

Meeting Record

To:		From:	
Name:	Earl Nelson and meeting attendees	Name:	Anne Hoagland
Firm:	DWR - DFM	Firm:	AECOM
Fax number:		Date Sent:	February 3, 2012
Meeting Date:	January 19, 2012		
Project Name:	Lower Feather River Corridor Management Plan		
Project Number:	60217656		
List of Attendees:	See last page for attendee list		

Subject: Lower Feather River Corridor Management Plan Work Group Meeting

Distribution: Attendees

The following is a summary of the meeting held at AECOM in Sacramento on January 19, 2012.

ITEM	DESCRIPTION	ACTION ITEMS
Introductions & Agenda Review	<p>The meeting began with a list of project updates.</p> <p>Went over the items that will be discussed at today's meeting and notified the group that the next anticipated Work Group meeting will be in April a draft Corridor Management Plan may ready for review. As material becomes available for review it will be sent to the Work Group via e-mail.</p>	
Geomorphic Assessment of the Feather River	<p>Chris Campbell: cbec augmented information from previous studies of the Lower Feather River with two days of reconnaissance surveys, and added the Bear River as it informed potential enhancement measures.</p> <p>Went over PowerPoint presentation:</p> <p>Historical influences on the Feather River:</p> <p>In the mid 1800's to early 1900's hydraulic mining occurred which led to channel and floodplain aggradation. In the early to mid 1900's, dam construction, levee projects, dredging and channelization occurred. This led to channel incision and a disconnected floodplain.</p> <p>Historic cross section analysis:</p> <p>We appended the 1997 analysis with USACE's Comprehensive Study model topography. What we see from early to mid 1900's is significant changes of channel geometry. There was minimal change from the later 1900's through today.</p> <p>We went out into the field to help inform future scenarios by conducting reach characterizations. Split the project area up into four focus areas:</p> <p>Beer Can Beach – Nelson Slough: River over time has come to occupy the dredge cut-off channel. Gradient of historic channel slopes to the north. Levee segments were constructed in the 1970's and other activities undertaken to constrain the Lower Feather River from jumping</p>	<p>cbec will send AECOM a copy of their PowerPoint Presentation for distribution to the Work Group.</p>

	<p>the banks. There is an erosion hot spot here. The bank on the right is eroding and there is potential high risk to the levee on the left bank.</p> <p>Bear River Confluence: In the early 1900's the Old Bear River channel was diverted to the west and significantly shortened. Historic channel [across Schneider Ranch] was left high and dry.</p> <p>Lake of the Wood Pinch Points: There is minimal levee freeboard here. Maintenance currently occurs here with regard to vegetation removal. About 180 feet from the levee there is an erosion hot spot that currently serves as bank swallow habitat. This narrow floodway reach represents a hydraulic constraint for flood control purposes. Erosion is not a great threat right now but there is potential in future years.</p> <p>Shanghai Rapids: Active bank retreat over time. Shanghai Rapids is an outcrop of Modesto Formation that has been eroding over time. There is concern over what floodplain inundation would be here. 2008 aerial image shows where the headcut is located. We have mapped the migration rate of the primary headcut lobe (there are 3 lobes) and it is occurring at a rate of about 10-15 ft a year. The shoot would probably breach in 10 years. As soon as the formation is breached there will be impacts. Shanghai Rapids is more susceptible to erosion during low to moderate flows. We did some preliminary two dimensional analysis, using the 2D model that was developed for the Feather River Setback project. Under existing conditions we could activate flow in Eliza Bend at a fairly low flow in mid March through mid-May for a two week period. We could activate State Cut at a flow of 28,500cfs. If Shanghai Rapids is breached, we would need an additional 4,500cfs to activate Eliza Bend or we could increase excavation volumes up to 3 feet deeper through Eliza Bend and the Old Feather River and setback area, or we could stabilize the rapids to prevent breaching.</p> <p>QUESTION: You mentioned habitat function? What is our key interest?</p> <p>ANSWER: Primarily fish but there is an array of other ecological functions and habitat benefits.</p> <p>QUESTION: You mentioned that State Cut did not activate until relatively high flows. Did you look at the fact that the sedimentation has built up at the area where the motorcycle business is [i.e. inlet to state Cut from Yuba River]? It doesn't activate as soon as it used to.</p> <p>ANSWER: We have not totally modeled it yet.</p> <p>Stan Cleveland: The cbec study has already had a positive influence; it helped Sutter County and SMARA get an exemption to remove sedimentation off of Goose Farm. The study supported Goose Farms' assertions that it was a victim of increased sedimentation from the river that affected their operations.</p> <p>QUESTION: Where do you plan to cut the channel to activate State Cut?</p> <p>ANSWER: This will be addressed during Steve Chainey's presentation.</p>	
<p>Hydraulic Analysis-Baseline Model Documentation</p>	<p>Don Trieu: Went over PowerPoint presentation:</p> <p>Flood Modeling Scope of Work: During Phase 1 we updated, refined and extended the existing 2D model and developed baseline hydraulic conditions. During Phase 2 we have been tasked to simulate various floodplain management and restoration features. We want to determine hydraulic impacts associated with proposed restoration and vegetation management. In order to do this, we needed to develop a baseline we could compare against. The main purpose is to simulate larger situations (100- and 200-year floods, and 1957 design flow). The 2D model refinement and extensions include extending the model into the Sutter Bypass, incorporating recently constructed setback areas and available as-built topography. We used the USACE COMP study and CVFED LIDAR. There is a difference between the study area of the</p>	<p>MBK will send AECOM a copy of their PowerPoint Presentation for distribution to the Work Group.</p>

	<p>hydraulic models and the LFRCMP planning area, however, upstream limits haven't changed.</p> <p>QUESTION: How far away is the upper limit of the model from the proposed actions we would take?</p> <p>ANSWER: It is right at the limit of the Shanghai Rapids degradation. Frequent flow and transport flow would extend about a mile beyond the 10th St. bridge.</p> <p>The 2D model gives us the flexibility to analyze changes in various habitat/vegetation types across the floodplain. Model calibration was needed to gain confidence that the model can simulate conditions in the real world. The January 1997 flood event was selected for calibration. We calibrated the model by adjusting roughness coefficients, then compared computed water surface elevations with observed peak water surface elevations. The 1997 model takes vegetation and roughness conditions from that time. We expanded the model to include levee setback areas. Since there has not been major high water events since 1997, we had to make some assumptions regarding vegetation conditions on the setback levee areas. Assumptions that were made: Levee alignments as of 2011; detailed 2011 vegetation maps provided by AECOM; and design roughness coefficients approved by CVFPB as part of the Floodway Encroachment Permits for the three setback projects.</p> <p>QUESTION: What is the N-value [hydraulic roughness coefficient] used for Bear River Setback?</p> <p>ANSWER: It is between 0.10-0.06.</p> <p>This assumption does not represent the conditions out there today; it represents the design conditions. If there was a flood today the stage would be lower than the model predicts. But the model would be accurate for the rest of the corridor, just not the setback areas. Two hydraulic centerings were used to simulate the model and used to stress different reaches of the river (upper and lower).</p> <p>Baseline condition results: The model gives us a good idea of what the levee freeboard is along the river.</p> <p>QUESTION: What is the location of the low centering?</p> <p>ANSWER: The Bear River setback from the COMP study.</p> <p>During a 200 year flood event there was quite a bit of freeboard in the setback area.</p> <p>QUESTION: This setback wouldn't change after the Sutter Butte Flood Control Agencies (SBFCA) proposed modifications to the levee?</p> <p>ANSWER: No.</p> <p>Stan: The need to reduce freeboard to achieve habitat conservation has been a part of our discussions. There may be something that has to be done to ensure we have the 200 year but it won't damage the health of the river.</p> <p>Velocity contours: During a 100 year flood event there was a very high N-value in the setback area that slows down the velocity quite a bit. There are restoration opportunities in the slow areas. Near Star Bend, the channel is very constricted and flow is more accelerated. There is a big drop in the floodplain elevation from the Lower Feather River to the Sutter Bypass.</p> <p>QUESTION: Do velocities assume a 0.10 N-value in setback area?</p> <p>ANSWER: Yes.</p> <p>The next step for us is to move into future conditions modeling.</p>	
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<p>Floodway and Ecosystem Benefits of Proposed Future Conditions</p>	<p>Steve Chainey: I am going to go over the colorized maps, which show the activities described in the floodway and ecosystem benefits table. The maps show proposed changes in topography but do not yet show roughness. The colors on the right side are 1.5-2 foot elevation increments; and those on the very top and bottom of scale could be larger, approximately 5-7 foot increments. In State Cut channel, we're taking out sediment aggregation and creating a more uniform channel width and gradient to create a more efficient channel.</p> <p>State Cut Channel. This channel was constructed 100 years ago, now sediment has accumulated and the area below Island Road in lower State Cut is not maintained, with a vegetated, mid-channel ridge there that we will be removing in the future conditions model. At the confluence of historic Feather River and State Cut there is currently not much flow in this channel because it is plugged at the river. In the model we are making the gradient and topography more uniform so these flows can blend more efficiently and not create as much mounding as they currently do. We are proposing to remove the plug at the mouth of Eliza Bend, which will change the frequency of flow and duration in Eliza Bend and Old Feather River. We are trying to maintain a more uniform width so both flow of water and sediment transport is more efficient. We would be sending water into the Lower Feather River floodplain where habitat is and where more could be created.</p> <p>QUESTION: Would we see water in this floodplain at low flow conditions?</p> <p>ANSWER: No, it wouldn't see water at base flow. Assuming Shanghai Bend remains intact it would start to activate at 9,000 cfs. We will have more precise hydrology once we run the future conditions model.</p> <p>We have scaled back topographic changes to about half of what the excavation volume was the first time we talked about this. We kept the channels relatively narrow because of the high ground they must pass through at the north end of setback area. The existing Messick Lakes mitigation site is a depression that is lower than the floodplain surrounding it. We would be aligning the channels into an existing swale in order to capture lower topography and receive sheet flow and move this through the system. There is a topographic gradient from north to south, and we are putting higher roughness vegetation types as channels and floodplain elevations get closer to the water table. We made a conservative assumption about future maintenance: these swales/channels would not be cleared and riparian vegetation would colonize these sites naturally. In the model, we created an outflow channel to decrease fish entrapment in the upper Messick Lake depression.</p> <p>At Messick Lakes we are building greater capacity into the model for outflow to the river and putting in additional drainage swales so the Feather River Setback floodplain can drain naturally. The existing drainage channel faces upstream so in higher flows it is working against itself. Goal is to benefit fisheries as well as other species. In order to move higher flows more efficiently, we are also lowering this elevation so more flood flow can move across the plain and we can have a lesser radius floodplain. We made the bank wider so over bank flow would be captured more frequently.</p> <p>O'Connor Lake. In the modifications we made we avoided the burial mound and shaved the bank to capture more flow more frequently, and spread flows out over floodplain. When putting in swales or benches, routed them to avoid as many trees as possible, but there will be some tree removal. Historic meander on O'Connor is a dead end – (Jeff noted that it daylight at south end). We are trying to minimize fish entrapment with no outflow in this large lake without a high flow outflow. We are not proposing change in roughness at O'Connor lake because it is already well planted. Some planted areas proved to be high scour, so just let that be.</p>	<p>Alternative to consider: What would it take to look at a higher floodplain that loops across Nelson Slough.</p>
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	<p>Lake of the Woods is a dense riparian area that holds water and is good fish habitat, but is also a dead end to a long narrow lake adjacent to the east levee. We want to push water more frequently into that area but also keep detention volumes down by creating an outflow swale at the downstream end. Lake of the Woods is the narrowest, most constricted reach of the floodway. There is a mound of high ground that obstructs and deflects flood flows against the levee. We want to see what the model shows us if we shave this down to a lower elevation. We think this might have some beneficial effects by increasing flood flow capacity and reducing flood stage and channel velocity. Some of spurs (dense in this area) could be redesigned to be parallel to levee (Don will look at this in his model).</p> <p>There are no proposed changes on the Bear River setback; it is fully vegetated. The setback portion of the constricted reach is no longer constricted now because there is no levee there. We are putting in an area of higher roughness that is currently maintained by DWR at low roughness. We will find out when we run the model if ongoing vegetation removal in this area is important or not.</p> <p>Nelson Slough: We have interest in whether we can trap more sediment and keep it out of the Sutter Bypass. It may be close to its sediment trapping capacity at its current elevation. We are proposing to shave the banks down and create two terraces 10-15 feet below existing grade. We'll see if we can decrease the high channel velocities near the east levee during flood flows. The model will also tell us how often and at what discharge these surfaces would capture sediment.</p> <p>Stan made a good point that we have to manage a plan both in substance and in perception. We considered from the outset all potential changes would benefit all important CMP objectives; we never considered this a 'zero sum game' for either flood protection or ecological objectives. We are cautiously optimistic that model results will be positive from all aspects.</p> <p>QUESTION: Do we know the proposed aggregate volume we are talking about?</p> <p>ANSWER: About 7.5 million cubic yards for all the topographic changes combined. About half of the total volume is excavation for the sediment trap at Nelson Slough</p> <p>QUESTION: Is O&M built into these plans?</p> <p>ANSWER: We are not blind to that but in a sense we are temporarily while building the model. The first step is to see determine the hydraulic effects of all these hypothetical future conditions.</p> <p>QUESTION: Specifically with the upper reaches, will the model show sediment movement? Is it realistic not to anticipate maintenance?</p> <p>ANSWER: That is why we are doing the sediment transport models.</p> <p>Stan: I would like to provide an alternative to the excavated terraces at Nelson Slough. What would it take to look at creating a high stage floodway channel that loops across Nelson Slough approximately where the historic channel was [before the river avulsed into the cutoff channel]. We could take a sweeping curve approach so that at higher flow this channel would/could relieve the pressure or need to adjust the levee location at the confluence of the Feather River and the Sutter Bypass. We could maintain oak woodlands and vegetation, and return flows back to the river at least at medium high flows. This is a practical solution to return the channel back to its historical condition, and would not affect private property.</p> <p>QUESTION: Have we looked at the SBFCA analysis setting the levee back in the north; has that been factored in?</p> <p>ANSWER: They did some type of analysis, not sure if they did models.</p>	
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	<p>Get in touch with SBFCA for more information. FEMA and USACE were very interested this but stepped away because they couldn't fund it right now. SBFCA considered three alignments but the primary cost constraint was extending a causeway bridge for Highway 99.</p> <p>Activities proposed at Shanghai Rapids: cbec is going to look at what would happen here if it breached and then incised to the channel bottom; this will be evaluated in the MIKE-2D model.</p> <p>QUESTION: If nothing is done, Shanghai Rapids will wash out, but we would lose the opportunity of gravity feeding water onto the 1600 acres?</p> <p>ANSWER: This will be quantified in the model.</p> <p>USACE: If there is any project levee realignment, even a training levee, it is considered a Section 408 permitting activity.</p>	
<p>Update on Permitting Subcommittee Activities</p>	<p>Susan Sanders (reporting on behalf of Lisa Mangione, who is out sick today): We are still waiting to update the Project Description with the modeling results and more detailed maintenance information. The Permitting Subcommittee won't meet unless there is an important topic to discuss. We are trying to be very efficient in our scheduling of meetings to make the best use of everyone' time.</p>	
<p>Action Items and Next Meeting</p>	<p>Earl Nelson: The next planned Work Group meeting is April 19th. If we have information to justify a Permitting Subcommittee meeting before that, it will be scheduled.</p> <p>For people who presented information today: Are you looking for feedback, and if so, by when?</p> <p>Steve: We are scrambling to get everything in the models. When we see the outcome of the models we can determine if there are reasons for changing the plan.</p> <p>Steve asked if there was consensus among the group that scenarios described in today's presentations were the key features to model. Hearing no disagreement, he considered everyone to have reached consensus today on proceeding with modeling these features.</p> <p>Jeff Twitchell: Low flow channel at Star Bend should be moved a little further east. Also concern over high N-value in the setback area. If that was lowered, could there be increases elsewhere in the corridor?</p> <p>Steve: We have a mosaic of vegetation types with a range of N-values. We can't say to what degree river stage will be affected until we run the future conditions models.</p> <p>Jeff: I am asking for sensitivity in changing N-values. We need to look at how sensitive the river is to changing N-values.</p> <p>Steve: We have a baseline condition with uniformly high N-values throughout the Feather River Setback area which will be compared to a hypothetical future condition with a diverse mosaic of vegetation which varies from low to moderate and high roughness. The composite roughness will be less than what was assumed in the Baseline Condition model.</p>	

END OF NOTES

The record herein is considered to be an accurate depiction of the discussion and/or decisions made during the meeting unless written clarification is received by AECOM within five (5) working days upon receipt of this meeting record.

Lower Feather River Corridor Management Plan Thursday, January 19, 2012 Meeting Work Group Member Attendance

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