

CALFED Water Management Development Team Meeting
Tuesday November 2, 1999

1. Review Recommendations of Last Meeting

A. Welcome and Introductions

- The Co-chairs (Steve and Wayne) opened the meeting.
- The WMDT welcomed Tom Zuckerman as a new participant representing Delta interests.

B. Recommendations from Last Week

- Agree to convene again this week.
- CT will evaluate impacts of model and gaming assumptions.
- Review process for incorporating and evaluating alternative methods for achieving benefits to fish, water quality, and water supply.

C. Today's Agenda and Expectations.

- Majority of meeting will be spent on presentation of modeling and gaming results.
- Item on the workplan review will only take a few minutes.
- The Subcommittee meeting to follow will address the editing of the CalFed staff draft document summarizing the three baseline positions. It was agreed it is unlikely that consensus will be reached on a singular baseline for the group therefore efforts should be concentrated on developing an accurate summary of each group's baseline for policy makers.
- **Expectations:** During the presentation of results, the focus should be on whether type and quality of the information is useful. DT should provide feedback on whether this information and level of detail is useful and if it isn't then need to describe what would be useful. Also, there needs to be agreement concerning the workplan. Is everyone ok with next steps in the process?

2. Progress Report on Scenario Results to Date

A. Overview of Gaming Process

- Ron Ott presented an overview of the gaming process.
- There is difficulty with b(2) water and how it is used.
- Simplifying assumptions were made so we could get through games in the specified period of time.

B. Objectives

- Elise Holland presented a summary of the objectives, assets and scenarios.
- The objective of the exercise was to define the effects of the same set of assets under different operating conditions.
- In addition the exercise sought to define the effects of b(2) implementation.
- The b(2) accounting method is not well detailed and as a result the gaming exercise has become a learning process for all parties as they attempt to deal with the issues raised by the scenarios. DOI is learning some aspects of how to account for b(2) as the gaming process went along.
- In general, and qualitatively, the results showed that there were substantial impacts on water quality, water supply and fisheries under varying conditions.
- The scenarios examined all three outputs.
- Scenario 1A and 1B were gamed from 1981 through 1988.
- The general purpose of gaming is to establish bookends from a federal agency perspective; to determine how the environment would fare if the EWA had no new assets except b(2) water (800taf in each year); and to determine how close you could get to the stated water supply and water quality targets.
- The EWA assets that could be applied in Scenario 1A were identified as: 800taf, E/I flexibility, 400cfs intertie, and 100 taf from ERP flows.
- Any other early and late Stage 1 assets were considered project assets.
- Only 3 assets were used in the early Stage 1 run (Scenario 1A). The other assets were eliminated for a variety of reasons such as inability to model, uncertainty of availability of the asset, or because they couldn't be used or weren't "needed" due to wet hydrologies.
- *Question: How realistic are those assumptions?*
- *Question: Does anyone of have a problem with these assets?*

- It is a game and it is nothing more than information.
- My sense is that these assets are achievable and realistic, some have already occurred.
- In late Stage 1 (Scenario 1B) a slightly different set of assets was available. The additions included: In-Delta storage and Shasta Dam expansion.
- Every asset identified in this exercise is very controversial. We are modeling the ones that we determined to be most realistic at this time. Most have significant issues to be worked out and we are trying to lay those issues out (in the CT). We can provide that information to you if you want it.
- It is recognized that the late Stage 1 assets have a little bit more baggage all the way around.
- *Question: How can these things be a package, pick those select ones, are they really worth the work?*
- *Question: The assumptions that were not used in the gaming so far, Do we add them into the game? Do we need to take things out of the gaming exercise?*

C. Results of DWRSIM Runs

- George Barnes presented a summary of the DWRSIM results.
- These results provide a starting point for gaming.
- *Question: Did you assume existing trinity flow for all studies? Are you planing and can run ones with enhanced trinity?*
- These six models were run with the existing trinity flow. Right now we have only been asked to run these six models with the 340taf assumptions.
- *Question: What is the relationship between the Russ Brown Model and the DWRSIM model?*
- The two models are not directly compatible. DWRSIM provided a starting point for scenarios 1a-3. Russ Brown's model is based on historical exports and flows, and provides a daily record for each action. Whereas this model is what a certain year would look like under current conditions. There is a disconnect between the two models. The daily model captures things monthly model doesn't capture such as peak flows that could arrive in the Delta over a period of days. Russ's model would let you export that whereas DWRSIM wouldn't because it is looking across the month at other demands that are coming up. You do get more data in the daily model data rather than monthly model but the benefits could be overstated.
- *Question: In broad terms how do the results of the two models compare?*
- We haven't compared them directly.
- I hope we could get to that point soon, I want to make sure we understand the differences between the two models.
- We did notice significant differences between the two models.
- DWRSIM has never been validated.
- The word validation is hard to deal with, primarily DWRSIM's strength is looking at comparative runs. It can generate a great deal of useful information on comparative runs. It can help determine how implementing certain things would change results.
- Study 1 D1485 + u/s winter-run biological opinion
- Study 2 WQCP + u/s winter-run biological opinion.
- Study 3 WQCP + u/s biological opinion with some added features. These additions were: increased pumping capacity from July-December; 400 cfs intertie; and unlimited joint point of diversion. This study served as the starting point for Scenario 1.
- Study 4 is the same as 3 but added b(2) actions (upstream 1997AFRP flows and VAMP export restrictions).
- Study 5 is another way of viewing a base, it utilized the same assumptions as Study 1 except it met the upstream AFRP flows per the 1997 paper on b(2). The study was done because some water users were interested in beginning from that point.
- Study 6 incorporated many of the late Stage 1 assets including: increased bank pumping capacity to 10,300cfs), unlimited joint point of diversion, 400 cfs intertie, increased maximum storage at Shasta (by 290 TAF), Delta Island storage to 240taf.
- All of these differences are compared to Study. 1.
- *Question: Has the CT seen this information, have they looked at the tables?*
- The first four studies have been done for a couple of weeks but the last two are fairly new and the CT probably has not had time to examine them in depth.

- *Question: On table 2 is there anything that jumps out that is unusual that we should not? It is difficult to digest all of these numbers.*
- In table 1 there is quite a difference between average annual and a drought period.
- It is important to remember that these are operations studies and not yield studies.
- *Question: In Study 5, which is the one closest to the water users studies? The other studies all do better than Study 5. Why?*
- Study 6 includes a real wet year, moving a lot of water.
- The difference between Studies 2 and 5 is that there is a net water cost to the CVP and a net water gain to the SWP because water is being captured under the COA.
- *Question: What do you mean by "capturing water under the COA?"*
- The current COA is written in a manner such that if a party can't make use of their releases, other parties can pick it up. (windfall)
- *Question: In looking at the higher export capacities you show, did you assume you had a place to put the water or did you really have storage available?*
- Yes, the model did have someplace to put the water.

D. Gaming Methodology

- Dave Fullerton gave the presentation on overall methodology.
- Scenario 1A-Fish Managers get b(2) all the other asset water goes to the water projects.
- The change in project operations from Scenario 1A (fishery agencies meet fish needs within limited budget - 800taf) to Scenario 1B (same fish protection measures but late Stage 1 assets) is significant.
- These results demonstrate that the project responds to changes by the fish managers.
- To obtain the amount of b(2) water in play we subtracted out the federal share of WQCP from Russ Brown's daily model by splitting the cost of the Accord in half and assigning half to the CVP. The difference in between that number and 800taf is what is left to implement fish actions.
- There are significant differences between these results and the DWRSIM results.
- The joint point of diversion is another area of weakness, it could be cleaned up.
- We assumed water can be shared in San Luis and we realize that is not universally accepted.
- Scenario 1B gives projects a lot more flexibility.
- Assets not used: Kern water purchases, groundwater storage, efficiency, supply shifting. These would add to the performance on both sides. This was a quick cut using a limited number assets to obtain a general idea of what types of results the gaming would produce.
- I think laying these caveats out is really good. The WMDT needs to have a discussion about each caveat.
- *Question: Does this exercise assume no San Luis lowpoint problems?*
- No. The lowpoint issue was dealt with in the gaming.
- *Question: In the Russ Brown model you can't separate state and federal water, is there a way to get the biological bar info into the DWRSIM model, where it might be possible to get that information if you used actual numbers?*
- At various times that they were taking export restrictions at various points in the gaming we could put that information into the model. We would need to quantify how b(2) actions would play out. I would try to establish a pattern and plug that information in. We are putting in export restrictions in Dec and Jan.
- What we assumed the b(2) assumptions might be, and then trying to translate those into DWRSIM is a difficult leap. We have been working at it, there is not a clear path.
- I think the daily model (Russ Brown) is very accurate. I wouldn't say I don't believe it because it is not in the DWRSIM model.
- *Question: I presume there will be some lack of clarity in the results but how reliable are they?*
- We haven't had a chance to discuss the analysis, but a lot of problems in the daily model are fixable.
- *Question: I have a concern about the accounting for b(2) in these scenarios. Are they consistent with the latest DOI interpretation? Specifically I am concerned about the accounting for unused water.*
- It is possible that the accounting method used in the gaming is incorrect. I won't claim we are right. We went with our best interpretation of the DOI decision. However, we came up with a methodology based on input from the DOI.

- *Question: I recognize we need to look at results, however, I am worried about the timeframe we have and the course we are on and the quality of information the gaming exercise is producing. Given our framework, we may need to do something other than gaming. To do this process correctly and get the WMDT results that we have confidence in, how many years would it take?*
- We are talking weeks for me to be comfortable.
- I would assume that Russ could change the model, but as you add layers it would take longer to run the model.
- *Question: The bigger question is we on the right course?*
- *Question: Should we be doing policy analysis instead of focusing on technical studies? Isn't this group more suited to those types of decisions?*
- I don't think this is an either or question. We probably need to have a parallel path, a policy framework independent from modeling.
- Some of us have started to talk about what a framework would look like.
- *Question: I believe our schedule is too ambitious. I believe we have a good enough approach to deal with these constraints and our mission. To me the question does it give us enough information to make a decision?*
- At least with Russ Brown model we can compare the results to reality. I would recommend a special session that presents the Russ Brown model to give us a better understanding of the technical work.
- I like the parallel process idea. We have a lot of confidence in DWRSIM. I don't have a feel for what the 800taf does for water supply and water quality in this model.

E. Scenario 1A

a. Water Quality

- David Briggs made the presentation.
- Dave presented results from Scenario 1A (1981-88).
- These are the issues for water quality:(1) Actions result in different levels of effectiveness and tradeoffs; (2)More operational.(3) Interactions that are unpredictable and difficult to model
- We are comparing numeric goals for TOC, BR and TDS. You can set the standard two ways you can look at CALFED or CUWA goals keeping in mind that the CUWA intermediate goals are not recognized by CALFED. Alternatively, you can compare yourself to the current water quality situation to make sure you are getting better.
- There are water quality benefits to the biological actions. Further, there are a lot of benefits to more than one group.
- Recognize that there is interaction with water previously pumped, and some attention needs to be paid to that water.
- As previously presented,1A utilizes a limited number of assets including 800 taf.
- Since we are loosing water in this Game, the organic carbon is reduced.
- Chloride is a surrogate for intrusion, based on this game chloride is getting better, it did not appear that outflow was increasing.
- The water supply is about 200,000. There are more tools for water supply in Scenario 1B. I don't know what the implications are for water quality using those late Stage 1 assets. Does it get worse? That's my sense.
- In Delta storage is part of 1B, TOC implications very difficult to figure out.
- *Question how is the model weighted? Annually?*
- On monthly basis.
- *Question: How does the TDS rate impact quality?*
- You are loosing water in the winter and not making it up, therefore the reason you are getting higher quality is because we are not pumping it.
- In essence lower water supply is mitigated by higher quality.
- *Question: Do you have any analysis at all regarding how well this model achieved the water quality goals?*
- Urban water districts aim to get below 4.0 mg/l for TOC in the short term and ultimately below 3.0 mg/l. In late Stage 1 there are other things that may make up

the difference and you could achieve that goal. In early Stage 1, you are in the range.

- *Question: How does this information relate to the DWRSWIM results that were presented earlier.*
- It is confusing to us, perhaps Dave or Ron could have stab at it.
- *Question: DWRSIM studies 1-6 are 1a scenarios - are they not?*
- No, they don't relate.
- *Question: Did you run anything with the hood connector?*
- The question is what is probable in Stage 1.
- I think CALFED proposal was to see where you could get with the assets we identified.
- *Question: Can someone please clarify what the water quality is in the DWRSIM model studies 1-6?*
- What is presented here in these tables is what the water quality would be if b(2) was implemented You cannot perform this analysis with the DWRSIM model because DWRSIM doesn't know how to model the in-Delta b(2) actions.
- What the tools show is that any time you can shift the time of pumping you can better control the water quality. This manipulation was the key in terms of water quality regardless of which scenario it relates to.
- *Question: For point of exports or generic? Primarily exports what does Contra Costa look at?*
- Our diversion pattern is not similar to exports (what the model shows) The make up is what really concerns me, and that is probably more meaningful.
- In order for us to evaluate water quality, we are just looking at water exports (DWRSIM #3) left same export patterns.

b. Water Supply

- The presentation was made by Paul Fujitani.
- In the graph the water quality control plan is the base because of accounting we are counting the deficits out.
- Maybe you should have accounted increase as a deduct, method of accounting on b(2) water.
- In many cases there were much more exports.
- *Question: When you used the additional export capability in late Stage 1, was that to move storage or capture unrelated flows in winter?*
- The goal was always to fill San Luis as quickly as possible but we also moved a lot in the summer and came out with San Luis higher later in the year, if we took the next step and looked at delivery patterns we could answer.
- *Question: What is the SRI is it?*
- Sacramento River Index
- We split impact 50-50 between state and federal and did not use the full 800taf in every year.
- *Question: Am I reading this information correctly, in the first year you used 680?*
- Yes (1/2 of third column plus next 2).
- *Question: If you didn't use all the b(2) water you assumed that you would get a letter from DOI saying it was ok?*
- We looked at banking water, we assumed one year we did try to represent when that would be possible.
- *Question: It can't be banked right where it is?*
- You may have to have a cut in reservoir use to do that.
- I'm looking at DWRSIM table 3 and your table. You paint a much rosier picture (with the daily model) than DWRSIM.

- One big difference is we don't separate state and fed. I can't explain it. We need to work that out with coding. In our model we can't handle Stanislaus River.
- I assume we are making a note of these and the CT needs to look at these.
- Yes we are taking notes, and we do tackle these issues on Thursdays.
- I am very confused about the banking issue
- We picked one methodology stayed consistent, there are many ways to do it.
- The issue is what is consistent with DOI, and this approach is not.
- The failure to use 800taf reflects the biologist's desire.
- *Question: Another point to go back to, Did you use groundwater storage as an asset?*
- *Question are these points correct? Method of accounting used in game was to count against the reductions in exports but not to account for imports and second with that accounting method in some years you still didn't use 800taf?*
- One other things was looking at DWRSIM Accord impacts, a lot of times they were bigger on the CVP, it wasn't split equally, it was an approximation during the game. We made some assumptions
- *Question: I believe I have a fundamental comprehension problem. How valuable are the different tools toward water management? What capacity number are you using for the In-island Delta storage?*
- *Question: Physically you could fit all of that in there?*
- Yes.
- You can't fill it that full. Capacity is much lower. I will get a number for you.
- We tried to be true to the physical conditions for Delta islands.
- Just given the physical limits of these islands, it is improbable plus the other constraints.
- Dave Forkel was at all of our meetings - we are not pulling numbers out of thin air.

c. **Fisheries Model**

- The fish information was presented by Bruce Herbold.
- 10 categories of biological needs along with the tools to influence each need were identified. Then the system status and priority were determined for each of the 15 years of analysis.
- No two years are alike.
- In some cases the priority assigned changes within the year as well as some sub-priorities to reflect the current status of the population.
- Salvage record is the only comprehensive data available.
- There is a more useful way to present this data. It would be helpful if you had a category for biological objective, what is it you are trying to address and what you are trying to achieve, and then results. You need it to be cleaner. I want to know what the relationship is between the objective and the result and know what the significance is as well as the relative significance of these measures.
- It is very important to see the relationship between the measures and the results. I need that connection for the recommendations to be plausible. There is a level of accountability that needs to be brought to this process.
- The entire matrix represents the priorities, sensitivities to expectations of the results, I am going to move on without further addressing these concerns which have already been noted on several occasions..
- *Question: On your chart you still have striped bass goals, why are you operating to try to protect them?*
- Protecting the striped bass is part of CVPIA goals. Striped bass have been identified by California Department of Fish and Game as a species to manage and protect, so it has to be included. However it has been given a relatively low priority. There has never been agreement to remove it.
- I believe it is counter productive to protect native fish and nonnative predator.

- The plan that has been designed manages impacts and has scientific validity.
- In my opinion, there is inconsistency in the approach.
- There are and will always be competing interests.
- *Question: Do the results include extrapolation explanations somewhere? I would like to see a formula that explains population impacts. My understanding of the baseline data you used, the salvage numbers, represent only a ½ - 1% impact on species population. If we are to base our actions on this data, it is my opinion that we are giving up a lot of water for little gain. Therefore, it is important to see the potential impact these actions will have on the fish population.*
- The intent of utilizing the salvage data is to identify a time, a set of conditions under which these measures should be taken.
- Your assumptions of this data then conclude that the ½ percent translates to more actual fish.
- The outcome is not going to be captured in a finite number. We are going to describe the outcome in terms of our ability to meet the priority actions to one degree or another.
- *Question: We are using b(2) as an asset, what is our list of b2 actions?*
- DOI has a list of actions. Not all of the DOI actions are used every year. At some point you have to select some action instead of others. We have made some effort to bring cohesion to the process. We are generally focusing on same type of actions that are on the b(2) list. There are some actions which are absolutely consistent however I am claiming 1:1 correspondence across the board and how they would be chosen and prioritized every year.
- *Question: Is it correct that both DOI and CALFED have lists of b(2) actions that don't correspond directly?*
- To some degree that is true, I don't think there are competing interests though.
- *Question: Is there agreement on priorities between these lists?*
- I don't think there are any major discrepancies.
- The reason for the differences lies in the level of detail. I think b(2) actions become very specific when you see the triggers and hydrology right in front of you like you do when you are gaming a scenario. When you are crafting the interpretation you are working at a much broader level. It is necessary to have the hydrology right in front of you to develop a specific b(2) action list.
- *Question: I am curious about biological triggers - are they based on real time monitoring?*
- Yes, better monitoring programs are just around the corner.
- *Question: You just asserted that real time monitoring is critical to the whole gaming exercise. Are you telling us that you are making assumptions on a system that doesn't yet exist?*
- What was used was entrainment data. Ideally to do a thorough analysis one would have different types of data to get a comprehensive assessment of the fish populations. However the best available data was utilized
- The 2000 Ops is looking at two levels of dryness in determining its course of action. It is not examining wet years or the current situation. I see these results as a piece of a long-term process in which needs are addressed in a much broader range.
- *Question: Is the concern here if you are basing success on the salvage numbers that you are talking about the pumps and nothing else?*
- Yes.
- There is no proven relationship between pumping and fish mortality.
- This is a weakness of the gaming process, it is a modeling parameter not a direct consequence.
- Then it needs to be identified as such.

- Part of b(2) use is to augment upstream flows. We don't have a representation of the value to the fish in taking this action.
- It has been stated by people that the best real time monitors we may have are the facilities in the South Delta.
- Some needs are taken care of outside of the actions accounted for in the model. For example, by good hydrology and other means.
- Discreet actions with relative priority is assigned, within the budget of b(2) it was determined how many objectives could be accomplished either fully or partially to stay within the budget.
- I would like a copy of the list of what clearly states the actions and background information on them
- Yes, that will be made available.
- The resources available in b(2) would not adequately address the 1999 Delta Smelt problem. An additional asset would be required to meet the needs encountered that year. That is the only "A" priority that did not get addressed in this exercise.
- *Question: Are any of these entrainment conditions linked to the cooling water intakes at the PG&E plant in Martinez?*
- We didn't have access to that data.
- I believe there are serious entrainment losses in that area, there should be lots of data.
- There isn't good monitoring in that region and there has not been for a long time.
- We could provide the fishery actions.
- It would be helpful to have those in advance so the information could be reviewed.
- In looking at the results, it is important to note that lower level priorities ("B" and "C" priorities) were not addressed until after the higher priority needs were met.
- I would like to get these priorities represented in a comprehensive form instead of on an annual matrix. Over the course of the period studied, these are the "A" priorities and this action was taken to meet them. That information would be more conclusive and instructive in this exercise.
- *Question: Is QWEST a part of any of those?*
- In the fall and winter in the list of needs there are some QWEST requirements (associated with the biological bar) but we did not specifically game those conditions. It is possible to go back now and see how we did in relation to QWEST, but we are not necessarily loyal to letter of the biological bar.
- *Question: Of the numbers you presented here, did you track and see if QWEST is met?*
- No not directly.
- If one examines the bar graph of a particular row on the matrix, it indicates successful completion of the "A" priorities.
- *Question: Nine years were modeled, does the number 9 have anything to do with these graphs?*
- With the exception of VAMP, everything was addressed only as it occurred. So you will see nine VAMP actions because we implemented it each year, however other circumstances may not have occurred every year so the number will be less than nine.
- These results only address entrainment. The data reflects Take at the pumps as a measure of both sensitivity and magnitude. It measures the mortality in the Central and South Delta. Using b(2) water doesn't assume any other habitat actions. In a manner it gets away from CALFED question of balance but entrainment does address how and when.
- The entrainment rates are historic, WQCP (these are flow proportional except Delta Smelt).
- We already know there are problems with comparing historic and WQCP.

- Regardless of the difficulties, these are real dead fish. There is value in all of these numbers
- *Question: Can you explain why I am interested in these numbers?*
- *Question: Are all of the Delta Smelt YOY?*
- *Question: What about the Displacement of X2?*
- *Question: Why are we looking at this table?*
- This table illustrates how entrainment can be reduced utilizing CALFED assets.
- Given that assessment the columns 1A and 1B are the only really important numbers for CALFED.
- Yes from their perspective that data is the most useful.
- The only number based on data is historic.
- *Question: I assume the 1b results are less favorable to fish is pumping capacity?*
- Yes, that is the most logical assumption although that game has not been run.
- *Question: Are any of those changes biologically significant?*
- I don't know which numbers are significant in projecting future populations. I can't tell you, we don't have anything qualitative beyond the priorities.
- *Question: Is it correct there are no tools to be able to take a look at salvage at the pumps, no correlation at all with that 1/2 percent from salvage and the indirect mortality? It is merely a hypothesis that pumping has a significant relationship to indirect fish mortality?*
- We are getting ready to dedicate an incredible amount of water to a trajectory of full recovery but we are using a tool that points to 1/2 % of fish recovery. I think we need something that is based on more than intuition, I think it would be worthwhile to identify another tool.
- It is common practice in sampling programs to take a small percent of the population and project outcomes for the entire population.
- This exercise was design to measure the impact of the 800 acre feed based on CVP's directives.
- *Question: But why are we dedicating so much water to this endeavor?*
- Killing endangered species is not in anyone's best interest.
- Back when we started the gaming, the intention was to get away from a prescriptive action plan. It is necessary to have an indicator and entrainment the best available biological data. It is necessary to test the effective implementation of an environmental water account and this data is the best way to do that. The alternative to utilizing entrainment data to establish an indicator was to go back to a prescriptive action plan. It is important to realize the data is an indicator, it is a tool.
- It is not productive to have a dialogue about what 1% implies, it sounds like we are going down a rat hole.
- We are losing focus, maybe this discussion's focus is too small. All we should be assessing is whether these measures enhance the welfare of the ecosystem.
- But we have been told to meet this initial biological bar with very specific goals.
- It is important to remember that reducing entrainment is one piece of a larger strategy to deal with ecosystem. There are other actions, it is one part of a larger part of investment. Most of you who have great opposition to this measure support other environmental actions. You are talking about a different approach here, you can't predict the exact population impact but you are going to get a rough idea.
- I believe there is an inordinate focus on pumps. I would like to revisit several issues. First, the fisheries never wanted 1:1 in the accord. I do not believe in looking only at entrainment. I think we are still tangled up in a lot of issues that are outside of the room, we are here to look at biological and supply needs objectively, we should strive to achieve a balance.
- In the next agenda item we will get to broader issues. The objective is figure out how these assets perform, that is the b(2) water that is available to fish and wildlife.

The biological bar is not a CALFED document, how we assess the biological needs is flexible.

- *Question: To the WMDT, the question is where do we go from here? The results demonstrated that water quality got better in the Delta, in the gaming there was quite a bit of flexibility and there was not an impact on deliveries, we have very sketchy connection between our program and 2000 year plan, should we be looking at a better b(2) picture or leave it and look at what CALFED can do to patch the holes*
- For salmon in most years b(2) addresses the problem.
- In general, assets and flexibility are very useful to reducing the number of fish you kill.
- Based on this presentation, it appears that in Scenario 1b you are delivering a lot more water and not getting anything more environmentally.
- I believe the WMDT needs a clear take home message. I think we are in need of qualitative message points that clearly state for who or what, as well as a careful characterization of the assumptions that were made in the work. We also need to reflect the serious technical concerns that express that inability to get a handle on the population dynamics. This type of information would be useful.
- I would be concerned with the CT drawing conclusions regarding getting better or worse based on one indicator and then making decisions on population as whole.
- I do not believe there is need to look at total CALFED, water management is just one piece and that should be our focus.
- But whether or not we reduce pumping, I would not want to deduce that entrainment fixes something.
- No matter what position we take, everyone would love to have a better analytical tool.
- I believe there are lots of better indicators available.
- I have a great deal of discomfort with the use of entrainment.
- No one has given us a better tool.
- I believe it is a host of tools not one tool.
- There a lot of assumptions that have gone into number presented, for example, density stayed constant. Whatever assets you are using, the key to using them effectively is answering questions behind the assumptions: e.g. what makes fish move and to what degree to moving the pumps impacted that migration. An effective program needs to answer those questions. It is something we can start in the next 7 years, and it may go far beyond what we imagine now, that area needs a lot of thought in terms of the recommendation.
- Entrainment varies very significantly. Can you reduce how many fish you kill by how you manage water? Yes, this data supports that. I don't know what level of detail the CT should be looking at. The CT has gotten different guidance every week.
- We know there is going to be big biological uncertainty, but you can deal with it through other measures such as institutional design. It is necessary design around the uncertainty instead of pretending it doesn't exist.
- I suggest what we need only qualitative conclusions of the studies with supplements that address the serious concerns the CT may have. I don't think the numbers are what we really need.
- It would be helpful on the demand side to be clearer what demands we are assuming when we do the gaming because it is fairly important. I would like to better understand what your assumptions for demand were, a better understanding of how the assumptions play out. I would like someone to analyze accord impacts, and what the significant differences are.
- I thought the last group of fish numbers was useful. The headings in the table should be changed to accurately reflect the numbers. That level of detail works for me, I

want to see how we look 1b compared to the historic data. If we are using the DOI interpretation of b(2) then lets see how it compares. We need to know if there are unmet needs.

- I believe a workshop presented by the CT on the differences and nuances of the DWRSIM and daily models would be useful.
- In our last meeting we talked about breaking out CVP and state, I know the CT is busy, but we need that information.
- *Question: Do we have full participation on the CT?*
- Yes, but not all CT members participate in the gaming.
- *Question: Are you suggesting the qualitative information as a total change of course?*
- *Question: What do the numbers mean? If this process doesn't help explain that we might as well forget it.*
- We are trying to see how different assets perform. Does b(2) for the environmental water account perform well for the environment? That is what we are trying to get out of the gaming exercise.

3. WMDT Expectations and Dynamics

- This is a painful process, we have all been in similar situations before. This group and the entire process are very dysfunctional. I am not sure we are going to get where we need to be. We have overloaded the staff. This process is going to require more work with smaller subgroups, it could include looking at financing, etc. If we don't do something like that I don't think this process will be useful.
- The comments were made about more qualitative analysis, I think that information plus smaller group work we might achieve the objective or at least it would be possible to achieve it.
- We are just looking at one piece of the big enchilada. Right now we are at a stalemate. I believe need to see how this fits in with the bigger picture.
- *Question: What is your sense of the cause of the dysfunctionism?*
- I would say, it is a couple of different things,. One the process is not focused. enough process, the goals need better definition. The group size is a hindrance, there are too many people here posturing. We need to be in smaller groups where we don't have to worry about being quoted.
- I think it has to do with the honesty of the process, to me that is the root cause of the dysfunctionality. The dishonesty leads to a laborious debate.
- It is a hell of a good point, Has interior rejected any other run than the DOI interpretation of b(2)
- Entrainment is an issue no matter what action is taken.
- I have been confused by the directive to only use the DOI version. I think DOI has their reasons but water user is going to use you're their own measure of success. Even if the baseline shifts the success line you set is intrinsic.
- The task at hand is not that difficult. The WMDT was instructed to identify water supply opportunities that can satisfy both delivery and b(2), the process has become captured by second, third and other extraneous agendas such as can we use this process to get data for b2.
- That is not why we are promoting it.
- We don't even have any ideas about financial considerations. If we could sequence this process logically we could get through these issues minimally.
- My observation on successful processes is that at some point there needs to be ownership of one another's goals. Our mission is a minor one on the big picture. Simply, there has to be biological, quality, supply goals on table. Instead of productive conversation towards meeting these goals we keep reopening Pandora's box. There is a ton of technical information, but we aren't going to answer those big technical questions any way. We are trying to get through this modest policy assignment.
- We won't own each other's goals, I don't think we believe in the legitimacy of each other's goals. The problem is I don't think we accept each other's goals.
- Can we ratchet our goals back to get to a place where joint ownership is possible? To get through this process?.
- This summary is an excellent analysis of the dilemma , can we suspend final outcome process, if we can both get better by the process then it was good, you have to stage it.

- This group is definitely one of the more difficult ones CALFED has assembled. Meeting weekly does not help because it doesn't allow enough time to properly analyze the data. I suggest we abandon next week's meeting to retool the agenda and goals. Typically in a process you have finite goals, our tools are fixed, our goals are vectors, if we can't make the fish bar in Stage 1, we need to concentrate on getting on the right vector in order to meet the bar in the future.
- As far as owning each other's goals, we have fundamentally incompatible goals and we have a scientific question about what reducing exports does for fish. I actually don't think this process is as bad as the rest of you, the gaming group have shown that if you do certain things it will lead to certain results. People aren't; going to agree to where this information leads but I think we are learning valuable insights.
- You are weird.
- In terms of consensus building we have a great example in the gaming group. Despite divergent objectives and beliefs that group have functioned extremely well. I think we have a real good model in that group. My frustration is to come from that group to the WMDT where there is no spirit of cooperation or ownership.
- I agree with common ground approach but I feel the frustration of the water users. We have gotten just a couple pieces of the puzzle, we need to have a more complete picture to suspend judgement.
- This week is the first time that we have had results to look at. One of the problems we had is that we can't generate data fast, having litigation hanging over us is a problem we can't make that to go away. I believe it is in our best interest to cancel next week and have the technical work proceed.
- We keep hearing dates like middle of month for the Secretary and the Governor to convene with this group that would put us very close to that date.
- That information is not confirmed.
- We haven't gotten to the framework or stuff out beyond the pumping. Those things could be produced for next week, I don't want to have another unproductive meeting next week.
- Another feature of our dysfunctionality is the manner in which we give input back to the CT. There is a better way to deal with the concerns raised in these meetings. There should be increased communication between meetings. It would also be helpful to get better information out before the meetings. The consultants should make suggestions to fix our process tools, we need to do this starting tonight.
- I still think the correct sequence is to identify the assets and then build from there without delving into everyone's satisfaction level.
- I don't believe there is support for the assets.
- Maybe we should just put together a matrix
- That is where we started and we moved away from that approach.
- A member of the technical team is attempting to compile comprehensive information on each asset.
- I don't think you should agree the unanimity of the assets at this point.
- At a minimum there is confusion about the assets. My sense is we haven't been clear about what we mean by assets.
- They are assets that create water.
- b(2) was a baseline, with DOI interpretation and how far could you get using that pot of water.
- If we each have these goals, another is to accept goals with general sense and broaden possibilities to meet these goals, so that there is another way of dealing with the problem expand the discussion, one reason we are dysfunctional is that we are so damn myopic, maybe there are different means of achieving them.
- We have really screwed up the CT, we should apologize the CT.
- The way I have thought of it is the hard path and the soft path, and everyone finds it difficult to get off the hard path.
- The reason we are focusing on the export pumps is that where we get the grief. We are debating the most controversial part of CALFED.
- *Question: Does anyone want to evaluate on a technical level? If there is no interest in that data, we should not have the CT continue its work*
- We are raising a question of what it is we can do, not the validity of what they are doing.
- We couldn't properly structure a meeting to get something meaningful to you next week.

- I honestly believe that additive species have a huge impact.

Agreements

1. Tom Zuckerman will suggest different capacities for Delta Islands storage.
 2. CT provides different fisheries data.
 3. The focus of the technical presentation will be on qualitative outputs.
 4. A better description of demand assumptions and an explanation of the discrepancies in supply produced by the two models.
 5. Examine different way to apply b(2).
 6. Workshop on models presented by the CT.
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- Our homework assignment is to critique the asset descriptions, one of the goals is to be consistent, distribute it next week, and we will respond
 - If group be willing to give a mini presentation pre-meeting, on what kind of biological package that would be very helpful. It is almost indispensable, a framework is needed.
 - The discussion we are talking about squeezing in, it is not a one hour thing.
 - The question is are we going down a water path or biological path.
 - This is not a session to get together with the biologists and hash it out, it is a framework discussion, Calf-Fed needs to lay out where we are and what we know.
 - The two models definitely need to be reconciled.
 - We will need to do work on meeting structure, we can take the liberty to meet with two or three weeks to structure how we approach the remaining meeting. The CT will continue the technical work.
 - The modeling presentation will take some time away from gaming. That tradeoff needs to be understood. But it is important given the differences in results.