

DELTA PUBLIC HEARING (DPH)

AGREN BLANDO COURT REPORTING & VIDEO INC

ORIGINAL

REPORTER'S TRANSCRIPT OF PUBLIC HEARING April 8, 2009

IN RE:

DRAFT ASPINALL ENVIRONMENT IMPACT STATEMENT.

PURSUANT TO NOTICE to all parties in interest, the above-entitled matter came on for public comment hearing on Wednesday, April 8, 2009, commencing at 6:37 p.m., at the Bill Heddles Recreation Center, 530 Gunnison River Drive, Delta, Colorado, before Lisa Persichitte Reed, Certified Realtime Reporter within and for the State of Colorado.

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1 APPEARANCES:

2 BUREAU OF RECLAMATION:

3 Ed Warner, Resources Division Manager
4 Carol DeAngelis, Area Manager
5 Steve McCall, Environmental Specialist

6 I N D E X

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7 PUBLIC COMMENTS:

8	By Jim Dyer	DPH1	8
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1 P R O C E E D I N G S

2 MR. WARNER: Good evening. Welcome to this
3 public hearing on our Aspinall EIS. It is an EIS on
4 the operations of the Aspinall Unit. And tonight is,
5 like I said, a public hearing to hear from you guys,
6 your comments. Hopefully everybody has read it and
7 grabbed it. And hopefully, we'll have some good
8 comments.

9 My name is Ed Warner. I'm with Reclamation
10 out of the western area office in Grand Junction.
11 Steve McCall is with us. Steve is an environmental
12 officer for us. Carol DeAngelis is our area manager.

13 Several other Reclamation people are around.
14 Nancy Coulam right here is from our regional office in
15 Salt Lake City. Jane Blair is also from our regional
16 power office in Salt Lake City. Dan Crabtree is our
17 water operations chief out of Grand Junction. And
18 Terry Stroh at the table back there is an environmental
19 planning group chief.

20 Also, I want to introduce Lisa Reed. She is
21 our court reporter tonight. Like I said, a public
22 hearing on Aspinall EIS tonight where we do this to
23 really come listen to what you people have to say to
24 us. Obviously, that is why we have Lisa here, a
25 written record of this. So we'll get going in a few

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1 minutes.

2 Reclamation, I think most people do know
3 this, is the lead agency on this EIS. We had several
4 cooperators working with us. Cooperating agencies
5 could be anybody from several state and federal
6 agencies and I guess mostly those quasi, whatever you
7 call them, entities. But Dave Kanzer with the River
8 District is one of our cooperators. Patty Gelatte with
9 Fish and Wildlife Service, they are one of our
10 cooperators. Michelle Garrison, State of Colorado.
11 State of Colorado is, obviously, a cooperating agency.
12 Michael Dale of the National Park Service, the National
13 Park Service is one of our cooperating agencies.
14 Couple others that aren't here, Western Area Power
15 Administration -- I'm sorry, Burt. Western Area Power,
16 I've talked to you on the phone. Sorry about that. So
17 I guess who isn't here? I better not say that yet, but
18 Platte River Power Authority is one of our cooperating
19 agencies. I don't think I missed anybody, did I?
20 Anyway, the cooperating agency -- you can see, it is a
21 multityagency effort, people assisting us in doing
22 this. So I appreciate everybody coming.

23 I think, again, most people understand the
24 Aspinnall Unit. As I said, it is an EIS on the
25 operations and changing the operations of the Aspinnall

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1 Unit to try to assist in meeting the flow
2 recommendations that were developed by the Fish and --
3 or the Recovery Program, actually, the Upper Colorado
4 Recovery Program.

5 And so this EIS is pursuant to the National
6 Environmental Policy Act. It started, I don't know,
7 four or five years ago and got to this point now. And
8 hopefully we're coming to a quick end, but I don't
9 think I can honestly tell you that.

10 But anyway, the EIS is on the operations of
11 the Aspinall Unit. If you don't understand the
12 Aspinall Unit, the Aspinall Unit is a series of three
13 dams and reservoirs on the Gunnison River right outside
14 Montrose, going up towards Gunnison, Blue Mesa, Morrow
15 Point, Crystal Dams and Reservoirs, and power plants.
16 Blue Mesa is the largest reservoir in Colorado. So I
17 think probably by saying that tells you how important
18 it is to the state of Colorado and the citizens.

19 As I said, this is about doing -- an impact
20 analysis, really, is what this EIS is about on the
21 operations of the Aspinall Unit pursuant to some flow
22 recommendations developed by the recovery program for
23 endangered fish from, really, if I've got my directions
24 right, right out here on downstream to the confluence
25 with the Colorado, its critical habitat and the

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1 Gunnison River there. And these flow recommendations
2 were developed over a series of years and basically are
3 just -- call for a higher spring peak and a more
4 modern -- well, not more modern -- a more steady base
5 flow the rest of the time and protection of those base
6 flows.

7 Volume, I think some people -- if you didn't
8 have it, I think the big volume is back there. It is
9 the impact analysis on the different resources that
10 were analyzed. Some of those are the hydropower, fish
11 and wildlife, agriculture, recreation, on and on.
12 Volume II, the technical appendices has, obviously,
13 those technical appendices in it. And Steve will tell
14 me probably the more important thing is, because he
15 wrote it, a biological assessment in that Volume II.

16 That biological assessment, if you
17 understand the process, is a document we write that we
18 put out that says what we think the effects are on
19 endangered species pursuant to the Endangered Species
20 Act. We send it to the Fish and Wildlife Service.
21 What we get back from them is a biological opinion
22 where they either concur, agree, disagree, negotiate
23 whatever issues are associated with, in this case,
24 these endangered fish. And there are issues with that.
25 I don't know that -- probably the biggest issue is

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1 obviously the flow for the fish and some water quality
2 issues that have come out.

3 Again, I think it's on some of the papers
4 Terry has back there, but if not, maybe some of you are
5 on our mailing list. We're accepting comments on the
6 EIS until April 24th. Written comments will be
7 accepted up to that time. And along with the comments
8 tonight, if you have them, we have a list of at least a
9 few people that want to provide verbal comments. And
10 if you want to provide verbal comments if you have them
11 written down, please give them to us also. Those
12 comments, like I said, along with any written comments
13 you've sent to us, will be responded to in the final
14 EIS and will be distributed to the public.

15 Again, Lisa is transcribing everything
16 tonight so that we have a written record of that. A
17 few, I guess, rules while the hearing is in session.
18 It became in session when we started, all spoken words
19 are recorded by her. And the only people that will be
20 recognized to speak -- when we ask you to come up here,
21 state your name, who you are with. We're going to try
22 to limit you to five minutes. There is not a lot of
23 people here, so if you go a little over, we probably
24 won't get too excited about that. Or if you do have a
25 lot longer, we will probably stop you and say, "Can you

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1 cut your comments off," and we'll come back to you
2 after we've had a chance to hear others. It is
3 important, though, that only one person speaks at a
4 time so Lisa can make sure she gets a good, accurate
5 record of that.

6 I guess, as I said, we're here to hear what
7 you have to say. It is not a forum to debate the
8 merits, drawbacks, or anything else of the proposed
9 actions outlined in this EIS. We're just going to be
10 up here listening. The only things we might say is ask
11 for a clarification on a question you might have or
12 provide any type of clarification or something like
13 that. So we're here just to listen.

14 Again, I just want to express my
15 appreciation on behalf of the Bureau of Reclamation.
16 We think this is a very important document and a change
17 in the operations of the Aspinall Unit that I think
18 everybody probably that has been around here has
19 concerns about. So I would like to hear what you have
20 to say.

21 So with that, I think we'll get started
22 again. I think I have this turned on. So come on up
23 and we'll start out with Jim Dyer. Come up to the
24 podium.

25 MR. DYER: Good evening, ladies and

DPH1

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1 gentlemen. As you know, I'm the Jim Dyer from Arapahoe
2 County, not my cousin from Durango. We were known as
3 Arapahoe Dyer and Durango Dyer on the floor of the
4 Senate for a number of years and people keep mistaking
5 us, except for our politics and our views on water.

6 Thank you for the opportunity to come over
7 here today and discuss this matter. I'm here
8 representing Arapahoe County and the group of
9 interested water providers and people that represent
10 different coalitions of interest on the east slope
11 about the use of the water in the Aspinall Unit.

12 To Arapahoe County and the area -- the south
13 area of the corridor, the south corridor of Denver,
14 it's a serious economic problem that we're beginning to
15 experience in some real terms. We just lost a
16 development from an outfit from Australia called Land
17 Lease, which was going to build a very large,
18 extraordinarily environmentally sensitive project on
19 what is called in the vernacular the Lowry Bombing
20 Range, which went -- which goes with it, a large open
21 space project, which would be unprecedented perhaps in
22 the entire country. And that failed because they do
23 not have access to surface water replenishment.

24 There was an attitude and has been an
25 attitude in Colorado for some years, you go out and

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1 punch holes in the ground forever and keep building
2 without any eye to renewable resources. And it's
3 becoming not just a burden, but it is beginning to now
4 endanger probably several billions of dollars of
5 assessed property values because their access to water
6 is simply becoming more and more limited as time goes
7 on.

8 We feel that this is an opportunity to weigh
9 in on that tension between ecological issues and
10 economic issues, but the proper use of that Aspinall
11 pool, which can provide a serious amount of water
12 statewide, frankly, not just to Arapahoe County, but to
13 people who can put it to a productive use that would
14 help economically and not create any undue stress on
15 the environment.

16 I had the opportunity to read the report.
17 And my colleague, Alan Leak, which will speak hopefully
18 after me, if he can follow me, has more technical
19 expertise as a water engineer in this area. But I
20 wanted to express our interest in being able to work
21 collaboratively and cooperatively with you folks to see
22 if we can come up with a reasonable solution to provide
23 that water in the areas that deeply need it. If you
24 have any questions, I'll be happy to answer them.

DPH1-1

25 MR. WARNER: Thanks, Jim. So as Jim said,

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1 Alan Leak, and he is next on the list. So Alan, if you
2 want to step up.

DPH2

3 MR. LEAK: Thank you. My name is Alan Leak.
4 I'm a water resource engineer in the state of Colorado
5 and have about 27 years of water resource engineering
6 and water rights experience and modeling experience on
7 the Gunnison River Basin.

8 I'm here as an engineering consultant to the
9 Colorado Water Partnership. And I believe the
10 partnership will be submitting written comments to you
11 later on this month.

12 As you are aware, one of the primary
13 purposes of the Aspinall Unit is to store water for
14 beneficial consumptive use, making it possible for the
15 State of Colorado to utilize Colorado's full compact
16 apportionment. The draft EIS states several times that
17 alternatives should recognize the consumptive use of
18 300,000 acre-feet of projected yield, which may be used
19 in the future by the entire state of Colorado under its
20 compact apportionment. And that view should not be
21 precluded by the selection of any of the alternatives.

22 In addition, the alternative chosen must
23 comply with the recently decreed Black Canyon National
24 Monument Water Rights, which was supported by Arapahoe
25 County and the Colorado Water Partnership. In

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1 accordance with those two requirements, then I think
2 the Bureau can use its discretionary authority to
3 further regulate the flows to benefit the endangered
4 species as described in the action.

5 My following comments address a concern that
6 several of the proposed alternatives may put at risk
7 the ability of the Aspinall Unit to meet its primary
8 purpose, that is, to store water. I understand that
9 the hydrologic modeling for the draft EIS was conducted
10 using Riverware, a proprietary computer modeling
11 system, not generally available to the general public.
12 Thus, I've taken the description of the model, the
13 assumptions, and results at face value.

14 My review of the Bureau documents of the
15 Blue Mesa Reservoir indicate the reservoir has a
16 storage capacity of about 940,000 acre-feet, including
17 about 110,000 acre-feet of dead storage, 81,000 of
18 inactive capacity, leaving about 748,000 acre-feet of
19 active capacity. With a total of about 829-, 830,000
20 acre-feet of useful capacity.

21 The tables and figures in the report should
22 clarify these values, as well as identify when and how
23 it's appropriate to utilize inactive capacity, as it
24 appears we were getting close in one of the
25 alternatives to that inactive capacity.

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1 Considering that usable capacity, Blue Mesa
2 Reservoir, in the no-action alternative, fills to
3 within 10 percent of full over 60 percent of the time.
4 This is the same for Alternative A. In contrast,
5 Alternative D achieves storage within 10 percent of
6 full only 52 percent of the time. Alternative B, only
7 42 percent of the time. And Alternative C, only
8 29 percent of the time.

9 These facts show that the proposed
10 alternatives store significantly less water than the
11 no-action alternative. This may place the State of **DPH2-1**
12 Colorado at risk in not being able to utilize the full
13 300,000 acre-feet if it is not accounted for in the
14 modeling itself.

15 I've prepared three graphs, which I've
16 provided to you. And I will apologize, the inactive
17 and dead storage on those are incorrect. And I request
18 permission to submit tomorrow the correct graphs for
19 that.

20 I respectfully request that these graphs or
21 something similar be included into the final EIS. And
22 the reason for it is I think that provides the general
23 public a much, much clearer picture of the impact of **DPH2-2**
24 these alternatives than trying to look through numbers
25 and numbers and trying to understand what they really

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1 mean.

2 The first graph labeled "Average Blue Mesa
3 Reservoir Content" is based on the data in Appendix A,
4 Table -3 of the draft EIS. In general, Alternatives A,
5 B, and D result in an average of 10,000 to 30,000
6 acre-feet of Blue Mesa storage content, less Blue Mesa
7 storage content as compared to the no-action
8 alternative. Alternative C results in an average of
9 50- to 90,000 acre-feet less Blue Mesa storage content
10 as compared to the no-action alternative.

11 The second graph labeled "Minimum Blue Mesa
12 Reservoir Content" is also based on the data in
13 Appendix A, Table -3. In general, Alternatives B and D
14 result in a minimum content of Blue Mesa Reservoir from
15 40- to 100,000 acre-feet less than the no-action
16 alternative with periods of significantly lower minimum
17 storage contents in May, June, and July. Alternative
18 C's minimum storage contents are typically an average
19 of about 170,000 acre-feet less than the no-action
20 alternative.

21 The third graph labeled "Maximum Blue Mesa
22 Reservoir Content" is based upon the data in Appendix
23 A, Table -2. Variations of almost full to full maximum
24 storage content for Alternatives A, B, and D range up
25 to 100,000. Alternative C has the lowest maximum

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1 storage content of about 200,000 acre-feet in 1981,
2 which is a staggering 300,000 acre-feet less than the
3 other alternatives. This value is also less than the
4 300,000 acre-feet of consumptive use the Bureau has
5 stated it will recognize for Colorado's apportionment.
6 Thus, in my opinion, this alternative does not meet the
7 primary purpose of the Aspinall Unit and endangers Blue
8 Mesa of going dry if you were to have a dry year after
9 that year.

10 In addition, this graph shows Alternative C
11 keeping Blue Mesa Reservoir at a maximum 60 percent
12 full or less for a full five-year period. I don't
13 believe this achieves any reasonable intended use of
14 Blue Mesa Reservoir.

15 Lastly, I understand that the DEIS was
16 prepared before the Black Canyon Water Right Decree was
17 finalized. However, most of these same Appendix A
18 tables and figures, such as what I have provided to
19 you, have not been provided to the general public,
20 probably because they haven't been prepared. But it
21 doesn't make it impossible to provide accurate and
22 detailed comments on the actual impact of any of the
23 proposed alternatives when modeled in accordance with
24 that decree.

25 In closing, I'd ask the Bureau to choose

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1 your recommended alternative carefully to assure that
2 the State of Colorado is not impaired or put at risk in
3 its ability to fully utilize the State's compact
4 apportionment.

5 And one last clerical issue, there are
6 several of the tables in there. Some of them have some
7 subs down at the bottom; some of them do not. I think
8 it would be appropriate to have all of them to either
9 summarize or average the data. I think that would be
10 helpful for the general public to understand the
11 difference in those alternatives. And I thank you for
12 your time.

13 MR. WARNER: Thanks, Alan. Next on the
14 list, I have Jim Brown.

15 MR. BROWN: Good evening. I've met you DPH3
16 folks before, in my official capacity as special
17 counsel for the City of Delta. I'm not here in that
18 capacity this evening. I'm just here on my own behalf.

19 However, I would say I'm here as a citizen
20 of Delta and I can see a couple of issues in here that
21 should be important to the folks in Delta. I do think
22 that you may well receive some written comments from
23 the City before the end of the comment period. And I
24 don't know if anyone from the City snuck in behind me,
25 but of course, what I have looked at in the draft EIS

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1 and what I've been interested in are changes in the
2 peak flows in the spring. And I do see that under some
3 options, there are chances for higher flows in the
4 spring for Delta. I am glad to see that there is,
5 generally speaking, a reference to 12,000 cfs as being
6 about the capacity of the river here. We certainly had
7 a good test of that last year, last spring. And flows
8 in that neighborhood caused some damage, but nothing
9 serious.

10 I take it that the flood manual still talks
11 about 15,000 cfs. I take it also, and my question
12 would be, is there any difference under the
13 Environmental Impact Statement in the operation -- the
14 changes of it occurring, the operation of the unit,
15 with respect to the Bureau's flood control obligations?

DPH3-1

16 Throughout the discussions on the Black
17 Canyon, I don't know, the City was assured that flood
18 control is a paramount concern to the Bureau. And I
19 guess I would like to -- my comment would be that it
20 should be just as much a concern now in this context as
21 it was in the Black Canyon context.

22 The other issue that I see a reference to
23 is, as I take it, if there are higher flows in the
24 spring, the total amount of water released, you are
25 assuming it is going to be the same, which means that

DPH3-2

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1 there may be lower flows at other times of the year and
2 that that could have an impact on the operation of the
3 City's water treatment plant. And I have mentioned
4 that to the City engineer. And, again, I would expect
5 him to give you some comments on that.

DPH3-2
(cont.)

6 So as a citizen, I'm concerned about those
7 two things. Thank you very much.

8 MR. WARNER: Terry, did you get anymore? I
9 guess at least currently, we don't have anymore people
10 signed up. If any of the three of you want to add
11 anymore statements you would like to make, feel free to
12 step up here or anybody else in the room. Jim?

13 MR. BROWN: Thank you. One of the specifics
14 that I neglected to mention might be best explained by
15 an example of what we're doing at ACWWA, the Arapahoe
16 County Water/Wastewater Authority. I sit on the board
17 of that. We're negotiating right now the purchase
18 of -- we're doing the due diligence on the purchase of
19 3,000 acre-feet. This is going to dry up a significant
20 amount of farmland, which is the pattern now, working
21 up the Platte River Valley drying up farmland. It's
22 expensive, in this case, \$30,000 an acre-foot of water,
23 to transport south so we can support some semblance of
24 economic value to the developments that we have going
25 on or just supporting the ones we have now.

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1 So on the economic side, it's becoming both,
2 as a matter of state policy, do we want to keep drying **DPH3-3**
3 up ag farmland and to burden the water from that, which
4 I don't, by the way. I am not a supporter of doing
5 that, or do we want to try and move water that we hope
6 to use every year from snowmelt. I just wanted to add
7 that example before the end of the program.

8 MR. WARNER: Thank you, Jim. Well, I guess
9 it is a voluntary thing, but always -- there is an
10 awful lot of you I know out there. We'll do a little
11 bit of picking on people, I guess, just to see if we
12 can solicit anything. Steve reminded me, so I won't
13 take all the blame. So if you guys get mad, blame him
14 too.

15 But Michelle, is there anything you want to
16 respond to or I should say make a comment on anything?

17 MS. GARRISON: I don't think I have anything
18 to add beyond what I said last night.

19 MR. WARNER: And Mr. Kanzer, another one
20 that --

21 MR. KANZER: Well, informally -- it will be **DPH4**
22 formal since it will be on the record.

23 MR. WARNER: Why don't you step up here if
24 you are going to say something.

25 MR. KANZER: I'm feeling coerced now.

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1 MR. WARNER: Just to make sure Lisa gets
2 everything, so I appreciate it if you'd come up there.

3 MR. KANZER: All right. Well, I didn't come
4 here with any prepared statements. We're going to be
5 submitting formal comments. But in reviewing the
6 document today, and I haven't gone through the whole
7 thing, but we have been involved in the whole
8 process -- when did we start -- 2003.

9 MR. WARNER: It seems like yesterday.

10 MR. KANZER: In any case, from scoping to
11 the final, we are in support of Alternative B, the
12 preferred alternative. That's the bottom line for us.
13 We think it is a good compromise.

14 We're also in support of the programmatic
15 biological assessment. We had a part in that. We are
16 quite active in the selenium task force. We are
17 concerned, I should say, about the funding of some of
18 the steps or the program as outlined. And we recognize
19 it's a draft and subject to evolution, but it does
20 point to the selenium task force as a key component of
21 that assessment. And we believe it is going to end up
22 in the opinion. It talked about the river district --
23 Colorado River District as being the sole financial
24 supporter of -- the facilitator. We have one,
25 basically, part-time staffer that runs that. We do

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1 appreciate the fact that the Bureau contributed 5,000

2 this year for some efforts. So I guess this year,

3 we're not the sole provider, but we would look to the

4 Bureau to increase that and help with those efforts. **DPH4-1**

5 We think that that part-time staff is probably going to

6 need to be expanded to include some other folks to try

7 to implement some of the measures that we think are

8 going to be necessary.

9 We're also working very hard to get grant

10 monies to help modernize the irrigation system here, **DPH4-2**

11 which is -- throughout the Lower Gunnison Basin, that

12 is responsible, we believe, for some of the loading of

13 selenium. That is quite a higher cost over what we

14 believe to be a 15-year implementation plan. We're

15 working hard in a controlled forum and work group, but

16 we think there is going to need to be a regular federal

17 appropriation to address that. We are going to

18 continue to work on that, but look to you to support

19 the appropriation process as much as you can through

20 your management.

21 What am I forgetting? I guess the

22 depletions that have been outlined are okay. There is

23 additional growth within the basin that needs to be

24 considered. We did work with you on trying to come up

25 with that compromise, but we're concerned that it's a

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1 low number and below the Aspinall Unit. So sort of a
2 placeholder there for future growth. We need to make
3 sure that operations are going to consider that and the
4 Fish and Wildlife Service will anticipate an increment
5 of new growth.

6 Again, not having prepared comments, that is
7 probably enough for now, but that's what you get for
8 coercing me.

9 MR. WARNER: Thanks, Dave. Appreciate it.
10 Anybody else? Well, I guess you wanted to schedule
11 this until 9:00. So if you wanted to get something to
12 eat and come back, we're going to be here for a while.

13 Anyway, I guess last night we were in
14 Gunnison because we had a similar number of commenters.
15 And what we did is we went off the record and said
16 we'll temporarily close the public hearing and have an
17 informal discussion if anybody wants to have one on
18 anything and we'll entertain that for a period, if you
19 would like to.

20 So with that, I don't know if there is
21 anything -- I don't know if that loosens tongues any
22 when you are off the record, but we'll see if we can
23 answer a few questions here and there since we're going
24 to be here.

25 MS. DeANGELIS: You need to tell her if

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23

1 you're off the record.

2 MR. WARNER: Oh, I'm sorry. Off the record.

3 (Discussion held off the record.)

4 (The public meeting adjourned at 7:06 p.m.)

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1 STATE OF COLORADO)
 2) ss. REPORTER'S CERTIFICATE
 3 COUNTY OF)

4 I, Lisa Persichitte Reed, do hereby certify that I
 5 am a Certified Realtime Reporter and Notary Public
 6 within the State of Colorado;

7 I further certify that these proceedings were
 8 taken in shorthand by me at the time and place herein
 9 set forth, that it was thereafter reduced to
 10 typewritten form, and that the foregoing constitutes a
 11 true and correct transcript.

12 I further certify that I am not related to,
 13 employed by, nor of counsel for any of the parties
 14 herein, nor otherwise interested in the result of the
 15 within proceedings.

16 In witness whereof, I have affixed my signature
 17 and seal this 16th day of April, 2009.

18 My commission expires April 12, 2012.

19
 20 *Lisa Persichitte Reed*
 21 Lisa Persichitte Reed
 22 Certified Realtime Reporter
 23
 24
 25



Table 2-DEIS List of comment designations with corresponding responses

Federal Government Agencies (FG)	
FG01-01	<p>On January 8, 2009, the Colorado Water Court issued a decree quantifying the 1933 federal reserved water right for the Gunnison River through the Black Canyon of the Gunnison National Park (Black Canyon NP Water Right). The decree quantifies the March 2, 1933 priority date water right as a year-round minimum flow and variable peak and shoulder flows for each year, the magnitudes of which are dependent upon current Gunnison Basin hydrologic conditions. The negotiations for the right were mentioned in the draft EIS. Now that the Black Canyon NP Water Right is in place, additional detail has been included in the narrative of the final EIS and a copy of the decree, including a full statement of the terms and limitations, is included in Appendix G of the final EIS. Because the reserved right is now decreed, it is considered to be a common element in the No Action and action alternatives in the final EIS.</p> <p>Section 3.1 of the final EIS discusses that the Black Canyon NP Water Right calls for a spring peak as well as shoulder and base flows and generally results in a spring peak similar to the action alternatives, in particular the preferred alternative. The right calls for a 1-day peak while the action alternatives for endangered fish have longer duration peaks. When exercising the Black Canyon NP Water Right, differences in impacts between the No Action and action alternatives are reduced.</p> <p>Alternatives have not been modeled to include the Black Canyon NP Water Right. Reclamation will operate the Aspinall Unit with the intent of meeting the Black Canyon NP Water Right, the Flow Recommendations, and authorized Unit purposes every year. The Black Canyon NP Water Right will be considered equally along with Flow Recommendations and authorized purposes of the Unit. Additional information has been added to Chapters I, II, and III of the final EIS concerning the Black Canyon NP Water Right and how it affects impact analysis.</p>
FG01-02	<p>A copy of the Black Canyon NP Water Right is included in Appendix G of Volume II of the final EIS. Pursuant to its normal procedures, Reclamation, beginning in January, will monitor inflow forecasts for operation planning and throughout this process will keep the National Park Service apprised of current operations and specifically apprised of projections of operations and their ability to allow the Black Canyon NP Water Right to be met. Coordination will occur throughout the January-May period and formal notification will be made to National Park Service on April 1 concerning anticipated status of the potential of meeting the Black Canyon NP Water Right. Reclamation will operate the Aspinall Unit with the intent of meeting the Black Canyon NP Water Right every year along with the Flow Recommendations and authorized Unit purposes. Releases will be made from the Aspinall Unit using the necessary combination of available powerplants, bypasses and spillways, while attempting to reach the Black Canyon NP Water Right peak flow target. See section 2.3.1.1 and 3.3.1.2C of the final EIS for further information.</p>
FG01-03	<p>Additional information has been included in Section 1.6.4 of the final EIS which addresses laws and policies related to the National Park Service and Bureau of Land Management. Included are legislation and authorities such as Antiquities Act of 1906, Black Canyon Proclamation No. 2033 of 1933 and later related proclamations, National Park Service Organic Act, National Park Service General Authorities Act of 1970, and Black Canyon of the Gunnison National Park and Gunnison Gorge National Conservation Area Act of 1999.</p>
FG01-04	<p>Daily reservoir operation decisions require the analysis of a myriad of data inputs, including but not limited to: present reservoir levels, inflow forecasts from the Colorado Basin River Forecast Center, reservoir target elevations, and downstream flow requirements such as downstream water rights, fishery flows, special study flows, or flood control releases. The daily reservoir operation is comprised of release decisions which arise as an integrated response to hydrologic conditions, current reservoir and flow conditions, and future targets or goals. The decisions underlying each alternative and their difference from the No-Action are addressed in Section 2.3 of Volume I of the final EIS.</p> <p>From year-to-year, forecast errors can play a large part in the variability and uncertainty in runoff forecasts and resulting operations. Flood control is included in all alternatives and is discussed in the draft and final EIS. Endangered fish target flows are based on the May 1 forecast. If actual April through July inflow is less than the forecast, reservoir levels may be lower than planned, conversely, if inflow is higher than forecast, reservoir levels may be higher than planned.</p>

Federal Government Agencies (FG) (cont.)	
FG01-05	<p>The releases needed to attempt to meet endangered fish targets are based on inflow forecasts at Blue Mesa Reservoir. Alternatives B, C, and D call for avoiding bypasses from April 1st through May 10th in order to make more water available for a spring peak and/or duration flows. A peak flow target is identified in the spring and operations are designed to attempt to meet this peak and associated flow duration. In addition, because there are so many combinations of scenarios and operational options to meet the downstream targets, no specific description of how operations will be modified can be provided beyond what is already described in the Section 2.3 of Volume I of the FEIS (Alternatives).</p>
FG01-06	<p>Alternative A describes specific Morrow Point releases in Section 2.3.2.1 of Volume I based on forecasted bypass volumes. The other alternatives do not specifically discuss operations at Morrow Point Dam because the peak targets at Whitewater can be achieved in a variety of ways. The final EIS states in Section 2.3.3.2 of Volume I “Releases will be made from the Aspinall Unit using the necessary combination [emphasis added] of available powerplants, bypasses and spillways, while attempting to reach the spring peak flow target.” “Crystal Dam releases, and releases from Morrow Point and Blue Mesa Dam as needed, would begin to be ramped up approximately 5 days...” The Alternatives B, C, and D are based on moving volumes of water through the Unit to achieve target peaks. The model does not describe what happens at each reservoir. The Unit is a “Black Box” in the model which does not describe individual reservoir operations. Volume II, Appendix A, does compare hydropower releases and bypasses for each reservoir. Because the results are from a model, day-to-day real life operation could be modified to enhance timing and peaks by utilizing spillway features not utilized in the model.</p> <p>Peaking and drawdown criteria do not affect the change in operations as modeled. Again, Morrow Point and Blue Mesa power operations are a “Black Box” in the model. Section 2.3.6.6 of the draft and final EIS explains that Morrow Point and Crystal Reservoirs’ daily fluctuations are limited by landslide criteria which restrict the elevation drop of the reservoirs’ surface during certain times of the year. Downward elevation change in excess of the recommended rates could activate massive landslides due to a combination of sudden reservoir lowering and saturated soil conditions.</p> <p>In addition, a general description of the purpose of peaking operations can be found in Appendix C of Volume II.</p> <p>Reclamation is responsible for determining monthly water releases from Unit reservoirs and daily releases from Crystal Reservoir. Reclamation is also responsible for designing and implementing spring peak operations and base flows. Reclamation also operates and maintains the Unit dams and hydropower facilities. Western Area Power Administration (Western) determines daily releases from Blue Mesa and Morrow Point reservoirs.</p> <p>Reclamation and Western work together on a daily basis in scheduling water releases, developing generation schedules, and coordinating maintenance outages. Western transmits and dispatches power generation from each Reclamation facility and ensures compliance with minimum and maximum flow requirements and other constraints set by Reclamation in consultation with other federal, state, and local entities. In generating and dispatching power, Reclamation and Western must also consider their responsibilities associated with North American Electric Reliability Council (NERC) and Western Electricity Coordinating Council (WECC) criteria. WECC, as a regional council of the NERC, has responsibility for coordinating and promoting electric system reliability in the provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of the 14 Western states in between.</p> <p>NERC and WECC operating criteria require Western and Reclamation to meet scheduled load changes by ramping the generators at Morrow Point and Blue Mesa up or down beginning at 10 minutes before the hour and ending at 10 minutes after the hour. Ramping is the change in the water release from the reservoir through the turbine to meet the electrical load (or power demand). Both scheduled and unscheduled ramping are crucial in load following, ancillary services, power system regulation, emergency situations, and variations in real time (what actually happens compared to what was</p>

Federal Government Agencies (FG) (cont.)	
FG01-06 (cont.)	<p>scheduled) operations. Typically, power demand increases during the daylight hours as residences, commercial establishments, agriculture and industry put electricity to use. Hydropower generation can react instantaneously to the load – a pattern called load following or peaking. Morrow Point and Blue Mesa typically operate for this purpose while Crystal regulates the flow below the Unit to even out fluctuations associated with peaking or load following. By comparison, coal and nuclear based resources have a relatively slow response time; consequently, they generally have limited load following capability in the WECC.</p> <p>As a control area operator, Western regulates the transmission system within a prescribed geographic area. Western is required to react to moment-by-moment changes in electrical demand within this area, adjusting the electrical power output of hydroelectric generators within the area in response to changes in the generation and transmission system to maintain the scheduled level of generation in accordance with prescribed NERC criteria. Automatic Generation Control (AGC) is a process whereby the control system automates the water releases in a manner that follows the power system’s actual dynamic demands on a moment-to-moment (typically a four-second-interval) basis.</p> <p>In regulating the transmission system, Western needs to be able to ramp releases up or down quickly in response to system conditions. In addition, each utility is required to have sufficient generating capacity – in varying forms of readiness – to continue serving its customer load, even if the utility loses all or part of its own largest generating unit or largest capacity transmission line. This reserve capacity ensures electrical service reliability and an uninterrupted power supply.</p> <p>Reserve generating capacity that is connected to the transmission system is called spinning reserve. Spinning reserves are used to quickly replace lost electrical generation resulting from a forced outage, such as the sudden loss of a major transmission line or generating unit. Additional off-line generating units are also used to replace generation shortages, but they cannot replace lost generation capacity as quickly as spinning reserves.</p>
FG01-07	See response to FG01-03
FG01-08	This paragraph is simply meant to disclose the authority under which Reclamation can provide releases from the Aspinall Unit for endangered fish. The various reasons the fish have become endangered are discussed elsewhere in the EIS.
FG01-09	A biological assessment was included in the draft EIS. The assessment evaluated the effects of the preferred alternative (Alternative B) on endangered species. The Fish and Wildlife Service has prepared a programmatic biological opinion (PBO), included as Appendix B in Volume II, which concluded compliance with the Endangered Species Act (ESA). The PBO calls for monitoring and adaptive management to evaluate the long term effects of the new operation and to respond to new information that is developed from the monitoring.
FG01-10	The subject paragraphs outline the authority for implementing the proposed action and have been retained in the final EIS. Also in regard to releases for trout or recreation, these resources are benefitted by releases to meet other Unit purposes. Reclamation’s operation planning attempts to protect the unique fishery and recreation uses downstream while meeting authorized purposes.
FG01-11	<p>The text in the final EIS has been changed to give a consistent explanation of Crystal’s role of reregulating and stabilizing downstream flows. “Crystal Reservoir then serves an important function in stabilizing the flows of the Gunnison River to benefit water users and the downstream environment, particularly the Black Canyon of the Gunnison National Park and Gunnison Gorge, as well as the production of hydroelectric power.”</p> <p>See FG01-06 for discussion and description of peaking operations. Peaking operations and drawdown/landslide criteria do not affect the change in downstream releases. Morrow Point and Blue Mesa operations are treated as a “Black Box” in the model. Therefore peaking and drawdown/landslide criteria are not considered in the modeling process. Operations under the alternatives fall within landslide criteria because the model moves volumes of water through the Unit at timing and rates which fall within historical practices and within the criteria.</p>

Federal Government Agencies (FG) (cont.)	
FG01-12	See Section 2.3.6.6 in Volume I for discussion on this issue. Also, refer to the PBO included as Appendix B in Volume II for information on the Dallas Creek and Dolores Projects and the Colorado River.
FG01-13	This question is addressed in various sections in Chapter 2 of Volume I (Section 2.3.1, last bullet). Some of the water necessary for the operation of the Redlands fish ladder may come from the Aspinall Unit. No accounting has been done to quantify the amount of water attributed to the Aspinall Unit for the fish ladder and the change in operation of the Aspinall Unit is deemed to address the Dallas and Dolores Project depletions without specifying an amount, thus making reference to and accounting for the 148,000 af unnecessary.
FG01-14	This comment refers to the “Connected and Related Actions” Section (1.5) in Volume I. This section has been expanded to include more information on the Black Canyon NP Water Right. Also refer to response FG01-01.
FG01-15	Refer to response to comment FG01-03.
FG01-16	This item referred to the No Action Alternative in the draft EIS. Discussion in Section 2.3.1 has been modified to include reference to the Black Canyon NP Water Right. Also refer to response FG01-01.
FG01-17	See response to FG01-01.
FG01-18	Operational decisions, including peak targets will be discussed at the Aspinall Operations meetings as mentioned in Section 2.3.6.4. In addition, as mentioned in Section 2.3.3.2, peak targets will be achieved “Using a combination of available powerplants, bypasses and spillways....”
FG01-19	For Alternatives B, C, & D, the operational commitments are mentioned in Section 2.3.3.2 – “Reclamation will not bypass the powerplant at Crystal Dam from April 1 st through May 10 th Peak releases will be made in an attempt to match the peak from the North Fork in order to maximize the potential of meeting a desired peak at Whitewater.” This is the way the alternatives were modeled. Consequently, they show an increase in peak occurrence. The last paragraph of Section 2.3.3.2 further discusses operational commitments: “Crystal Dam releases and releases from Morrow Point and Blue Mesa Dam as needed would begin to be ramped up approximately 5 days prior to the predicted North Fork peak.” Alternative A identifies the volume of water to be managed for a peak as that water to be bypassed or spilled at Crystal based on the May 1st Forecast and May 1st Blue Mesa Reservoir content and includes a corresponding maximum 1 day release.
FG01-20	If only less than the peak target flow can be achieved (probably due to lack of flow in the North Fork), a cut-off flow rate had to be determined in the model in order to not release excessive volumes of water in an attempt to meet an unreachable peak. The figure of 90 percent was selected because it seemed a reasonable level of target achievement. The peak flow duration occurs only when the act of achieving a peak is >90 percent effective. In addition, the model limits the number of days allowed to achieve the peak in order to limit futile efforts and save storage volumes.
FG01-21	The overall goal of the Recovery Program is to recover the fish in the Colorado River basin. Once the fish are recovered, habitat will still need to be maintained in order to prevent the fish from once again becoming endangered. Operations of the Aspinall Unit may be adjusted in the future as the result of monitoring and adaptive management. In theory, future adjustments could include higher or lower peaks or adjustments in base flows. Significant changes would require additional NEPA and public review. Water rights, including the Black Canyon NP Water Right, would be incorporated into all new operations.
FG01-22	If proposed in the future, out of basin depletions, in a quantity sufficient to induce an “artificial drought” will be required to go through the NEPA and ESA process. Operations and guidelines needed to address such an event will be developed to address the timing and volume of such depletions. Neither “Artificial drought” due to power releases or mismanagement is reasonable to expect, but if such an event did occur it would probably be handled similar to a real drought, whereby, for Alternatives B, C, and D, recovery is undertaken pursuant to the bullets in Section 2.3.6.3.
FG01-23	In Section 2.3.6.3, action alternatives do not specifically call for a release of 122,000 af of storage plus all inflows. The drought rules are intended to allow the target flows at Whitewater to be reduced in order to allow the Aspinall Unit to recover from a previous year’s drought. If drought criteria are in effect there is plenty of storage available for the runoff...there has been a drought. By the drought criteria’s definition, Blue Mesa’s content is specified, and there is space available for runoff...otherwise the drought criteria would not be in effect and there would be no drought.

Federal Government Agencies (FG) (cont.)	
FG01-24	Reclamation believes that the statement is correct and consistent. In the future, requests to contract for Aspinall Unit storage water may be made. If this occurs, the request would be subject to evaluation under the ESA, other environmental regulations, water rights, and other factors. The ESA consultation could result in limitations or conditions on the use of the water.
FG01-25	Alternative 5 was an initial action alternative no longer under consideration. The March 31 st target referred to is a modeling target which is further explained in Section 2.3.3. The narrative is not implying that water will be stored for 6 weeks in anticipation of the peak flow. It is stating that Reclamation will avoid an operation that will cause water to “by-pass” or “go around” the powerplants during this time period. The Gunnison Tunnel right would not affect this since we are talking about powerplant <u>bypasses</u> , which imply we are at full powerplant capacity to begin with. Full powerplant capacity is about 2,100 cfs which provides sufficient flow for the tunnel and the Black Canyon.
FG01-26	The paragraph referred to indicates that less than 1,000 af/yr of the “safe yield” is now being used. The remainder has not been quantified and for that reason, the term “up to 300,000 af” is used. This indicates that the total safe yield may be less than 300,000 af.
FG01-27	In Section 3.3.1.1f of the final EIS, Flood Control is referred to as an operational <i>sideboard</i> , meaning a constraint, consideration, or limitation. In this case, flood control is a purpose of the Unit.
FG01-28	The spillways are designed to be used only high runoff events, not for day-to-day operation. Peak releases for the Black Canyon NP Water Right and endangered fish call for frequency of high flows greater than the bypasses and powerplants were designed for. Thus, Reclamation has had some concern related to implementation of these reoperations. There is a difference between using the spillways for operational purposes (i.e. a <i>controlled</i> spill) and flood control operations to not <i>cause</i> a spill. In this instance, a <i>caused</i> spill might be better identified as a hydrologically caused spill, meaning the inflow and reservoir elevation is such that spillway gates must be opened in order to maintain control of the reservoir. The action alternatives may utilize a combination of powerplants, bypasses and spillways to achieve target flows. The spillways may be needed because they have a much larger discharge capacity than the other outlet facilities. Releases to meet targets for the action alternatives are <i>controlled</i> releases and are not caused by flood control criteria or hydrologic causes.
FG01-29	The model is described adequately in Appendix A of Volume II.
FG01-30	Section 3.3.2.1D, Upper Colorado River Basin Fund, provides a general description of the Basin Fund. As noted in that section, the Basin Fund is managed by Western Area Power Administration. A detailed discussion of current balances and annual revenue/expenditures is outside the scope of this EIS. Tables 3.3-9 through 3.3-11 show the economic impact associated with a change in electrical generation for each alternative in comparison to the No Action alternative. A discussion of the significance of economic impacts associated with a change in power generation for the various alternatives is presented in Section 3.3.2C, Economic Impacts. Context is provided to the reader by recognizing that the annual economic value of generation at the Aspinall Unit is around \$60 million. A comparison to the entire Colorado River Basin Units is outside the scope of this EIS.
FG01-31	The model referred to in this section is completely different than the Aspinall Operations RiverWare model. This is an Economic Analysis, not an operational analysis or description of operational criteria. Aspinall is not operated on a one week schedule. The section clearly states that the hydrology input is from the projected daily releases under the action and No Action alternatives. No changes of overall releases are contemplated on a weekly scale. The hourly operation schedule deals with power generation and demand within the Aspinall Unit “black box”, Blue Mesa and Morrow Point, and has nothing to do with scheduling water operations as they relate to daily releases from Crystal Reservoir.
FG01-32	The final EIS has been modified to include more information on the Black Canyon NP Water Right (see FG01-01). With the right included in the No Action and action alternatives, it is recognized that the differences in impacts between No Action and Alternatives A, B, C, and D have been reduced.

Federal Government Agencies (FG) (cont.)	
FG01-33	<p>Reclamation does not believe there are contradictions in the analysis. The analysis is based on information provided by the Colorado Division of Wildlife which has several decades of monitoring data on the trout resource. Indeed high spring flows help maintain the habitat and long periods without these flows will decrease the quality of the habitat. At the same time high spring flows, dependent on ramping rates and timing, can decrease recruitment in any given year. The condition of the trout fishery in the Black Canyon prior to the Aspinall Unit has not been documented. Extreme high and low flow periods and warmer summer water temperatures probably limited the fishery. In the future under the new flow regimes, the key to maintaining the quality trout fishery will be careful ramping of Crystal releases, timing of the peak, and maintaining Crystal Reservoir’s role in reregulating peaking releases from Morrow Point.</p> <p>Please refer to comments furnished by the Colorado Division of Wildlife for further information on impacts to the trout fishery.</p>
FG02-01	<p>Reclamation reviewed the hydropower section to see if we had omitted reference to how past actions, when added to the present actions, and reasonably foreseeable future actions might affect hydropower. We believe the document fully discloses the impacts in the regional context of the Western Electricity Coordinating Council (WECC) network using the modeling provided by Argonne National Laboratories. As stated in the final EIS, the model indicated that impacts of some of the alternatives to hydropower would be significant. Therefore, we believe Argonne’s model provided the context requested in this comment.</p>
FG02-02	<p>Reclamation has previously carried out a relatively comprehensive exploration of these hydrologic data. Reclamation’s effort included a rather extensive parametric and non-parametric analysis of (a) total annual inflows, and, (b) total run-off period (April through July) inflows for the 1906-2005, 1937-1997 and 1975-2005 periods of record. This analysis shows there are no statistically significant differences between any of these periods of record.</p> <p>Reclamation’s technical staff is familiar with the application of weights to adjust sample input data, such as hydrology data, to more closely approximate the relevant characteristics of the population. Although the details of the weight calculations have not yet been supplied, it appears that Western is suggesting that the resulting input weights would be applied to the RiverWare output. This suggested application of the weighting procedure is rather unorthodox and is at variance with the application described in the supplemental document furnished by Western.</p>
FG02-03	<p>Hydropower is affected by alternative operations by increasing the quantity of water bypassed around the hydropower facilities in certain years to create spring peaks. In addition, water may be shifted from high power demand periods to lower demand periods. There may be potential to shift some water to high power demand months (for example: July-August and December-February) that can be evaluated at the Aspinall Operations Meetings.</p>
FG02-04	<p>The purpose has been stated as “...to provide sufficient releases of water at times, quantities, and duration necessary to avoid jeopardy to endangered fish species and adverse modification of their designated critical habitat in the lower Gunnison River while maintaining the congressionally authorized purposes of the Aspinall Unit.” While wording elsewhere may vary, the meaning has been consistent and is included in the final EIS.</p>
FG02-05	<p>Section 2.3.3.2 has been modified to provide the requested flexibility. There are several years where scheduling “treatments” (Alternative A only) to be timed with the North Fork outside of the May 15th to May 31st window could increase the annual peak flow at Whitewater in Alternative A. However it is unlikely that this would change the number of years that the annual peak target at Whitewater is met.</p>
FG02-06	<p>The qualitative summary portion of the referenced table is based on the quantitative section of the table and Chapter III of the final EIS. There is a clear difference between Alternatives A and B in regard to the Black Canyon flows. As modeled, Alternative A exceeds the calculated Black Canyon right in 7 of the 31 years modeled while Alternative B exceeds the right in 17 of those years.</p>
FG02-07	<p>The language is intended to describe the authority for the proposed action and has been retained.</p>
FG02-08	<p>As a matter of record, Western has previously asserted the concept of nonuse economic value did not apply to the Aspinall Unit EIS. In response, we clarified our narrative to more clearly explain that indeed, an existing nonuse value study of nine threatened and endangered fishes (Ekstrand and Loomis</p>

Federal Government Agencies (FG) (cont.)	
FG02-08 (cont.)	<p>(1998), did encompass the Gunnison and Upper Colorado River Basins. This geographic region is affected by Aspinall operations and by the continued operation of various Reclamation projects, all of which are the subject of this final EIS.</p> <p>We concur there is some uncertainty regarding the magnitude of the potential effects on native fish populations. As we noted in the final EIS, the incremental effects of the action alternatives on critical habitat remain unquantified and numerical estimates of the impact of reoperation on fish populations are not currently available. If such estimates were available, we could estimate the change in nonuse economic value resulting from the proposed alternatives using the methodology described in a recent paper by Richardson and Loomis (2009). The Fish and Wildlife Service has been recognized by the courts as the nation's foremost authorities on fish and wildlife biology. Service staff has stated the proposed changes in Aspinall operations will benefit the populations of native fish on which the Ekstrand and Loomis (1998) nonuse value paper is focused. Based on their professional judgments, we have qualitatively described the likely effect on nonuse economic value as an "increase." We believe our assessment of the direction of change in nonuse value to be well-considered.</p>
FG03-01	As in the draft EIS, Alternative B is the preferred alternative in the final EIS and will be included in the Record of Decision. The Fish and Wildlife Service's PBO is included as Appendix B in Volume II.
FG03-02	The final EIS has been modified to read: "Should damage to the spillway tunnel become excessive use of the spillway would be limited to when hydrologically necessary repairs have been completed". Also see response FG01-28.
FG03-03	The graph already contains paired measurements of flow and selenium concentrations. A linear regression would be out of place on a plot with flow on a log scale
FG03-04	The values are for dissolved selenium. The text has been clarified.
FG03-05	The projection is actually simulated selenium concentrations from the LOADEST model using the modeled flows at Whitewater for each alternative. The x-axis of Figure 3.3-21 is years of the model period of record and not instream flows.
FG03-06	The figure, as well as actual data, shows that selenium concentrations have declined over time.
FG03-07	Reclamation agrees that selenium remediation is needed to support downward trends in selenium concentrations. The downward trend was discussed in Section 3.3.1.2 of the draft EIS and is included in the final EIS. Concentrations in the period 2001 and 2005 may not be representative of long-term conditions as this was an extremely dry period and dilution of pollutants, including selenium, was lower than usual. The Flow Recommendations for endangered fish increase river flows in the spring and reduce flows at other times. The lower flows do reduce the dilution capacity of the river as was shown in Table 3.3.8 and this was recognized by the Fish and Wildlife Service when they prepared the Flow Recommendations for the Recovery Program. The biological assessment in the draft EIS presented a Selenium Management Program and additional detail is included in the Service's PBO which is included as Appendix B in Volume II. Additional information is included in Section 1.5 as requested in the comment.
FG03-08	Section 3.3.7 discusses the effects of selenium on recovery of the endangered fish. In addition, this topic is discussed in the PBO included as Appendix B in Volume II.
FG03-09	Section 3.3.7 and the PBO included as Appendix B in Volume II discuss impacts of selenium on endangered fish.
FG03-10	Reclamation agrees that collecting larval razorback is encouraging and agrees that recovery throughout the basin will depend on sufficient natural recruitment of the species in the future.
FG03-11	The Uncompahgre Valley is identified as a major area of selenium loading; however, other sources include the Grand Valley and other areas of Mancos shale derived soils. Section 4.2.3 has been expanded in the final EIS to include information on the Selenium Management Program. Also the biological assessment in the draft EIS and the PBO in the final EIS can be referred to.
FG04-01	The PBO included in the final EIS includes a "reasonable and prudent measure" to include an adaptive management process in the proposed action. A study plan is required to be completed within one year of the final PBO. Reclamation will work with the Recovery Program and the Fish and Wildlife Service on this study plan and in monitoring and evaluating the effects of the proposed action on the endangered

Federal Government Agencies (FG) (cont.)	
FG04-01 (cont.)	<p>fish and their habitat. Future operational changes may occur as a result of this monitoring and evaluation.</p> <p>Monitoring will address some of the “unknowns” mentioned in the comment and included in the Flow Recommendations.</p> <p>If conditions change –for example due to climate change - or new information is obtained - such as habitat needs - changes in operations and perhaps reconsultation with the Service may be appropriate. The Recovery Program, the Service, and Reclamation will monitor streamflows and other factors.</p> <p>As far as future depletions are concerned, a limited amount of future depletions in the basin are covered by the PBO. Depletions beyond that value would require full consultation under the ESA and additional NEPA compliance before a decision was made concerning them.</p>
FG04-02	See response FG01-01 concerning the Black Canyon NP Water Right for the Gunnison River in the Black Canyon. Now that the Black Canyon NP Water Right has been quantified, it is considered a common element of all alternatives.
FG04-03	See response FG01-01 and FG01-02 concerning the Black Canyon NP Water Right for the Gunnison River in the Black Canyon. In addition, changes have been made in the final EIS to address this water right. A copy of the Black Canyon NP Water Right Court Decree is included as Appendix G in Volume II.
FG04-04	<p>The Black Canyon NP Water Right is now quantified (see Appendix H, Volume II). The right calls for one day peaks in the Black Canyon NP based on inflow forecasts to Blue Mesa Reservoir. The Black Canyon NP Water Right also gives a high priority to control of downstream flooding and this may limit the right in certain wet years.</p> <p>Reclamation will operate the Aspinall Unit with the intent of meeting the Black Canyon NP Water Right along with the Flow Recommendations and authorized Unit purposes. The Black Canyon NP Water Right will be considered equally along with Flow Recommendations and authorized purposes of the Unit. Because the Black Canyon NP Water Right is now decreed, it is considered to be a common element in the No Action and action alternatives. Releases will be made from the Aspinall Unit using the necessary combination of available powerplants, bypasses and spillways, while attempting to reach the Black Canyon NP Water Right peak flow target.</p> <p>See response to FG01-01 and 02 and Sections 1.5 and 2.3.6.6.</p>
FG04-05	See response to FG01-01 and 02. The Black Canyon NP Water Right has many similarities to the preferred alternative. <u>As modeled</u> , the reserved right is often exceeded under the preferred alternative but is not always met. The model did not target the Black Canyon, rather it targeted downstream critical fish habitat. With the Black Canyon NP Water Right now in place, the right will be considered equally along with Flow Recommendations and authorized purposes of the Unit. Releases will be made from the Aspinall Unit using the necessary combination of available powerplants, bypasses and spillways, while attempting to reach the Black Canyon NP Water Right peak flow target. See Section 2.3.6.6 for further information.
FG04-06	The quantification of the Black Canyon NP Water Right was not completed when the draft EIS was prepared. The Black Canyon NP Water Right has now been quantified and additional information is included in the final EIS. Section 2.3.3 describes operations under the preferred alternative while Section 2.3.6.6 describes how the Black Canyon NP Water Right is determined each year.
FG04-07	As indicated in this final EIS (Section 1.1.4), Reclamation must avoid jeopardizing the continued existence of listed species and destroying or adversely modifying designated critical habitat with the exercise of its discretionary authority. The new operations are designed to avoid jeopardy and to assist in recovery in concert with other Recovery Program activities. This has been clarified in Section 1.1.4.
FG04-08	Considering only the endangered fish, Alternative C would provide increased duration of peak flows for habitat which would be beneficial. It would also increase periods of low flows which tend to concentrate pollutants and this would be considered adverse (see Fish and Wildlife Service comments). In selecting the environmentally preferred alternative, a variety of resources were considered in

Federal Government Agencies (FG) (cont.)	
FG04-08 (cont.)	addition to endangered species. These resources included river and reservoir recreation, and river and reservoir cold water fisheries which the public has cited as important environmental concerns.
FG04-09	Climate change is addressed in Section 2.3.6.5. Some excerpts include: “As discussed elsewhere in this EIS, the inflow to the Aspinall Unit has historically been highly variable and operations under the action alternatives are planned to address this variability. The study period used in this analysis includes drought periods and both extremely dry and extremely wet years. The action alternatives also include an adaptive management process, supported by Recovery Program monitoring, to address new information about the subject endangered fish, their habitat, reservoir operations, and river flows. Reclamation will also continue to support multi-faceted research on climate change (Reclamation 2007). If climate results in effects to the listed species or critical habitats that were not considered in this EIS, then Reclamation would reconsult with the Service.” Also information is included in the PBO as Appendix B in Volume II.
FG04-10	<p>The impacts of high Gunnison River flows on the town of Delta have been thoroughly observed and documented over recent history. The runoff of 2008 provided an excellent opportunity to observe these impacts on a daily basis. As flows approached 14,000 cfs at the Gunnison River gage at Delta, the first threats of more significant flooding and erosion to city and county property were observed. It is believed that the 15,000 cfs threshold could lead to extensive flooding and erosion of city, county, and private property and is still appropriate as a flood management criterion. It is recognized that additional protection of the Delta wastewater treatment plant has been provided in recent years.</p> <p>In addition to the area around Delta, erosion along the railroad that parallels the river to Grand Junction is a significant concern.</p>
Tribal Governments (TG)	
TG01	No response required.
State and Local Governments (SLG)	
SLG01-01	<p>Additional information has been included in Section 3.3.12.2. The following information is provided from the Curecanti Resources Management Plan (National Park Service 2008): “To help reduce impacts on cultural resources, resources would continue to be monitored on a regular basis. Vulnerable resources listed on or potentially eligible for the National Register of Historic Places would have priority for conservation measures. The Curecanti NRA staff would continue to actively work with tribes to conserve ethnographic resources and privacy for traditional activities. Appropriate resource management actions could include monitoring and site stabilization; and visitor management actions could include signing, ranger patrols, and interpretive messages. In cases where it was determined there was a potential for adverse impacts (as defined in 36 CFR 800) to cultural resources listed on or eligible for listing on the National Register of Historic Places, the National Park Service would coordinate with the State Historic Preservation Officer of Colorado to determine the level of effect on the property, and to determine what mitigation would be needed.</p> <p>The Curecanti NRA staff would continue to educate visitors regarding archeological and ethnographic site etiquette to provide long term conservation for surface artifacts, architectural features, and traditional activities. If necessary, additional mitigation measures would be developed in consultation with the state historic preservation officer and the three American Indian tribes who are most affiliated with the Curecanti NRA: Northern Ute; Southern Ute; and Ute Mountain Ute. These three tribes will receive copies of this Environmental Impact Statement for review and comment. It will also be sent to the Colorado State Historic Preservation Officer and to the Advisory Council on Historic Preservation for review and comment as part of the Section 106 compliance process.”</p>
SLG02-01	The preferred alternative should continue to meet authorized purposes of the Aspinall Unit while avoiding jeopardy to and assisting in conserving downstream endangered fish species.
SLG02-02	The Aspinall Operational Meetings will continue and are included in the final EIS.
SLG02-03	Language concerning future water uses has been retained in the final EIS.
SLG02-04	Reclamation concurs with the importance of hydropower purposes at Aspinall.

State and Local Governments (SLG) (cont.)							
SLG02-05	The PBO (Appendix B in Volume II) provides the ESA coverage described. In order to maintain this coverage, federal, state, and local interests will need to work together to implement the Selenium Management Plan, which is a key element of the opinion.						
SLG02-06	Additional information has been added to Section 1.2.2.						
SLG02-07	The footnote has been added to Section 1.2.3.2.						
SLG02-08	Reclamation does attend the Dolores River Dialogue meetings and technical workgroup meetings and is there to provide information and to stay abreast of information that could affect operations.						
SLG02-09	Footnote has been changed in the final EIS as suggested.						
SLG02-10	This section has been modified to clarify the totals.						
SLG02-11	The executive summary recognizes that an important purpose of the Aspinall Unit is to assist the state in utilizing its compact apportioned water.						
SLG02-12	A footnote has been added to denote a depletion of 99,200 af/yr from the upper Colorado River at the Dolores River confluence due to the Dolores Project. Return flows also enter the San Juan River and Lake Powell, so actual depletions from the entire river system are less than 99,200 af.						
SLG02-13	Reclamation has worked closely with the City and County of Delta during high water stages over the past two years (2008 and 2009). Instantaneous flows during both years exceeded 12,000 cfs; 2008 exceeded 14,000 cfs. No significant property damage was reported other than minor bank erosion and pasture and trail flooding. Reclamation will continue to work with these entities in the future and to maximize communication and coordination efforts.						
SLG02-14	The economic information cited has been added to the summary table in Section 2.7.						
SLG02-15	The suggested change has been made in Section 4.2.3.						
SLG02-16	Refer to response SLG02-13. Spring peaks will increase at Delta and this will require increased coordination to reduce flooding potential.						
SLG02-17	During actual operations the time frame for providing a peak can be expanded as explained in the final EIS.						
SLG03-01	Alternative B is designed to benefit the endangered fish and has been maintained as the preferred alternative in the final EIS. In actual operations, efforts will be made to match peak flows in the North Fork to maximize the duration and magnitude of peaks downstream in critical habitat.						
SLG03-02	The final EIS recognizes adverse impacts to the trout fishery. The key to reducing these impacts will be careful ramping of spring peak releases and maintaining Crystal Dams ability and role to reregulate peaking releases from Morrow Point.						
SLG03-03	<p>Alternatives are designed to attempt to match the North Fork peak to maximize the probability of reaching flow targets at Whitewater. Efforts will be made to provide the peak in May but peaks may still occur in June due to runoff conditions.</p> <p>Ramping rate guidelines in the action alternatives call for a maximum of 500 cfs or 25 percent of the flow on the ascending limb and 400 cfs or 15 percent per day on the descending limb. Under present conditions and No Action, the descending ramping rates are the same; however, ascending limbs are 15 percent or 500 cfs. As indicated in the comment, ramping rates are important for the recruitment of trout and the proposed rates exceed those recommended by the Division.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">CDOW Recommendation – descending limb</th> <th style="text-align: left;">Action Alternatives – ascending limb</th> </tr> </thead> <tbody> <tr> <td>< 500 cfs per day for flows between 2500 and 6000 cfs</td> <td>400 cfs or 15 percent</td> </tr> <tr> <td>< 250 cfs per day for flows below 2500 cfs</td> <td>400 cfs or 15 percent</td> </tr> </tbody> </table> <p>Reclamation has not changed the ramping rates in the final EIS because of the significant amount of additional storage that could be used in the recommended rates. Reclamation will attempt to make the changes twice a day (one-half of change in the morning and one-half in the late afternoon) and this should reduce impact. This wording has been added to Chapter 4 of the final EIS under Environmental Commitments and Mitigation.</p>	CDOW Recommendation – descending limb	Action Alternatives – ascending limb	< 500 cfs per day for flows between 2500 and 6000 cfs	400 cfs or 15 percent	< 250 cfs per day for flows below 2500 cfs	400 cfs or 15 percent
CDOW Recommendation – descending limb	Action Alternatives – ascending limb						
< 500 cfs per day for flows between 2500 and 6000 cfs	400 cfs or 15 percent						
< 250 cfs per day for flows below 2500 cfs	400 cfs or 15 percent						
SLG03-04	Impacts on the fishery at Blue Mesa are recognized and additional information has been presented in Section 3.3.5.2B based on the Division’s comments. The following graph does support the comment that minimum reservoir elevations were frequently lower prior to the late 1980’s and this change may						

State and Local Governments (SLG) (cont.)	
SLG03-04 (cont.)	<p>have benefitted lake trout recruitment to the detriment of the kokanee fishery. Under action alternatives, winter elevations will be slightly lower than under No Action and this may have a minor negative impact on lake trout recruitment, in particular for Alternative C.</p> <p style="text-align: center;">Date 1 major tick = 1 year</p>
SLG03-05	The PBO prepared by the Fish and Wildlife Service is included as Appendix B in Volume II concludes consultation on the Dolores Project on endangered fish species. Reclamation does recognize that data show declines in other native fish in the Dolores River and will continue to work with the Colorado Division of Wildlife to reverse this trend; however, it is also recognized that discretion to make significant changes in flows in the Dolores River flows is limited.
SLG03-06	Reclamation will continue to work with the Division and others on river flows downstream from the Dolores Project, including planning spring spill operations and will continue to participate in the Dolores Biology Committee and the Dolores River Dialog.
SLG03-07	Minimum flow commitments in the Dallas Creek Project final EIS will continue to be followed. It is recognized that these minimum flows do not provide optimum winter flow levels. Suggestions in this comment are beyond the scope of the Aspinall EIS but can be considered through other activities.
SLG04-01	Gunnison County's support of the preferred alternative, Alternative B, is recognized.
SLG05-01	Comment noted. Language concerning reservoir yield has been maintained in the final EIS.
SLG05-02	Comment noted. The goal will continue to be to coordinate releases for the Black Canyon NP Water Right and the endangered fish. See response to FG01-01.
SLG05-03	These values are defined in Section 3.3.1.1B During the development of alternatives, the use of inactive storage was not considered because maintenance of the inactive pool is important for hydropower production, fisheries, and recreation. Drought recovery criteria were developed specifically to avoid the use of storage in the inactive pool.
SLG05-04	<p>Although it is not known when or how the State of Colorado may wish to utilize Aspinall Unit yield, there is only one year among all the alternatives where Blue Mesa does not achieve a maximum live storage content greater than 300,000 af – Alternative C in year 1981. The lowest maximum annual live contents of the 31-year model period for each of the alternatives are: No Action = 542,365 af; Alternative A = 500,171 af; Alternative B = 485,819 af; Alternative C = 238,615 af; Alternative D = 505,679 af. While it may be fair to assume that using water to attempt to meet the Flow Recommendations increases the risk that 300,000 af may not be present in Blue Mesa every year, for the modeled time period this never occurred for Alternatives A, B and D and only occurred once for Alternative C. Alternatives A, B and D and only occurred once for Alternative C.</p> <p>Drought criteria that are not reflected in the current model output would take effect in 1978 for Alternative C (as well as for the other alternatives). These criteria would reduce the target for half bankfull days in 1978 and would therefore preserve some additional storage in Blue Mesa. Since Blue Mesa does not fill or achieve the December 31 target until 1982, this additional storage would raise the content numbers for 1981 (as well as for 1978, 1979 and 1980) and may possibly increase the</p>

State and Local Governments (SLG) (cont.)	
SLG05-04 (cont.)	maximum content above 300,000 af although this cannot be readily confirmed. The maximum content achieved in 1981 for Alternative C is 238,615 af.
SLG05-05	See Section 2.3.6.7 for a discussion of Aspinall Unit yield. Safe yield continues to be estimated to be up to 300,000 af, including subordination water.
Power and Water Interests (PWI)	
PWI01-01	<p>The final EIS does discuss in Appendix D that the Salt Lake City Area Integrated Projects (SLCA/IP) customers could possibly see a rate change of about 0.16 mils/kWh under the preferred alternative. DWCD is correct in their statement that this is a small increase as it amounts to \$0.00016 per kWhr. According to WAPA's CRSP Management Center website:</p> <p>http://www.wapa.gov/crsp/planprojectscrsp/dolores.html, the estimated combined annual power requirement for pumping of Dolores Project water from the Great Cut Pumping Plant and the six Sprinkler Pumping Plants along project canals is about 17 million kWhr. A \$0.00016 per kWhr increase amounts to an annual increase of \$2,720. This should not preclude DWCD's desire to pursue a reduced irrigation power rate for CRSP participating projects, however it is out of the scope of this EIS.</p>
PWI02-01	See Section 2.3.6.7 for a discussion of Aspinall Unit yield and future water uses.
PWI03-01	Table 2.3 1 shows the base flow targets at the Whitewater Gage under action alternatives. As stated in Section 3.3.1 "By operating to meet the base flow targets, the number of days which senior water right holders, mainly the Redlands Water and Power Company, would potentially be calling out junior water rights is actually reduced over the 31-year study period in each of the action alternatives as compared to the No-Action." Again, this is because operations described in the action alternatives are driven by downstream targets, in this case base flow targets at Whitewater.
PWI03-02	<p>As described in Section 3.3.1.2E under each of the alternatives, existing spring flood control operations would be continued by using discretion and being proactive to keep 14,000 cfs, or normally considerably less, in the Gunnison River measured at the gage above the Uncompahgre River confluence. Each alternative results in slightly more years of flow occurrences above 12,000 cfs at Delta than the No Action Alternative (a maximum of 3 years during the 31-year study period). However, the number of years resulting in flows above 14,000 cfs and 16,000 cfs increase or decrease slightly with each alternative. Compared to the No Action Alternative, Alternative A results in an additional year of flows above both 14,000 and 16,000 cfs. Alternatives B, C, and D result in the same number of years above 14,000 cfs as the No Action; Alternatives B and D have the same number of years above 16,000 cfs as the No Action.</p> <p>Reclamation will continue to work diligently with the City and County of Delta to control and reduce flooding. Over the last decade, Delta area entities have developed flood control measures which make flows at 12,000 cfs less "dangerous". For instance, the USGS reports the peak on the Gunnison River at Delta for 2008 (occurring on May 22) as being 13,300 cfs. Real-time 15-minute flow data recorded during 2008 shows the instantaneous peak on that date as being 14,000 cfs. It appears a correction was made to the real-time 15-minute flow data although this did nothing to make the reported daily average flow value different from the average of all the real-time 15-minute flow data for May 22. During the 2008 spring high water season, the City of Delta reported that at these flows there was no damage to structures or buildings. However these flows did inundate a small private lake east of the Highway 50 Bridge, damaged a berm located on the south side of the river east of the bridge, inundated trails in the northwest corner of Confluence Park and caused the closing of a backwater prevention device at the Delta Hardware and Big O Tire parking lot. In addition, the river was close to overtopping the dike near this location and very small areas of commercial improvements north of the river on either side of Highway 50 were briefly inundated but not damaged other than a walkway which was washed out. In 2009, Delta flows again exceeded 12,000 cfs with no damage reported.</p>
PWI03-03	Section 3.3.1.2D does describe or at least alludes to the reason for higher concentrations of selenium being a result of lower flows in some months. However, selenium loading from irrigated lands will remain the primary cause of elevated selenium concentrations. According to Hamilton (1999) the elevated levels of selenium started in the 1890's with the advent of irrigation in the area followed by the decline of the native fish populations. A successful Section 7 Consultation as a result of the PBO will be to the benefit of the irrigators. Participating in selenium control activities is a critical component of successful implementation of the PBO.

Power and Water Interests (PWI) (cont.)	
PWI03-04	Reclamation has intended to us the words “up to” everywhere remaining yield is discussed in the final EIS for this specific purpose. In addition, as mentioned in the EIS, any future development of the remaining yield would need to undergo NEPA and this number would be further scrutinized at that point.
PWI04-01	The PBO prepared by the Fish and Wildlife Service and included as Appendix B in Volume II, concludes ESA consultation for the Dolores Project. A programmatic opinion for the Dolores Basin was considered beyond the scope of the final EIS and ESA consultation.
PWI04-02	See response to PWI01-01. As per Section 2.3.6.4, Reclamation will gather input from the public and affected parties to develop operation plans. Operation will consider a multitude of factors including project purposes which includes power production.
PWI04-03	See response to PWI01-01
PWI05-01	The draft EIS did analyze impact to hydropower. Cumulative impacts are addressed in response to PWI05-07. The energy requirements of the project are miniscule and changes in energy requirements through implementation of the project as well.
PWI05-02	The final EIS recognizes impacts to hydropower in Section 3.3.2.
PWI05-03	Reclamation agrees that the Aspinall Unit should be operated consistent with 43 U.S.C. section 620 f and believes that the Preferred Alternative and Environmentally Preferred Alternative, as analyzed in the EIS, is consistent with the intent of the 1956 CRSP Act. Reclamation is considering the development of renewable energy technologies.
PWI05-04	Flow Recommendations prepared by the Fish and Wildlife Service and the Recovery Program include both the Gunnison River (measured at Whitewater) and the Colorado River (measured at the Colorado-Utah Stateline). The action alternatives target increasing peak flows at Whitewater. The biological assessment prepared for the preferred alternative discusses resultant changes in flows at the Stateline although these changes are not modeled. This is important in that the biological assessment is programmatic and is designed to provide ESA clearance for the Dolores Project that depletes the Colorado River downstream from the Gunnison confluence. Under the action alternatives, peak Gunnison flows are not modeled to match Colorado River peaks. Also refer to the PBO, Appendix B in Volume II, for more information on flows in the Colorado River.
PWI05-05	<p>Section 1.1.4 has been revised to include the Federal Register wording as suggested. Concerning native fish, the final EIS wording has been clarified to reflect that the native fish species have not gone extinct.</p> <p>The comment references fish control projects conducted in the 1960’s to remove non-game fish, including native fish, to reduce competition with trout fisheries. These actions did occur on the Green River downstream from Flaming Gorge Dam but were not implemented on the Gunnison River or mainstem Colorado.</p> <p>Concerning critical habitat, the ESA does refer to “destruction” of critical habitat.</p>
PWI05-06	See Section 2.3.6.1 for a discussion of this language.
PWI05-07	Reclamation believes that, statistically, on an <u>average</u> annual basis the economic impact of hydropower impacts associated with Alternatives A, B, and D, in comparison to the No Action alternative, is small, i.e., changes between No Action and action alternatives are between .1 percent and 1.4 percent. The impact of Alternative C is greater at \$2.716 million on an average annual basis – a nearly five percent reduction in economic value in comparison to the No Action alternative. Section 3.3.2.2C, Economic Impacts, qualitatively recognizes the effect of monthly changes in electrical generation and the potential need for Western to purchase replacement power to meet contract commitments and impact to the availability of funding for operation and maintenance, environmental programs, and project repayment. Specifically, Table 3.3 11 shows annual impacts of alternatives on the economic value of hydropower generation. In some years, there could be significant impacts that could affect the availability of power revenues for deposit in the Basin Fund.
PWI05-08	Reclamation will continue to use operation meetings, held every four months, to discuss any proposed research, studies, or maintenance work that might affect hydropower. Reclamation will also continue to discuss operations at Aspinall on a frequent basis and these discussions can include any proposals that might affect hydropower.

Power and Water Interests (PWI) (cont.)	
PWI05-09	<p>As can be seen in the final EIS, the action alternatives do not fully meet the Flow Recommendations. Reclamation’s goal is to assist in meeting Flow Recommendations while continuing to meet authorized purposes of the Unit. It should be noted that while the action alternatives target flows at Whitewater on the Gunnison River they are also designed to improve critical habitat on the mainstem of the Colorado River.</p> <p>The Aspinall Operations EIS is a voluntary non-mandated effort. It is recognized that the recovery of the listed species does not rely on the Gunnison River or the modification of operation of the Aspinall Unit. The purpose and need statement of the EIS expressly states the modification of operations “necessary to avoid jeopardy and adverse modification to designated critical habitat, while maintaining authorized purposes of the Aspinall Unit.” It is recognized by Reclamation that this EIS is but one piece of the overall effort needed to recover the endangered fish..</p>
PWI05-10	The storage numbers mentioned in the comment appear to be incorrect. Aspinall Unit purposes remain at the forefront of any modified operation. Section 3.3.1.2A of the final EIS discusses additional storage used for each alternative to meet the identified purpose and need.
PWI05-11	Reclamation developed a range of action alternatives. The preferred alternative was selected as the most reasonable alternative of meeting both endangered fish purposes and Unit authorized purposes. Flexibility and adaptive management can be used with the preferred alternative to better meet these purposes in the future.
PWI05-12	The draft and final EIS discuss impacts on hydropower.
PWI05-13	See response PWI05-11.
PWI05-14	The sentence has been modified to indicate that Flow Recommendations are designed to offset impacts of water development in general, not only the Aspinall Unit. Reclamation does not believe repeating the purpose and need statement at this point in the final EIS is appropriate.
PWI05-15	Thank you for your suggestion. Climate change is addressed in the EIS as well as the PBO in Volume II of the final EIS.
PWI06-01	Language in the draft and final EIS address the potential future use of the Aspinall Unit yield. Please refer to Section 2.3.6.6 and response PWI08-14.
PWI07-01	All references to the variety of terms used to describe “safe yield” will be changed to “safe yield” or “remaining safe yield” since they are all referring to the same thing. Reclamation believes the discussion of yield in the final EIS is appropriate.
PWI07-02	The reference to “remaining project yield” appears during a discussion of the baseline. Under the baseline or the proposed action, there is remaining project yield in the Aspinall Unit. Use of the yield in the future is speculative and is not included in the baseline. See also response PWI08-14.
PWI07-03	Recommended language is used in the final EIS; however, the EIS recognizes that safe yield from the Aspinall Unit could be up to 300,000 af. Concerning the “use of storage” term, this means the release of water previously stored in priority in Blue Mesa Reservoir under the water rights decreed to the reservoir as described in the comment.
PWI07-04	This would have to be another side analysis to determine the impacts of meeting the Black Canyon NP Water Right and the Flow Recommendations during moderately wet or wet years (May 1 forecast >1,035,000 af) with almost exclusively Aspinall Unit water. Flood control can become a priority in such years as described in the Black Canyon NP Water Right Decree. There may be flexibility to consider potential operations to address the concern expressed in this paragraph; release patterns will be discussed at January and April operation meetings in moderately wet and wet years.
PWI08-01	See PWI08-02.
PWI08-02	<p>The issue of using a 31-year fixed period for the input hydrology is partially addressed in Appendix A of Volume II. This information can be supplemented as follows:</p> <p>It is assumed that the historic hydrology of the Gunnison River Basin (from 1975 to 2005) provides an adequate representation of potential future conditions for an assessment of the performance of alternatives relative to the No Action Alternative. While this 31- year period could be considered too short to properly represent the range of future hydrologic conditions, it does include the wettest period (the mid-1980) and the driest period (the drought of 2000 through 2005) in the recorded history of Gunnison Basin hydrology. This allows the model to show how the alternatives would perform under</p>

Power and Water Interests (PWI) (cont.)	
PWI08-02 (cont.)	these relatively extreme hydrologic scenarios. At the same time, it is highly probable that future conditions will not be exactly the same as those experienced between 1975 and 2005, especially if the impacts of global climate change significantly alter the hydrology of the Gunnison Basin. Therefore analysis of the results of modeling the alternatives is limited to discussion of the relative performance of the alternatives versus the No Action over this selected 31- year period of hydrologic conditions. If future hydrologic conditions differ significantly from recent hydrology, meeting the Flow Recommendation targets could be more difficult or less difficult compared with the success of the alternatives analyzed during the modeled time period.
PWI08-03	Any modeling would benefit from a more variable input dataset, additional model traces, and/or stochastic/probabilistic approaches rather than a single deterministic run. However, Reclamation believes the modeling used is adequate for alternative comparison and impact analysis.
PWI08-04	The model results show fairly conclusively that the number of days that the Redlands Canal will experience flows below its water right of 750 cfs is greatly reduced in all action alternatives. In general the No Action shows approximately 25 days with flows below 750 cfs while the action alternatives range between 15 and 18 days with flows below 750 cfs. This is a 40 percent reduction in days that flows are below 750 cfs and in days a water right call might occur.
PWI08-05	The model was intended to provide an assessment of the relative performance of the action alternatives against the No Action Alternative. While this does not answer how often the Flow Recommendation targets can be achieved, it does show which alternative offers the best opportunity to meet these targets while still achieving the intended purposes of the Aspinall Unit.
PWI08-06	Refer to the PBO (Appendix B in Volume II) concerning commitments related to selenium. Details of the selenium program, including monitoring, will be included in the Selenium Management Program to be prepared within 24 months of the final PBO.
PWI08-07	Agreed. The USGS is developing data on selenium trends in the basin.
PWI08-08	The flow vs. selenium analysis was intended to correspond with the selenium threshold targets as measured at the downstream end of the critical habitat on the lower Gunnison River – Whitewater. The time period analyzed was 1975-2005 in order to correspond with the modeled period of record.
PWI08-09	It is recognized in the final EIS that higher spring peaks will result in lower flows at other times of the year and that lower flows tend to concentrate pollutants. This was recognized in preparing the Flow Recommendations and a higher priority was given to providing spring peaks. If future monitoring and information change this priority, operational plans can be adjusted. It should be noted that extreme low flows will be reduced under the proposed action due to base flow targets.
PWI08-10	The draft EIS was written prior to finalization of the right. Information has been included in the final EIS. See response to comment FG01-01 for further information.
PWI08-11	Section 1.5 has been expanded to include information on the PBO.
PWI08-12	This comment leads to the point that operations as defined in the model rule set may not exactly match real-life operations in the future. The model requires a trigger value to tell it when to initiate flood avoidance operations – i.e. reduce releases from Aspinall. It has no ability to forecast flows and can only react to values produced during a given time step. In real-life there is no need to wait for a trigger value to initiate flood avoidance operations. With daily streamflow forecasts and in-house expertise, releases at Aspinall can be adjusted at any time deemed necessary to avoid flooding flows at Delta. Flood control operations could begin when flows reach 12,000 cfs at Delta or they could begin when flows are higher or lower than this value. The important point is that the current flow rate at Delta is not a trigger for adjusting operations at the Aspinall Unit. There is other information, primarily the daily forecasts, which will provide this guidance in real-life operations.
PWI08-13	It is appropriate to discuss yield of the reservoir in general when describing the Unit because one of the authorized purpose of the Unit is “...storing water for beneficial consumptive use...” The final EIS does not quantify the yield because this would be very premature based on existing information. Refer also to response PWI08-14.
PWI08-14	The draft EIS included a discussion of “remaining project yield” that was applicable to all alternatives. This discussion was developed with the State of Colorado during the writing of the EIS. The comment suggests deleting estimates of the quantity of this yield and references to possible “upstream” use of this yield in the future. Also it is suggested that the language “Under all alternatives, the unused portion of the Unit yield would not be relied on as part of any permanent solution that seeks to provide

Power and Water Interests (PWI) (cont.)	
PWI08-14 (cont.)	<p>releases for Flow Recommendations or any subsequent modifications to them” be deleted.</p> <p>Reclamation has determined that the language in the draft EIS was correct and it has been carried forward to the final EIS with minor editorial changes. The EIS does not attempt to quantify the “yield” but the yield is described as being <u>up to</u> 300,000 af including subordination water. The location and quantity of future use of this yield is unknown; and the State of Colorado has not finalized a policy on the state’s desires concerning the water. It should also be noted that authorization for the Unit does not restrict use of the water to “downstream” of the Unit.</p> <p>Language concerning “permanent solution” has also been maintained in the final EIS. Any future use of water will be subject to ESA review and consultation as discussed in the final EIS.</p>
PWI08-15	The final EIS does not attempt to quantify Colorado’s remaining entitlement under the Colorado River Compact of 1922. Yield of the Aspinall Unit is discussed, but it is stated that the yield has not been quantified.
PWI08-16	An executive summary has been included with the final EIS.
PWI08-17	The two selenium graphs are of the largest size of all the graphs in the document and could not be made any larger and still fit on the page. Second, as with the rest of the analysis in this document, these graphs are meant to show relative comparisons of the action alternatives versus the No Action Alternative. If the lines are on top of each other, it indicates there is not much difference in the performance of the alternatives regarding this metric. In figure 3.3.21 none of the alternatives have any annual values less than 4.6 ppb. Figure 3.3.22 is an exceedance plot showing average annual selenium values from average monthly concentration data. An assessment of this data against the standard of 4.6 ppb is probably somewhat meaningless since the standard is not measured in this fashion. The graph is intended to reveal differences in the performance of the action alternatives relative to the No Action Alternative. Any mention of mcg/L will be changed to ug/L.
PWI09-01	Please refer to the biological assessment and the PBO in Volume II (appendices B and C) of the final EIS. The opinion completes consultation on the Dolores Project.
PWI10-01	The PBO (Appendix B in Volume II) addresses the Dolores Project. New operations of the Aspinall Unit along with other Recovery Program activities to supplement peak and base flows offset the depletions of the Dolores Project in the Colorado River.
PWI10-02	Thank you for your comments. These comments were provided to the Fish and Wildlife Service to consider in preparation of the PBO. The PBO concludes that selenium levels are adversely affecting endangered fish and calls for an aggressive selenium management program to reduce this impact. The PBO includes a conservation recommendation on future studies on effects of selenium: “We recommend that the Recovery Program initiate investigations to determine appropriate levels of selenium to insure recovery of Colorado pikeminnow and razorback sucker. We recognize any new studies would follow established Recovery Program protocol for priority and funding. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service request notification of the implementation of any conservation recommendations.”
Environmental Groups (ENV)	
ENV01-01	Considering only the endangered fish, Alternative C would provide increased duration of peak flows which would be beneficial. It would also increase periods of low flows which tend to concentrate pollutants such as selenium and this would be considered adverse (see Fish and Wildlife Service comments). In selecting the preferred alternative, the dual purposes of not jeopardizing endangered fish while meeting Aspinall Unit purposes were considered.
ENV01-02	The comment is correct in that the purpose of the proposed action for the Aspinall EIS differed from the purpose stated for the Flaming Gorge EIS. The comment reflects a concern that the Aspinall operations should assist in recovery of endangered fish in addition to avoiding jeopardy. Reclamation believes the Aspinall Unit language is correct. Reclamation is required to avoid jeopardy to endangered species; and operations are authorized, but not required, to assist in recovery. The purpose as written does not preclude having or selecting an alternative that assists in recovery. Reclamation’s intent is to assist in recovery.

Environmental Groups (ENV) (cont.)	
ENV01-03	As indicated in response ENV01-02, Reclamation and the Aspinall Unit have the authority to assist in recovery of the subject endangered fish. Reclamation is very active in supporting and participating in the Recovery Program in general and has been actively involved in specific recovery activities on the Gunnison River including construction of fish passage and screens and providing flows for the passage and migration flows. Overall Reclamation agrees that there is no conflict between the ESA and the Recovery Program and the Aspinall Unit authorization.
ENV01-04	Reclamation is required to comply with the ESA for operation of the Aspinall Unit. The purpose of the proposed action is to operate the Aspinall Unit to avoid jeopardy to endangered species while maintaining the congressionally authorized purposes. As indicated in Section 1.1.4, it is also Reclamation's intent to assist in recovery of the endangered species. The authorized purposes do not override the ESA. Please refer to the PBO included with the final EIS for further information.
ENV01-05	In selecting the environmentally preferred alternative, a variety of resources were considered in addition to endangered species. These resources included river and reservoir recreation and river and reservoir cold water fisheries which the public has cited as important environmental concerns. In terms of endangered fish, Alternative C provides more improvement in duration of peak flows but also increases low flow periods compared to the preferred alternative and thus provides less dilution capability of pollutants such as selenium and total dissolved solids. Alternative C also has increased impacts on trout fisheries, recreation, and water storage.
ENV01-06	The Flow Recommendation report (McAda 2003) states on page 4-10 "There are many possible scenarios by which spring-peak Flow Recommendations for the Gunnison River could have been derived from Pitlick et al. (1999). Table 4.5 presents one of these using the two targets..." This is not meant to imply that the Flow Recommendations are not well thought through.
ENV01-07	The uncertainties were presented in the Flow Recommendation report (McAda 2003)
ENV01-08	Because there are many different ways to make releases from the Aspinall Unit, in combination with variable side inflow sources into the Gunnison River, it is not practicable to describe a specific operation to cover all years which would meet downstream targets. Reclamation desires to maintain the flexibility needed in order to meet downstream targets in the most efficient, practicable method while still fulfilling Aspinall Unit purposes. In addition, we conducted a thorough EIS, thus conditions which may preclude releases for downstream targets are also described.
ENV01-09	<p>There could be a number of reasons outside of Reclamation's discretion which cause the water surface elevation in Blue Mesa to be inadequate for spillway use. Those include drought conditions where there is inadequate inflow to fill the reservoir to the spillway elevation or flood control situations where the reservoir elevation must be kept down in order to provide storage space for the flood control portion of the forecasted runoff. If that runoff does not materialize or comes at a time later than forecast, the spillway may not be available for use during the timeframe specified in the Flow Recommendations. It is correct to say that surface elevations and content targets are a result of a pattern of releases throughout the year. However, these release patterns are based on forecast information and hydrology which changes constantly. These variations create uncertainty in resultant water surface elevations, thus creating the possibility that the spillway maybe unavailable for use.</p> <p>The supposition that Reclamation is largely in control of the water surface elevations could be true; however, this is within the context of meeting Aspinall Unit purposes, with emphasis on flood control. No one wants to see Reclamation make extreme adjustments in response to changes in runoff forecasts. For instance, if Reclamation operates to a less conservative March 31 target to raise the reservoir surface elevation, and suddenly the forecast increases, Reclamation could possibly have to release large amounts of water which could cause flooding at Delta or even loss of control of the reservoir. Content and elevations are discretionary so that we have flexibility in meeting all authorized purposes, especially flood control. It would be irresponsible to constantly operate solely under mandatory flood control criteria as this would have far reaching impacts on other Aspinall Unit purposes. Establishing and operating to specific operational criteria solely for the purpose of enhancing downstream critical habitat would not be appropriate or responsible. Thus the need for flexibility in operations so that all purposes including the Black Canyon NP Water Right and flows for endangered fish can be achieved.</p>

Environmental Groups (ENV) (cont.)	
ENV01-10	Increases in spring peak flows in the Gunnison will result in increases in flows in the Colorado River during the same time period. In discussions with the Fish and Wildlife Service, it was decided not to attempt to match Gunnison and Colorado river peaks nor to model Colorado River flows. The increased Gunnison River contribution to the Colorado River during the spring period in concert with flow activities on the Colorado River upstream will have beneficial effects on the endangered fish. Other Recovery Program activities are supplementing both base and peak flows in the Colorado River downstream from the Gunnison River confluence. See the PBO (Appendix B in Volume II) for further information.
ENV01-11	See response to ENV01-10. Attachment 9 in the biological assessment summarized changes in the mainstem of the Colorado River under the preferred alternative. There is also additional information in the PBO (Appendix B in Volume II) and in Section 3.3.7.2..
ENV01-12	The PBO was prepared by the Fish and Wildlife Service and is included as Appendix B in Volume II. The Fish and Wildlife Service has concluded that ESA consultation on the Dolores Project has been completed.
ENV01-13	Please refer to the PBO, which addresses the Dolores Project, prepared by the Fish and Wildlife Service in Appendix B of Volume.
ENV01-14	The biological assessment and programmatic biological opinion address reconsultation on the Dolores Project. The updated Colorado River depletion resulting from the Dolores Project -99,200 af- is included in the assessment and opinion. See responses ENV01-10 and 11.
ENV01-15	<p>Page 25 of the biological assessment identified an annual average depletion of 428,348 af. This will be corrected to 503,500 af because during the PBO review process it was discovered that the annual average of 428,348 af of historic depletions above the Whitewater gage over the study period 1975 – 2005 did not include depletions above Crystal Reservoir. In the next paragraph, new depletions are identified: 3,500 af in the North Fork, the remaining maximum development of Dallas Creek (an additional 12,200 for a maximum of 17,200 af), and the remaining Upper Gunnison subordination (an additional 22,200 af for a maximum of 30,800 af.)</p> <p>The model accounted for all historic depletions (503,500 af) through the use of gage records in the modeling process and, in addition, included the new depletions (3,500+12,200+ 22,200=37,900 af.) In addition, even though the new depletions being consulted upon are less than 71,000 af mentioned in the WRA/TNC comment, and still less than 45,000 af mentioned in the Black Canyon NP Water Right Decree, it should be noted that paragraph 32.4.5 of the decree states that the PBO “covers existing depletions in the Gunnison River Basin from federal and non-federal water uses plus reasonably foreseeable future in-basin depletions of approximately 45,000 af . . .” There is no reference to a “maximum” or “not-to-exceed” 45,000 af. All existing and future depletions have been disclosed and modeled</p>
ENV01-16	The biological assessment for the project was completed prior to finalization of the reserved right. The reserved right is now in place and is considered part of No Action and action alternatives and the baseline.
ENV01-17	As explained in the draft and final EIS’s, Alternative B has been identified as the preferred alternative and was thus analyzed in the biological assessment prepared by Reclamation and the PBO prepared by the Fish and Wildlife Service.
ENV01-18	The draft EIS was written prior to completion of the reserved right. Given the long history of attempting to finalize the right, it was not considered reasonable to utilize preliminary flow numbers being negotiated for the right.
ENV01-19	Refer to response to FG01-01 and additions in the final EIS. The draft EIS did not assume the Black Canyon NP Water Right will not be exercised. Reclamation maintains its commitment to operate to allow the Black Canyon NP Water Right to be met within the terms and conditions of the Decree. The final EIS states: “Reclamation will operate the Aspinall Unit with the intent of meeting the Black Canyon NP Water Right, the Flow Recommendations, and authorized Unit purposes every year. The reserved right will be considered equally along with Flow Recommendations and authorized purposes of the Unit.”
ENV01-20	Refer to response FG01-01 and revisions in the final EIS.

Environmental Groups (ENV) (cont.)	
ENV01-21	The statement that there are no “foreseeable proposals” does not mean, at some point, a proposal will not be brought forward. In the meantime, a portion of the remaining project yield may be used to meet the Flow Recommendations. The language saying that consumptive use up to a total of 300,000 af of project yield would not be precluded by any of the alternatives, simply says that the remaining project yield may not be designated solely for the Flow Recommendations in the future. In addition, this comment omits an important statement in the draft EIS which says that “When future water sales or uses of portions of the “remaining project yield” from the Unit are proposed, the proposals will be evaluated under NEPA.” This will provide the opportunity to determine the effects on the endangered fishes and establish alternatives.
ENV01-22	<p>Nonetheless, the impacts of high Gunnison River flows on the City of Delta have been thoroughly observed and documented over recent history. The runoff of 2008 provided an excellent opportunity to observe these impacts on a daily basis. As flows approached 14,000 cfs at the Gunnison River gage at Delta, the first threats of more significant flooding to city and county property were observed. It is believed that the 15,000 cfs threshold could lead to extensive flooding of city and county property and is still appropriate as a flood management criterion.</p> <p>Reclamation has worked closely with the City and County of Delta during high water stages during the past two years (2008 and 2009). Instantaneous flows during both years exceeded 12,000 cfs; 2008 exceeded 14,000 cfs. No significant property damage was reported other than minor bank erosion and pasture and trail flooding. Reclamation will continue to work with these entities in the years to come maximize communication and coordination efforts. Also see responses PWI-3-02 and PWI08-12.</p>
ENV01-23	The final EIS has been corrected to say: “Past spillway/plunge pool inspections, following a spill, have ranged from around \$7,500 per inspection at Morrow Point Dam to \$85,000 per inspection at Crystal Dam.”
ENV01-24	Through a trial and error modeling process, these criteria were developed to allow the Blue Mesa and Aspinall Unit to quickly recover from extreme drought conditions so that Unit authorized purposes and critical habitat needs can be satisfied immediately following such conditions.
ENV01-25	The approach used in the final EIS scales back environmental flows by a small amount to assist in recovering reservoir storage. Dry year recovery operation will be consistent in consideration of the Black Canyon water right and flows at Whitewater. Reclamation will determine releases to accommodate all purposes under the current conditions through input from the Aspinall Operations Meetings.
ENV01-26	As stated in Attachment 11 of the biological assessment in Appendix C of Volume II, Reclamation is committed to working with Western in meeting contract needs and understands the inherent flexibility in contracts that are not “unit specific” but apply to integrated project facilities. Attachment 11 also commits to “following relevant laws and regulations” which would include “federal environmental laws.”
ENV01-27	<p>This sentence will be revised to reference Table 3.3-11 so that the reader can distinguish the impacts among the alternatives.</p> <p>Text change: “Power available for deposit in the Basin Fund could be reduced, as shown in Table 3.3-11, and thus impact the amount of funding available for . . .”</p>
ENV01-28	This information is part of the affected environment description, Section 3.3. It is appropriate to provide a description of what resources could be affected by the alternatives. On a short term basis, the non-reimbursable funding of environmental programs can and has affected the liquidity of the Basin Fund.
ENV01-29	Refer to response SLG03-03.
ENV01-30	The preferred alternative is targeted at avoidance of jeopardy and adverse modification of critical habitat and will assist in recovery of endangered fish species. Impacts to the trout fishery are predicted and efforts will be made to reduce these impacts. It should be noted that the public has consistently made it clear that protection of the trout fishery is important.
ENV01-31	A better explanation of shifting water release volumes toward the spring peak period would be: Because Alternative B uses water to make peak flow targets and durations in the spring and early summer, a lower elevation at Blue Mesa will occur when compared to the Environmental Baseline

Environmental Groups (ENV) (cont.)	
ENV01-31 (cont.)	<p>after duration flows are complete. Therefore, Alternative B needs to release less water through the rest of the year to make the December target. Consequently in drier years Alternative B late season releases are nearer the base flow targets (sometimes dropping below) as it attempts to balance base flow needs with meeting but not dropping below the Blue Mesa December target elevation.</p> <p>Other reasons for the large difference include: 1) The Fish and Wildlife Service agrees that something less than 300 cfs would be adequate in dry and moderately dry years to allow for drought recovery. A higher number of days with lower migration flows are seen in Attachment 10 in Appendix C in dry and moderately dry years or in recovery years following. This increases the chances of a having adequate water available in following years for peak flows. For instance, 1981 is classified as a Dry Year and had 106 days of flows below 300 cfs downstream of Redlands compared to the Baseline which had 80 (table corrected) days. 2) In other situations, there are days which the model “sees” needed flows at Whitewater of 1,050 cfs (750 cfs for Redlands, 300 cfs downstream of Redlands) and then makes releases at Aspinall to provide these. However, due to lag time, those flows don’t arrive at Whitewater for two days under the model, thus causing the number of days below 300 cfs to be more than would occur under real-time operations which would better anticipate the need for additional releases to maintain flows above 300 cfs. In addition, in order to provide model output for comparison, days counted below 300 cfs include many days at or above 290.</p> <p>In addition, summary table 2.7 1 in the final EIS Section 2.7 shows that the number of days of flows below 300 cfs changes from 28.5 for the No Action to 32.2 for Alternative B. The figure of 22.3 days below 300 cfs comes from the Environmental Baseline, which is different than the No Action Alternative.</p> <p>It should be noted that under the No Action Alternative no special releases of storage to meet migration flows of 300 cfs are made. However, under all action alternatives additional releases to maintain minimum base flows at Whitewater will be set each year based on discussions with the Fish and Wildlife Service. (EIS Section 2.3.2.3). In most years, a base flow of 1,050 cfs will be maintained at the Whitewater gage (750 for Redlands, 300 cfs for migration); however, these targets will be reduced in dry or moderately dry years. Again, in Attachment 10 of the programmatic biological assessment, Moderately Dry and Dry Years and recovery years (a year following a Dry or Moderately Dry with certain reservoir conditions) have significantly more days below 300 cfs. For example: 1976 Mod Dry – 26 more days, 1977 Dry – 3 more days, 1978 recovery – 47 more days, 1981 Dry – 26 more days. This is a product of drought criteria described in Sections 2.3.2.3 and 2.3.6.3 of the final EIS. Again, Reclamation will work with the Service in these year types to set flows that make sense at the time.</p> <p>Note that Table 4 in the programmatic biological assessment somewhat addresses this by always maintaining a 1,050 cfs target (750 for Redlands, 300 cfs migration) at the Whitewater gage in June and July for every year-type.</p>
ENV01-32	<p>This comment has misunderstood the words on page 21 of the biological assessment (Appendix C in Volume II). Table 4 in the biological assessment summarized base flow targets as outlined in the Flow Recommendations...and as footnoted, additional releases will be made to provide 100 cfs to the Redlands Fish Ladder as needed in April through September and an (additional) 40 cfs for the Redlands Fish Screen from March through November, using storage water if necessary. It says nothing of “only” providing 100 cfs for migration flows. This is additional flow, if necessary in order to operate the Fish Ladder and maintain 300 cfs below Redlands. Again the increase in average days below 100 cfs from 3.2 in the Environmental Baseline to 4.4 in the preferred alternative is attributed to the drought criteria. Again, note that in Table 4, migration flows are targeted in June and July in all year types, but drop off in shoulder months in dry years. This actually makes good biological sense. Water is made available in dry years during the months when the fish need it most. A more technical explanation of why model results show an increase in days below 300 cfs and 100 cfs can be found below. Even though Reclamation believes and has demonstrated that real-time operations will provide better results than the model, we felt it important to present the data as the model output it rather than</p>

Environmental Groups (ENV) (cont.)	
ENV01-32 (cont.)	<p>attempt to modify it to reflect what we think we can do.</p> <p><u>No Action Alternative</u></p> <p>The No Action Alternative attempts to provide 100 cfs to the Redlands fish ladder from April through September and 40 cfs to the Redlands Fish Screen from March through November. There are no releases made to maintain base flows at Whitewater in the No Action Alternative. During low river flows, when additional water may be needed for the Redlands fish screen and ladder, the Redlands Canal water right is for 750 cfs. The total 140 cfs release to the Redlands Fish Ladder and screen is protected water and cannot be diverted by the Redlands Canal. The Aspinall Unit is junior to the 750 cfs Redlands Canal water right but it is not required to deliver storage water to the Redlands Canal. Low flows in the lower Gunnison River are reflected as shortages in the amount of water diverted by the Redlands Canal.</p> <p>The model attempts to maintain 140 cfs as measured at the Gunnison River below Redlands reach. Additional releases are made from the Aspinall Unit when there is less than 140 cfs at the Gunnison River below Redlands reach. The model contains a 2 day travel time for releases from the Aspinall Unit to arrive at this reach of the Gunnison River. This travel time results in periods where there is less than 140 cfs at the Gunnison River below Redlands. During extended periods of flows less than 750 cfs at Whitewater, flows at the Gunnison River at Redlands would bottom out at 140 cfs while the Redlands Canal diverted the remaining water.</p> <p><u>Action Alternatives</u></p> <p>The action alternatives attempt to meet year-round base flow targets at Whitewater and also attempt to provide 100 cfs to the Redlands fish ladder from April through September and 40 cfs to the Redlands Fish Screen from March through November. During low river flows, additional releases are made from the Aspinall Unit to maintain base flow targets as measured at Whitewater. This water is available for diversion by the Redlands Canal, which is downstream of Whitewater. Therefore this additional water for base flows may not guarantee that 140 cfs is still in the river downstream of the Redlands Canal, especially if the Redlands Canal would have been shorted water without the additional base flow release in the river.</p> <p>To insure that the 140 cfs requirement for the requirement for the Redlands Fish Ladder and Screen is met, the model also attempts to meet a target of 140 cfs at the Gunnison River below Redlands reach. The additional water needed to meet this target is computed after the base flow release is made for the Gunnison River at Whitewater reach. The model contains a 2 day travel time for releases from the</p>
ENV01-32 (cont.)	<p>Aspinall Unit to arrive at the lower Gunnison River. This travel time results in periods where base flow targets at Whitewater may not be met and periods where there is less than 140 cfs at the Gunnison River below Redlands. A side benefit of this model configuration is that the Redlands Canal has fewer days where it is short of water because of the availability of base flow releases for diversion into the Redlands Canal.</p>
ENV01-33	<p>As indicated in the final EIS and biological opinion (Appendix B in Volume II), Reclamation and the Service will work with the Recovery Program to develop study plans for monitoring the effects of the new operations. New information may result in modification of operations; significant changes would be subject to additional NEPA and ESA consultation.</p>
ENV01-34	<p>Please refer to the PBO (Appendix B in Volume II) concerning commitments related to the Selenium Management Program. Also, Section 1.5, Connected and Related Actions has also been expanded to discuss the selenium program.</p>
ENV02-01	<p>Please refer to response ENV01-02.</p>
ENV02-02	<p>See response to FG01-01.</p>
ENV02-03	<p>See response to FG01-01.</p>
ENV02-04	<p>Please refer to response PWI08-14.</p>
ENV02-05	<p>Development of monitoring plans with the Recovery Program is included in the PBO. The Recovery Program and the Fish and Wildlife Service will review monitoring results, and, if needed, provide</p>

Environmental Groups (ENV) (cont.)	
ENV02-05 (cont.)	recommendations on modifications to the operation of the Aspinall Unit. If suggested changes are significant, additional NEPA compliance would be necessary.
ENV02-06	This activity is outside of the scope of this final EIS. There would be many concerns from the Corp of Engineers, Fish and Wildlife Service and others regarding impacts of this proposal on the habitat in the Gunnison River and its long-term effectiveness and cost/benefits.
ENV02-07	Please refer to response ENV01-34.
ENV03-01	It is true that as fish populations and spawning increases, “take” would also increase. Please refer to the PBO Incidental Take Statement in Appendix B of Volume II. The Service concluded that “...the Fish and Wildlife Service determined that the anticipated level of incidental take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.”
ENV03-02	If Reclamation decides that it is necessary to expand on the ongoing mining relationship to selenium during preparation of the selenium management plan, then we shall do this.
ENV04-01	<p>We believe two comments in this letter are asking to expand the geographic scope of analysis beyond the Aspinall Unit to the entire Colorado River basin. We have two responses. First, the consultation with the Fish and Wildlife Service was expanded beyond the Aspinall Unit and its downstream effects to include all of the Gunnison Basin and the effects of the Dallas Creek and Dolores projects. This consultation is programmatic in that it included effects of non-Reclamation projects throughout the Gunnison Basin and it included effects of Dallas Creek and Dolores projects. Therefore, we do not believe the ESA consultation needs an expanded action area.</p> <p>Second, in 1987 the Secretary of the Interior, the states of Colorado, Utah, and Wyoming developed the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin. The Recovery Program outlines the conservation actions needed to recover the fish and improve critical habitat. It was back in 1987 that Reclamation laid out its plan to consult with the Fish and Wildlife Service on a project-by-project basis and to have the Colorado mainstem projects like Aspinall combined in consultations to offset the impacts of the smaller, non-mainstem projects like Dallas Creek and Dolores. This project-by-project approach was because the different CRSP projects were on different schedules for compiling information regarding their effects on listed species and critical habitat. Now with completion of the consultation on the Aspinall Unit, all of the planned consultations with the Fish and Wildlife Service have been completed.</p> <p>Of course, reinitiation of consultation is required under circumstances described in 50 CFR 402.16 and this may occur at some time in the future.</p>
ENV04-02	Reclamation is a very proactive participant and contributor to the Recovery Program. Stocking of hatchery reared fish is just one element of the Recovery Program and is needed where wild stocks of fish are greatly diminished. It is true that in the long-term, naturally recruiting populations are the key to recovery, not stocking.
ENV04-03	The biological assessment and the PBO (Appendices B and C in Volume II) discuss reasons for the decline of the endangered fish. Reclamation continues to be an active participant in the Recovery Program and has implemented significant structural and operational projects to assist in recovering the fish.
ENV04-04	Reclamation is committed to the use of peer-reviewed science in the AMP. In the draft EIS, Reclamation and the Fish and Wildlife Service used peer-reviewed articles, to the extent they were available. The Recovery Program is committed to peer-review and meeting information quality guidelines.
ENV04-05	Climate change is addressed in Section 2.3.6.5. Some excerpts include: “As discussed elsewhere in this EIS, the inflow to the Aspinall Unit has historically been highly variable and operations under the action alternatives are planned to address this variability. The study period used in this analysis includes drought periods and both extremely dry and extremely wet years...The action alternatives also include an adaptive management process, supported by Recovery Program monitoring, to address new information about the subject endangered fish, their habitat, reservoir operations, and river flows. Reclamation will also continue to support multi-faceted research on climate change (Reclamation 2007). If climate results in effects to the listed species or critical habitats associated with Aspinall operations that were not considered in this EIS, then Reclamation would reconsult with the Fish and Wildlife Service.”

Environmental Groups (ENV) (cont.)	
ENV04-06	Decommissioning (removing) the Aspinall Unit was not considered as an alternative because it does not meet the purposes of the project: avoiding jeopardy to the endangered fish while continuing to meet the purposes of the Aspinall Unit.
ENV04-07	There are many factors adversely affecting the endangered fish. Reoperation of the Aspinall Unit is not designed to resolve all of these issues; however, the new flow regime should improve physical habitat for the fish. The Aspinall Unit is not a source of selenium and in fact reduces selenium concentrations through dilution during most months. Selenium is addressed in the PBO included with the final EIS. The PBO includes a Selenium Management Program designed to reduce selenium loading in the basin.
ENV04-08	The Recovery Program has an active non-native fish control program. On the Gunnison River, there has been control on the river itself and the Redlands fish passage is operated to selectively prevent non-native fish from moving upstream.
ENV04-09	See response to ENV04-01.
ENV04-10	See response to ENV04-01.
ENV05-01	The Fish and Wildlife Service has prepared a PBO, included as Appendix B in Volume II, which evaluates Gunnison Basin water developments along with the Dolores Project. This opinion completes ESA compliance for the Dolores Project.
Other Organizations (OO)	
OO01-01	As required in the PBO, included as Appendix B in Volume II, a Selenium Management Plan will be developed. Reclamation will take the lead in plan development but it is imperative that others, including the Selenium Task Force, are significantly involved. Issues brought up in this comment can be addressed during development of the plan.
Individuals (IND)	
IND01-01	It was decided that consideration of modifications to the winter icing target would not be addressed in this EIS. However, review of winter operations regarding the icing target could be performed in the future.
IND01-02	What the commenter proposes would be addressed as a separate consultation if a project with known water demands was being proposed. Using projected energy resource development requirements from the 1970's seems like a stretch given how technologies have changed since then.
IND01-03	Duly noted.
IND01-04	See response to ENV03-05.
Gunnison Public Hearing (GPH)	
GPH1-1	The PBO which addresses selenium issues was provided cooperators for review. The PBO is included as Appendix B in Volume II.
GPH2-1	Reclamation believes the Aspinall Unit language is correct. Reclamation is required to avoid jeopardy to endangered species; and operations are authorized, but not required, to assist in recovery. The purpose as written does not preclude having or selecting an alternative that assists in recovery.
GPH2-2	See response to FG01-02.
GPH2-3	The final EIS recognizes that the yield of Blue Mesa Reservoir may be used in Colorado sometime in the future. Colorado has consumptive use depletions remaining for use under the Colorado River Compact of 1922 and the Upper Colorado River Basin Compact and a portion of this would legally be available for development using sources in the Gunnison Basin. Any future uses would have to be evaluated under NEPA and the ESA.
GPH2-4	Flow Recommendations were developed to maintain and improve habitat for all life stages of the endangered fish. Movement of sediment is an important aspect of this, but as the comment suggests, flows provide other benefits to the fish.
Delta Public Hearing (DPH)	
DPH1-1	One of the purposes of the proposed action is to maintain Aspinall Unit purposes which include assisting the State of Colorado in developing compact apportioned waters.

Delta Public Hearing (DPH) (cont.)	
DPH2-1	Section 3.3.1.2.A discusses effects of alternatives on water stored in Blue Mesa Reservoir. Alternative C has the greatest effect.
DPH2-2	See Section 3.3.1.2A or Appendix A in Volume II (Tables 3-10).
DPH3-1	The final EIS does not change the flood control requirements for the Aspinall Unit. Please refer to responses PWI03-02, PWI08-12, and ENV01-22.
DPH3-2	Higher and longer duration of spring flows under the alternatives will result in lower average flows at other times. The potential effect of point source discharges are discussed in the final EIS. Also, it should be noted that the Unit will be operated to meet minimum base flows and this should reduce some
DPH3-2 (cont.)	of the extreme low flow periods.
DPH3-3	Comment noted. Converting eastern slope agricultural water to domestic purposes is beyond the scope of the EIS.
DPH4-1	See response OO01-01.
DPH4-2	Funding will be one of the issues that must be addressed in the Selenium Management Plan (see response OO01-01).



United States Department of the Interior

NATIONAL PARK SERVICE
Black Canyon of the Gunnison National Park
Curecanti National Recreation Area
102 Elk Creek
Gunnison, Colorado 81230

IN REPLY REFER TO:

FG-01

L54(2380)

March 24, 2011

MEMORANDUM

To: Manager, Colorado Area Office, Upper Colorado Region, Bureau of Reclamation
From: Superintendent, Curecanti National Recreation Area and Black Canyon of the Gunnison National Park.
Subject: NPS comments on the Aspinall PFEIS

The National Park Service appreciates the opportunity to comment on the Bureau's Preliminary Final Aspinall EIS (PFEIS). We applaud the hard work and diligence of the Bureau in completing the PFEIS, we support the preferred alternative operation for endangered fish, and we offer our continuing support in bringing the PFEIS to a record of decision.

FG-01-01

Aspinall Unit operations described under the Preferred Alternative operation will help protect the riparian resources of the Black Canyon of the Gunnison National Park by flexibly incorporating the decreed senior downstream water right of the park. The Preferred Alternative operation provides flows to help maintain the river channel and minimize woody vegetation encroachment, maintain fish and other aquatic resources, and assure that the Gunnison River will not be dewatered in times of drought.

Finally, we note that while the Aspinall EIS process has been arduous we trust in the ultimate value of the effort – recovery of the downstream endangered fishes while continuing operation of the Aspinall Unit for its authorized purposes.

/s/

Constance A. Rudd

**Western Area Power Administration
Comments on the
Aspinall Unit Operations Draft Final Environmental Impact Statement
of December 2010**

FG-02

Thank you for the opportunity to comment. The electrical power generation from the Aspinall Unit supports a significant part of Western's marketing program. We first offer comments that relate to the entire document. In addition, we have attached a table with specific comments and page numbers.

General Comments:

The inclusion of the Black Canyon of the Gunnison National Park Water Right:

The Draft Final Environmental Impact Statement (DF EIS) has added the Black Canyon NP Water Right as an element to all alternatives. As described in this EIS, the water right Spring peak flow appears to take precedence over a Spring Peak flow timed for endangered fish. In several years the Spring peak flow is "moved" to satisfy the requirements of the Black Canyon water right (pages 1-33 through 1-38) without considering the effects on water conservation or power production. The EIS describes the water right as non-discretionary throughout. Several cooperating agencies, Western included, have been working together to create language that would adequately describe the water right. The proposed language will be transmitted to Reclamation by the State of Colorado, but represents a concentrated effort to come to a consensus regarding the description of the water right in an EIS about the operation of the Aspinall Unit. Western recommends adopting this language.

Additional hydrological and impact modeling:

FG-02-01

Given the change to the EIS that includes the Black Canyon water right, the operational modeling done for the public draft of the EIS no longer accurately describes the operation of the Aspinall Unit for each alternative. Since the Aspinall model results form the basis of impacts to the other resources, the resource impacts are incorrect and should be updated.

The EIS may need to be supplemented to properly include the Black Canyon NP water right. CEQ regulations at 40 C.F.R. 1502.9(c) require a supplement to an EIS where "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." Here, the Black Canyon NP water right was introduced into the DF EIS without supplementation or any additional hydrological and impact modeling. As such, the impact of the Black Canyon NP water right and its impact on the environment have not, and cannot, be fully evaluated.

FG-02-02

Purpose and Need:

FG-02-02
Cont.

NEPA requires that the Purpose and Need of the EIS be a well thought out and carefully drafted statement serving to direct the research and choice of alternatives studied in the EIS. In this case, the original Purpose and Need was carefully drafted to ensure that the goal of protecting and recovering endangered fish was done in a manner that was consistent with the Congressionally mandated and authorized purposes of the Aspinall Unit -- one of which is to maximize hydropower production.

Especially troublesome to Western is the inclusion of the conclusory statements, "Changes in the operation of the Aspinall Unit and other reservoirs are needed to provide habitat to support recovery of endangered fish" and "The preferred alternative will avoid Jeopardy [...] and will assist in the recovery of the endangered fish." The after-the-fact inclusion of these statements in the Purpose and Need indicates that not enough attention was paid to the other Congressionally authorized purposes, such as hydropower production, and focused only on ESA compliance. This was never the intent of the EIS.

Timing the Spring peak flow:

The DF EIS carefully timed the Aspinall release to be coincident with the peak of the North Fork of the Gunnison (within a specified period). This timing was built on the concept of efficient use of water. This provides for the targeted velocity and volume at the Whitewater gage to be achieved using a smaller release of water from the Aspinall Units. The DF EIS describes the timing of the Spring peak flow, in some years, to meet the water right via a release of water from the Aspinall Units well after the peak of the North Fork of the Gunnison. This will increase the water used for the peak, increase powerplant bypass, and further affect the distribution of water through the years (out of months of peak power demand). Western suggests that the timing of the Spring peak flow release from the Aspinall Unit remain as described in the DF EIS.

FG-02-03

Operational flexibility:

Western supports the language offered by the Colorado River Energy Distributors Association regarding operating flexibility of the Aspinall Units. Currently, Reclamation reacts to changing hydrological conditions and can take into account the state of key resources in determining the operation of the Aspinall Unit. Western suggests that this flexibility be included in the Final EIS and record of decision.

FG-02-04

Failure to “weight” the model output by the probability of occurrence:

FG-02-05

Throughout the EIS, whenever Alternatives are compared, the EIS relies on an average or a sum of the 31 modeled years. The 31 years selected for modeling purposes are not representative of historic hydrological/operational conditions. The impact of these years should be “weighted” by the probability of occurrence.

This is important because the impact of Alternative A on the average number of days per year that flows at Whitewater achieve bank full, half-bank full, and other flows thought to be important to endangered fish, as shown by the model runs, is very close to Alternative B. Based on the data, Alternative B was considered slightly better and was chosen as the preferred alternative. With the addition of the Black Canyon water right, proper modeling would likely show that the impacts of Alternative A and Alternative B on endangered fish would be negligible. The “weighting” of the modeling outputs of these alternatives may show that there is little to no difference between these alternatives.

Lack of a cumulative impact analysis:

The DF EIS does not include a cumulative impact analysis regarding electrical power production. The major dams of the CRSP power system have had restrictions placed on their operation in recent times. New operating criteria were implemented at Glen Canyon Dam in 1997 and at Flaming Gorge in 2005. These actions have significantly reduced the marketable electrical capacity. A decision to modify the operation of the Aspinall Unit would further reduce CRSP marketable capacity. The decision-makers and the public should be fully apprised of the cumulative impact, past, present, and anticipated future of the actions of Reclamation on CRSP electrical production.

FG-02-06

FG-02-07

Specific comments:

Comment No.	Page	Location	Comment
2	ES-2		The description of risk of spill is not accurate. Water at risk of spill was developed by a algorithm that predicted water that might be spilled, rather than historically spilled.
3	ES-4	Table ES-4	Where is the data for these comparisons? From what we know of the impacts of the alternatives, the numbers presented in this table are misrepresentations. For example, this table shows that the No Action Alternative is an improvement for Park resources compared to Alternative A. Another example: the impact on endangered species is +3 for Alternative 3, +1 for Alternative A and +2 for the No Action Alternative. Flows for half bank and bank full for Alternatives A and B are almost identical (especially when they are weighted by probability of occurrence), so how can the quantitative ranking of Alternatives A and B be so different?
4	ES-4	Table ES-4	It is not clear if the reserved water right requirements are included within the action alternatives. It appears that they are not, since some of the resources which show benefit under the "no-action modeled with reserved water right" show less benefit or greater adverse effect under one or more action alternatives. On page 1-19, the EIS states "The Black Canyon NP Water Right is a senior downstream water right to the Aspinall Unit. As such, along with other senior water rights, it is a condition that is common to all alternatives." Because of this, and compared to the no-action with reserved water right alternative, I would think that all of the action alternatives would show similar or greater benefit to certain resources that are expected to respond positively to higher flows, such as endangered fishes.
5	1-19		This section describes high flows for the water right as being "similar to" flows for the ESA. Does page 1-19 suggest these similar impacts are additive? The following information (as well as the description on page 1-19 indicates that there will be TWO Spring peaks. 1.2.6--The public DF EIS stated that: "the exercise of Black Canyon water right will be coordinated with Aspinall reoperations to the extent possible." This language is not included in the preliminary final.
6	2-3	last paragraph	A better description of the reserved water right should be provided in this chapter. Details may be provided later and in Volume II, but a summary should be provided in this chapter

FG-02-07 Cont.

			to allow the reader to see how the reserved right relates to the action alternatives. Throughout, the reader is assured that the right results in similar flows to the original action alternatives, but is not shown what the flows actually are.
7	2-5	4 th Bullet	Western would like to reconsider the ramping rates that are currently allowed to produce Spring peaks. This EIS could describe existing ramping practices, but the description should say that this is the current management practice.
8	2-5	4 th Bullet	Crystal Dam was authorized to steady the flows from Morrow Point Dam <i>for the purpose of facilitating the operation of the Gunnison Tunnel</i> . There is no authority, that we are aware of, that requires steady flows from Crystal Dam for downstream environmental resources.
9	2-9	Fig. 2.3-1	Provide the rationale for the relationship shown in Fig 2.3-1.
10	2-16		Information about the use of the Aspinall Unit to meet regulation, reserves, assist in meeting power pool events, etc. has been removed from this EIS. Does this mean that USBR will not allow the Aspinall Units to be used for this purpose? Because Western has a legal requirement to provide these services, please add this text back to the Final EIS.
11	2-16	Paragraph 4	If Reclamation believes it is necessary to call out NPS in relation to the Black Canyon water right, suggest also naming Western because our specific operational needs to meet this requirement. Alternatively, suggest reference could be made to Federal partners or some other slightly more generic reference.
12	2-29		Both Alternative A and Alternative B meet the flow recommendation as developed by the FWS and approved by the UC RIP. The USBR analysis of the Aspinall operation that would occur as a result of each of the alternatives was done by running the Riverware model. 31 years were modeled. The model output gives the degree of compliance with the ESA Gunnison River flow recommendations. The last 31 years included some of the driest years ever. If a different set of years is used for modeling purposes, both Alternative A and B comply with the Gunnison River flow recommendations. Western's comments on the public draft proposed that the final EIS including a "weighting" of the model outputs to deal with the fact that the 31 years modeled is not a representative sample. If the "weighting" were done, the impact tables would show that both Alternatives A and B met the Gunnison River flow recommendations. We believe that this would lead to a reconsideration of the preferred alternative.
13	2-31	Table 27-2	It is not clear why the reserved water right is not included in this quantitative comparison of impacts. The footnote tries to explain that the relative impacts would be comparable, but since this is a quantitative comparison presented here, the water right effects should be included in the model.

FG-02-07 Cont.

14	3-1	last paragraph	Basing the analysis of impacts on hydrology modeling that does not include the reserved water rights effects seems like a fatal flaw. Since the water right is now considered an element of all alternatives, how can alternatives be compared if this is not taken into account? For instance, any difference between Alternatives A and B could be even more negligible than without the water right.
15	3-31	Fig. 3.3-10	How different are the peak distributions if the water right is added to all alternatives?
16	3-34	Fig. 3.3-14	It would be helpful if this graph was presented in the same form as the previous graph for the Black Canyon.
17	3-36	Paragraph 4	The text notes that the alternatives were not modeled to include the Black Canyon water right, but that it was treated like other similar senior water rights. Were these other senior water rights included in the modeling or were they also excluded? It would be helpful to clarify the similarity or differences in how various water rights were treated in the impacts analysis.
18	3-38		In the discussion of how operations would be adjusted to meet Black Canyon water right needs, 4 years are identified in which endangered fish peak flow requirements can be met with less water from the Aspinall Unit, using North Fork flows to achieve much of the total volume needed to meet the necessary peak and duration targets. The discussion indicates that the water right requires Reclamation to give highest priority to flood control and then talks about adjusting the timing of Aspinall Unit releases to avoid flooding at Delta. In these years, it may be most appropriate and potentially within the flexibility of the water right decree, to forego meeting fully the peak flow requirement in the Black Canyon if the release cannot be achieved with the endangered fish peak release without flooding at Delta. There may very well be adverse effects to resources that accrue from a later offset release = are counterproductive to the intent of the water right. An example is a decrease in spawning temperature in June and July when Colorado pikeminnow would be spawning.
19	3-39 and 3-40		Were modified operations for 1979 and 1980 with mid to late June releases examined in terms of environmental impact and impacts to hydropower? Does this June 16 release replace the May 28 release to meet endangered fish flow recommendations or would there be two peak releases to meet both requirements?
20	3-40	last paragraph	Providing a peak release at the end of July to meet the Black Canyon water right does not seem consistent with the presumed objectives of the right. One would think that a peak that late would have potentially adverse ecological consequences during a normally base flow period (e.g., reduced spawning temperatures for pikeminnow).
21	3-36 through 3-42	Various paragraphs	If Reclamation did not model the changes to water operations that would be required to meet both the ESA flows and the Black Canyon water right under notations A and B and summarized in this section, Western does not believe that the power impacts discussed later

FG-02-07 Cont.

			in the document are accurately reflected because the power impacts rely on the water output from Reclamation's Riverware modeling tool.
22	3-53	Figure 3.3-25	This is the exact same figure as presented on page 3-34. This same figure appears repeatedly throughout the EIS.
23	3-54	Issue statement	The Issue Statement needs to be broadened to reflect that timing of generation as well as the legislative requirement to repay the project within the specified time frame are also factors that must be addressed. These factors, plus the ones already listed result in the rate determination. Focusing on the rate may tend to make the consideration too narrow, and discount the legal mandate for repayment within the framework of the body of Reclamation Law.
24	3-56	Paragraph 4	Change "control area" to "Balancing Area" to reflect the terminology now used in the industry and by the regulators.
25	3-57	Paragraph 1	The focus of the last sentence in this paragraph is too narrow in scope. Suggest inserting "and system reliability" after "contractual" to be more accurate. System reliability violations can result in sanctions from the Federal Energy Regulatory Commission against Reclamation and/or Western.
26	3-57	Paragraph 2	Last sentence refers to CRSP power customers and CRSP marketing area. It is more technically correct to refer to SLCA/IP (Salt Lake City Area Integrated Projects) customers and marketing area, since, in 1987, Western combined the power from the CRSP powerplants with the generation from the Colbran and Rio Grand projects together for marketing purposes.
27	3-57	Paragraph 3	Western's rate information needs to be updated to reflect current charges. Line 8--capacity charge is now \$5.18 per kilowatt-month; Line 11--energy charge is now 12.09 mills per kWh; Line 14--composite rate (not "combined") is now 29.62 mills per kWh. Also on line 13, the term should be "composite" rate, not "combined."
28	3-59	Paragraph 3, second bullet	Update AMP cost to current amount.
29	3-60	Paragraph 1	Update amount in line 1 to current amount.
30	3-60	Paragraph 2	O&M expenses are now in the neighborhood of \$130 M for Western (about \$60 M) and Reclamation (about \$70 M). Please update.
31	3-61	Paragraph 1	Suggest the name of the modeling tool be used on first reference.
32	3-62	Table 3.3-10	It should be made clear that the alternatives do not include the effects of the Black Canyon water right.
33	3-66	Paragraph 2	Black Canyon water right is described as a "future" condition. The text also notes that the alternatives have not been modeled and that the incremental impacts of the action alternatives for endangered fish flows are generally lessened. Suggest the word "future" be

FG-02-07 Cont.

			deleted. The condition exists now. Also, the analysis discusses several years when fish flows will not meet the Black Canyon water right but that operational changes to the Aspinall unit can be used to meet this requirement. This operational change has an impact on hydropower that has not been modeled and is at this point unknown. It is inaccurate to state that the incremental impacts to hydropower will be generally lessened.
34	3-66	last paragraph	Contrary to what is stated here, if implementation of the Black Canyon water right is as described in Section 3.3.1.2C, it seems there could be significant deviations from the impacts presented in this section.
35	3-67	Paragraph 1	The text correctly explains that SLCA/IP rates include a component for "assistance to irrigation." It would be helpful to quantify the amount of that assistance by inserting "S1.5 B" before "assistance."
36	3-67	Table 3.3.13	The impacts summarized in this table use a previous lower rate. Current impacts are higher because the rate is higher. The data should be brought current to more accurately capture the amount of the impact.
37	3-86	paragraph 5	Justification, including supporting references, should be provided to support the statements here regarding limitations to ramping rates to protect trout. Is there empirical evidence that these ramp rates are protective and necessary? The next paragraph, which includes an extensive quote from the CDOW, does not provide any specific recommended flows to protect trout, but rather, general recommendations.
38	3-87	bullet lists	The effects of specific flows presented in these lists should be supported by references.
39	3-92	paragraph 1	There seems to be a disconnect between the presentation of flow effects on young trout in this paragraph and that presented in the bullet list on page 3-87. Page 3-87 talks about negative effects of flows greater than 3,500 cfs. This section states that flows above 3,000 cfs have an adverse effect and that flows around 6,000 cfs reduce survival.
40	3-97	last paragraph	It would be more useful if the comparison of alternatives incorporated the Black Canyon water right effects.
41	3-107	last paragraph	The term "backwater" is used here to refer to flooded off-channel habitats (comparable to flooded bottomlands), but elsewhere in the EIS, and more commonly within the Recovery Program, backwaters are considered in-channel low velocity habitats that develop when flows drop and side channels are no longer connected at one end (usually the upstream end). The term should be defined, used consistently, and preferably be consistent with the more common use of the term.
42	3-112	first paragraph	Replace "expatriated" with "extirpated." Do the same on page 3-116, first paragraph.
43	3-115	last bullets for summer	There are few backwater habitats available in the Gunnison River. Backwaters do not provide important nursery habitat for Colorado pikeminnow in the Gunnison River.

FG-02-07 Cont.

		and winter	
44	3-119	last bullets for summer and winter	There are few backwater habitats available in the Gunnison River. Backwaters do not provide important nursery habitat for razorback suckers in the Gunnison River.
45	3-124	last paragraph	It is stated here that if peak flows remain at or above 3,000 cfs during June, favorable spawning conditions would occur in the Whitewater area but not the Delta area. It should be noted in the text that only the Colorado pikeminnow is likely to be spawning in the June time frame. This later spawning is one reason why the options presented earlier for making a Black Canyon water right release in June or July to prevent flooding could result in adverse impacts to endangered fish.
46	3-128	Figures 3.3-36 through 3.3-39	It looks like Alternative A would provide better spawning temperatures than the no-action and preferred alternatives in June and July.
47	3-128	Figures 3.3-36 through 3.3-39	It is surprising that the relative performance of alternatives at Delta is not the same as at Whitewater, since the tributary and Aspinall contributions to flow would be the same. Are these graphs correct?
48	3-187	Paragraph 5	The text states that there will be minor to moderate adverse effects to recreation, sport fisheries, and hydropower. Are there any plans to mitigate any of these effects? If so, suggest they be outlined and the reader pointed to the appropriate text in Chapter 4. In this version, I see no mitigation measures for these resources listed in Chapter 4.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

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IN REPLY REFER TO:
ES/CO: BR/Aspinall
TAILS 65413-2011-CPA-0011

FG-03

March 31, 2011

Memorandum

To: Area Manager, Western Colorado Area Office, Bureau of Reclamation, Grand Junction, Colorado

From: Western Colorado Supervisor, Ecological Services, Grand Junction, Colorado

Subject: Aspinall Unit Operations Draft Environmental Impact Statement

Allen R. [Signature]

The Fish and Wildlife Service (Service) has reviewed the Aspinall Unit Operations Preliminary Final Environmental Impact Statement (PFEIS) and is providing the following comments. The PFEIS describes the environmental impacts of various operation scenarios of the Aspinall Unit which is comprised of Blue Mesa, Morrow Point and Crystal dams and reservoirs on the Gunnison River. The purpose of the proposed action is to provide sufficient releases of water at times, quantities, and duration to conserve the endangered Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila Cypha*), bonytail (*Gila elegans*) and their designated critical habitat in the Gunnison and Colorado rivers in western Colorado and eastern Utah.

FG-03-01

The PFEIS describes and analyzes five alternatives. The Service supports Reclamation's selection of Alternative B as the preferred alternative. The Service supports Alternative B because it is based on the Aspinall Unit operating to meet specific downstream flow targets for endangered fishes, while meeting authorized purposes of the Unit. Endangered Species Act section 7 consultation has been completed on Alternative B and water depletions in the Gunnison River basin. The Service issued the Final Gunnison Basin Biological Opinion (BO) on December 4, 2009.

The Service's assessment of the Colorado River Endangered Fish Recovery Program's sufficient progress for 2009 – 2010 was issued on July 16, 2010. This assessment anticipated the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) would be completed prior to 2011 spring runoff. The Service recommends that Reclamation expeditiously complete the Final EIS and issue a ROD by October 1, 2011.

The Service is providing detailed comments on flow and water quality in an attachment. Many of the technical comments regarding water quality (selenium) for the PFEIS are the same as our

comments submitted for the Draft EIS. We think the FEIS will be a stronger document if these comments are addressed.

Reoperation of reservoirs in the upper Colorado River basin is an integral part of the Recovery Program's Recovery Action Plan. The Service appreciates the significant time and effort Reclamation has put into the plan to reoperate the Aspinall Unit to contribute to endangered fish recovery.

If you have any questions concerning our comments, please feel free to call Patty Gelatt or Barb Osmundson at (970)243-2778, extensions 26 and 21 respectively.

Attachment

B\Osmundson\BRFEIS\AspinallUnitOperationsCommentLetter.docx:03312011:KM

Detailed Comments on the PFEIS FG-03-02

Flows

Page 3-34 - Last sentence in full indented paragraph referring to the Black Canyon Water Right.

Comment: The Service recommends adding the following language:

To reduce the risk of flooding at Delta, Reclamation may look for opportunities to shift the operation to meet the Black Canyon NP Water Right peak flow (and/or the endangered fish peak flow target) to later in the spring/summer after high tributary flows have receded *enough to avoid exceeding the flood criteria*. *Operations to meet Black Canyon NP Water Right peak flow would take place during the runoff period and not after the river has returned to base flows. When these situations are projected to occur, Reclamation will discuss the scheduling of peak releases in a manner that best assist in the recovery of the endangered fish with the Fish and Wildlife Service and National Park Service.*

Page 3-116 – Last paragraph referring to Coordinated Reservoir Operations (CROS).

Comment: The National Weather Service (NWS) has increased the flood stage at Cameo from 12 feet to 12.5 feet, allowing for more flexibility in CROS implementation. (See NWS report: Cameo Resurvey Report, March 1, 2010, Bryon Lawrence.)

Water Quality

Page 2-12 Other uncertainties include whether elevated selenium concentrations and other water quality elements affect the recovery of the endangered fish in the Gunnison River and other basin rivers . . .”

Comment: Language in the programmatic biological opinion (PBO) (see page 1-20 of FEIS) states that “the ongoing operation of irrigation projects and other water uses in the basin will continue to contribute selenium to the Gunnison and Colorado rivers at levels that adversely affect the endangered fishes and their critical habitat **and are inhibiting the survival and recovery of the endangered fishes.**” Language regarding selenium and recovery of endangered fish should match in the PBO and the FEIS, and should not be presented as an uncertainty in the FEIS.

Page 3-18 Lower Gunnison River Water Quality
Butler (2000) summarized water quality data for the lower Gunnison River . . .

Comment: We recommend also citing the following report because it also has selenium data for biota samples, including the endangered fish:

Butler D.B. and Osmundson B.C. 2000. Physical, chemical, and biological data for the Uncompahgre Project Area and the Grand Valley, West-Central Colorado, 1993-98. U.S. Geological Survey, Water-Resources Investigations Report 99-453, U.S. Geological Survey, Denver, CO. 216 pages.

Page 3-20, Figure 3.3-4

Comment: The publication Osmundson *et al.* (2000) also discusses the inverse relationship between in-stream flows and selenium concentrations in water and in Colorado pikeminnow muscle plugs. We recommend including this citation, because it includes the relationship between flows and selenium concentrations in water and fish tissue. The new EPA selenium criterion will most likely be a fish tissue standard.

Osmundson, B.C., T.W. May, and D.B. Osmundson. 2000. Selenium concentrations in the Colorado Pikeminnow (*Ptychocheilus lucius*): Relationship with Flows in the Upper Colorado River. Arch. Environ. Contam. Toxicol. 38: 479-485.

Page 3-20 “The median value for these samples was 5 parts per billion (*dissolved selenium*) as compared to the Colorado chronic water quality standard for selenium of 4.6 parts per billion (*dissolved selenium*).

Comment: It needs to be specified in the text following Figure 3.3-4 which selenium values are total selenium or dissolved selenium. It can be confusing because the Colorado chronic aquatic life selenium standard is 5 ug/liter total selenium, or 4.6 ug/L dissolved selenium.

Page 3-21 Water Temperature

“Later, construction and operation of the Aspinall Unit has tended to lower downstream temperatures in the summer and raise them in the winter, due to hypolimnion (deep water) releases from the reservoirs.”

Comment: We recommend including the following citation that discusses temperature limitations of Colorado pikeminnow in the Gunnison River related to dams:

Osmundson, D.B. 2010. Thermal regime suitability: Assessment of upstream range restoration potential for Colorado pikeminnow, a warm water endangered fish. River Res. Applic. Published online in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/rra.1387.

Page 3-42 “These changes in the Uncompahgre Valley are expected to continue, resulting in a continued gradual reduction in selenium concentrations.”

Comment: No citation is included for the statement that “changes are expected to continue”. Any decline in selenium loads is dependent on future land use. Using the Devil’s Thumb golf course example, selenium concentrations can increase substantially when water is applied to previously un-irrigated land. Mayo (2008) noted that “control of deep percolation from unlined ponds that are created to support residential irrigation could be an increasingly important factor

to consider for minimizing irrigation-induced salt loading to the Colorado River.” This would also apply to selenium loading.

Continued downward trends in selenium loads will most likely be dependent on the selenium management program. Statements regarding current downward trends in selenium concentrations need to include the following *in press* citation: Mayo and Leib (2011), which is currently undergoing internal review at US Geological Survey (USGS). Thomas *et al.* (2007) projected that “the Uncompahgre River, Gunnison River at Delta, and Gunnison River near Grand Junction would require 69, 34, and 53 percent, respectively, of the mean annual load to be reduced for water years 2001 through 2005 to meet the water quality standard. The 2001-2005 period involved in-stream flows which were below average. Selenium concentrations will continue to exceed Colorado water quality standards, (especially during drought years), unless remediation efforts are implemented via the proposed Selenium Management Program outlined in the biological assessment (BA). We recommend including the following citations, along with the discussion above in the FEIS.

Mayo, J.W. 2008. Estimating the effects of conversion of agricultural land to urban land on deep percolation of irrigation water in the Grand Valley, Western Colorado. U.S. Geological Survey Scientific Investigations Report 2008-5086, 58 p.

Mayo, J.W. and K.J. Leib. 2011. Trend analysis of selenium load and concentrations at USGS streamflow-gaging stations at Colorado River near Colorado-Utah state line and Gunnison River near Grand Junction, CO., for water years 1986-2008. U.S. Geological Survey Scientific Investigations Report 2011 In Press.

Thomas, J.C., K.J. Leib, and J.W. Mayo. 2008. Analysis of dissolved selenium loading for selected sites in the Lower Gunnison River Basin, Colorado, 1978-2005: Reston, VA, U.S. Geological Survey Scientific Investigations Report 2007-5287, 25 p.

Page 3-43 and 3-44 “Figures 3.3-21 and Table 3.3 9, respectively, show the annual maximum average monthly projected selenium concentration and the projected number of days per year the selenium concentration threshold of 4.6 ppb is exceeded for each alternative at the Whitewater gage. Figure 3.3.21 depicts a downward trend in selenium concentrations”

Comment: It is not mentioned how this projection was determined—again, recommend including the Mayo and Leib 2011 citation is needed here. Table 3.3 9 title needs to read “Selenium concentration threshold 4.6 ppb (*dissolved*) . . .

Page 3-95 “The decline of populations is likely due to three primary factors: loss or degradation of habitat; blockage of migration; and introduction of non-native fish species. The two types of factors that appear to have had the greatest impact have been water development and introduction of non-native species.”

Comment: Hamilton (1999) suggested that “there is now evidence that selenium, historically and currently, may be contributing to the endangerment of fish in the Colorado River basin. Burdick (1995) concluded that the Gunnison River upstream of Redlands Diversion Dam is

predominantly composed of native fishes that probably resembles the historic composition of the fish community, compared to reaches downstream in the Colorado River that are composed primarily of nonnative fishes. Within the Gunnison River, water development is the major factor that led to the decline endangered fish populations. Water development has changed the natural hydrograph as well as increased selenium concentrations through agricultural return flows.

It needs to be recognized that elevated selenium concentrations are a component of water development and have played a role in the decline of endangered fish in the Gunnison River. We suggest including the discussion above and referring to the listed citations as well as the PBO and the endangered fish recovery goal documents as appropriate.

Page 3-98 Others concluded that most of the evidence implicating selenium is circumstantial and that “neither the historical record nor the technical literature consistently supports the emphasis given selenium toxicity” (Korte 2000).

Comment: The Hamilton (1999) study was published in a peer-reviewed journal. Hamilton has published numerous studies on the effects of selenium to fish, including endangered fish. The following peer-reviewed Hamilton publications regarding selenium effects to razorback suckers were completed 5 years after the Korte (2000) report:

Hamilton, S.J., K.M. Holley, K.J. Buhl, F.A. Bullard, L.K. Weston, S.F. McDonald. 2005. Selenium impacts on razorback sucker, Colorado River, Colorado I. Adults. *Ecotoxicology and Environmental Safety* 61: 7-31.

Hamilton, S.J., K.M. Holley, K.J. Buhl, F.A. Bullard. 2005. Selenium impacts on razorback sucker, Colorado River, Colorado II. Eggs. *Ecotoxicology and Environmental Safety* 61: 32-43.

Hamilton, S.J., K.M. Holley, K.J. Buhl, F.A. Bullard. 2005. Selenium impacts on razorback sucker, Colorado: Colorado River III. Larvae. *Ecotoxicology and Environmental Safety* 61: 168-189.

Hamilton, S.J., K.J. Buhl, F.A. Bullard, S.F. McDonald. 2005. Reduced growth and survival of larval razorback sucker fed selenium-laden zooplankton. *Ecotoxicology and Environmental Safety* 61: 190-208.

Hamilton’s results are similar to selenium toxicity results from the numerous other published studies conducted with other species of fish from other locations that show adverse effects occurring at very similar selenium concentrations.

The Korte (2000) report was an internal report with Oakridge National Laboratory, and did not receive the level of scientific peer review that the Hamilton (1999) publication received. The Korte (2000) report presented no new scientific data. Report conclusions were based on interviews, and reinterpretation of other people’s data. Korte (2000) also discussed nonnative fish removal, and stated “the role of nonnative fish is no less controversial than the other aspects involved with recovering the endemic endangered species”, and wrote that “blaming non-natives

is preferred by those favoring population and land development because poisoning nonnative fish has no effect on the water diversions needed to promote population growth.”

Skorupa (1998) evaluated 12 case scenarios demonstrating toxicity to fish and wildlife from both selenate and selenite inputs, and concluded that a national water-based criterion for selenium should be set below 5 ug/L. Lemly (1996) suggested that waterborne selenium concentrations > 2 ug/L and food-chain organisms with ≥ 3 ug/g dry weight selenium should be considered hazardous to the health and long-term survival of fish and wildlife populations. In the Gunnison River below Delta and the Colorado River below the Gunnison River confluence, selenium concentrations in sediment, water, prey items, and fish indicate a high hazard when assessing risk to aquatic life (Lemly 1995). In about 60 miles of designated critical habitat, selenium concentrations exceed water quality standards for the protection of aquatic life. The above discussion builds a weight of evidence case that selenium is adversely impacting endangered Colorado River fish, and moves the issue beyond the circumstantial status.

Lemly, A.D. 1995. A protocol for aquatic hazard assessment of selenium. *Ecotoxicol. Environ. Safety* 32: 280-288.

Lemly, A.D. 1996. Selenium in aquatic organisms. IN: Beyer, WN, Heinz GH, Redmon-Norwood A (eds). *Environmental contaminants in wildlife: interpreting tissue concentrations*. Lewis Publishers, New York, NY. Pages 427-445.

Skorupa, J.P. 1998. Selenium poisoning of fish and wildlife in nature: lessons from twelve real-world examples. IN: *Environmental Chemistry of Selenium*. W.T. Frankenberger, Jr. and R.A. Engberg editors, Marcel Dekker, Inc. New York, NY. Pages 315-354.

We recommend including the above discussion and listed citations in the FEIS, as well as referencing the PBO and emphasizing conclusions reached in the PBO.

Page 3-105 In the Colorado River in the vicinity of the Gunnison River mouth, the number of wild razorback suckers dropped precipitously between the early 1970's and the 1990's.

Comment: A citation should be provided for this statement.

Page 3-105 Overall, there is little evidence of successful recruitment of this species in the Upper Colorado River Basin, although recent surveys indicated that stocked razorback sucker are spawning successfully in the Gunnison and Colorado rivers (Osmundson and McAda 2006 and 2007).

Comment: This sentence should be rewritten to indicate that “a few larval endangered fish have recently been found, indicating that some successful reproduction has occurred” (Osmundson and Seal 2009). Although encouraging, finding a few razorback sucker larvae does not mean that reproductive impacts linked to high selenium concentrations are not occurring. Fecundity of one adult female can be several thousand eggs (McAda and Wydoski 1980). Depending on survival of stocked razorback suckers, this could potentially result in thousands of larvae if survival was not reduced by selenium toxicity, predation, and other variables affecting survival.

Recovery cannot occur until there is sufficient recruitment of larval and young-of-year fish to compensate for adult mortality to maintain a self-sustaining population, not dependent on continued hatchery releases.

McAda, C.W. and R.S. Wydoski 1980. The razorback sucker, *Xyrauchen texanus*, in the Upper Colorado River Basin, 1974-76. Technical papers of the U.S. Fish and Wildlife Service, 99. 15 Pages.

Osmundson, D.B. and S.C. Seal. 2009. Successful spawning by stocked razorback sucker in the Gunnison and Colorado Rivers, as evidenced by larval fish collections, 2002-2007. Upper Colorado River Endangered Fish Recovery Program. Project No. 121. 38pp.

09-23-2011

FG-04

Western's comments on the
Revised Preliminary Final Impact Statement
Aspinall Unit Operations
August, 2011

Thank you for the opportunity to comment on the revised EIS. We appreciate Reclamation's willingness to work with the cooperating agencies to try to come to a consensus on this important document.

As stated by the DOI representatives at our September 12th cooperating agencies meeting, DOI focused its attention on addressing the Black Canyon water right issue and has asked Reclamation's Grand Junction office to address other comments. Western has a variety of other comments requesting changes in the EIS and we trust these will still be considered and addressed in the final EIS. Therefore, we will not repeat our comments here. Please be aware that the comments we've submitted on previous version of the EIS remain important to Western. If you would like to have Western clarify any of these comments, or if you'd like to discuss them further, please contact me.

Western appreciates that some comments have been addressed by Reclamation. In particular, adding need for Western to meet NERC and WECC obligations and Aspinall's role in meeting those obligations.

Comments

Pg 2.4

The PFEIS states that the inclusion of the BC water right is within the "historic range of Aspinall operations", and that the inclusion of the BC water right "did not significantly change the impacts analysis as displayed in the DEIS. . ." This sentence includes two different concepts: historic range; since the range of operations of the Aspinall unit includes extreme drought years and extreme wet years, it's hard to imagine a water right or operational criteria in which this statement would not be true. Change of impacts: the inclusion of the BC water right can significantly modify the operational pattern of the Aspinall Units beyond the change in the pattern contemplated by the EIS alternatives. This change can further modify the impact of the EIS alternatives on the human and natural environment and on authorized purposes. Unless an analysis or "hard look" is completed on how the inclusion of the BC water right alters the impacts previously and meticulously analyzed, a "hard look" has not been accomplished.

FG-04-01

Attached is a report by Argonne National Laboratory requested by Western. The analysis described in the report describes how the inclusion of the Black Canyon water right has significantly affected the

FG-04-02

analysis in the DEIS on hydroelectric power production at the Aspinall Unit. It also shows how the inclusion of the BC right not only results in a significant change but, when considered on a year-by-year basis, changes the impact in a non-linear way. This means that the hydropower impacts described in the DEIS have significantly changed with the BC water right included and that the direction and magnitude of the change is unpredictable and unknown without a new analysis. (see also, page 3-68)

Page 2-26

The EIS states that the inclusion of the BC water right results in an “impact difference between No Action and the action alternatives are generally reduced”. Therefore, the DEIS contains impact that can be considered “worst case”. Western doesn’t agree with this assessment. First, because of the analysis by Argonne referred to above about the lack of consistency among years with respect to how the BC water right affects the results. Second, because the description of the BC water right spring peak indicates that (in some years) the operation of the Aspinall Unit will be significantly different than modeled and described in the DEIS (specifically, note B on Table 3.3-9 on page 3-38, indicates that the BC water right will be achieved by either a second spring peak or by significantly delaying the peak)

FG-04-03

Section 2.3.6.1

Western requests that, when available, the Record of Decision be provided, in draft, to the cooperating agencies. We also suggest that the description in this section and wording in the ROD indicate that the EIS describes the operation of the Aspinall Unit AS MODELED. The operation of the Aspinall Unit will not strictly follow the modeled operation. Flexibility will be required in actual operation in order to meet environmental goals while avoiding unnecessary impacts.

FG-04-04

Section 3.3.2.1C

Please replace all of the description of the power customers of the Aspinall Unit from “CRSP” to SLCA/IP.

FG-04-05

Page 3-68

While this page and the previous tables describes the variation in power impacts when the average impact is disaggregated into the separate years, we believe that describing the range of impacts would help the reader understand that there are significant differences of impacts within the 31-year modeled results.

FG-04-06

Section 3.3.2.1D

Several of the figures in the bulleted items near the bottom of the page need updating.

DRAFT REPORT

**COMPARISON OF IMPACTS ON ELECTRICAL POWER
OF THE
ASPINALL UNIT OPERATIONS
PRELIMINARY FINAL ENVIRONMENTAL IMPACT STATEMENT (August,
2011)
WITH THE
PUBLIC DRAFT (December, 2009)**

Prepared by Les Poch, Argonne National Laboratory
S. Clayton Palmer, Western Area Power Administration

September 21, 2011

DRAFT REPORT
COMPARISON OF IMPACTS ON ELECTRICAL POWER
OF THE
ASPINALL UNIT OPERATIONS
PRELIMINARY FINAL ENVIRONMENTAL IMPACT STATEMENT (August, 2011)
WITH THE
PUBLIC DRAFT (December, 2009)

New model runs for two PFEIS Aspinall EIS alternatives were requested by Western:
PFEIS No Action Alternative
PFEIS Alternative B

These new alternatives were formulated to include water rights for the Black Canyon in Gunnison National Park. Data for these reformulated alternatives was obtained from the Bureau of Reclamation in the form of daily outputs from the Riverware model.

Data updated for the two new alternatives included:

- Powerplant releases;
- Total releases from Blue Mesa, Morrow Point and Crystal;
- Reservoir storage and elevation at Blue Mesa; and,
- Water flows in the Black Canyon, at Delta, at Whitewater, and below Redlands.

Data remaining the same from the previous No Action and Alternative B included:

- Blue Mesa inflows;
- Crystal side inflows; and,
- Tributary flows from the Black Canyon to Delta (mostly the North Fork).

The data from the Riverware model served as input to the GTMax model which was used to analyze operations and economic impacts at the Aspinall Cascade as a result of these revised Riverware model runs. The version of the GTMax model used for this analysis was developed specifically for the Aspinall Cascade and was used for simulating the alternatives in the draft EIS.

Western requested that the same electricity price and load data used in the GTMax simulation runs for the public draft EIS be used so the effect of these new Riverware model runs could be easily compared to the power analysis included in the Public Draft. Peak and off-peak electricity prices were obtained from Prebon Energy and natural gas futures data were obtained from NYMEX. Data from the summer of 2007 was used because that was the time when simulations for the Public Draft EIS were initially conducted.

Three specific comparisons between new and previous alternatives were requested by Western;

- (1) the old No Action Alternative to the New No Action Alternative;
- (2) the New No Action Alternative to the New Alternative B; and,
- (3) the old No Action Alternative to the New Alternative B.

Table 1, below, provides a comparison of the 31-year average economic impact. The table shows that the average annual economic impact of the two new alternatives compared to the old No Action

Alternative is negative, which means that both new alternatives generate an economic cost. The New No Action Alternative has an economic cost of \$833,000 and the New Alternative B has an economic cost of \$981,000. The New No Action Alternative generates 13.9 GWhs less and releases 43.2 thousand acre feet (TAF) less than the old No Action Alternative. The New Alternative B generates 16.7 GWhs less and releases 62.1 TAF less than the old No Action Alternative.

The New Alternative B also has an average annual economic cost of about \$148,000 compared to the New No Action Alternative. Therefore the cost impact when the Black Canyon (BC) water right is added to both Alternative B and the No Action Alternative is about one seventh of the impact when the BC water right is added only to Alternative B.

Table 1 Comparison of New Alternatives and Old No Action Alternative

Alternative Comparison	Average Annual Economic Impact	Range (Max/Min) of Annual Impacts - Value and Year	Average Annual Generation (GWh)	Power Release (TAF)	Average Annual Non-Power Releases (TAF)
New NA vs Old NA	-\$833,000	\$0.6 million - 1983 -\$5.9 million - 1984	-13.9	-43.2	44.8
New Alt B vs New NA	-\$148,000	\$4.6 million - 1978 -\$5.3 million - 1979	-2.8	-19.0	23.4
New Alt B vs Old NA	-\$981,000	\$2.7 million - 1978 -\$10.7 million - 1979	-16.7	-62.1	68.3

Table 2 provides the same comparisons as Table 1, but for each of the 31-years that the Riverware model was run.

Table 2 Comparison of Total Generation and Economic Value of the New Alternatives with the Old No Action Alternative Over the 31-year Study Period

Year	Total Generation (MWh)			Economic Value (2008 \$)		
	New NA vs Old NA	New Alt B vs New NA	New Alt B vs Old NA	New NA vs Old NA	New Alt B vs New NA	New Alt B vs Old NA
1975	(25,285)	20,725	(4,560)	(\$1,728,119)	\$1,315,153	(\$412,966)
1976	4,253	(1,949)	2,304	\$131,140	(\$649,181)	(\$518,042)
1977	(513)	25,499	24,986	(\$19,255)	\$1,836,184	\$1,816,928
1978	(28,393)	79,364	50,971	(\$1,933,666)	\$4,649,740	\$2,716,074
1979	(84,833)	(87,212)	(172,045)	(\$5,384,424)	(\$5,312,722)	(\$10,697,146)
1980	(75,935)	(68,325)	(144,261)	(\$5,002,014)	(\$3,090,605)	(\$8,092,619)
1981	(2,747)	17,790	15,043	(\$202,608)	\$1,167,571	\$964,963
1982	(51,319)	20,609	(30,709)	(\$2,852,029)	\$698,849	(\$2,153,180)
1983	8,572	(2,002)	6,570	\$604,314	(\$167,016)	\$437,299
1984	(111,496)	(3,056)	(114,552)	(\$5,934,905)	\$188,507	(\$6,123,412)
1985	(404)	2,275	1,871	(\$7,500)	(\$142,191)	(\$149,691)
1986	(17,904)	(110)	(18,014)	(\$913,599)	(\$505,583)	(\$1,419,182)
1987	3,504	1,640	5,145	\$170,607	\$134,114	\$304,720
1988	(3,982)	11,925	7,942	(\$407,832)	\$698,674	\$290,842
1989	1,159	514	1,673	\$33,992	(\$104,875)	(\$70,883)
1990	(4,031)	(4,878)	(8,909)	(\$248,322)	(\$246,899)	(\$495,221)
1991	758	(17,939)	(17,181)	\$24,672	(\$899,378)	(\$874,706)
1992	(6,820)	447	(6,373)	(\$403,654)	\$29,537	(\$374,117)
1993	(22,895)	8,620	(14,275)	(\$867,791)	\$283,199	(\$584,592)
1994	(5,018)	(2,103)	(7,120)	(\$286,728)	(\$190,467)	(\$477,195)
1995	11,374	(22,139)	(10,765)	\$392,269	(\$849,505)	(\$457,236)
1996	(10,877)	(28,952)	(39,829)	(\$384,373)	(\$1,577,456)	(\$1,961,829)
1997	7,134	(4,592)	2,542	\$290,675	(\$278,409)	\$12,266
1998	(1,816)	(2,266)	(4,082)	(\$71,811)	(\$133,638)	(\$205,449)
1999	3,767	(17,207)	(13,439)	\$50,562	(\$753,944)	(\$703,382)
2000	(3,660)	5,290	1,630	(\$224,742)	\$70,990	(\$153,752)
2001	(7,008)	(37,961)	(44,969)	(\$338,201)	(\$1,473,221)	(\$1,811,423)
2002	609	15,690	16,300	\$21,142	\$625,943	\$647,085
2003	8,487	55,563	64,051	\$281,150	\$2,128,925	\$2,410,074
2004	(3,298)	16,448	13,150	(\$145,010)	\$567,811	\$422,801
2005	(10,739)	(69,860)	(80,600)	(\$456,286)	(\$2,237,126)	(\$2,693,412)
Total	(429,356)	(88,149)	(517,505)	(\$25,812,348)	(\$4,594,034)	(\$30,406,381)
Average	(13,850)	(2,844)	(16,694)	(\$832,656)	(\$148,195)	(\$980,851)

Table 2 shows the significant annual variation in economic impact over the 31-year modeling period. The economic impacts range from benefits (positive) to costs (negative); 1978 has a positive impact (benefit) of over \$4.6 million (comparing New Alternative B with the New No Action Alternative), while 1979 has a negative impact (cost) of almost \$10.7 million (comparing the New Alternative B with the old No

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SLG-01

April 1, 2011

Via E-Mail and U.S. Mail

Ms. Carol DeAngelis, Mr. Steve McCall
Bureau of Reclamation
Western Colorado Area Office
2764 Compass Drive, Suite 106
Grand Junction CO 81506



John W. Hickenlooper
Governor

Mike King
Executive Director

Re: State of Colorado Comments on the *Preliminary Final Environmental Impact Statement: Aspinall Unit Operations*

Dear Carol:

On behalf of the Colorado Department of Natural Resources (DNR), the Colorado Water Conservation Board (CWCB) and the Colorado Division of Wildlife (DOW), I submit the following comments on the *Preliminary Final Environmental Impact Statement: Aspinall Unit Operations* (the "PFEIS") released by the Bureau of Reclamation ("Reclamation") in December 2010. We would like to thank the Bureau of Reclamation (BOR) for the opportunity to serve as cooperating agencies during this effort and we appreciate the opportunity to comment on the PFEIS. We appreciate the cooperation and consideration that Reclamation has provided during this EIS process, and believe it has resulted in better understanding and cooperation with regard to the management of the relevant federal reservoirs within Colorado. We look forward to continuing working with Reclamation and other stakeholders as this process moves forward.

As cooperating agencies, the DNR, DOW and CWCB have worked closely with Reclamation through this NEPA compliance process and believe that the current document reflects Reclamation's efforts to work with all affected stakeholders and arrive at the best possible conclusions. While we still have concerns, we acknowledge and again, appreciate, all of the work and effort by Reclamation and other Federal agencies in this process. Attached are specific comments from the CWCB and the DOW. DNR has worked closely with both agencies and fully supports all of the comments enclosed.

I would like to highlight two issues that are addressed in more detail in the attached letters.

First, we remain concerned regarding how the EIS seeks to articulate the interaction of SLG-01-01 Aspinall Unit operations under the EIS and the National Park Service Black Canyon water right decree. We have made this point several times before, but it is important enough to repeat at this time. As you know, the Aspinall Unit, as a Colorado River Storage Project Act (CRSPA) project,

Board of Land Commissioners • Division of Reclamation, Mining & Safety • Colorado Geological Survey
Oil & Gas Conservation Commission • Colorado State Parks • Division of Forestry
Water Conservation Board • Division of Water Resources • Division of Wildlife