Responses to Questions Raised by FERC Staff on Oroville Facilities Relicensing Site Tour

1. Provide a description of the specific proposed enhancements at McCabe Creek

DWR Response

No additional recreation development is proposed for this location. The entire area of McCabe Creek cove has been recorded as archaeological site CA-BUT-362/H. The site contains numerous discrete loci of both historic and prehistoric activity that are tied together by a broad distribution of historic placer mining remains. The entire area has also been used to contain woody debris collected from the reservoir over the last 40 years and is a popular recreation area due to the accessibility of the shoreline.

Archaeological testing was conducted at all of the loci last winter to evaluate their potential eligibility for listing in the National Register of Historic Places. Preliminary analysis of the evaluation data indicate that most of the loci appear to be eligible under Criterion D of 36 CFR 60.4; certain of the historic loci also appear eligible under Criteria A and/or B.

The preliminary findings are currently being written up by California State University, Chico. Once these preliminary documents have been prepared, they will be forwarded to the State Historic Preservation Officer (SHPO) who will be asked to concur with the eligibility finding. Assuming that the SHPO concurs with the eligibility determination, the Historic Properties Management Plan will include appropriate measures for the cultural resources at McCabe Creek cove.

As a result of the operational and recreational activities at this location, some level of mitigation will be necessary for the eligible cultural resources at McCabe Creek. DWR has developed data recovery plans for the eligible prehistoric and historic loci, respectively and is developing approaches to mitigate loci that are also eligible under Criterion A and B. Once the SHPO has concurred with the eligibility determination for CA-BUT-362/H, and FERC has adopted the HPMP in a new license DWR will move forward with implementation of the data recovery plans.

In the meantime, debris handling will be managed to the extent possible to avoid impacting identified loci and seasonal recreational closures will continue to be implemented.

Responses to Questions Raised by FERC Staff on Oroville Facilities Relicensing Site Tour

2. Provide a specific reference (name, date, and agency) and status of the plan or criteria used in the recreation use needs assessment.

DWR Response

Study R-17 – Recreation Needs Analysis synthesizes results from the other 16 recreation and two socioeconomic studies, and also relies on data from two Land Use studies and one Water Quality study. Since Study R-17 is an objective review of Project 2100 needs (both presently and in the future), other regional general and site specific recreation-related plans only indirectly shaped the results of the Needs Analysis. The relevance and effect of those related plans are described in detail in Studies R-4 (Assessment of Relationship of Fish/Wildlife Management and Recreation) and R-5 (Assessment of Recreation Area Management); additional description of those plans is presented in Studies L-1 (Land Use) and L-2 (Land Management).

The following plans and related Code (criteria) are relevant from the aforementioned supporting studies:

Amended Recreation Plan (DWR 1993)
Lake Oroville Fisheries Habitat Improvement Plan (DWR 1995)
LOSRA Resource Management Plan and General Development Plan (DPR 1973, as amended; update pending)
LOSRA General Plan (DPR, draft)
Oroville Wildlife Area Management Plan (DFG 1978)
California Fish and Game Commission's Hunting and Other Public Uses on State and Federal Lands California Regulations (DFG 2002)
California Code of Regulations (current)
California Fish and Game Code (current)
California Public Resources Code (current)
California Water Code Sections 11900–11925 (current)
State Parks and Recreation Commission Policies (DPR, current)
Resource Management Directives (DPR, current)
California Outdoor Recreation Plan (DPR 2002)
The Seventh Generation: The Strategic Vision of California State Parks (DPR 2001)
California Boating Facilities Needs Assessment (DBW 2002)
Bald Eagle Management Plan (DWR, draft)
Peregrine Falcon Territory Management Plan (DWR, draft)
Central Valley Joint Venture Implementation Plan (DWR 2003)
Plumas National Forest Land and Resource Management Plan (USFS 1988, as amended)

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Redding Resource Management Plan (BLM 1993)
Butte County General Plan and Zoning Ordinance (1996)
City of Oroville General Plan (1995)

The above documents were referenced and evaluated during Relicensing studies to gain an understanding of how recreation resources (opportunities, facilities) and recreation operations (management, coordination) relate to current and future recreation needs, demands, and constraints. The interpretation of the Needs Analysis into a relevant and adequate Draft Recreation Plan (submitted with the License Application) took into account the applicability of the above plans, to ensure consistency and efficiency in future development. Perhaps the most relevant is the LOSRA General Plan, as most Project 2100 recreation facilities are managed by DPR within the constraints of State Park (State Recreation Area) regulations. The Oroville Wildlife Area Management Plan speaks little to recreation, other than acknowledging recreation's secondary purpose there to the protection and priority afforded fish and wildlife resources.

The current LOSRA General Plan (1973) has exceeded its anticipated lifespan (generally about 20 years). For this reason, DPR seized the opportunity presented by the availability of DWR's abundant and contemporary recreation data (compiled during Relicensing) to prepare an updated LOSRA General Plan. Currently in draft form and under public review, it also requires review under the California Environmental Quality Act (CEQA) and ultimately requires State Parks and Recreation Commission approval (allows additional public comment) before being adopted. Adoption is likely sometime in 2006. Development of the draft LOSRA General Plan included public meetings explicitly for that purpose (April and November, 2004) as well as coordination with the Relicensing Collaborative (Recreation and Socioeconomics Work Group, March 25, 2004; Plenary Group, March 23, 2004). It is generally agreed that the actions recommended by the Needs Analysis are entirely consistent with the Draft LOSRA General Plan, although the State Parks and Recreation Commission has ultimate authority to revise or amend the latter.

R-17 Synthesis Process

The Recreation Needs Analysis was structured around eight categories of recreation activities (day use, camping, boating, etc.). For each activity type, the following factors were considered: supply, demand, capacity, suitability, and operations and maintenance. The following sections describe the specific sources of information use related to these factors.

The Needs Analysis identified both existing recreation needs and projected recreation needs over the term of the new license (to 2050). Projected needs make use of capacity thresholds or “triggers” which indicate when use levels have reached a point that justifies facility expansion or other management action. These triggers are based on standards widely applied and accepted within the recreation planning profession and

on professional judgment similarly used on other hydroelectric project FERC relicensings in the western United States.

Stakeholder input was incorporated into the Needs Analysis in several ways. First, stakeholder input was received during issue identification, preparation of proposed resource actions, and a scoping process that resulted in the development of 19 recreation and socioeconomic study plans including specific methodologies. This process was participated in by a wide range of stakeholders. Stakeholder input was also received during study plan implementation with systematically-obtained survey responses and similar data contained in several of the recreation and socioeconomic studies. Finally, stakeholder input was obtained when study results were presented to the Recreation and Socioeconomic Work Group and comments were received. Based in part on these comments, some corrections and supplemental information were compiled in an errata sheet for each Study Report.

It is important to underscore that the Needs Analysis also relies on considerable professional judgment in evaluating and interpreting the study data and the implications of the data for determining recreation needs. The primary authors of the Recreation Needs Analysis have prepared similar assessments at numerous hydroelectric projects in the western U.S.

Below are additional discussions of sources used in the recreation supply, demand, capacity and suitability which are all components of the Recreation Needs Analysis.

Recreation Supply Factors

A recreation supply analysis was conducted to support the Recreation Needs Analysis and synthesized the results from seven recreation studies:

R-1 – Vehicular Access Study
R-2 – Recreation Safety Assessment
R-6 – ADA Accessibility Assessment
R-10 – Recreation Facility and Condition Inventory
R-11 – Recreation and Public Use Impact Assessment
R-14 – Regional Recreation and Barriers to Recreation Assessment
R-16 – Whitewater and River Boating

Refer to the Methodology and References sections of these studies for more details. These studies, in general, are primarily based on information gathered directly at Project recreation facilities and use areas and through field studies, surveys of recreationists, and application of ADA-related guidelines.

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Recreation Demand Factors

A recreation demand analysis was conducted to support the Recreation Needs Analysis and synthesized the results from eight recreation studies:

R-4 – Assessment of Relationship of Fish/Wildlife Management and Recreation
R-5 – Assessment of Recreation Area Management
R-7 – Reservoir Boating Survey
R-9 – Existing Recreation Use
R-12 – Projected Recreation Use
R-13 – Recreation Surveys
R-14 – Assessment of Regional Recreation and Barriers to Recreation
R-18 – Recreation Activity Spending/Economic Impacts

Refer to the Methodology and References sections of these studies for more details. Studies R-4 and R-5 were based on review of management plans, agreements, and other documents and interviews with personnel from managing agencies (DWR, DFG, and DPR). Studies R-7, R-9, and R-13 were based on 18 months of field data collection at recreation facilities and use areas across the Project area, which included completion of over 2,500 on-site visitor surveys and over a thousand mail-back surveys. Study R-14 (also used for supply analysis) was based on both field data collection and off-site research. Study R-18 also relied on Project visitor survey data.

Study R-12 is of particular importance in determining future recreation needs for the Recreation Needs Analysis. The study provides use projections for all recreation sites in the Project area based on projections for participation in 13 recreation activities. These projections began with existing use data (Study R-9), to which future projections were applied for regional participation in specific activities (Cordell 1999), past participation in the activities in California from the National Survey on Recreation and the Environment (USFS 2004), latent demand for certain activities in California (DPR 1992, 1998), and other statewide data from DFG such as fishing and hunting license sales.

The data from these sources were sometimes not in agreement in relation to certain activities, and sometimes were contradictory in relation to certain activities within an individual data source. Also, the collected data did not directly indicate the rate of growth that should be projected for participation in individual activities. All of the data, and latent demand data in particular, were evaluated and interpreted in light of knowledge specific to the Oroville area (current use patterns, opportunities, facilities, facility occupancy, etc.) obtained in the course of conducting the other recreation studies.

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Recreation Capacity Factors
A recreation capacity analysis was conducted to support the Recreation Needs Analysis and synthesized the results from other studies. Study R-8 – Carrying Capacity evaluated the facility, physical, social, and ecological capacity of all of the developed recreation sites within the Project area and identified likely limiting factor or factors to increased recreation use of the sites. Refer to the Methodology and References sections of this study for additional detail.

Recreation Site Suitability Factors and Other Constraints
Study R-15 – Recreation Suitability identified areas appropriate for potential new recreation development and areas inappropriate for development due to physical, biological, or legal reasons. Constraints related to project operations such as reservoir fluctuations and drawdown, river flows, and cold water temperatures were described in Study R-3 – Assessment of the Relationship of Project Operations and Recreation. These studies were based on field investigations supplemented by off-site research. Refer to the Methodology and References sections of these studies for additional detail.

Specific Recreation Demand Projection Sources
In addition to the sources of data and citations/references cited in the 19 recreation and socioeconomic study plans and study reports (R-1 to R-19), the following sources of data were of particular importance when developing recreation use projections.

Cordell, K. 1999. *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends. Chapter VI. Projections of Outdoor Recreation Participation to 2050.* Sagamore Publishing. 440 pp.

USFS (U.S. Forest Service). 2004. Website. Presentation titled “Outdoor Recreation and Region 5’s National Forests: Using the National Survey on Recreation and the Environment to Help Set Recreation Priorities” by H. K. Cordell, C.J. Betz, and C.T. Green. Accessed at http://www/srs.fs.usda.gov/trends/R5rec.html. Site accessed March, 2004.

DPR (California Department of Parks and Recreation). 1993. *Public Opinions and Attitudes on Outdoor Recreation in California - 1992.* 100 pp.

DPR (California Department of Parks and Recreation). 1998. *Public Opinions and Attitudes on Outdoor Recreation in California - 1997.* 72 pp.

Responses to Questions Raised by FERC Staff on Oroville Facilities Relicensing Site Tour

3. *Provide a parcel by parcel description of the proposed land transfer from BLM to the state of California and a description of the proposed use for each parcel that is proposed to be transferred.*

DWR Response

Neither DWR nor any other agency is actively pursuing a land transfer. Therefore, at this time, no entity has developed a detailed description or proposed use by parcel. The BLM land consists of large parcels some of which encompass entire sections. Many parcels that have been considered for transfer extend beyond the Project boundary. These may include submerged and upland areas.

The June 1993 BLM Redding Resource Management Plan and Record of Decision contains the following statement:

> Transfer via exchange or R&PP to the State of California all surface and submerged public lands encompassing approximately 6,400 acres within and adjacent to the Lake Oroville State Recreation Area. All lands identified by California or BLM as excess to park needs will be offered for exchange to any party after two years from approval of the Final RMP.

In 1994 the California Department of Parks and Recreation submitted an application to BLM for transfer of 6,400 acres within and adjacent to the Lake Oroville State Recreation Area. The proposed use of transferred parcels would continue existing public day use and camping activities while precluding detrimental non-recreational intrusions or activities. The proposed recreational use would be consistent with the FERC Project 2100 Recreation Management Plan and the DPR LOSRA General Plan.

Transfer of the BLM land under the Recreation and Public Purposes Act (R&PP) would require that certain environmental resources and conditions be identified and evaluated in compliance with NEPA. Site resource inventory analysis which includes cultural resources, mineral resources, special status species, commercial timber values, and hazardous materials would need to be preformed. Since this type of analysis was being preformed in connection with the relicensing studies the opportunity was discussed with DPR to utilize the relicensing study material to meet the needs of the R&PP land transfer application. Since some of the property extends beyond the FERC boundary the limits of the relicensing study inventory work needed to be expanded outside the study area to completely inventory of the BLM land. Due to the time constraint for completion of the relicensing studies no additional inventory work was done.

Responses to Questions Raised by FERC Staff on Oroville Facilities Relicensing Site Tour

4. Provide via a non-internet filing, copies of Bald Eagle Territorial Nesting Management Plan.

DWR Response

The Bald Eagle Nesting Management Plan contains sensitive locational information regarding the bald eagle and is therefore a privileged and confidential document. The plan is contained in our privileged and confidential portion of our response in contained in Binder #3.

Responses to Questions Raised by FERC Staff on Oroville Facilities Relicensing Site Tour

5. Provide findings of spring 2005 surveys for bald eagles and Swainson's hawk productivity.

DWR Response

Activities during 2005 resulted in a record year with 4 nest territories producing 6 fledglings (1.5/occupied nest). This production greatly exceeds the USF&WS Pacific Bald Eagle Recovery Plan goal of 1.0/occupied nest and for the first time we have met the secondary recovery goal of 4 active nests in the Lake Oroville area. The long term production in the Pacific Recovery area is 0.93/occupied nest.

Two chicks were produced at both the Palm and Bloomer nest territories, while one each was produced at the Diversion Pool and Crystal Hill sites.

We will be notifying both DFG and USF&WS of the 2005 production via the DFG bald eagle nest production reporting form.

Successful reproduction is one of the key criteria that USF&WS can use in determining the adequacy of existing conservation measures (nest territory management plans). The other key criteria are if the birds choose to renest in the same location next year. One way bald eagles have been documented to respond to disturbance is to relocate the nest further away from the disturbance source within the same general territory. Therefore, it appears that nesting at the Diversion Pool is not being disturbed by recreationists.

DWR staff observed a known Swainson hawk nest location within the Oroville Wildlife Area in mid July of 2005. This Swainson hawk nest fledged one young this year. One young per occupied Swainson hawk nest is near the Statewide long-term average, but is below the production of two young per nest which was observed at this same nest location in calendar years 2003 and 2004.

Responses to Questions Raised by FERC Staff on Oroville Facilities Relicensing Site Tour

6. *For PME A-1 (for Alternative 2), please provide a description and location for each enhancement (including location on a map) proposed for the Lower Feather River, and break down the proposed $8 million to correlate to the specific enhancement measures. Additionally please confirm if the $8 million includes Alternative 2 measures at Shanghai Bench and Sunset Pumps. If not, please provide a description and costs for the Alternative 2 enhancements. Please confirm that PM&E A-1 for Alternative 2 also includes enhancements of Hatchery Ditch and Moe's Ditch, as in PM&E A-1 for the Proposed Action.*

DWR Response

PME A-1 (for Alternative 2) is actually the map code for *Side-Channel Habitat Improvement Program – along Low-Flow Channel* and it includes the Proposed Action (enhancements to Hatchery Ditch and Moe's Ditch) and the creation of additional side channels. The costs for these measures are in included in Table 6.2-3 under the item for *Natural Salmonid Spawning and Rearing Habitat* and not part of the $8 million for the item identified as *Lower Feather River Fishery*. The $8 million included in Table 6.2-3 under item *Lower Feather River Fishery* includes Alternative 2 measures for Shanghai Bench and Sunset Pumps.

Description for A-1 (Alternative 2), Side-Channel Habitat Improvement Program – Along Low-Flow Channel:

Hatchery Ditch

Discharge in Hatchery Ditch is directly related to water use in the Feather River Hatchery (FRH). The most critical habitat improvement need for Hatchery Ditch is to provide a source of water other than the current FRH source. It will take some time and analysis to get to the bottom of how best to fix the Hatchery Ditch water supply. Alternatives to consider in the analysis include: 1) an upstream diversion from the Feather River; 2) a conveyance from the Fish Barrier Pool; or 3) a conveyance from the current FRH water supply. The approximate location of this ditch is shown on Volume VII, Figure 3.2-1 in the License Application, and on the enclosed map. DWR proposes to improve a combined total of about 2,800 lineal feet of Hatchery Ditch and Moe's Ditch under the Proposed Action; this would be the same under Alternative 2. The improvements would likely include changes to the channel morphology, adding gravel to improve substrate and improved water supply. The estimated cost of improvements to Hatchery Ditch is approximately $475,000.

Moe's Ditch

Moe's Ditch is an artificial spawning channel adjacent to Hatchery Ditch. Currently Moe's Ditch lacks flow due to upstream changes in bed morphology, a lack of cover and

lack of channel sinuosity. Moe's Ditch is quite broad and has little flow. A beaver dam backs up the flow in much of the channel, creating a large area of pool habitat. The most immediate need for restoring habitat in Moe's Ditch is to remove the gravels that restrict flow from the river channel. If the channel was opened the flow entering the ditch might wash out the beaver dam. Otherwise the dam would have to be removed mechanically. The improvements would likely include changes to the channel morphology, adding gravel to improve substrate, improved riparian and instream cover and improved water supply. The approximate location of this ditch is shown on Volume VII, Figure 3.2-1 in the License Application, and on the enclosed map. The estimated cost of improvements to Moe's Ditch is approximately $400,000.

Additional Side-Channel

Under Alternative 2 an additional 1,200 lineal feet of new side-channel habitat would be created adjacent to the low-flow reach in the Feather River. DWR studies have found that juvenile steelhead trout strongly select shallow riffle/glide and near shore habitats with abundant riparian and instream cover. Habitats meeting these criteria are most often found in side channels. If found desirable to expand availability of preferred rearing habitat, side channels would be constructed at various suitable areas within the Low Flow Channel under Alternative 2. Potential sites for additional side-channel creation in the Low Flow Channel include (from upstream to downstream): Aleck Riffle; Great Western Riffle; Robinson Riffle/Borrow Pond; Steep Riffle, between Eye and Gateway Riffles; and the Oroville Wildlife Area southeast of the Thermalito Afterbay Outlet. The approximate locations of these potential sites are shown on Volume VII, Figure 3.3-1 in the License Application, and on the enclosed map. The estimated cost of additional 1,200 lineal feet of new side channel habitat is $2,400,000. These were not included in the Proposed Action because they are duplicative of other measures such as gravel supplementation, Large Woody Debris supplementation and restoration of existing side channels.

The area identified as the Oroville Wildlife Area southeast of the Thermalito Afterbay Outlet is not part of the additional 1,200 feet. At this area the proposal was to cut a larger channel approximately 2 miles long through the wildlife area. In addition to being extremely expensive estimated at $15,970,000, this proposal had various drawbacks: It would split the flow in the Low Flow Channel which could work against other measures designed to maintain cooler water temperatures in the Low Flow Channel and the High Flow Channel; It would be relatively low gradient with low velocity areas that would provide very little habitat for juvenile steelhead, and only fair habitat for juvenile Chinook; It would adversely modify existing giant garter snake habitat along its entire length, Therefore, this measure was not included in the Proposed Action.

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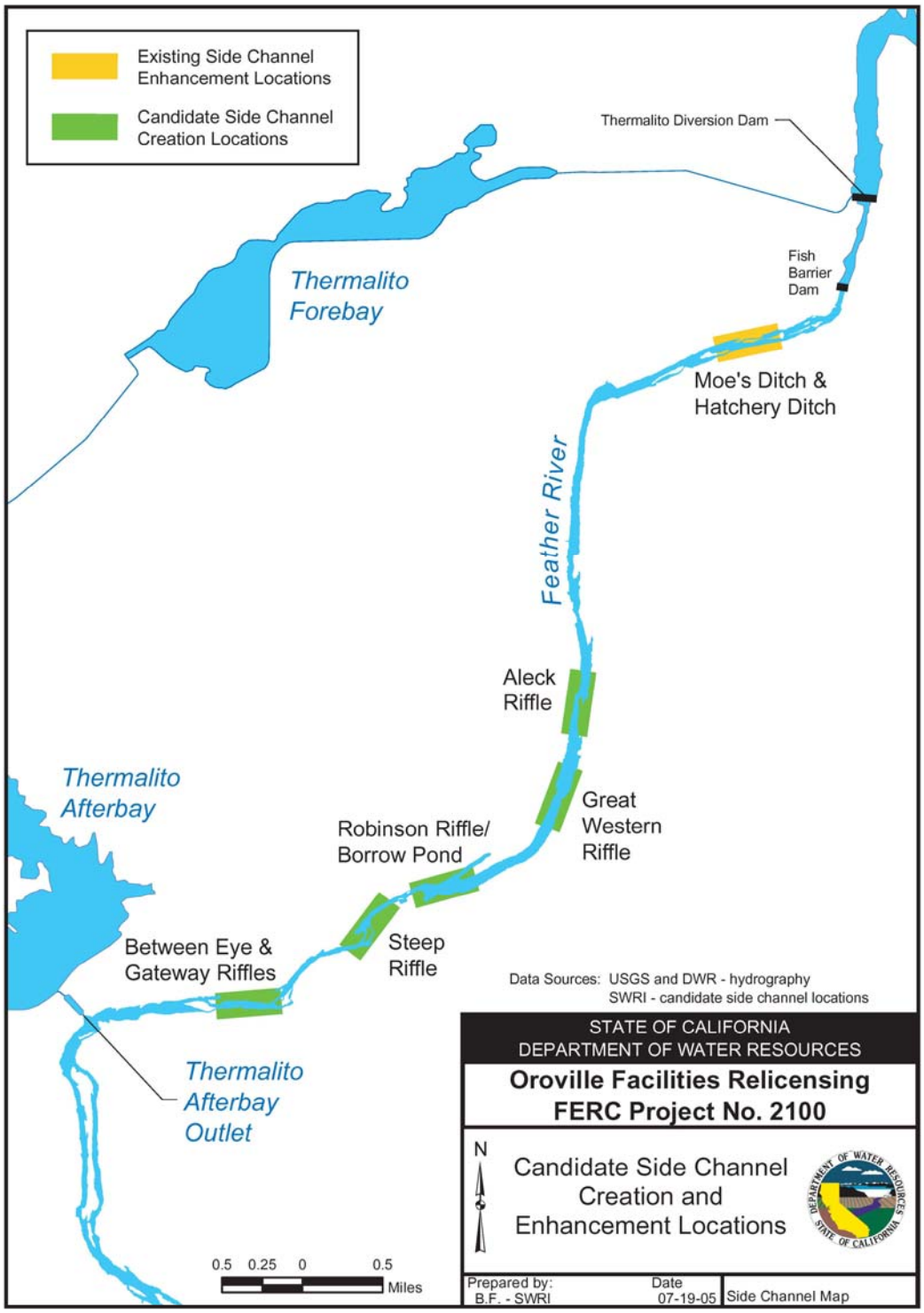

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Description for A-7 (alternative 2), Lower Feather River – Allow for Sturgeon Passage at Shanghai Bench and Sunset Pumps

Initially, it should be noted that during the performance of Oroville Facilities Relicensing studies, extensive field surveys were done and no Sturgeon were found. Also, these barriers are not project related PM&E measures and were rejected as potential measures in the proposed alternatives. Shanghai Bench (also called Shanghai Bend) is a river-wide ledge that creates a 3 to 5 ft. waterfall, depending on the flow. This is a natural geologic feature, and is located approximately 31 miles downstream of the Project Boundary, which is 3 miles downstream of the confluence with the Yuba River (refer to map and photo).

The Sunset Pumps facilities are located approximately 16 miles downstream of the Project boundary (refer to map and photo). They consist of a river-wide rock dam that results in a 3 to 4 ft. high waterfall over the dam, with a narrow, relatively high velocity chute in the middle along with the pumps and intake structures upstream of the dam. This dam was constructed, and is maintained, by the Joint Water District to create a backwater for irrigation pumping from the Feather River.

Under certain low-flow conditions, and possibly certain high flow conditions, these locations may be impassable for sturgeon and/or American shad due to high water velocities in some areas and/or a vertical height barrier. This PM&E measure proposed to provide physical changes to the Shanghai Bench and/or Sunset Pumps areas to aid passage of sturgeon and shad. Structural modifications could include:

- Blast a section of Shanghai Bench to turn it into a chute
- Change channel configuration to increase the depth and proportion of flow in the existing Shanghai Bench side channel
- Add a ladder at Sunset Pumps
- Change channel configuration to create a low velocity side channel at Sunset Pumps

The $8 million total cost is roughly allocated such that $2 million is provided for each location and allows for one replacement of each structure once during the life of the new license.

Numerous issues would need to be resolved prior to any action being taken at either of these locations. Such as:

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Shanghai Bench

- Additional information on the life history and passage capabilities of sturgeon and American shad
- Yuba River flow regime and how this affects this natural geologic feature
- Uncertainty of affects to socioeconomic issues (recreation, aesthetics, navigation, etc.) with altering this naturally occurring feature
- Assessment of the sturgeon and American Shad habitat value upstream of this location

Sunset Pumps

- Additional information on the life history and passage capabilities of sturgeon and American shad
- Uncertainty with modifying a facility owned and maintained by another entity
- Uncertainty with how the modification would affect operations and maintenance of this facility
- Uncertainty with how the modification would affect the efficiency of the existing fish screens at Sunset Pumps (e.g. sweeping velocities)
- Uncertainty with how the modification would affect navigation and recreation

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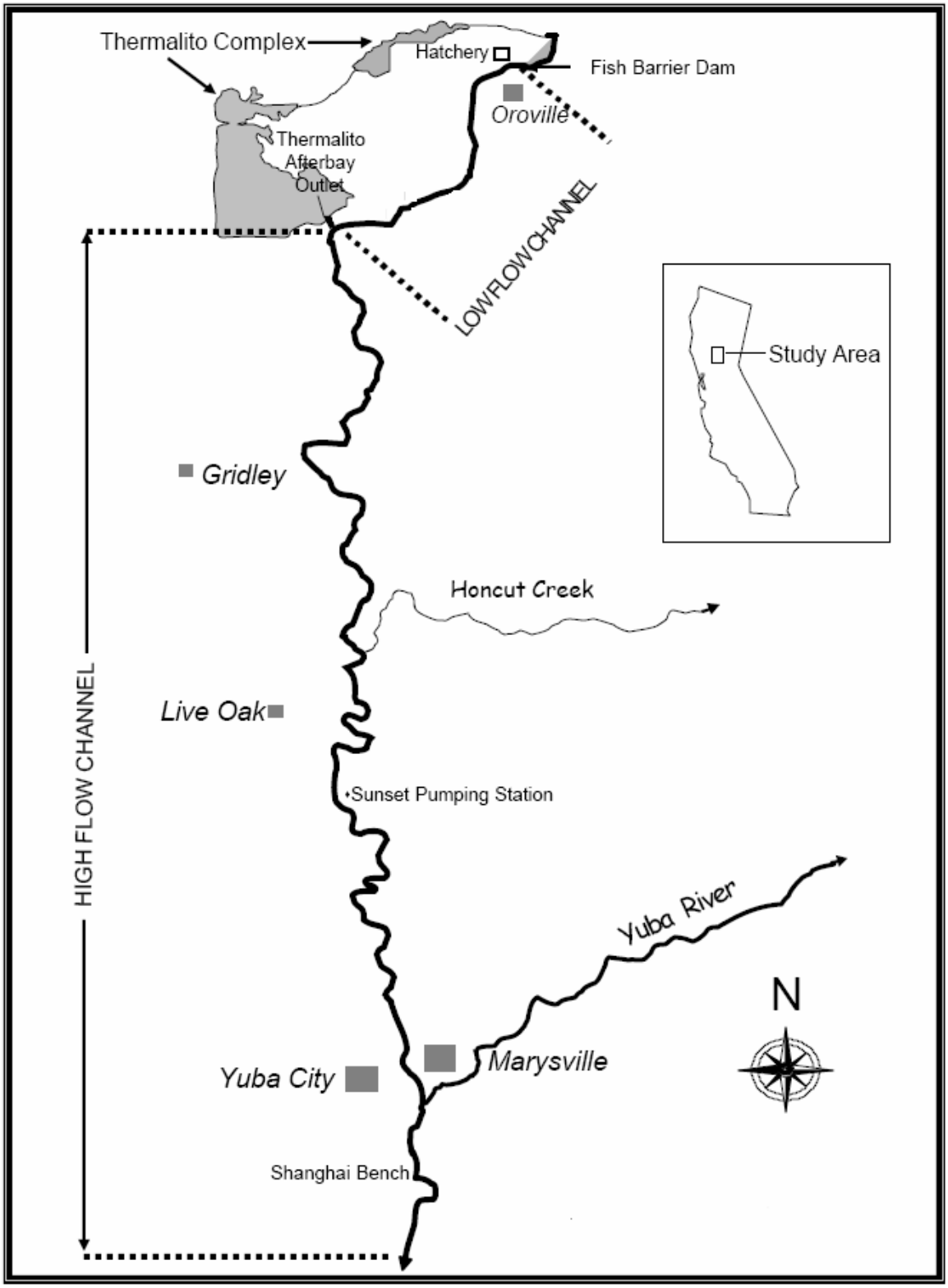

Map of Feather River Including Sunset Pumps and Shanghai Bench Locations

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Aerial photograph of Shanghai Bench (taken June 2002).

The lower Feather River at Sunset Pumps.

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7. For PME A-4 (the same for both the Proposed Action and Alternative 2), please identify the potential locations of the fish barrier weirs (preferably on a map zoomed to the low-flow section of the river) and identify any known opportunities or constraints specifically related to these locations.

DWR Response

Spatial Segregation and Enumeration of Salmon and Steelhead Runs: Known Opportunities and Constraints for Potential Weir Placements in the Lower Feather River

The following describes the known opportunities and constraints related to the potential weir locations. As previously described, as many as two weirs would be placed within the low flow channel (lfc); initially, one counting weir near the Thermalito Afterbay Outlet with a segregation weir to be placed later at this location or somewhere upstream. The following discussion describes in more detail the opportunities and constraints associated with the placement of weirs at Gateway Riffle, Robinson Riffle and/or Bedrock Park. Final selection of weir sites will depend on detailed site specific studies and consultation with permitting agencies (e.g. Army Corp of Engineers).

Gateway Riffle (River Mile 59.6)

Known Opportunities:

- Gateway Riffle was selected as a favorable potential weir location because it is the last spawning riffle in the lfc. Thus, this location would provide an excellent opportunity to enumerate the largest proportion of migratory fishes.
- As a potential segregation weir site, Gateway Riffle provides the largest possible quantity of upstream spring run Chinook habitat. Nearly seven miles of habitat are available upstream of Gateway Riffle which typically accommodate approximately 2/3 of the total Feather River salmon population (spring and fall run).
- The channel morphology (width, depth & velocity) at the Gateway Riffle site appears to be suitable for a weir placement. The channel is fairly narrow and straight with moderate to slow current and relatively shallow depth.
- The area surrounding Gateway Riffle is accessible (near a road) and appears suitable for construction of a weir and possible egg taking station.
- Provides more upstream habitat for spring run salmon than does any other weir location.

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Known Constraints:

All weirs (regardless of location) are subject to challenges from potential impacts to angling, boating, swimming and impacts to fisheries from poaching and equipment vandalism. While careful project design and implementation can minimize these impacts, several constraints may be more acute at Gateway Riffle. These constraints include:

- Water temperature stress due to proximity to the Thermalito Outlet and distance from Thermalito Diversion Dam,
- Problems with recreation and vandalism may be exacerbated by proximity to Thermalito Outlet which is a area with high public usage
- If used as a segregation weir, distance from Feather River Fish Hatchery (FRFH) will require construction of an egg taking station and transport of eggs to the hatchery.
- Provides less downstream habitat for fall run salmon than any other weir location.

Bedrock Park (River Mile 66.1)

Known Opportunities:

- The proximity of Bedrock Park to the Feather River Fish Hatchery (FRFH) will ease and facilitate processing and/or transport of fall run Chinook salmon which are captured at the segregation weir.
- The spawning habitat between Bedrock Park and the Fish Barrier Dam (FBD) provides excellent habitat and is heavily utilized by spawning Chinook and steelhead. Currently, approximately 10-25% off all salmon spawn in this section alone.
- The channel morphology (width, depth & velocity) at the Bedrock site is probably ideal for a weir location. The channel is fairly narrow and straight with moderate to slow current and relatively ideal depth. Below the proposed weir site is a large pool that could be utilized by holding fall run Chinook.
- Water temperatures in the vicinity of Bedrock Park are coldest available in the lower Feather River which should maximize spawning success and minimize handling stress.
- Very little (if any) angling occurs in the direct proximity of the proposed Bedrock Location. Heavy angling pressure for steelhead does occur upstream (approximately 300 m) and downstream (approximately 500 m) of the proposed location.

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- Any angling closure above the weir will only close a small portion of the river that is currently closed from July 16 to December 31 to protect spawning salmon. Downstream segregation weir locations may require more significant angling closures.
- Currently, there is no motorized boating allowed above the State Highway 70 Bridge (City of Oroville Ordinance). Therefore, a weir placed at the proposed Bedrock location would not be subject to motorized boating pressure. Canoes, kayaks and other non-motorized boats could freely pass over the collapsible portion of the weir.
- Any weir location must deal with swimmers passing over or around the weir. The Bedrock location would probably have less swimmer traffic due to its colder water temperatures (as compared to some downstream locations).
- Provides more downstream habitat for fall run salmon than any other weir location.

Known Constraints:

All weirs (regardless of location) are subject to challenges from potential impacts to angling, boating, swimming and impacts to fisheries from poaching and equipment vandalism. While careful project design and implementation can minimize these impacts, several constraints may be more acute at the Bedrock Park weir site. These constraints include:

- Though the habitat upstream of Bedrock Park is heavily utilized, it may be found inadequate in quantity/quality to support the entire spring run Chinook salmon population.

<u>Robinson Riffle (River Mile 62)</u>

Known Opportunities:

- The spawning habitat between Robinson and the Fish Barrier Dam (FBD) provides excellent habitat and is heavily utilized by spawning Chinook and steelhead. Currently, approximately 45-60% off all salmon spawn in this section alone.
- The channel morphology (width, depth & velocity) at the Robinson Riffle site is probably ideal for a weir location. The channel is fairly wide, but very slow moving and shallow. Below the proposed weir site is a large pool that could be utilized by holding fall run Chinook.
- The area surrounding Robinson Riffle is accessible (near a road) and appears suitable for construction of a weir and possible egg taking station.
- Robinson Riffle might experience fewer problems with vandalism and poaching due to its relative isolation from areas of high public use.

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- Provides more downstream habitat for fall run salmon than does Gateway Riffle.
- Provides more upstream habitat for spring run salmon than does Bedrock Park.

Known Constraints:

All weirs (regardless of location) are subject to challenges from potential impacts to angling, boating, swimming and impacts to fisheries from poaching and equipment vandalism. While careful project design and implementation can minimize these impacts, several constraints may be more acute at the Robinson Riffle weir site. These constraints include:

- Distance from Feather River Fish Hatchery (FRFH) will require construction of an egg taking station and transport of eggs to the hatchery.
- Wide active channel and unstable bed morphology may complicate placement and construction of egg take station.

An aerial photo is provided on the following page showing the Low Flow Channel of the Feather River and potential locations for the segregation weir.

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