

ESHMC Meeting Notes February 27th, 2012

Item 1 - Introductions were made, and an attendance list was circulated. The following were present at the meeting:

- Rick Raymondi
- Allan Wylie
- Jennifer Sukow
- Chuck Brockway
- David Blew
- David Hoekema
- Greg Sullivan
- Mike McVay
- Bryce Contor
- Chuck Brendecke
- Dave Colvin
- Roger Warner
- Jon Bowling
- Hal Anderson
- Willem Schreuder
- Mat Weaver
- Rick Allen
- Scott Magneson
- Jairo Hernandez
- Gary Spackman*
- Eric Rafn*

***Present at meeting but did not sign attendance sheet.**

Jaxon Higgs, Jim Brannon, Stacey Taylor, Gary Johnson, and John Koreny joined the meeting via polycom.

Item 2 – Stacey Taylor began the meeting with a progress report regarding the water budget data that she is assimilating for model validation. She discussed missing data from the Northside Canal Company, recently obtained data from Reno Ditch, and the efforts of Tim Luke to get data from Southwest Irrigation District. Stacey gave credit to Chuck Brockway for helping to obtain data from Reno Ditch. She then discussed her effort to develop ET data for the water budget and noted that AgriMet data were less than satisfactory in comparison to the ET-Idaho data. As a result, Rick Allen processed the ET-Idaho data for 2009 and 2010 and provided Stacey with data files. Stacey noted that monthly data from some national weather service stations were still missing. She reported that the plan was to replace the data with information from AgriMet stations, and that information was also processed by Rick Allen. Rick Allen was given special thanks for his effort.

Stacey also indicated that more crop mix data were acquired from the USDA NASS website for Quick Stats 1.0. She added that she was waiting for ET depths derived from the newly acquired ET data. Stacey reported that the NIR and PRE files had been completed, and she was still processing the FPT and the OFF files. She summarized that she needed to finish summarizing the ET data, complete the data for files associated with ET, and create the remaining files using the ESPAM Recharge Tools v1.2.

- Item 3 -** Matt Weaver reported on a strategy to monitor the Florence Spring pipeline and the diffuse spring flow. He noted that the diffuse flow would be measured by using a rectangular weir. Chuck Brendecke asked where the pipeline goes, and Matt said to agricultural land in the state park on the west side of Billingsly Creek.

Bryce Contor discussed the installation of a new well with a dual completion for monitoring ground water in the Egin Lakes area that is within the Fremont-Madison irrigation district. Rick Raymondi mentioned the plans for spring discharge monitoring at the Huff hatchery and for return flow measurements at the New Sweden Irrigation District. Jon Boling asked about the progress of the new IDWR database, and Rick Raymondi indicated that the Department is beginning to load data and that it eventually would be made available to the public.

- Item 4 -** Rick Raymondi provided a brief overview of the model validation effort. Chuck Brendecke asked what the model validation period is, and Allan said 2009 and 2010. Chuck then asked if the Department was still pursuing the 1902 validation, and Allan said yes, and Jennifer Sukow said she was working on it. Greg Sullivan asked if the 1902 validation was a steady state analysis, and Allan said yes.

Allan Wylie gave a status report on the model uncertainty runs and started with a table that provided the calibrated impact, maximized impact, and minimized impact at the centroid of four water districts (110, 120, 130, and 34). Chuck Brendecke asked Allan for an explanation of the percentages, and Allan said it was the percent of impact from a stress applied at the centroid. Chuck Brockway remarked that the maximum and minimum stress applied at WD 130 did not change much from the calibrated impact, and Allan agreed. Rick Allen said that it was important to differentiate the in-season and out of season stress. Allan said not as much for the springs but perhaps for the river. Rick Allen then asked if a time-base response was important at the springs. Allan said that the Director's orders that have been prepared for the spring Delivery Calls show that steady state model analyses have been used. Chuck Brendecke asked if the same version of the model has been used for all of the uncertainty analyses in Allan's table, and Allan said yes.

- Item 5 -** Jennifer Sukow provided the committee a comparison of the Milner to King Hill reach gains to the USGS graph created by the Kjelstrom equation. She began with hydrographs of both with the Kjelstrom regression covering from the early 1950's to 2010, and the reach gains covering from the early 1980's to 2008. Jennifer discussed the Kjelstrom regression methodology indicating it is based on a 10 spring indicator

or index method. She explained the differences in the two analyses may be the result of changes in relationships between higher and lower elevation springs, different methods for measuring or estimating diversions, returns, or other reach gain components, and/or changes in spring measurement locations or methods. She was not aware of specific changes in measurement locations or methods. Jennifer also said that Kjelstrom noted that the Milner to King Hill reach gain trend does not always correspond to the trend observed in measured springs.

Chuck Brendecke asked what is involved in the calculation of reach gains, and Jennifer said that it is the difference between gages minus the returns and the south side contribution. Chuck Brockway asked if this is an apple to orange comparison, and Jennifer said yes and no. She said that the Kjelstrom regression does include underflow, but changes in the relationship between high and low elevation springs might make the regression invalid for more recent conditions. Bryce Contor said that both methods are trying to compare the same thing, and Jennifer agreed.

Jennifer then showed a hydrograph of the components of the Kjelstrom regression with USGS measurements of the Thousand Springs and Magic Springs discharge less Sand Springs discharge. Greg Sullivan asked if the yellow line representing miscellaneous springs and seeps was underflow in the model. Jennifer said that the yellow line represented most of the Group C target springs except some of the large individual springs that are in the regression equation. Finally, Jennifer presented the ESPAM2.0 model-calculated reach gains (E120116A) for comparison to the Kjelstrom regression and the measured reach gain target

At this point, Scott Magnuson was introduced and he said that he is representing Shelly Davis with Barker Roshalt and Simpson LLP.

Item 6 - Allan Wylie updated the committee on the new 2012 Point of Diversion (POD) file. He explained that the POD file is a GIS file of ground water irrigation wells containing the priority date and maximum irrigation rate, and it is used in curtailment scenarios to determine number of curtailed acres in each model cell. He said that the POD file needs to be updated because of water right transfers and changes brought about by the adjudication process.

Allan showed annual POD file cumulative numbers for irrigation points of diversions and enlargements. Dave Blew asked why the enlargements number continues to increase. Allan said he was not sure, but he indicated that all enlargements have an effective priority date of April 1994 so he thought that the new numbers represent a combination of better identification of enlargements and splitting of water rights. Bryce said that most enlargements actually have an earlier (more senior) priority date. Roger Warner added that Allan's list represents the cumulative number of enlargements and not the number for that year. Dave Blew asked if this list represents an update to the database and not new water rights, and Roger Warner said yes. Bryce said that most enlargements predate the trust water rights and have an older priority date. Chuck Brendecke asked how many acres were labeled as

enlargements, and Allan said that he did not know the specific number. Bryce said that 30% of the acres on his farm were enlargements.

Allan said that the POD file being shown to the committee will be used this summer to respond to Delivery Calls. He also said the POD file is the latest that will be developed for the 2012 irrigation season. Allan then showed the results of 3 tests on the new POD file. For the first test, he simulated a curtailment using a priority date of September 4, 1950. He compared the model output (cfs gain) to the Blackfoot to Neeley and Neeley to Minidoka reaches with the 2011 and 2012 POD files. The difference in gains to the target reach was -0.27% indicating a very small difference in the two files. For the second test, he simulated a curtailment using a priority date of March 3, 1982. He compared the model output for cfs gain to the Devil's Washbowl to Buhl reach with the 2011 and 2012 POD files. The difference in gains to the target reach was 3.16% again indicating a small difference in the two files. Allan also showed a small difference in the curtailed area for the two POD files (2011 and 2012). For the third test, he simulated a curtailment using a priority date of December 10, 1973. He compared the model output for cfs gain to the Buhl to Thousand Springs reach with the 2011 and 2012 POD files. The difference in gains to the target reach was 0.43% indicating a very small difference in the two files.

Chuck Brockway asked what tool was used to define the trim line, and Allan said it is the steady state response function. He pointed Chuck Brockway to Practicum 3 of the ESPAM version 1.1 model training provided by IWRRRI and the Department. Allan added that the POD file is used to update source fractions, irrigated acres are run through the wheel line, and the results are entered in to MODFLOW.

Item 7 - The committee took a short lunch and began a discussion of the tools that had been developed by different members to be used in the evaluation of the model calibration results posted by Allan Wylie. Dave Colvin introduced the web tool that has been developed by Jim Brannon. Jim said that his tool was developed for sharing results among members of his firm (Leonard Rice Engineers), with his clients, etc. He indicated that the tool centralizes data, provides visualization, and it has been used on other projects. Jim also said that the tool uses the same data that Allan uses in the calibration, and he discussed SMP files that convert input to Google visualization.

Bryce said that the cross plots developed by Greg Sullivan were very useful. Jim Brannon said that if the committee liked the format that Greg developed, this could be added to his tool. Dave Colvin said that the output from Jim Brannon's tool had been updated to reflect all of the recent calibration runs, and it will allow a comparison of the results. He recommended that other committee members try using the tool. Greg asked what else can be evaluated with the tool besides spring flow, and Dave said reach gains and underflow. Bryce congratulated Jim on his achievement. Jim said that if members use his tool, then he will add other outputs. Chuck Brendecke asked where the tool could be found. Bryce responded that Jim sent out an email indicating that you have to go online to register an account. Jim added that he would set up an

account for anyone that makes a request. Dave Colvin logged onto the web site and showed the committee the tool that Jim Brannon developed.

Greg Sullivan presented his tools for analyzing model calibration results. Bryce again commented positively on Greg's product.

Item 8 - The Director joined the committee for the discussion of the ESHMC Updated White Paper. Chuck Brockway gave the first oral presentation. He began by saying that purpose of the contribution to the White Paper that he represents was to provide input into the uncertainty analyses that the committee is contemplating. The title of his presentation was Uncertainty Analysis and Utilization of ESPAM2 for Water Rights Administration, and it was offered by Chuck Brockway, Jim Brannon, John Koreny, Willem Schreuder, and Dave Colvin. The presentation was also reviewed by Dave Blew and Jon Bowling. Chuck first discussed the need for an uncertainty analysis and pointed out that administrators and users need to analyze the potential risk in relying on model output. He also said that Administrative decisions (discretionary or not) require technically sound and scientifically supported knowledge of model capabilities. Then Chuck said that the model is the Department's product, but it will be a better product if the committee takes ownership. He reminded the committee of its advisory role. Chuck concluded his introduction by saying that the Director uses the model to determine injury, and the model output needs to be supported and scientifically sound.

Chuck Brockway then discussed the sources of model uncertainty, and he acknowledged the paper by Chuck Brendecke. The sources that Chuck described included:

- Conceptual Uncertainty
- Mathematical Uncertainty
- Parameter Uncertainty
- Internal Calibration Uncertainty (model over specification)
- Calibration Target Uncertainty
- Predictive Uncertainty

Chuck then discussed the current ESPAM version 2.0 uncertainty analyses and said that it provides an estimate of the range of values for a specific output due to parameter adjustments within which the model will remain calibrated. He said that it may also be called a dual model approach and that it is assumed that both the conceptual model and the input data are correct (without error) when determining a range of conditions. He added that separate analyses are required to determine the impact of un-adjustable input data on conceptual model uncertainty. Then he described the Monte Carlo uncertainty analysis which he said is a more rigorous method that takes more time and computing power. Chuck said that the current procedure provides no probability distribution or confidence limits on output.

Chuck Brockway gave the following recommendations to the Department:

- Complete the ESPAM2 calibration as soon as possible
- Complete the uncertainty analysis as outlined as soon as possible
- Fully document the procedures and results
- Complete the proposed verification as soon as possible, with the first priority being the 2009-2010 verification, and lower priority given to the pre-calibration period verification
- Compare similar output from ESPAM1.1 and ESPAM2
- Officially adopt ESPAM2, modify and improve transfer tool and guidelines

Then Chuck discussed the anticipated use of the model and said that the ESHMC has a responsibility to advise the Director and staff regarding how to develop the best available scientific tool for evaluating ESPA hydrologic relationships, to provide hydrologic guidelines in the use of the model for administrative decisions, to provide guidance on technical deficiencies and the real meaning of simulation results, and to provide adequate information to the Director and model users to understand and defend the model. He said that the model belongs to the Department although it is beneficial for the committee to take ownership. He added that users need to know how good the model is and the most likely outcome of an analysis. Finally, Chuck said that the Director will use the model for decisions to determine injury, and the numbers need to be technically sound and supported scientifically.

The next subject that Chuck discussed was how version 2 of ESPAM should be used. He started off by saying that the ESHMC has a responsibility to advise the Director and staff to develop the best available scientific tool for evaluating ESPA hydrologic relationships, to provide guidelines in the use of the model for administrative decisions, provide guidance on technical deficiencies and the real meaning of simulation results, and provide adequate information to the Director and model users to understand and defend the model.

Chuck finished his power point with the following summary: he said that ESPAM2 is the best scientific tool available to IDWR; the model needs to be completed and adopted as soon as possible; the current calibration, uncertainty analysis, validation, and ESPAM1.1 comparison needs to be completed as planned; the committee should complete the analysis and documentation including model capabilities and limits should be completed; and the current utilization of the trim line concept as a surrogate for model uncertainty is not defensible and other protocol utilizing documented uncertainty analyses should be adopted.

Chuck added that the 2 year validation period is inadequate. Allan Wylie said that the 2009 and 2010 data are all that we have for validation. Chuck responded that it would be better to use a longer string of data, and he said the pre-calibration period validation is interesting but not too useful. Bryce said it depends on if we like the

answer. Chuck went on and commented that regarding the comparison of version 1.1 to 2.0, version 2 is so much better.

Chuck recalled the modeling work started with the IT Committee on Hydrology (ITCH) before Karl Dreher was the Director. He said there was hope at the time that future conflicts could be diffused by using the model, and that court actions could be avoided by the parties working together. Chuck added that it didn't work. He acknowledged the model is the best available tool but stressed that the deficiencies and capabilities need to be known. He said the committee has the responsibility to recommend what can and cannot be done with the model, what the output means, and how to use it.

Chuck then mentioned that two briefs were written by lawyers and submitted to the Department in response to the request to prepare contributions to the Updated White Paper. Chuck said that the briefs indicate that some members delve into policy issues and that this should not be done. Chuck then said it is unfortunate that lawyers are getting involved in committee business, and they should stay out of the discussions.

Bryce Contor was the next committee member to provide an oral presentation regarding the Updated White Paper. Bryce represents the Eastern Idaho Water Rights Coalition, and he said he would discuss both technical and policy issues related to the trim line, uncertainty, and model use. He said that his comments related to uncertainty were similar to what was presented by Chuck Brockway.

Bryce said that there is procedural, conceptual, and water budget uncertainty in the model output. He added that there is quantity, temporal, and spatial aspects of the water budget uncertainty and that the R^2 is the fraction of variability in that data. He said the fraction increases as more data become available.

Bryce gave the following recommendations:

- When curtailing junior ground water users, there should be a de minimus consideration which should not necessarily be modeled after other states.
- All uncertainty involved in a model prediction should be described.
- Predictive uncertainty should be quantified.
- Model use should be matched to its limitations.
- A zone approach should be used for transfers.

Bryce concluded his recommendations by saying that the model is not the only available tool for hydrologic analysis, and it is not always the best tool.

John Koreny responded to Bryce's presentation and said that he was familiar with the rules in Oregon and Washington. He said both states acknowledge shortages to senior water right holders and that all ground water users in a basin are regulated when there is a shortage.

Chuck Brendecke followed Bryce's presentation, and he said that he had provided a submittal to the Updated White Paper last Friday. He said that uncertainty is a confidence issue on the part of the decision maker, and there are sources of uncertainty related to the model and sources related to the data. Chuck added that there are natural variables that can't be controlled and we can never know what will happen. Chuck showed a chart of the sources of uncertainty, and he focused his discussion on estimation, calibration, and some aspects of data quality. He indicated that uncertainty related model structure is rarely examined and added that we should not forget and acknowledge sources that we can't or don't quantify.

Chuck concluded that a truly comprehensive approach to quantifying uncertainty is not feasible. In hindsight, he said we should have defined the areas of model uncertainty at the beginning of the modeling effort, while he admitted that it is common to perform the analysis at the end. Jairo Hernandez said that he thought that it is reasonable to analyze uncertainty at the end with a calibrated model. Chuck said it is a chicken and the egg kind of question. Greg Sullivan said we are at the beginning of a long journey, and from the results that have been obtained, we can target different data collection. Chuck Brendecke added that we can use the uncertainty analyses to structure ESPAM version 3.

Rick Allen asked if PEST is able to identify preferential flow and transmissivity distributions and determine the sensitivity of responses to different spring discharges. Greg Sullivan said that is what is being done. Chuck Brendecke said that one has to be careful in this type of analysis because the stress is concentrated out in the water districts. Allan suggested that we try a different distribution of stress. Willem said it is a function of where we put the pilot points and knowing the exact spring conductance and starting water levels. Willem added that there is a lot of structure that is lost because we pick the pilot points. Allan said we could have more pilot points if we had more computing capacity.

Willem said the proper questions have to be asked. He started by saying, we have a prediction, so what is the uncertainty. Then he asked what the smallest impulse that the model will predict is. He said the other question is what prediction noise is, and he said this is different than de minimus. Bryce asked what about using superposition. Willem said that when using the fully populated model, the mass balance for a run might be 100 AF/yr. He added that in superposition, the error goes to 0. Bryce said that the fully populated model should not be used for a prediction that is a similar level of the error (100 AF/yr).

Rick Allen asked the committee to refer to Greg Sullivan's spreadsheet and assume there are or no gains or losses in the Neeley to Minidoka reach. He asked if the graph indicated that estimates are overstated. Chuck Brendecke said the graph tells us the variability is high and the bias is zero, and he asked if we were able to get the correct timing for the Heise to Shelley reach. Willem said that we are talking about the Shelley to near Blackfoot reach. Willem then offered that version 2 is a much better model and the correct path to version 2.1.

Willem asked if there were any comments or discussion from the Director, and this led into an open discussion. Greg Sullivan said that we have had a good discussion on uncertainty, and it is hard to get that information into the final report to inform those who would use the model. Greg also thought there was lots of commonality in the discussions, and that it would be useful to summarize point of agreement and disagreement. Bryce said this would be possible. Greg went on to say that a draft of this summary should be circulated for comment, and that it would be important to distinguish the policy from the technical part. Greg said that when Karl used 10%, he was making a judgment on what counts with respect to de minimus. He added that the committee members have experience with policy matters, and the lines between technical and policy are blurred. Greg thought we should look to the other states because there are lessons to be learned so we are not re-inventing the wheel. Finally he said that the Director should tell us how the model will be used, and we could give him feedback.

Willem said that the Director does not need the permission of the committee regarding how to use the model, but he could get the opinions of the committee. Chuck Brockway said the ESHMC has the responsibility for guidance, and we should indicate whether the model is being used correctly or incorrectly. Bryce questioned whether the model should be used to predict to individual springs and said he is not comfortable with those simulations. Willem said that if the model is calibrated to a spring in a cell, then it is OK to use the model to simulate that spring, and if it is not calibrated to the cell, then it is not OK. Willem added that the model is the tool providing the best information, and the alternative, would be to say we don't know what the impact to the spring would be.

Bryce said for Rangen, the Director has to make a decision, but in his opinion, he could not represent to the Director that you can count on the model output. He added that it is not a clever thing to use a regional model to predict to a single cell. Willem said that there is a good calibration at Rangen, so it is probably appropriate to use the model for the Delivery Call, but maybe not somewhere else. Bryce said he is not comfortable it is fair to recommend to the Director to model to a single cell. He added that there is some limit, maybe a reach on a three month basis.

Willem said that if we are calibrated it is OK to predict a change to a particular spring from a stress. Bryce responded if we had enough pilot points. Willem said the model is still our best prediction despite imperfections, and there is nothing else better. Jairo said we are using area-wide uniformity, for instance ET is county wide. Chuck Brendecke said the model can be used some places better than it can be used at others, and there should be some guidance on the temporal and spatial scales, because the model is not the same everywhere.

Greg said regarding the temporal aspects, the model does not perform as well at other places as it does at Rangen. Willem said the problems are specific to particular areas. Allan said the model generally performs better to the springs than the reaches on a

temporal scale. Bryce said there are bigger differences in the magnitude of the relationships of the aquifer to the river than the aquifer to the springs. Chuck Brockway said that if we use steady state and superposition, we are taking the bias out, maybe not the variability. He added that if the model is calibrated to a spring (single cell), then it is OK to use the model in superposition and in the steady state mode.

Gary Spackman thanked everyone for the discussion. He said he liked Greg Sullivan's idea to bring out areas of agreement and disagreement. Gary said he heard similarities during the discussion, it has been helpful for him to listen, and it reinforces the value of the committee. He said there was mutual agreement that the model is a valuable tool that the Director will have for future water resource administration.

Gary said that he struggles with the same kinds of concerns that Bryce mentioned. He said that the suggestion by Willem and Greg that the committee provide recommendations for how the model should be used was great advice. He said he was not sure how that assistance would be sought, but maybe the Department can bring questions to the committee. Gary gave managed recharge as an example, and the committee could recommend if predicting when the recharge will come out is an appropriate use of the model. He gave other examples including Delivery Calls and transfers.

Chuck Brockway mentioned the Rangen status conference calls and asked if ESPAM version 2 would be used and whether a trim line will be applied. Gary said ESPAM version 2 will be used for Rangen. He said the Department is approaching the call a little different because the parties are sophisticated enough to tell the Director how the model should be used. Chuck Brockway said that Rangen is pushing to move the case forward and get the model adopted on schedule. Gary said that the model will be adopted for the call unless there is a variance like there was with version 1 leading to version 1.1.

Item 9 - Allan Wylie began a discussion of the final calibration results and showed what adjustments had been done on the various runs (001, 004, 006, and 007). He showed the transmissivity and storage distributions and said there was not a lot of difference between runs 006 and 007. Allan indicated that run 006 has lower drain conductance with lower elevations, and he added that the base flow conductance is a general head boundary conductance. Willem commented that the Blackfoot to Neeley reach has three orders of magnitude greater conductance than the others. Allan agreed, but added that half of the gains should take place on the Portneuf.

Allan continued through the results of the calibration runs for perched river seepage, tributary underflow, spring targets, etc. Jim Brannon asked to what extent does Allan make adjustments to weights during the process. Allan said he only adjusted weights per instruction from the committee, although he made his own adjustment to the weights on the Crystal Springs base flow. A long discussion of the Crystal results

followed. Greg Sullivan suggested a way to summarize which run does better for each target. Jennifer had already created a table. Willem questioned a portion of the NFH data that looked suspiciously flat, and Jim Brannon agreed that some of the data may not have been recorded properly.

Jennifer Sukow showed a table and discussed the springs that were dry throughout the calibration period for the four runs. They included Malad for all four runs and the upper drain for the National Fish Hatchery for runs 004, 006 and 007. Chuck Brendecke said it boils down to runs 006 and 007 as the best candidates for the accepted run. Bryce said he liked 006 and 001. Allan said 007 is not a significant improvement over 006. Bryce said 001 would be his favorite, but it had the highest number of drains that went dry. He added that if we used a single drain per cell and superposition, the problem with drains going dry would not be a factor. Jennifer and Allan mentioned that elevation is not log transformed, whereas spring conductance is.

Willem recommended the committee begin the process of eliminating calibration runs, and the committee agreed to eliminate 004 first. Dave Colvin, Bryce, Willem, Chuck Brendecke, and Jennifer Sukow voted to keep 006. Jennifer commented that the conductance of the high elevation drain in one of the Malad cells, which is dry throughout the calibration period, should be reduced to 1. Allan said the R^2 on Box Canyon Spring is good, but the seasonal amplitude is missing. Willem said the match between measured vs. modeled on Box Canyon Springs could be improved with manual manipulation. Willem made the point that he believes overall there is a much better replication of flow in ESPAM version 2. He also said the committee has come far enough with version 2, but there is still work to be done. Willem said he considers the starting point for future improvements is ESPAM version 2.0. Allan Wylie agreed with Willem.

Chuck Brendecke said that calibration run 006 should be accepted, but that the issues with the upper drain at Malad and Box Canyon Springs should be addressed first. John Koreny was concerned that this meant the calibration was still a month away. Allan assured John that the two items recommended by Chuck Brendecke could be addressed in a week. At this point, the committee was in agreement that the ESPAM version 2.0 006 calibration run would be accepted to use in validation and model uncertainty analyses. Allan agreed to perform additional calibration runs to address the concerns about Malad and Box Canyon Springs.

- Item 10 -** Dave Blew and Neal Farmer briefly discussed the near-rim synoptic water level measurements that were performed November 2011. There was not time for their presentation which was re-scheduled for the next meeting. The effort was well received by the committee. Dave Blew said the effort will be repeated later this year.
- Item 11 -** Rick Raymondi informed the committee that IDWR plans on running the curtailment scenario as an effort to compare the output of ESPAM version 1.1 to version 2.0. Willem suggested running the old stress file on the new model.

Item 12 - The committee agreed to hold the next meeting on April 16, 2012.

DECISION POINT SUMMARY

The following was agreed upon:

- 1) IDWR agreed to list the areas of agreement and disagreement in developing the executive summary for the Revised White Paper.
- 2) The committee agreed that the ESPAM version 2.0 006 calibration run with the following modifications would be accepted to use in validation and model uncertainty analyses:
 - a. Fix river cell 75 153 that used conductance for the Heise - Shelley reach during stress period 185 and 275 rather than conductance for Shelley - Near Blackfoot.
 - b. Change the high drain elevation at Three Springs, cell 1041013 from 3,144 feet back to 3,136 feet. The over-prediction of seasonal amplitude suggests that the 3,144-foot elevation is too high to represent the majority of the spring flow. Alternatively, we could try one of the other HDR survey elevations from this complex, which range from 3,123 to 3,139 feet.
 - c. The 3,090-foot drain in Malad cell 1036016 is dry in both 12/1983 and 3/2005. The digitized dot corresponds to a line of springs that C&W lists as 3010-3090e, so the 3,090-foot elevation appears to be based on a maximum, estimated C&W value. The other drain in this cell is at 3,040 feet. Consider changing the elevation of the dry drain to 3,040' also (or make it the low drain at 3,010').
 - d. The 3,130-foot drain in Box cell 1047012 is pegged at $C = 300,000,000$ and has 0.13 to 0.16 ft of water. The 3,130-foot elevation from C&W represents a 0.1 cfs spring that is not in the Box Canyon/Blind Canyon complex. Consider changing the elevation to 3,046 feet, which is the highest C&W elevation associated with Blind Canyon.
 - e. The 3,375-foot drain in cell 1058020 is dry in both 12/1983 and 3/2005. This is very high on the rim and may not represent ESPA discharge. Consider changing this to 3,081, the next highest C&W elevation.
- 3) The committee agreed to hold the next meeting on April 16, 2012.