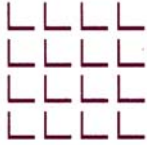


Attachment H
Meeting notes from December 5, 2003



Meeting between NOAA National Marine Fisheries Service (NMFS), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), ENTRIX, and Pacific Gas and Electric (PG&E).

Location: The meeting was located at the Sacramento ENTRIX office.
7919 Folsom Boulevard, Suite 100
Sacramento, California 95826

Attendees: **National Marine Fisheries Service**
Howard Brown – NMFS Biologist
Dave White – NMFS Fish Passage Engineer (joined by conference call)

California Department of Fish and Game
Mike Berry – CDFG Fisheries Biologist
Annie Manji – CDFG FERC Coordinator (joined by conference call)
Steve Baumgartner – CDFG Fisheries Biologist (joined by conference call)

United States Fish and Wildlife Service
Kathy Brown – USFWS Biologist

Pacific Gas and Electric Company
Angela Risdon – PG&E Project Manager
Steve Nevares – PG&E Project Manager
Curtis Steitz – PG&E Biologist
Bob Folsom – PG&E Hydrographer
Dan Kogut – PG&E Hydrographer
Brian Frantz – PG&E Biologist

ENTRIX, Inc.
Jean Baldrige – ENTRIX Project Manager
Tracy MacMillan – ENTRIX Assistant Project Manager
Larry Wise – ENTRIX Project Fisheries Biologist
Mitchell Katzel – ENTRIX Project Geomorphologist
Kathy Frye – ENTRIX Project Wildlife Biologist
Sean Barry – ENTRIX Project Herpetologist
Paul Wisheropp – ENTRIX Project Hydrologist

Purpose: To review the Kilarc-Cow Creek Hydro Relicensing Project and study plans; directly addressing issues raised in agency correspondence to the First Stage Consultation Document (FSCD).

Meeting Agenda (Attachment 1) was distributed and the meeting commenced at 9:30 a.m.

INTRODUCTIONS and PROJECT OVERVIEW

PG&E: Angela Risdon kicked off the meeting by introducing herself. Meeting participants were introduced to one another and Ms. Risdon proceeded with an overview of the PowerPoint presentation (Attachment 2) and discussion topics:

- Discussion # 1 - Hydrology Information which includes Studies 1 & 2.
- Discussion #2 - Water Quality and Temperature, which includes Studies 3 & 4.
- Discussion # 3 - Sediment, which is Study 5.
- Discussion # 4 - All of the aquatic resources, which includes Studies 9 through 15.
- Discussion #5 - Botanical Resources, which are Studies 6 through 8.
- Discussion #6 - Wildlife Resources, which include Studies 16 through 20.
- Discussion # 7 - Cultural & Recreational Resources, which are Studies 21 through 28.

Ms. Risdon provided a brief project overview reminding attendees that the project has two main drainages (Base Map of Project Area was displayed): (1) the Old Cow Creek side which has North Canyon Creek and South Canyon Creek Diversions with Toscher Diversion also diverting at the South Canyon Creek into the main Kilarc Canal. There is also the Kilarc Cow Diversion, the Forebay and the Powerhouse. Downstream on that project there is the Olsen project, which is a small power facility downstream, and then Whitmore falls is located on that bypass reach; and (2) the other side is what PG&E refers to as the South Cow Creek portion of the project. There is a non-project feature upstream on South Cow Creek called German Ditch. PG&E take water from both South Cow Creek at the Cow Creek Diversion Dam and from Mill Creek. The water comes across and discharges into South Cow Creek. The water is then picked up by the Cow Creek Diversion Dam and is sent through the South Cow Creek Canal and goes into Kilarc Cow Creek Forebay. Once through the Powerhouse, the water is taken back out to the South Cow Creek via a drainage ditch, which PG&E refers to as Hooten Gulch. So a portion of Hooten Gulch would be one of the project features. There is also a diversion for Wild Oak Power and Agricultural purposes on Hooten Gulch, and at the bottom of that drainage ditch you have the Abbott drainage.

Ms. Risdon reminded attendees that the Kilarc-Cow Creek Hydroelectric Project is a very small facility, under 5 Megawatts. PG&E are following a different set of FERC regulations for facilities under 5 Megawatts, which allows PG&E a little bit more flexibility in the rigors of relicensing. PG&E has focused their energy and efforts on those areas that are of primary concern versus those that are not particularly important to this project, such as recreation.

Ms. Risdon concluded her discussion and turned the meeting over to Jean Baldrige to present the PowerPoint presentation.

ENTRIX: Jean Baldrige asked if there were questions on how the project operates or where the water goes? Ms. Baldrige explained that Paul Wisheropp was going to talk a little bit more about water issues during his presentation on Hydrology.

Ms. Baldrige reiterated that the project is small and that there are really two facilities: one on South Cow and one on Kilarc (Old Cow). She also noted that an interesting feature to the project is the lack of public lands. Everything is privately owned within the Project Area since PG&E disposed of or sold their property a few years ago. This has presented some unique circumstances related to this relicensing.

DISCUSSION 1: ESTIMATING AND MONITORING FLOW (Studies 1 and 2)

ENTRIX: (Following the PowerPoint Presentation) Paul Wisheropp explained that the purpose of his task was to come up with estimates of available flow in South Cow Creek and Old Cow Creek at the Diversion Dams. The purpose of this was to be able to allow other task leaders such as Mitchell Katzel (Geomorphology) and Larry Wise (Fisheries) to be able to understand the project influences. Paul's task estimated the available flow over a long hydrologic record. Also, PG&E had an objective of collecting some data that could be used to validate this process.

The approach Mr. Wisheropp took is one recommended by the State Board when estimating available flow and that is an approach of unit runoff in the watershed. Mr. Wisheropp reviewed many data sources that were available, starting out with USGS records and also PG&E flow records in the watershed. He also looked at the water rights decision that was issued many years ago for Cal Creek South Cal, and the other tributaries in the Project Vicinity, such that he could identify on the USGS quad map where the different diversions were in the watershed. All of the diversions in the watershed, bought for agriculture and pasture irrigation, are unmeasured diversions. And so, there is no data on those diversions. Mr. Wisheropp went through a large exercise with the water rights information and tried to estimate, based on water rights, where there are diversions in the watershed. Those diversions are all aggregated. Mr. Wisheropp also looked at records from DWR in Red Bluff relative to the land use. There was information regarding how water is being used in the watershed. From those data, Mr. Wisheropp developed a spreadsheet model that uses the State Board recommended approach of flow per unit area. Basically, the approach attempts to back out the diversions and potential return flows from irrigated agriculture to come out with a flow per unit area that is then applied upstream of the watershed to points of diversion, yielding an estimated flow upstream of the Kilarc and Cow Creek Diversions. The next step was to collect some data to start validating the model. PG&E went out this year (2003) starting in April and monitored a flow at two different locations. This is in addition to canal flow that PG&E monitored. One of the new monitoring locations was

on Old Cow Creek upstream of the Kilarc Powerhouse. The second location is at the Diversion Dam on South Cow Creek and that measures spill over the dam.

PG&E: Dan Kogut pointed out that in addition to the new transducer monitoring locations, there are some existing sites being monitored by PG&E.

ENTRIX: Paul Wisheropp continued with Mr. Kogut's point explaining that at both locations (Old Cow and South Cow Creek Diversions) water is diverted and a portion of it is immediately returned to the river for the minimum instream flow release. PG&E monitor that data. Also, at each of the forebays PG&E has the potential to spill back to the river and that is another monitored flow. So there are different monitoring stations throughout. But then there are also elements of the system, such as the Canyon Creeks and German Ditch that are not monitored. So these (indicating diagrams presented in PowerPoint presentation) are actual measured flow values starting about April 23, 2003 and those data are continuing to be collected.

PG&E: Dan Kogut commented that monitoring would continue throughout the winter and into next year so that the model could be continually calibrated.

ENTRIX: Paul Wisheropp added that PG&E (Dan Kogut and Bob Folsom particularly) made quite an effort to get a gage upstream of the Kilarc diversion and finally, concluded that it just wasn't possible to monitor accurately at that location. Cow Creek is a very steep channel, high gradient stream with a lot of boulders and very turbulent flow.

PG&E: Dan Kogut explained that he had also gone above the Kilarc Diversion on Old Cow with a USGS representative to see if they could provide some guidance on methodologies for an attempt to gage up there and they could not provide any recommendations. In fact, they mentioned that back when the project was being licensed, the reason a Weir Box was placed out there is because Old Cow Creek could not be adequately gaged to meet anybody's standard.

ENTRIX: Paul Wisheropp elaborated on the point that since data for a real direct one on one comparison between the modeled flows upstream of the diversion and the actual major flows was not possible, the flows were reconstructed upstream of the diversion (shown on the graph). Mr. Wisheropp identified the modeled flow versus the 2003 data representations.

Mr. Wisheropp concluded that he believed that the model provides a reasonable estimate, especially in the lower flow months.

ENTRIX: Jean Baldrige asked if the graphs were showing monthly flows.

ENTRIX: Paul Wisheropp responded "Yes", that the model was based on average monthly flows.

CDFG: Annie Manji asked if statistical analysis had been, or could be, performed on the model to continually refine the model and its estimates.

- ENTRIX:* Paul Wisheropp stated that there was not enough data at this point to perform a statistical analysis with any type of confidence. As Dan Kogut mentioned, PG&E is continuing to collect the data and ENTRIX will continue to evaluate the model based on the new data collected through time. But right now it's just limited records - April through September - five months, five data points.
- CDFG:* Annie Manji asked if a statistical analysis could be performed on the existing data information to any degree of reliability or if it was something that ENTRIX was planning on doing in the near future.
- ENTRIX:* Jean Baldrige stated that there may be some information that can be pulled from the analysis allowing ENTRIX to fine tune the modeling efforts and that is what ENTRIX will be striving for.
- ENTRIX:* Paul Wisheropp said that he could not answer Ms. Manji's question at this point on how much of a statistical analysis ENTRIX can perform on it. The flows are truly estimates - whether it's the measured numbers or the calculated numbers in the model. Since the numbers are estimates, Mr. Wisheropp is not sure how many data points it would take to get a real accurate statistical comparison. The answer to the question is that ENTRIX will continue to refine the model and discuss its applications with Mr. Katzel and others who are using the model results to come up with better estimates.
- ENTRIX:* Jean Baldrige explained that the hydrology information available gives a pretty good idea about the summer flow coming into the diversion, because the diversion has the opportunity to capture most of that summer time flow. There is less information for the wet period when there are spawning and passage issues. That's where the model is going to be important to help us understand what the hydrology is in the Project Area when the flows exceed the capacity of the diversion of that reach. To reconstruct the hydrology we would be taking the best available information from each part of the simulation in PG&E's records to put the picture together.
- CDFG:* Annie Manji asked Dan Kogut if it was Mike Friebe from the USGS that had accompanied him to evaluate gaging opportunities on Old Cow.
- PG&E:* Dan Kogut said "Yes". Mr. Kogut continued to respond to Ms. Manji by stating that he thought her concern regarding statistical analysis was legitimate, especially when models are used by themselves. However, with this effort, PG&E are not resting on the model alone and they plan to continuously calibrate it to further define it.
- ENTRIX:* Paul Wisheropp asked that everyone also keep in mind the application of the model, which is for resource topics such as geomorphology. How Mitchell Katzel and others use the data is the important issue.

As far as the results of Studies 1 & 2, ENTRIX developed the model and then tested calibration of the model based on the April through September data set. Also, new sampling locations have been established in the Project Area to monitor flows and that is ongoing. The sampling locations will be very useful in not only updating or validating the model, but also for just monitoring what's happening in the system.

DISCUSSION 2: WATER TEMPERATURE AND WATER QUALITY (Studies 3 and 4)

ENTRIX: Jean Baldrige asked if there were any questions or additional discussion regarding the hydrology information.

Ms. Baldrige continued with the presentation information. The next discussion is on water quality and water temperature. Brian Frantz from PG&E did a lot of the data collection and today we are going to summarize some of the objectives and results. For the water quality section we were really looking to determine what water quality conditions were out there, what constituents were found in the area upstream and downstream of the diversions and some of the Project Facilities. We also wanted to match those up against the Basin Plan and EPA guidelines to see where those constituents fell within the Project Area.

The purpose for the water quality collection stations was that the locations would allow PG&E/ENTRIX to look at Project Operations. So PG&E sampled above and below diversion facilities and tailraces for powerhouses and also we sampled within the impoundments themselves, the forebays. So we had 12 stations where we collected water quality information. We also had some additional stations where we were collecting some *in situ* measurements. We looked at 19 different organic and inorganic constituents through water quality laboratory analysis. Our structure is really sampling in the spring and then again in the fall for the water quality parameters. At the *in situ* water quality sampling stations we also took a look at temperature, dissolved oxygen, pH, turbidity with a HydroLab and Brian Frantz was out there collecting this information at a number of locations so that we could better understand how that worked within the system. In the water quality results we were a little concerned about coliform levels since that has been an issue in an number of streams and we did find that we had a few sites where we exceeded the criteria. There is cattle grazing upstream of a couple of the sampling sites above the diversion, which we believe to have contributed to the exceedances. There are also a couple of stations that exceeded the pH levels. Between the Basin Plan and the EPA we had different guidelines between what the high level pH is. The Basin Plan is 8.5 and the EPA is 9. The EPA guidelines were not exceeded, but there were three locations that had a pH higher than the Basin Plan's 8.5 in August. Those measurements were collected in: (1) South Cow, SC4 is downstream near the Powerhouse, (2) Hooten Gulch, HG1 is downstream of the Wild Oak Diversion, and (3) is the Kilarc Forebay – KF1.

PG&E didn't have a lot of information on water temperature but there was some original work that was done under the previous relicensing studies, so we were able to look at what water temperatures were coming into the Project. We knew that South Cow was a

fairly open drainage and we were expecting high temperatures. Old Cow is a little better shaded and also has some spring flows so we were expecting cooler temperatures there. A number of temperature monitoring locations were set up with the same strategy as the water quality monitoring - to look up and downstream of the diversions, tailraces and forebays. Water temperatures were recorded every 20 minutes and the information was summarized to look at the mean daily temperatures for the stations. When you look at the maximum and minimum temperatures (PowerPoint Presentation) from May through September – you can look at Old Cow 1, 2, 3 and 4 as you are going down the system, you can see that those water temperatures remain relatively cool – below the 20 degree C level in Old Cow throughout the entire system.

NMFS: Howard Brown asked if the temperatures shown were the maximum and minimum daily averages?

ENTRIX: Jean Baldrige confirmed that they were the averages. The other thing that you'll see a little better when the graphs are up (PowerPoint presentation) is that there are fairly constant temperatures in Old Cow. There is not a lot of variation up and down as you go through the summer period, which is probably related to the fact that it is a steeper system and there is spring flow.

CDFG: Annie Manji asked for clarification of the water temperature information and whether it was an average value was presented for both the minimum and maximum temperatures.

ENTRIX: Jean Baldrige responded that PG&E summarized water temperatures into the mean daily values and that is what is presented.

Ms. Baldrige noted that the water temperature warms slightly on Old Cow as the water moved down through the stations, but the degree of warming is not very significant. The graph compared the water temperature to air temperature data and stream flow data. The water temperature does seem to respond somewhat to air temperature, but there is a much greater response in the South Cow stations.

On South Cow we have warmer temperatures coming into the diversion which is what we had anticipated. One of the interesting things that we found is that Mill Creek has a cooling influence on South Cow Creek. Where Mill Creek water comes into South Cow Creek, there is a slight depression of maximum daily temperature. Downstream from there, water temperatures warm.

CDFG: Mike Berry asked for clarification on the cooling effect of Mill Creek since monitoring station SC3 states that it is located in South Cow Creek above the confluence with Mill Creek.

PG&E: Brian Frantz clarified that the monitoring location is below the Mill Creek Diversion – so you're getting the Mill Creek water but the monitoring site is actually above the confluence with Mill Creek itself (reference schematic).

ENTRIX: Jean Baldrige continued with the presentation illustrating the comparison between water temperature, air temperature and stream flow on South Cow Creek, indicating that it is much warmer than the Old Cow Creek system.

CDFG: Mike Berry asked if the bypass flow in South Cow Creek was 5 cfs?

ENTRIX: Jean Baldrige stated that the bypass flow in South Cow Creek is 4 cfs and 2 cfs in Old Cow Creek. She indicated that the anomaly on the flow line was related to the water releases performed by PG&E during the instream flow surveys.

The water temperature monitoring found cooler temperatures in Old Cow. South Cow water temperatures were consistently greater than 20 degrees upstream of the diversion and then further warming as water travels through the bypass reach.

NMFS: Howard Brown asked if data was collected in any way that would allow PG&E to see whether temperature increases through the forebays.

ENTRIX: Jean Baldrige explained that with the way the project operates, the temperature monitoring was focused on the effects of the bypass reaches. The forebays are very small. Additionally water temperatures below the confluence with Hooten Gulch, which is where the tailrace water discharge shows there is not a lot of cooling associated with that water. The sampling points indicate that the forebays have a negligible impact on the water temperature.

CDFG: Annie Manji asked if PG&E had monitored temperatures in the actual canals themselves.

ENTRIX: Jean Baldrige responded “No”. We monitored the water temperatures going into the canals and then we monitored temperatures in the forebays but we do not have temperatures at the end of the canal.

CDFG: Annie Manji was interested to see a thermal mass comparison of the water data.

ENTRIX: Jean Baldrige said that the temperatures in Hooten Gulch could be evaluated to provide the information that Ms. Manji was requesting.

PG&E: Brian Frantz stated that Hooten Gulch temperature data is very similar to SC5.

DISCUSSION 3: SEDIMENT AND CHANNEL STABILITY (Study 5)

ENTRIX: Mitchell Katzel reviewed the objectives and methodologies associated with the sediment and channel stability analysis that he performed. He explained that he had relied heavily on the background information provided in the Watershed Assessment report prepared by SHN Consultants in 2001.

CDFG: Annie Manji asked for the document reference again.

ENTRIX: Mitchell Katzel replied: SHN, Consulting Engineers and Geologists, Inc., 2001. Cow Creek Watershed Assessment. Mr. Katzel continued with the presentation discussing the areas that were focused on during the field studies. Some additional work was done to further evaluate the hydrology, specifically looking at how possible changes in streamflow affect sediment transfer. In addition, Mr. Katzel reviewed PG&E's sediment and maintenance practices.

Two types of channel classification were evaluated in the field: (1) the Rosgen Classification type, and (2) the Montgomery-Buffington classification. The methods are similar but different. The Montgomery-Buffington classification focuses a lot on the channel form to look at stream processes. Sediment sources were also evaluated. Landslides and bank erosion areas were tracked. Bank stability ratings were ranked high, moderate, and low. Then tributary confluence deposits were recorded to see if there was sediment build-up.

CDFG: Annie Manji asked if pebble counts had been done?

ENTRIX: Mitchell Katzel responded "No". Pebble counts were not done but under the Rosgen Classification type the dominant particle size was classified.

CDFG: Annie Manji wanted to know the methodology for classifying dominant particle size.

ENTRIX: Mitchell Katzel said that it was a visual estimate. Mr. Katzel continued with the discussion of the channel classification results. Old Cow Creek is boulder dominated, generally high gradient – between 5 to 6% grade. Above the diversion on Old Cow Creek it's even higher – almost 10%. It is a B-channel type which means that it has a moderate entrenchment, a moderate width to depth ratio, and tends to have very limited floodplain development. This is a supply-limited sediment transport system, which does not mean that there is not a lot of sediment. In fact there is a good amount of sediment in Old Cow Creek. But the relative capacity of the channel to move that sediment is much greater than the amount of sediment being supplied to the channel overall. The B-channel and cascade/step-pool bedform channel types are typically morphologically resilient to changes in flow and sediment regime. You can do a lot to those channels and you tend not to see a big change. It doesn't mean that there's no change at all, but you tend not to see those sorts of changes in those channel types.

South Cow Creek is also a B-channel type. The interesting thing about South Cow Creek is for about the first mile and a half below the diversion it's a little bit lower gradient than just about anywhere else in the Project system. It's about 1.5% grade and it's a plane-bed to step-pool bedform. This is an intermediate type in the Montgomery-Buffington classification scheme between step pool and plane bed. Both forms tend to be relatively resistant to changes in morphology and resilient to changes in flow and sediment regime. The lower gradient section, the 1.5 mile reach, is probably the most responsive to changes in flow and sediment. Still it is characterized as supply-limited sediment transport capacity. You can pour a lot of sediment in and it still has quite a bit of capacity to move that sediment. Once you get below river mile 1.5 to about 3.8 it tends

to be boulder and cobble dominated so it's a little bit larger bed material and it's higher gradient of the B-channel form. Again, it becomes a cascade step-pool bedform with the same characteristics as Old Cow Creek.

Hooten Gulch above and below the powerhouse is more of a cobble to gravel dominated plane-bed to pool-riffle bedform below the powerhouse. The pool-riffle bedform is probably the most responsive to potential changes in flow and sediment regime of all the bedform types. It's considered transitional in terms of its capacity to carry sediments. So unlike the supply-limited channels, if you pour enough sediment into the pool-riffle bedform, you can see responses and changes in the channel. It's relatively more responsive to changes in flow and sediment regime than any of the other project reaches.

ENTRIX: Jean Baldrige commented that Hooten Gulch comes in upstream of the tailrace water.

ENTRIX: Mitchell Katzel continued with the presentation referencing tables in the Resource Report for additional information.

ENTRIX: Jean Baldrige clarified that the meeting/presentation objective was to provide the Agencies with preliminary information about topics that they had expressed an interest in previously. There are much more detailed reports that will be coming out that will allow the Agencies to get into these topics in much greater detail than the information provided in the Status Report. The intent of the status report was to present some preliminary results.

PG&E: Angela Risdon expounded on Jean Baldrige's comment that the meeting was also an opportunity for the Agencies to raise concerns about the data, approach, or methodologies used.

ENTRIX: Mitchell Katzel continued with the presentation, discussing bank stability results. Overall, South Cow Creek had a very high bank stability. Old Cow Creek had a moderate to low bank stability. There is a section of Old Cow Creek starting about 9/10 of a mile below the diversion to about 2.5 miles below the diversion where there were some significant landslides. Most of the landslides were a function of the geology of the region.

NMFS: Howard Brown asked what the geology of the region was?

ENTRIX: Mitchell Katzel responded that the lower portion is sandstone and there is a layer of tuff from volcanic activity. The sandstone portion is the one that is really weak.

Hooten Gulch had a moderate bank stability rating. There was one relatively small slide observed near the powerhouse. Above the powerhouse, Hooten Gulch received a low to moderate bank stability rating because there were some significant slides occurring. So there are recruitment areas for sediment.

In terms of sediment storage, this is where ENTRIX characterized the amount of sediment, fine sediment that is easily available for transport in pools and in bars. Overall there was limited sediment storage found which was somewhat surprising considering the amount of recruitment from the landslide activities. Looked at nearly 100 pools between all of the stream reaches and on average there was approximately 12% of the bed surface area of all pools measured were comprised of fine sediment. That meant that 88% of the pool area was comprised of non-fine sediment material, that was predominantly boulders, sometimes cobble size material, and bedrock. So a very limited area of pools actually held fine sediment at all. Average thickness of pool fine sediment was 0.6 inches or less. Overall, fine sediment has almost no influence on residual pool volume. Residual pool volume being the volume you would have in the pool if the fine sediment was removed. There would be very little difference because you have very little fine sediment.

NMFS: Howard Brown asked for further clarification of the methodology used to evaluate fine sediment in the pools. Did you look at the pool and estimate the surface area covered by fine sediment and then measure depth to get an idea of the volume?

ENTRIX: Mitchell Katzel responded “Yes”. It was an approach to identify overall sediment deposition.

NMFS: Howard Brown said it sounded like a good approach for covering a large area.

ENTRIX: Jean Baldrige asked if Mitchell Katzel noticed any difference between lower gradient and higher gradient areas.

ENTRIX: Mitchell Katzel responded “No”.

NMFS: Howard Brown asked if there were any areas where volumetric analysis had been completed?

ENTRIX: Mitchell Katzel responded “No”. That would have been a V-Star measurement, which is what ENTRIX would have done if a moderate to excessive amount of fine sediment had been observed, but our initial analysis did not warrant it.

Mitchell Katzel continued with presentation. Hooten Gulch had greater amounts of fine sediment in pools than either South Cow or Old Cow Creeks. By comparison, 56% of the pool bed surface was occupied by fine sediment versus the 12% in South and Old Cow Creeks. Significant active landslides above the powerhouse in Hooten Gulch could account for the amount of sediment in the area. So it may be a natural condition and not necessarily influenced by the powerhouse. In fact, if you think about it, the powerhouse is adding water so it would help flush the sediment.

ENTRIX: Jean Baldrige added that there are cattle grazing and logging activities in the Project Area.

ENTRIX: Mitchell Katzel continued with presentation, discussing sediment maintenance practices. The canals are very low gradient and therefore have a limited transport capacity. If sediment was being deposited into the canals it would be evident.

CDFG: Mike Berry asked what the flow capacity of the two canals is?

ENTRIX: Mitchell Katzel said that the flow capacity is 45 to 50 cfs for each canal.

Mitchell Katzel concluded that given what we know about maintenance practices and the amount of gravel observed, there is not much gravel getting into the canals to represent any kind of loss of gravel from the stream system.

In terms of the capacity of the streams to move flows, we focused on the sediment transport flows. Specifically, looking at flows at or near the bankfull discharge. We look at those flows because those are geomorphically significant. Flows less than the bankfull discharge tend not to move sediment, so they are important in terms of habitat but they are not important in terms of the ability to form and maintain the channel, they have little influence on channel morphology. We wanted to know what the magnitude of flows would be to move sediment. We had to do some flow extension techniques because the record is not very long near the project diversions. ENTRIX looked at the gage with the longest period of record in Old Cow (50 some years of data) and made a mathematical relationship between that and the South Cow Creek gage where they overlap (16 years of data in South Cow Creek) to come up with a reasonably good correspondence, getting an idea of the major flows at the 1.5 year flow to transport sediment. The 1.5-year flow on South Cow Creek works out to greater than 2,000 cfs. The 1.5-year flow on Old Cow Creek works out to greater than 1,000 cfs. These numbers might not be exact but that's fine since we wanted to get an idea of the range. When you look at the magnitude of flows required and the capacity of the canals which is about 50 cfs, you're looking at a possible 2.5 to 4.8% reduction of flow by the diversions (assuming operation). These are not very significant changes. When you look at everything together, you see that there is actually very little change and the channels are very resilient.

ENTRIX: Jean Baldrige asked if there were any other questions for Mitchell Katzel.

CDFG: Annie Manji asked how long the 1.5 year bankfull flow needs to be maintained to flush sediments?

ENTRIX: Mitchell Katzel replied that there is no specific formula for that. It is a good question and a hard one to answer and different researchers have different amounts of time.

CDFG: Annie Manji asked how long do you estimate that there was 2,000 cfs going through South Cow?

ENTRIX: Mitchell Katzel said that he did not look at the number of days on average where the channels had bankfull flows or greater. Whatever it is, the amount of diversion that is

being taken (the 50-cfs) would not change the number of days you would expect to get bankfull flows. Basically, the project has no effect on bankfull flows.

CDFG: Annie Manji asked PG&E if there was any consideration to increasing the capacity of the diversions.

PG&E: Angela Risdon said “No”.

PG&E: Dan Kogut said that there were water rights associated with the diversion capacity and these were not going to change. The watershed is adjudicated for the most part and there really is not an opportunity to acquire more water.

ENTRIX: Jean Baldrige asked if there were any more comments or questions before releasing the group for a 15-minute break.

BREAK

DISCUSSION 4: AQUATIC RESOURCES (Studies 9 through 15)

ENTRIX: Jean Baldrige resumed the meeting and introduced the next discussion topic. Aquatic resources include a number of different studies that were focused on evaluating aquatic resources and they have been combined for discussion purposes. Larry Wise, the task leader for the aquatic resource section, will walk through the results of those studies. Some of these studies are still in progress. As we move forward we will let the Agencies know the status of those studies.

ENTRIX: Larry Wise first started talking about the aquatic habitat inventory objectives and methodologies.

CDFG: Annie Manji asked what the flows were during the habitat evaluation?

ENTRIX: Larry Wise said that the information would be provided in the next slide. Larry Wise continued with the presentation explaining that Old Cow Creek had been considered one reach with mapping flows that varied from 5 to 60 cfs depending on the timing. The data will be looked at for overlap to see how much variability there is based on flow level.

ENTRIX: Jean Baldrige asked if we have mapped everything at the base flows?

ENTRIX: Larry Wise responded “Yes”.

CDFG: Mike Berry asked if the entire Old Cow Creek was one reach within the diverted section?

ENTRIX: Larry Wise responded “Yes”. The entire diverted section was defined as a single reach since it had a similar gradient throughout.

CDFG: Mike Berry asked if there were any comparisons done to the undiverted section?

ENTRIX: Larry Wise said “No”. Larry Wise continued with the presentation. The habitat is really divided equally between pools, riffles and runs. South Cow Creek was divided into two reaches and mapping flows varied between 6 to 40 cfs. The two reaches differed somewhat in the quantity of cascades.

CDFG: Mike Berry asked if the evaluation of South Cow was also limited to the diverted reach?

ENTRIX: Larry Wise confirmed that the habitat inventory was performed solely for the diverted reach.

ENTRIX: Jean Baldrige said that the focal point was to understand the habitat in the diverted reaches and use that as the basis for some of the studies that were conducted.

NMFS: Howard Brown asked where Wagoner Canyon is on the schematic?

ENTRIX: Larry Wise said it was located in the lower portion of South Cow Creek, approximately 1.5 miles downstream of the South Cow Creek Diversion.

Larry Wise continued with the presentation, discussing the evaluation of spawning gravels. The quality of spawning gravels were assessed within the channel in relation to their embeddedness, fine sediments, where they were located in the channel, how compacted they were, and how homogeneous the areas were. Old Cow Creek had poor to fair spawning gravels with an area of 1,279 square feet per mile for rainbow trout, 2,941 sq.ft./mile for steelhead, and 3,279 sq.ft./mile for Chinook salmon. South Cow Creek had primarily good quality spawning gravel with an area of 301 sq.ft./mile for rainbow trout, 616 sq.ft./mile for steelhead, and 621 sq.ft./mile for Chinook salmon.

CDFG: Mike Berry asked if perched gravel beds were evaluated?

ENTRIX: Larry Wise said that perched gravel beds were evaluated.

CDFG: Mike Berry asked if the numbers included the perched gravel?

ENTRIX: Larry Wise responded “Yes”.

ENTRIX: Jean Baldrige stated that what we don’t know is what kinds of depths and velocities we would have over the perched gravels, but the square feet are incorporated.

CDFG: Mike Berry asked how the widths were measured if the flow height was unknown?

ENTRIX: Larry Wise stated that there are no floodplains in the area so anything 3-feet above the waterline would not be considered available.

CDFG: Mike Berry confirmed that the criterion used was whatever was 3-feet above the waterline was not included.

ENTRIX: Larry Wise said “Yes”.

PG&E: Curtis Steitz commented that it was fairly apparent when out in the field as to what to include and what not to.

CDFG: Annie Manji asked if the methodologies were going to be outlined and provided?

ENTRIX: Larry Wise informed the attendees that all of that information will be provided in the habitat inventory report.

CDFG: Annie Manji asked if the habitat inventory information was incorporated into the IFIM models and given to the transect selection team?

ENTRIX: Larry Wise said the information was incorporated in some areas but it was not a specific criteria for the placement of transects because specific spawning transects were not established.

NMFS: Howard Brown asked if there was any additional information/explanation on the criteria used for evaluating the spawning gravels?

ENTRIX: Larry Wise said that there were some criteria that would be presented in the report, but that the evaluation of gravels suitable for spawning was based primarily on professional judgement. Larry Wise wrapped up the habitat inventory discussion and started on the passage barrier information. ENTRIX identified 14 potential barriers on Old Cow Creek with four of them considered to be impassable.

PG&E: Curtis Steitz asked if the four barriers were considered low flow barriers?

ENTRIX: Larry Wise said that the falls were considered impassable at all flows but the South Cow Creek Diversion dam and other two barriers were probably passable at higher flows.

NMFS: Howard Brown asked how the information was incorporated to determine the flows that rendered the barriers passable versus impassable?

ENTRIX: Larry Wise said that ENTRIX was still in the process of collecting some of the data to do that. The height and complexities of the barriers have been measured.

NMFS: Howard Brown asked if ENTRIX planned on putting together any profiles that would overlay the water stage elevations and flow that would give the Agencies a more quantitative sense of the fish passage?

ENTRIX: Larry Wise said that that was the planned approach.

ENTRIX: Jean Baldrige said that some of the passage barriers need to be re-evaluated at higher flows.

CDFG: Mike Berry asked if ENTRIX would be making a determination on what flow they become passable.

ENTRIX: Jean Baldrige said that ENTRIX's goal was to determine the range of flows where the barrier obstructed passage, depending on the flows present in the streams when the assessments were made.

ACTION ITEM: Evaluate the passage barriers under higher flows to assess the flows at which the lower flow barriers become passable.

CDFG: Steve Baumgartner wanted to know if there would be an announcement of when ENTRIX planned to go out and look at the passage barriers during higher flows?

ENTRIX: Jean Baldrige said "Yes" and asked if Steve Baumgartner would like to go with the field team.

CDFG: Steve Baumgartner said "Yes".

CDFG: Annie Manji wanted a definition for "complete barriers" because it sounds as though the barriers are only "complete" at low flows.

ENTRIX: Larry Wise said that the one barrier that he believes to be a barrier at any flow is the single falls on Old Cow (upstream of the Kilarc Powerhouse). The other ones are probably passable at higher flows but the team needs to go out and look at that more quantitatively. "Complete" in this context really refers to lower flows.

ENTRIX: When we get our dates together, we'll be happy to notify everyone about when the flows get up to a more sustained level that we can go out and have another look at the barriers. But the goal really is to identify barriers that are significant problems at low flow and we need to go out and see if those barriers become passage at higher flow, or we leave them in the category of complete barrier at all times. That is what we're attempting to do when we go out at the higher flows. Some of the other barriers that we've identified that are partial barriers, we know that at higher flows those are going to become passable and we'll be checking in on those to see at what flow level they become passable.

ACTION ITEM: Inform Agency personnel of field monitoring dates for additional evaluation of the passage barriers.

NMFS: Howard Brown commented that the language used for the barriers is raising a red flag. It sounds as if the barriers have been classified as a complete barrier unless other information indicates that they are not.

ENTRIX: Jean Baldrige said that that was not ENTRIX's intention.

CDFG: Mike Berry suggested that the terminology be changed to say “impassable at lower flows”.

ENTRIX: Jean Baldrige thought that was a good idea.

ENTRIX: Larry Wise continued with the passage barrier presentation, describing the locations on a figure in the presentation (figures were faxed to Annie Manji and Dave White because they were not visible in the e-mailed version of the presentation). Mr. Wise explained that the 25UP was actually the Old Cow Creek Diversion Dam.

CDFG: Mike Berry asked which habitat unit represented the big impassable barrier?

ENTRIX: Larry Wise informed Mike Berry that it was number 271. Larry continued with the presentation, discussing passage barriers on South Cow Creek. There were 9 potential barriers identified on South Cow, one of which was considered completely impassable. In fact, it is known that steelhead get up through Wagoner Canyon to the diversion and to the ladder at the diversion. One of the 9 barriers identified is the diversion dam and that is the one that was considered complete. The rest of the barriers are less than 6-feet high and fish could probably get through them at various flows. During habitat mapping, large salmon were observed in South Cow Creek above Wagoner Canyon. So we know that they can get up through Wagoner Canyon as well, even through fairly low flows.

CDFG: Mike Berry asked if the ladder on South Cow was designed for steelhead?

PG&E: Curtis Steitz responded that it was designed for both salmon and steelhead.

ENTRIX: Larry Wise noted that all of the passage barriers on South Cow Creek are within Wagoner Canyon, with the exception of the Diversion Dam. Habitat unit 198 is about at the top of the Canyon.

NMFS: Howard Brown asked where the Chinook salmon was observed?

ENTRIX: Larry Wise said the salmon was observed right above habitat unit 198.

NMFS: Dave White asked for confirmation that the only barrier considered complete on South Cow Creek was the Diversion Dam.

ENTRIX: Larry Wise responded “Yes” and said that it does have a ladder. Larry Wise asked if there were any further questions to the passage barrier information.

CDFG: Mike Berry referred to the discussion of Whitmore Falls in the Status Report saying that there have been several field trips where all of the Agencies have agreed that Whitmore Falls is passable during the winter time.

ENTRIX: Jean Baldrige clarified that CDFG believes that under certain flow conditions Whitmore Falls is passable.

CDFG: Mike Berry said “Yes”, and that he had thought that we had all agreed to that - that Whitmore Falls is not a barrier.

NMFS: Dave White said that that was NMFS’ impression as well.

ENTRIX: Jean Baldrige said that our understanding had been that it was passable under certain circumstances, but not during most winters. ENTRIX will be happy to take another look at that.

CDFG: Annie Manji reiterated CDFG’s objective to manage Old Cow Creek as an anadromous fishery and that PG&E had also agreed to that. Ms. Manji emphasized how important it was to know what PG&E’s position on this was.

ENTRIX: Jean Baldrige noted that PG&E was planning to manage the reach as an anadromous fishery and there are two reasons for that: one of them could be from a discussion of Whitmore Falls, but the other one is that CDFG has clearly indicated that they have plans for that to be an anadromous fishery in the future.

CDFG: Mike Berry stated that CDFG has no plans to fix the falls because it is evident during high flows that steelhead could pass through.

ENTRIX: Jean Baldrige explained that originally it had been unclear exactly how much of a barrier Whitmore Falls was to the project but it was irrelevant to the study methodologies since CDFG had clearly outlined their management objectives and PG&E accepted that the reach was to be (if it was not already) managed as an anadromous fishery. The idea that the falls are passable most winters versus under some extreme circumstances will be incorporated in to the documents.

ACTION ITEM: Revise reports to reflect current information on Whitmore Falls.

CDFG: Mike Berry wanted to clarify that the statement in the Status Report saying:

“The passage of anadromous salmonids into the Project bypass reach on Old Cow Creek is likely restricted by Whitmore Falls, which is located downstream of the town of Whitmore about 9 miles below the Kilarc powerhouse. These falls have previously been considered impassible by CDFG, but was recently reclassified as being passable under very high flow conditions. Until more reliable passage past these falls can be provided, passage within the project bypass reach is likely moot.”

was no longer valid.

ENTRIX: Jean Baldrige agreed to modify the language in the Resource Report.

PG&E: Angela Risdon reiterated that the purpose of having “Preliminary Draft” on all of the documents is because they are still a work in progress.

CDFG: Annie Manji added that NOAA Fisheries believed that the unnamed falls in the bypass reach were passable under extremely rare situations, which may have been the cause for confusion regarding Whitmore Falls.

PG&E: Curtis Steitz added that there haven’t been any observations, that PG&E is aware of, of anadromous fish above Whitmore Falls. So PG&E thought that Whitmore Falls might be passable under certain conditions but it’s obviously not that easy or fish sightings would be reported.

ENTRIX: Jean Baldrige asked if there were any additional questions to the passage barrier information.

CDFG: **Mike Berry reiterated that the key is to look at what flows the lower flow barriers become passable.**

ENTRIX: Larry Wise continued with the aquatic resources presentation, discussing instream flow objectives and methodologies. Old Cow Creek was very uniform and therefore considered as one reach. South Cow Creek was divided into two reaches, above and within Wagoner Canyon. It was evident for previous discussions that the Agencies were primarily interested in the activities above Wagoner Canyon versus within Wagoner Canyon so the transects were concentrated in the reach above Wagoner Canyon. The transects placed within the canyon are not expected to be as responsive to changes in flow as the other transects are. Transects were placed in riffles, runs, shallow pools and deep pools, with emphasis on deep pools in South Cow Creek. Calibration flows in Old Cow Creek ranged from 3 to 48 cfs, with 3 to 10 cfs considered low flow, 25 to 32 considered moderate, and 42 to 48 considered high. Calibration flows in South Cow Creek ranged from 5 to 41 cfs, with 5 to 9 cfs considered low flow, 16 to 23 considered moderate, and 37 to 41 considered high. Velocity measurements were taken at the high flow levels. At this point with the PHABSIM data, we have calibrated the models and we’re getting ready to start the habitat simulation. We need to get a consensus on the criteria to be used in developing the habitat versus flow functions. Our study plan used the Battle Creek models, but we need to schedule another meeting with the group to get some consensus on what the appropriate criteria to be used is.

ACTION ITEM: Coordinate a meeting with the Agencies to discuss habitat suitability criteria to be used for the habitat simulation.

CDFG: Annie Manji asked if Larry could discuss the activities that were completed at the low, middle and high flows again?

ENTRIX: Larry Wise said that the depth and velocities across the transects were collected at the high flows. Water surface elevations were collected at the middle flows. Substrate information and channel profiling was completed at the low flows.

NMFS: Howard Brown clarified that there would be a follow-up meeting to discuss the suitability of the Battle Creek curves for the Kilarc-Cow Creek project.

ENTRIX: Larry Wise responded “Yes”.

ENTRIX: Jean Baldrige stated that the Battle Creek curves are attractive because they’re right next door, the next watershed over, and there was a fair amount of effort that was spent in coming up with the criteria.

NMFS: Howard Brown asked if there weren’t transferability tests that could be developed?

ENTRIX: Larry Wise responded that there were but that they were not really suitable for this project.

ENTRIX: Jean Baldrige added that the transferability tests require information from fish locations and that few anadromous fish have been observed in South Cow and Old Cow Creeks. We will probably have to determine the most appropriate criteria based on geomorphic and channel structure and stocks and go from there.

NMFS: Howard Brown suggested that PG&E include Mark Gard from the Fish and Wildlife Service in the criteria discussions.

ENTRIX: Jean Baldrige said that we had been discussing these issues with Stacy Li from NMFS and that he was a great resource. Ms. Baldrige asked if there were any other questions or comments to the instream flow information?

CDFG: Annie Manji wanted to know if some of the riffle transects were in spawning gravels?

ENTRIX: Larry Wise said, “Yes”, that some of the spawning habitat was associated with some of the riffle transects, as were some of the pool tailout transects.

CDFG: Annie Manji asked if there were enough to characterize the spawning habitat versus flow relationship?

ENTRIX: Jean Baldrige said that the original protocols were based on random selection, which was conditioned by access. A number of the transects pass through spawning areas, but spawning areas were not targeted. We did not use a critical habitat approach for this particular analysis, but we do have spawning areas, particularly in the reach that we are most interested in which is right below the diversion on South Cow. There are enough transects there that we should be able to characterize that spawning habitat versus flow relationship.

PG&E: Curtis Steitz added that on Battle Creek there were transects that were specifically selected to address spawning habitat. The difference being that fish were observed and actual fish spawning sites were identified. The areas were flagged and transects were

then installed. For the Kilarc-Cow Creek Project, PG&E really would not be able to specifically identify spawning sites. Additionally, the problem with specific selection versus random placement of transects is that biologists are often wrong when they place transects in locations that they believe to be providing spawning habitat, when the fish really don't use the site at all.

CDFG: Annie Manji asked if redd locations could be identified?

PG&E: Curtis Steitz said that he did not believe that redd surveys would be possible in Old Cow Creek at all since anadromous fish have not been observed in that reach. There would be a potential to see redds in South Cow Creek but it would be very difficult, due to high flows during the winter months.

CDFG: Mike Berry noted that redds were observed on South Cow during the field studies.

ENTRIX: Larry Wise responded that a few test redds were observed in South Cow Creek in mid-October, but these were not fully developed redds and that it was still too early to expect significant numbers of fall run chinook salmon to be spawning. These redds may have been from a spring run adult, preparing for spawning. Larry Wise continued with the presentation, discussing fish population objectives and methodologies. Since the bypass reaches are considered accessible to listed species, snorkeling was completed in the bypass reaches and in the stream channels above and below the bypass reaches. Electrofishing was done in the canals and forebays and gill netting was done in the forebays.

CDFG: Mike Berry stated that the Status Report said:

“Snorkel surveys were used to describe fish populations within the Project Area because electrofishing cannot be conducted in areas where listed salmonids are potentially found.”

Mr. Berry commented that a year or so ago it had been determined that electrofishing would be fine as long as PG&E/ENTRIX had the proper permits.

NMFS: Jean Baldrige said that NOAA Fisheries disagreed with that position. NOAA Fisheries thought it would be better to use snorkeling methods in case salmonids were present.

PG&E: Curtis Steitz commented that there would not have been time to acquire the proper permits with the relicensing schedule even if NOAA Fisheries had been amenable to using the electrofishing technique.

NMFS: Howard Brown asked if Mike Berry was concerned about the use of snorkel surveys from a calibration perspective?

CDFG: Mike Berry asked if ENTRIX would be discussing the methods used to calibrate the snorkelers?

ENTRIX: Larry Wise said “Yes”. Mr. Wise continued with the presentation, discussing survey dates and explaining that the late start was due to higher than usual flows in the spring and early summer months.

NMFS: Howard Brown asked where the reference sites were located?

ENTRIX: Larry Wise responded that there are three snorkeling sites within each of the bypass reaches that were compared to snorkeling sites above and below each bypass reach.

CDFG: Annie Manji asked if 9 habitat units were snorkeled at each site?

ENTRIX: Larry Wise responded “Yes”. ENTRIX sampled three runs, three riffles, and three pools.

CDFG: Annie Manji asked if that was also done above the Kilarc Diversion because she didn’t believe there was much riffle habitat to sample in that area due to the gradient?

ENTRIX: Marlene Heller responded “Yes”. Ms. Heller said that more pool habitat was sampled above the diversion in the high gradient reach, but she found two runs and two riffles that were snorkeled above the diversion.

CDFG: Mike Berry asked if ENTRIX had the raw data on how long each of the riffles and runs were?

ENTRIX: Marlene Heller responded “Yes” and said that that information could be provided.

CDFG: Mike Berry commented that it did not seem that the habitat in the higher gradient areas was very comparable to the habitat downstream.

ENTRIX: Jean Baldrige agreed that it was hard to find good riffles in that area.

ENTRIX: Larry Wise said that the riffles sampled upstream were definitely shorter than those sampled downstream, but with the way the data is being interpreted, the length is not a significant variable.

CDFG: Mike Berry said that if the riffle upstream is only a foot long and the riffle downstream is 40 feet long, there’s a better chance that you’re going to see more fish per foot. That leads to the question of how the areas outside of the bypass reach were compared – were the downstream and upstream portions averaged, and if so, can they be broken out?

ENTRIX: Larry Wise responded “Yes upstream and downstream areas were averaged and they can be broken out”. By averaging the riffles between the two sites, Mr. Berry’s concerns regarding unit length are somewhat alleviated, as six riffles were averaged to obtain the number of fish per unit stream length. Additionally, while the riffle upstream of the project area on Old Cow Creek was shorter on average than those in the bypass area, that below the diversion was longer on average, thus things balance out somewhat. In regard to averaging the sites or doing paired comparisons, Mr. Wise responded that Mike

Berry's concerns are reasonable, when looking at South Cow Creek, as there are two distinct communities below Wagoner Canyon and above it. Additionally the channel structure below the canyon is much different than that within and above the canyon. Thus ENTRIX would provide a comparison of bypass and reference sites for these two areas individually. On Old Cow Creek, the community structure was similar at all sites, and the only site that was significantly different in terms of channel structure was Site 5, the reference site above the diversion. Thus in this area, a pairwise comparison is not warranted. However, in the report, information will be provided for each individual site.

CDFG: Mike Berry said that you would need to compare the site just above the diversion to the next site below the diversion instead of averaging the whole diversion and the whole non-diversion. Mr. Berry suggested that a paired analysis would be better than averaging the sites.

ENTRIX: Marlene Heller commented that the report has each site listed individually so they can be compared in any fashion.

PG&E: Curtis Steitz commented that there is potentially a difference in flows.

CDFG: Mike Berry stated that that was the key to doing the surveys. If the flow above was 60 cfs and the flow below was 4 cfs, you would expect differences in fish densities. Mr. Berry asked for clarification on the fish per foot rating, whether it was fish per square foot or linear foot?

ENTRIX: Larry Wise stated that it was linear feet.

CDFG: Annie Manji asked if ENTRIX had used the same number of divers in all of the study areas?

ENTRIX: Larry Wise said that the number of divers was based on the flows and visibility in the stream at any given point. If one diver could adequately see from one side of the channel to the other, then only one diver would be used to have minimal disturbance on the fish. If two divers were necessary to cover the channel effectively then two divers were used and in some of the non-project reaches three divers were used.

CDFG: Mike Berry asked if replicate dives were completed to calibrate the divers?

ENTRIX: Larry Wise said that the divers were not calibrated with replicate dives or cross calibration. However, the divers from all teams worked together at the larger sites at the beginning of each trip, discussing procedures and techniques, before the crews went on individually to sample the smaller sites. This provided a high degree of confidence in the comparability of results between the different sites. Additionally, conditions in the different sites were generally similar in terms of visibility, so this would not be expected to add significant variability.

CDFG: Annie Manji asked if water temperature data was collected for each of the dives, and if so, could that information be provided?

ENTRIX: Larry Wise said “Yes”. The information will be broken out into individual sites in the report and water temperatures will be presented.

CDFG: Mike Berry said that the same should be done for the flows.

ACTION ITEM: Present the individual fish population sampling sites with flows, water and air temperatures.

Additionally, Mr. Berry commented that the write-up in the Status Report talks about choosing the habitat units outside the bypass reach, yet the habitat typing was only done within the bypass reach.

ENTRIX: Larry Wise stated that the reference sites were selected by walking up and downstream of the reaches.

ENTRIX: Marlene Heller said that they would walk up and downstream to select habitat units, looking for those that had comparable lengths to the areas sampled within the bypass reaches.

ENTRIX: Larry Wise continued with the presentation, discussing the findings on South Cow Creek. Four adult and three juvenile Chinook salmon were observed in South Cow Creek.

CDFG: Annie Manji requested that the flow, air and water temperature data be presented with the fish population information.

ENTRIX: Larry Wise responded that the information will be provided in the report but due to time constraints associated with the presentation, it was not included on the slides.

Mr. Wise continued with the presentation. Mr. Wise discussed the fish (California roach, rainbow trout, and lamprey) that were discovered within South Cow Main Canal, which is screened. The roach probably went through the screen. It is unknown how the rainbow trout entered the canal.

CDFG: Mike Berry had an editorial note to the write-up in the Status Report. One of the theories presented for how the rainbow trout entered South Cow Main Canal was that they climbed over the screens.

ENTRIX &

PG&E: Larry Wise and Curtis Steitz stated that it was a typographical error and it should say lamprey instead of rainbow trout.

ENTRIX: Jean Baldrige added that the rainbow trout have an opportunity to stay in the system since there is some gravel in the canal, but those screens have closed the system since 1987 or 1988.

CDFG: Mike Berry asked if the canals had been dewatered since 1987 or 1988 for maintenance, because that could put a damper on the resident rainbow trout theory?

PG&E: Curtis Steitz responded that the water would be slowly lowered and fish could move into the Forebay.

NMFS: Dave White asked if habitat assessments had been completed on the canals?

ENTRIX: Larry Wise responded “No”. Habitat assessments were not done on the canals.

CDFG: Annie Manji asked why entrainment was not evaluated on the South Cow Main Canal?

ENTRIX: Larry Wise said because it is screened and the screens were assumed to be relatively effective.

NMFS: Howard Brown asked if NOAA fish screen engineers had evaluated the screens?

ENTRIX: Jean Baldrige said that they have been looked at a couple of times and that ENTRIX is in the process of doing an evaluation of the screens. We are waiting for the flows to come up.

The reason we were focusing on the entrainment that could be occurring from the Kilarc side was because it’s an open system and we were interested in how fish were moving from the area upstream of the diversion down into the Forebay, so we set up a protocol to sample that movement pattern.

NMFS: Dave White asked if the Agencies would be informed when the fish screen evaluations were going to be performed?

ENTRIX: Jean Baldrige said “Yes”.

ACTION ITEM: Inform Agency personnel when fish screen evaluations are to be performed.

CDFG: Mike Berry wanted clarification on the statement in the Status Report that said early Chinook redds were noted during the October sampling.

ENTRIX: Marlene Heller said that Chinook redds were observed upstream of Hooten Gulch during the habitat inventory studies.

CDFG: Mike Berry was interested in knowing whether the sighting was early or late in October.

ENTRIX: Marlene Heller said that it was around October 20th.

NMFS: Howard Brown asked if snorkel surveys were done throughout the system to try and quantify the number of Chinook salmon in the system since they had been sighted?

ENTRIX: Larry Wise said “No”. Four fish were observed: three within the canyon and one above the canyon. Since they were observed above the canyon, clearly the canyon is not a passage barrier for Chinook. The surveys were habitat based and did not focus on specific fish species.

ENTRIX: Jean Baldrige added that there had been a lot of question as to whether fish could get through Wagoner Canyon early in the project. We now know that they can get above Wagoner Canyon. So PG&E will be looking at that whole section from a management perspective for steelhead and Chinook habitat. Since observations of the fish with low populations are somewhat opportunistic, we decided a habitat based approach would be more suitable for this system and we would manage for them without trying to spend a lot of effort in finding them.

CDFG: Mike Berry wanted clarification on the fish that were observed. There were adults in June, fairly good-sized juveniles in July, and redds showing up in October before there was enough rain to open up the main part of Cow Creek. Is that correct?

ENTRIX: Larry Wise responded “Yes”.

ENTRIX: Jean Baldrige added that we think there is potential for those to be spring-run.

CDFG: Mike Berry went back to Howard Brown’s comment and said that snorkeling the entire reach of the canyon in June and July would give us a better idea of what the salmon population is, whether it was just a couple of strays or if something is happening.

ENTRIX: Larry Wise continued with the presentation, discussing entrainment potential in the Kilarc Main Canal. Macroinvertebrate and fish protection results are pending.

ENTRIX: Jean Baldrige asked if there were any more questions or comments to the aquatic resources presentation?

NMFS: Howard Brown asked if there was any consideration to do the entrainment studies during other times of the year when fish would be more migratory?

ENTRIX: Larry Wise said that had been the original plan but the water year had made it difficult.

NMFS: Dave White asked if there were any habitat quality assessments performed on Mill Creek?

ENTRIX: Jean Baldrige said “Yes”. That habitat mapping was completed on Mill Creek and the section below the diversion is what ENTRIX focused on.

DISCUSSION 5: BOTANICAL RESOURCES (Studies 6, 7 and 8)

ENTRIX: Kathy Frye discussed vegetation mapping, special-status plant surveys, and riparian communities for the Kilarc-Cow Creek Project (follow PowerPoint Presentation)

DISCUSSION 6: WILDLIFE RESOURCES (Studies 16 through 20)

ENTRIX: Kathy Frye discussed general wildlife, presence or absence of special-status species with raptors, California red-legged frogs, foothill yellow-legged frogs, and valley elderberry longhorn beetles.

ENTRIX: Jean Baldrige introduced Dr. Sean Barry (ENTRIX Herpetologist) to the group who joined the meeting to respond to any issues related to the frog studies (follow PowerPoint Presentation).

ENTRIX: Kathy Frye continued with the presentation, discussing objectives, methodologies and results.

USFWS: Kathy Brown asked if peregrine falcons and bald eagles had been observed during the incidental raptor sightings?

ENTRIX: Kathy Frye said “No”. Only osprey and golden eagles were observed. Kathy Frye continued with the presentation, discussing the site assessments completed for the California red-legged and foothill yellow-legged frogs. The project does not provide any suitable habitat for the California red-legged frog with the possible exception of Hooten Gulch. Hooten Gulch is considered summer habitat, but not breeding habitat.

USFWS: Kathy Brown asked about the ponds that were located on private lands that were not evaluated and whether there was grazing associated with them?

ENTRIX: Kathy Frye and Sean Barry said that there was grazing associated with some of the ponds, but that in general, the ponds did not appear to provide promising habitat.

ENTRIX: Kathy Frye continued with the presentation, discussing the foothill yellow-legged frog survey results. Foothill yellow-legged frogs were observed on South Cow Creek but not Old Cow Creek.

USFWS: Kathy Brown asked when USFWS would be seeing the study results for the yellow-legged and red-legged frog studies?

ENTRIX: Jean Baldrige said that the reports were ready in draft form and pending review they would be issued shortly.

CDFG: Annie Manji asked if there would be any effort to locate egg sites in the spring for the foothill yellow-legged frogs?

ENTRIX: Jean Baldrige said that the current approach was going to be based on our knowledge that they exist on South Cow Creek and evaluate how the project operations might effect them.

Jean Baldrige asked if there were any other questions to the wildlife information?

DISCUSSION 7: ARCHEOLOGICAL, CULTURAL, RECREATIONAL, LAND MANAGEMENT & AESTHETICS (Studies 21 through 28)

ENTRIX: Tracy MacMillan discussed the regional and Project Area recreation information. It had been determined that none of the meeting attendants were particularly interested in archaeological, cultural, land management, or aesthetic issues from resource management perspectives.

Out of 135 questionnaires distributed, 45 responses were received. Fishing was found to be the primary activity (86%) of the visitors and a total of 475 visitors were counted for the six sites. The highest number of visitors recorded at the Kilarc Forebay Shoreline was 370.

CDFG: Annie Manji asked if the 370 was one day?

ENTRIX: Tracy MacMillan responded “Yes”, during either Labor Day or Memorial Day weekend.

CDFG: Annie Manji commented that there was a very large brown trout (25 pounds) caught at the Kilarc Forebay that received a lot of press which would maybe explain why so many people were in the area.

PG&E: Angela Risdon commented that it is a strange event to have that number of people up there for a weekend so it is worthwhile noting in the report that there were extenuating circumstances.

ENTRIX: Jean Baldrige said that the information would be put into context within the report.

ENTRIX: Tracy MacMillan completed the recreation discussion and asked if there were any questions?

NOTE: Tracy MacMillan verified the information with ENTRIX’s recreation task leader (John Baas) and 370 was the TOTAL number of people observed along the shoreline during the entire recreational survey – not during one holiday weekend. The striking information is that of 475 total visitors to the area, 370 of them were noted along the Kilarc Forebay Shoreline.

CLOSING

PG&E: Angela Risdon reiterated that the purpose of the meeting was to provide an overview of what the preliminary results from the studies were and to make sure that everyone was comfortable with the study plans. Mr. Risdon also wanted to confirm that the necessary information had been collected to answer the resource management questions that will arise for the Kilarc-Cow Creek Project.

There are studies that will continue to go forward. As we mentioned, we will continue to do the instream flow study, finish up the macroinvertebrate study, the fish facilities study, and distribute the California red-legged frog site assessment to see if USFWS protocol level surveys are required.

CDFG: Annie Manji said that she was not prepared to say whether the study methodologies were acceptable, but appreciated the opportunity to discuss the studies with the individuals that actually did the work.

ENTRIX: Jean Baldrige thanked all of the participants and said that we would continue our evaluation of the report and move forward. As Larry Wise mentioned, we need to put together a conference call to discuss criteria to be utilized for the habitat suitability criteria.

CDFG: Annie Manji asked that we give the Agencies a little bit of forewarning prior to completing the fish passage and fish screen evaluations. CDFG is not allowed on a lot of South Cow but they are allowed on most of Old Cow, and as long as the scheduling works out they would be happy to come out and see some of that work.

PG&E: Angela Risdon asked that the Agencies review the information and address areas of concern sooner versus later.

CDFG: Annie Manji commented that the nature of the questions during the presentation should provide an idea of where the Agencies have concerns.

ENTRIX: Jean Baldrige asked Kathy Brown if there was anything surprising about the results of the wildlife studies?

USFWS: Kathy Brown said “No”.

PG&E: Angela Risdon thanked all of the participants for attending the meeting.

Meeting Adjourned at 12:35.

ACTION ITEMS

ACTION ITEM: Evaluate the passage barriers under higher flows to assess the flows at which the lower flow barriers become passable.

ACTION ITEM: Inform Agency personnel of field monitoring dates for additional evaluation of the passage barriers.

ACTION ITEM: Revise reports to reflect CDFG's position on Whitmore Falls.

ACTION ITEM: Coordinate a meeting with the Agencies to discuss suitable habitat versus flow function criteria to be used for the habitat simulation.

ACTION ITEM: Present the individual fish population sampling sites with flows, water and air temperatures.

ACTION ITEM: Inform Agency personnel when fish screen evaluations are to be performed.

cc: Steve Nevares, PG&E
Curtis Steitz, PG&E
Dave White, NMFS
Howard Brown, NMFS
Kathy Brown, USFWS
Annie Manji, CDFG
Mike Berry, CDFG
Britt Fecko, SWRCB

Kilarc-Cow Creek Hydro Relicensing Project
Joint Agency Consultation Meeting
MEETING AGENDA

December 5, 2003

Time:	9:00 a.m. – 1:00 p.m.	Moderator:	Angela Risdon
Location:	ENTRIX Sacramento, California	Recorder:	Tracy MacMillan

9:00 INTRODUCTIONS (10 minutes)

PURPOSE and OBJECTIVES for MEETING

- 2003 Process and Completed Studies
- Structure and Organization of Information/Presentation
- Project Overview

DISCUSSION 1 (30 minutes)

9:10 Hydrology

- Stream Flow Monitoring
- Estimate Flow
- Calibration of Unimpaired Hydrograph

DISCUSSION 2 (30 minutes)

9:40 Water Quality and Temperature

DISCUSSION 3 (30 minutes)

10:10 Sediment and Channel Stability

10:40 BREAK (15 minutes)

DISCUSSION 4 (40 minutes)

10:55 Aquatic Resources

- Aquatic Habitat
- Passage Barrier
- Instream Flow
- Fish Population
- Entrainment
- Macroinvertebrates
- Fish Protection

MEETING AGENDA (Continued)
December 5, 2003

DISCUSSION 5 (30 minutes)

- 11:35** Botanical Resources
- Vegetation Mapping
 - Special-Status Plant
 - Riparian

DISCUSSION 6 (30 minutes)

- 12:05** Wildlife Resources
- Common Wildlife
 - Special-Status Wildlife
 - California Red-Legged Frogs
 - Foothill Yellow-Legged Frogs
 - Elderberry

DISCUSSION 7 (10 minutes)

- 12:35** Cultural and Recreational
- Historical
 - Archaeological
 - Recreational
 - Aesthetics
 - Land Management

12:45 CLOSING

- Ongoing Studies
- Project Alternatives
- Next Steps

1:00 Adjourn
