Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

FINAL

REC 4 – STREAM-BASED RECREATION OPPORTUNITIES TECHNICAL STUDY REPORT

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1.0 INTRODUCTION

This report describes stream-based recreation opportunities studies conducted by the Placer County Water Agency (PCWA) in association with the REC 4 – Stream-based Opportunities Technical Study Plan (REC 4 – TSP). The REC 4 – TSP was included in Supporting Document (SD) H of the Pre-Application Document (PAD) for the Middle Fork American River Project (MFP or Project) (PCWA 2007a).

This report provides a detailed description of the methods and results of stream-based recreation opportunities studies completed in 2007 and 2008 in relation to the overall scope of work described in the REC 4 – TSP. Specifically, this report: (1) characterizes general stream-based recreation opportunities in the bypass and peaking reaches associated with the MFP; (2) summarizes flows (hydrology) in the bypass and peaking reaches under impaired and unimpaired conditions, as they relate to specific stream-based recreation opportunities; and (3) provides detailed activity-specific information regarding trail use at stream crossings, angling, whitewater boating, and mining in the bypass and peaking reaches. In addition, this report provides information about how flow information is disseminated to the public and identifies potential public safety issues related to stream-based recreation.

2.0 STUDY OBJECTIVES

The REC 4 – TSP included five study objectives, as follows:

- Characterize stream-based recreational opportunities;
- Identify a range of flows in the bypass and peaking reaches that provide for stream-based recreation opportunities, such as angling, water-play, mining and whitewater boating;
- Characterize stream crossing conditions at specific crossings in the peaking reach;
- Determine mechanisms for disseminating flow information to the public; and
- Identify existing public safety measures and concerns.

Figure REC 4-1 shows the REC 4 – TSP study objectives, study elements, and activities that relate to each objective. It also shows how information developed through the stream-based recreation opportunities studies has been or will be documented.

3.0 STUDY IMPLEMENTATION

The REC 4 – Stream-based Recreation Opportunities studies were initiated in 2007 and completed in 2008. Specific study elements that have been completed, outstanding study elements, and any deviations or proposed modifications to the REC 4 – TSP are discussed in the following subsections.

3.1 STUDY ELEMENTS COMPLETED

The REC 4 – TSP included eight study elements and a contingency study. The following summarizes the work completed to date, organized by each study element, in the order they appeared in the REC 4 – TSP.

Describe General Stream-based Recreation Opportunities

- Utilized existing information sources to characterize and describe stream-based recreation opportunities, experiences, and preferences in the bypass and peaking reaches.
- Described stream-based recreation use and activities along the Middle Fork American River and North Fork American River between Indian Bar Rafter Access and Oregon Bar Access, utilizing information that was developed as part of the Auburn State Recreation Area (ASRA) General Plan/Resource Management Plan (GP/RMP) update.
- Utilized information developed through the REC 2 – Recreation Visitor Surveys TSP (PCWA 2007a) to describe stream-based recreation activities, experience, and the relationship between flow and user satisfaction, where appropriate.
- Developed maps showing the locations of popular waterplay, swimming and fishing sites, and whitewater boating runs, with respect to developed recreation facilities, land jurisdictional boundaries, and primary access roads and trails.

Summarize Hydrologic Information

- Utilized the available historical flow information to describe flows at specific locations (nodes) in the bypass and peaking reaches under impaired and unimpaired conditions.

Develop Activity Specific Information – Trail Use at Stream Crossings, Angling, and Whitewater Boating

- Developed activity-specific information as it relates to three specific uses: trail use at stream crossings, angling, and whitewater boating. Activity-specific information was developed using pertinent information available from existing sources, by implementing structured focus group interviews, and conducting flow studies.

Develop Activity Specific Information – Mining

- Developed information about mining in the bypass and peaking reaches by using pertinent information available on the internet and through recreation specialists, and by utilizing information maintained by the U.S. Bureau of Land Management (BLM).

Flow Information Dissemination

- Characterized the type of flow information that is currently available to the public through, for example, existing web sites and flow phones.
- Identified, mapped, and characterized existing stream gaging stations (location, equipment, and data collection capabilities) in target reaches.
- Consulted with stream-based recreational users, for example whitewater boaters, anglers, equestrians, swimmers, and waders, to identify target reaches or locations where flow information may enhance stream-based recreation opportunities.

Public Safety

- Determined whether there are signs present at key river access and crossing points that warn the public of potential flow fluctuations based on information developed as part of the LAND 3 – Emergency Action and Public Safety TSP (PCWA 2007a). Where present, the location, condition, and content of each sign was described.
- Identified potential safety concerns along the bypass and peaking reaches based on information developed as part of the REC 2 – TSP, along with information developed through consultation with the resource agencies and local user groups.

3.2 DEVIATIONS FROM THE REC 4 – TSP

All of the study elements were completed as outlined in the REC 4 – TSP with a few minor deviations as described in the following.

Stream Crossing Flow Study

The REC 4 – TSP indicated that PCWA would assemble a group of stream crossing users to assess stream crossing conditions over a range of flows at specific locations in the peaking reach. The REC 4 – TSP did not identify stream crossing studies on any of the bypass reaches. According to the participants present at a Trail User/Stream Crossing Focus Group session that was held on May 12, 2008, stream crossing is primarily dependent upon channel morphology, water depth, and velocity. Based on this information, PCWA proposed to develop stage/discharge relationships at each of the stream crossing locations in lieu of assembling a group of stream crossing users to assess crossing conditions. This refinement was documented in writing and provided to the Recreation Technical Working Group (TWG) members by e-mail on July 14, 2008 for review. The refinement was then discussed and approved by the Recreation TWG at the July 21, 2008 meeting.

Angling Flow Study

The REC 4 – TSP indicated that PCWA would assemble a group of anglers to assess

fishing conditions over a range of flows at specific locations in the peaking reach and on the Rubicon River below Ellicott Bridge. Based on the information developed during an Angler Focus Group session held on May 20, 2008, PCWA proposed to address flow-related fishing issues in the peaking reach by analyzing ramping conditions in lieu of assembling a group of anglers to assess fishing conditions. PCWA did not propose to conduct angler flow studies on the Rubicon River because sufficient information to characterize flow-related issues related to angling was developed during the Angler Focus Group session. These refinements were documented in writing and provided to the Recreation TWG members by e-mail on July 14, 2008 for review. The refinements were then discussed and approved by the Recreation TWG at the July 21, 2008 meeting.

Whitewater Boating Studies on the Peaking Reach

PCWA conducted whitewater boating studies on three runs located in the peaking reach.

- Tunnel Chute Run (Indian Bar Rafter Access to Ruck-a-Chucky Recreation Area);
- Mammoth Bar Run (Ruck-a-Chucky Recreation Area to Mammoth Bar); and
- Confluence Run (North Fork and Middle Fork American River Confluence to Oregon Bar).

A fourth run, the Murderer's Bar Run (Mammoth Bar to Confluence), was identified as a target reach in the REC 4 – TSP. However, this run was eliminated from study based on information developed during the Whitewater Boating Focus Group session. Specifically, the focus group participants did not believe that a study on this reach was necessary for three reasons. First, the presence of a Class V rapid (Murderer's Bar Rapid) immediately downstream of the put-in dissuades beginning and intermediate boaters from using this reach. (Beginning and intermediate boaters are the most likely to boat this section). Second, the run is only about two miles long. Third, the boatable flow range is known to be the same as that for the run located immediately upstream (Mammoth Bar Run) based on interviews with existing users. The Recreation TWG concurred with this assessment during a meeting held on July 21, 2008. Accordingly, flow studies were not conducted on the Murderer's Bar Run.

Voluntary Enhancement

Although it was not included in the REC 4 – TSP, the Recreation TWG participants requested that PCWA acquire and review existing published sources to document preferred stream crossing depths and velocities for different activity types. In response, PCWA committed to reviewing existing information sources and documenting the results in this report.

3.3 OUTSTANDING STUDY ELEMENTS

The following study element has been partially completed:

Potential Whitewater Boating Studies on Runs in Bypass Reaches

The REC 4 – TSP indicated that PCWA would conduct whitewater boating studies on the bypass reaches, if determined to be necessary by the Plenary and the Recreation TWG, based on the results of preliminary data gathering activities, as documented below.

- The Recreation TWG will utilize the information developed through the focus group session to expand upon the information developed through existing sources. In consultation with the Recreation TWG and upon review of other TWG objectives, determine if whitewater boating studies are necessary to further assess whitewater boating opportunities in the bypass reaches based on information developed in the tasks above and a review of the hydrologic record. If appropriate, identify target reaches where flow studies are needed and determine study objectives that consider the physical and operational constraints of the Project, and PCWA's ability to release flows. This flow study proposal will be sent to the Plenary for approval.
- If determined to be necessary by the Plenary and the Recreation TWG, conduct whitewater boating studies on specific runs in the bypass reaches using the methods described reaching the REC 4 – TSP.

During a Recreation TWG meeting conducted on June 15, 2009, PCWA agreed to conduct whitewater boating studies on the following bypass reaches, pending approval by the Plenary:

- Rubicon River – Ellicott Bridge to Ralston Afterbay. PCWA agreed to conduct a single flow study on a spill or high flow event during the winter/spring of 2010, with a target a flow range of 500 – 800 cfs as measured at Ellicott Bridge. To date, this flow range has not been observed in the Rubicon River in 2010. As such, this flow study has not been completed.
- Middle Fork American River – French Meadows Dam to Middle Fork Interbay. PCWA agreed to conduct a single flow study during the spring of 2010, with the target flow range to be determined by the study team. This study was conducted on May 22, 2010. The study flow at the put-in was 252 cfs. The study team was unable to complete the run due to the extensive amount of logs and downed trees in the river.
- Middle Fork American River – Middle Fork Interbay to Ralston Afterbay. PCWA agreed to conduct a single flow study during the spring of 2010, prior to May 15th, or immediately after the cessation of spill, if spill extended beyond May 15, 2010, with a study target a flow range of 450-550 cfs as measured at the gage just below Middle Fork Interbay Dam. This study was conducted on May 8,

2010. The study flow at the put-in was 425 cfs. The flow at the take-out was 475, due to accretion from tributaries.

PCWA is currently preparing a report which will describe the methods and results of the contingency whitewater boating studies. This report will be distributed as a stand-alone document.

3.4 PROPOSED MODIFICATIONS TO THE REC 4 – TSP

There are no proposed modifications to the REC 4 – TSP.

4.0 EXTENT OF STUDY AREA

The study area includes the bypass and peaking reaches associated with the MFP as identified in Table REC 4-1.

5.0 STUDY APPROACH

This study focuses on characterizing and describing stream-based recreation activities and opportunities along the bypass and peaking reaches associated with the MFP. Specific methods used to complete the study elements outlined in the REC 4 – TSP are described in the following subsections.

Note that the study methods described below, and the study results described in Section 6.0, are not organized in the order that the study elements appeared in the REC 4 – TSP. To facilitate reporting, similar subject material was combined together. For example, all material related to whitewater boating appears together. Similarly, all material related to angling appears to together and all material related to trail use and stream crossing appears together. Table REC 4-2 provides a "crosswalk" showing where the material associated with each study element can be found in this report.

5.1 GENERAL STREAM-BASED RECREATION OPPORTUNITIES

Existing information sources were used to characterize stream-based recreational opportunities, activities, experiences, and preferences in the bypass and peaking reaches. Existing information sources that were utilized include:

- Published guidebooks and maps, brochures available from local guides, outfitters and clubs, and data and reports available from government agencies such as the U.S. Department of Agriculture – Forest Service (USDA-FS), ASRA, and the BLM.
- Information developed by California Department of Parks and Recreation (CDPR or State Parks) as part of the ASRA GP/RMP update, including the following two reports developed as part of the GP/RMP process: (1) Report of the Findings from the 2006 Auburn State Recreation Area Visitor Survey (California State Parks, April 2007); and (2) Auburn to Cool Trail (ACT) Crossing Feasibility Study (JSA, June 2007).

The existing information available from the USDA-FS, ASRA, and other government sources was augmented with information developed in consultation with the stakeholders during three focus group sessions, and during follow-up consultation, to: (1) describe and characterize stream-based recreation opportunities along the bypass and peaking reaches, and (2) develop GIS-based maps showing the locations of the primary trails and roads used to access the bypass and peaking reaches, trail crossings, whitewater boating runs, popular fishing locations, and mining locations and claims in the bypass and peaking reaches. These maps also show the locations of developed recreation facilities and land jurisdictional boundaries.

PCWA also utilized information developed as part of PCWA's REC 2 – Recreation Visitor Survey TSP (PCWA 2007a) to help characterize recreation use on the bypass and peaking reaches, as described in the following subsection.

5.1.1 PCWA Recreation Visitor Surveys

PCWA conducted recreation visitor surveys in conjunction with the REC 2 – TSP (PCWA 2007a). The recreation visitor surveys were conducted during 2008, from Memorial Day weekend through Labor Day, and were administered at all Project recreation facilities, at select dispersed concentrated use areas, and at five locations located in the ASRA along the peaking reach. The survey methods and results are described in detail in the REC 2 – Recreation Visitor Surveys Technical Study Report (PCWA 2010c).

A sample of the Recreation Visitor Survey instrument is included in Appendix A for reference. The Recreation Visitor Survey instrument included a Background Information Section, which was completed by all respondents, and seven individual sections that were selectively completed by respondents, based upon the recreation activities they participated in. One of these seven sections (Section A-5) specifically pertained to stream-based recreation use. Individuals who indicated in the Background Information Section that they engaged in day use along a river or stream were asked to complete Section A-5 (Day Use along a Stream/River).

The REC 2 – Recreation Visitor Survey resulted in a total of 968 surveys. Of these, 249 survey participants completed all or a portion of Section A-5 (Day Use along a Stream/River), as follows:

- Twenty-one respondents indicated they recreated on a bypass reach. All of these respondents were encountered at or near Ralston Afterbay.
- Two hundred and nineteen respondents indicated they recreated on the peaking reach. These respondents were encountered at Indian Bar Rafter Access, Ruck-a-Chucky Recreation Area, Mammoth Bar, the Confluence, and Birdsall Access/Oregon Bar Access.
- Nine respondents indicated they recreated on a stream or river reach that was not defined as either a bypass or peaking reach (for example, the Rubicon River,

upstream of Hell Hole Reservoir). These surveys were not analyzed because the responses do not pertain to the MFP.

All of the survey responses and associated meta-data were entered into Statistical Package for the Social Sciences (SPSS), a statistical database and analysis program. The data was then queried and cross tabulated to address the following topics as they relate to the bypass and peaking reaches:

- Stream-based recreation activities;
- Arrival time and length of stay;
- Acceptability of flow-related factors;
- Acceptability of non-flow related factors;
- Flow perception;
- Recreation experience;
- Overall satisfaction;
- Adequacy and availability of flow information sources; and
- Public safety along rivers and streams.

The survey results pertaining to general stream-based recreation activities are summarized in Section 6.2.

A number of the respondents interviewed at Ruck-a-Chucky Recreation Area (33 of 219 people) indicated that whitewater boating was their primary recreation activity. Responses provided by these whitewater boaters are described separately in Section 6.4.2. Responses pertaining to flow information sources and safety are summarized in Sections 6.7.3 and 6.8.2, respectively.

5.2 HYDROLOGIC INFORMATION

In preparation for relicensing, PCWA acquired and compiled historic hydrologic data for the gages in the Watershed and has been augmenting the data set with new hydrologic data as it becomes available. The goal is to use the hydrologic data to describe impaired flows and model data to describe unimpaired flows in the bypass and peaking reaches. The methods used to fill in data gaps, to account for accretion flows, and to model unimpaired flows were developed in consultation with the stakeholders and are described in detail in the 2005 – 2006 Hydrology Study Status Report (PCWA 2007b).

The historic and synthesized hydrologic data were used to describe impaired and unimpaired flows at specific locations in the bypass and peaking reaches associated with the MFP, as they pertain to the stream-based recreation activities. Mean daily flow data collected from 1975 – 2007 were used to describe impaired flow in the peaking and bypass reaches. In addition, 15-minute data collected from 1988 – 2007 (excluding 1996) were used to describe and analyze impaired flows in the peaking reach, as

appropriate. The data were summarized both graphically and in tabular format to represent five water year types (extreme dry, critically dry, dry, above normal, and wet) in either daily or hourly time steps.

The information was also used to describe flows at specific locations in the bypass and peaking reaches under impaired and unimpaired conditions as they pertain to specific recreation activities such as stream crossing, whitewater boating, and angling. More specifically, the hydrologic data were used to evaluate: (1) stream crossing opportunities in the peaking reach, by season and water year type; (2) whitewater boating opportunities on the bypass and peaking reaches under impaired and unimpaired conditions; and (3) the effect of ramping on angling opportunities in the peaking reach. The hydrologic data were also used to interpret the results of recreation visitor surveys conducted in 2008.

Note that many of the analyses involving flows in the peaking reach rely on historic and real-time flow data available from a stream gage located 1.25 miles downstream of Oxbow Powerhouse. This gage is referred to in this report as the Middle Fork American River Gage below Oxbow Powerhouse. This gage is also referred to by the following names:

- The U.S. Geological Survey (USGS) refers to this gage as Middle Fork American River Nr. Foresthill, CA (Gage No. 11433300); and
- The California Data Exchange Center (CDEC) refers to this gage as Middle Fork American River Nr. Oxbow PH (OXB).

5.2.1 Flow Travel Time

Information developed as part of the AQ 1 – TSP (PCWA 2007a) was used to identify water travel time in the peaking reach between Oxbow Powerhouse and Oregon Bar over a range of flows. The specific methods used to estimate flow travel times at different locations will be described in detail in the AQ 1 – Instream Flow TSR (PCWA 2010a). A brief synopsis of the methods used to develop water travel time estimates is provided in the following.

Travel velocity of flow releases in the peaking reach resulting from operations of the Oxbow Powerhouse was determined using data collected at five pressure transducers distributed throughout the reach in 2008. Five pressure transducers were installed at various distances downstream of Oxbow Powerhouse (located at RM 24.35), as follows:

- RM 23.75 – Above Middle Fork American River Gage below Oxbow Powerhouse (0.6 miles downstream of Oxbow Powerhouse);
- RM 19.3 – Cache Rock (5.05 miles downstream of Oxbow Powerhouse);
- RM 14.5 – Otter Creek (9.85 miles downstream of Oxbow Powerhouse);
- RM 9.5 – Drivers Flat (14.85 miles downstream of Oxbow Powerhouse); and

- RM 1.4 – Below Mammoth Bar (22.95 miles downstream of Oxbow Powerhouse).

A linear regression of the base flow and the velocity of 17 flow events was used to create a travel velocity relationship (Travel Velocity mph = 0.0026 * Base Flow cfs + 1.96; R2=0.88). This relationship is visually depicted on Figure REC 4-2. Figure REC 4-3 graphically shows how water travel time is relatively constant during the up-ramp, but attenuates during the down-ramp, depending upon stage.

Typical flows during normal summer operations range from approximately 200 cfs to 1,000 cfs. According to the base flow/travel velocity relationship (Figure REC 4-2), water travels at about 2.5 mph when water ramps from 200 cfs to 1,000 cfs. This value was factored into any analysis that required location-specific flow information, as follows:

- Flow data used for the trail crossing opportunities analysis was adjusted by travel time between trail crossing points to better represent flow conditions at each crossing.
- Flow data used for the whitewater boating opportunities analysis was adjusted by travel time between Oxbow Powerhouse and each of the put-ins to better represent flow conditions associated with each run.
- The ramping analysis conducted for the angling flow study was limited to the area immediately below Oxbow Powerhouse. Therefore, travel time adjustments were not necessary for the ramping analysis.

5.3 TRAIL USE AT STREAM/RIVER CROSSINGS

The REC 4 – TSP included a study element that focused on developing information about trail use as it pertains to stream crossing in the bypass and peaking reaches. This study element included four primary tasks as follows:

- Describe Western States and Tevis Cup Trail Routes and Crossings;
- Implement Structured Group Interviews (Focus Group Session);
- Conduct Stream Crossing Flow Studies; and
- Determine Flow Travel Times.

Although it was not included in the REC 4 – TSP, the Recreation TWG participants also requested that PCWA acquire and review published information to document preferred stream crossing depths and velocities for different activity types.

The methods used to accomplish each of these tasks are described in the following subsections.

5.3.1 Western States and Tevis Cup Routes and Crossings

PCWA utilized existing information sources to describe and map the primary routes used for the Tevis Cup and Western States 100 (WS 100) endurance races, including the specific locations where these routes cross the Middle Fork American River downstream of Oxbow Powerhouse and event timing. Information sources include USDA-FS maps, trail guides, reports and letters published by the CDPR, and the Tevis Cup and WS 100 web sites (www.teviscup.org and www.ws100.com, respectively).

Information about coordination of flow releases from Oxbow Powerhouse during the two races was obtained through interviews with PCWA, PG&E, race organizers and participants, commercial boating outfitters, and Trail User/Stream Crossing Focus Group participants. Additional information about stream crossing studies previously conducted by PG&E in association with the Tevis Cup event was provided by Mr. Tom Johnson, a WS 100 and Tevis Cup race participant. Information about the coordination of stream crossing activities related to the WS 100 was provided by Nate Rangel, owner and operator of Adventure Connection, a local whitewater outfitter that provides raft assistance during the race.

5.3.2 Structured Group Interviews (Focus Group Session)

PCWA conducted a focus group session with a variety of trail users to develop information about stream crossings associated with the primary trails that intersect the bypass and peaking reaches. A list of potential Trail User/Stream Crossing Focus Group participants was identified in consultation with the Recreation (Appendix B). PCWA sent written invitations to each potential participant by letter dated April 7, 2008 and by e-mail dated April 7, 2008 (Appendix B). The focus group discussion topics were developed in consultation with the Recreation TWG and were distributed with the invitation (Appendix B).

The Trail Use/Stream Crossing Focus Group session was held on May 12, 2008. The focus group was attended by 13 people affiliated with the following activities: horseback riding (7), mountain biking (3), and hiking/running (3). The discussion focused on identifying: (1) where trail users cross the bypass and peaking reaches; and (2) factors that affect stream crossing. All meeting materials, including the meeting sign-in sheet and participant profiles are included in Appendix B.

To support the discussion, PCWA provided large scale aerial orthophotographs and other map products showing streams, rivers, roads, and existing trails. Information discussed during the meeting was documented and edited live on an excel spreadsheet projected on a screen. A complete set of the notes that were captured during the focus group session are included in Appendix B for reference. Information developed during the focus group session was used to: (1) supplement information available from public sources; (2) identify preferred stream crossing conditions; (3) describe endurance event timing and coordination; and (4) identify potential safety concerns. Information developed during the focus group session was also used to refine the study approaches

outlined in the REC 4 – TSP to more directly address the flow-related issues associated with stream crossing.

The focus group participants identified and discussed eight potential stream crossings: one on the Rubicon River, four on the Middle Fork American River between Oxbow Powerhouse and the Confluence, and three on the North Fork American River between the Confluence and Oregon Bar. No stream crossings were identified on the Middle Fork American River between French Meadows Reservoir and Ralston Afterbay, on Duncan Creek, or on Long Canyon Creek. Summary information about each of these stream crossings as discussed during the focus group session is provided in Table REC 4-3.

Some of the information provided by the focus group was later refined during follow-up conversations and site visits conducted with the stakeholders. For example, the focus group originally identified Oregon Bar as a crossing location. Oregon Bar is a gravel/cobble bar located downstream of Knickerbocker Creek, in the China Bar Recreation Area. California State Parks constructed a river access point just downstream of the bar. This access point is referred to by California State Parks and in this report at the Oregon Bar River Access. The Oregon Bar crossing location was excluded from further study because, according to U.S. Geological Survey USGS topographic maps, it is located within the Folsom Reservoir inundation area and therefore lies outside of the study area. More importantly, it was determined through field visits conducted after the focus group session, and through follow-up consultation (Appendix B), that equestrians actually cross the river upstream of Oregon bar, near the Birdsall Access; they do not cross at Oregon Bar as previously documented. The crossing location near the Birdsall Access is referred to by the equestrians, and in this report, as the “Coffer Dam Crossing.”

The trail users provided additional information and clarification regarding the Trail User Focus Group notes via a number of written letters and e-mail correspondence, as follows:

- E-mail from Gordon Ainsleigh dated August 12, 2008
- E-mail from Debby Murphy dated August 31, 2008
- Letter from Pat Gibbs dated September 19, 2008
- E-mail from Antonio Rossmann dated September 19, 2008
- E-mail from Jan Peterson dated September 21, 2008
- E-mail from Gene Freeland dated September 22, 2008

This correspondence is included in Appendix B for reference.

5.3.3 Published Stream Crossing Information

As requested by the Recreation TWG, PCWA compiled and summarized existing,

publicly available information regarding depth and velocity criteria for pedestrian and equestrian stream crossing. The search focused on three primary sources: (1) governmental agencies that manage outdoor recreation resources; (2) academic institutions with outdoor recreation programs; and (3) non-governmental organizations that advocate for equestrian and hiking use.

Information about pedestrian stream crossing depths and/or velocities was found in the following reports:

- Recreational Trail Design and Construction - University of Minnesota. 2009;
- Trail Construction and Maintenance Notebook – U.S. Department of Transportation -Federal Highway Administration. Forest Service Technology & Development Program. 2007a;
- Flow Requirements for Recreation and Wildlife in New Zealand Rivers – A Review. M.P. Mosley. Journal of Hydrology; Vol. 22, No. 2. 1983; and
- Methods of Assessing Instream Flows for Recreation – Hyra, R. 1978.

In addition, information about equestrian stream crossing depths and/or velocities was found in the following reports and/or articles:

- Crossing Steams Safely – Trail Blazer Magazine. Willis Lamm. 1996;
- Trail Construction and Maintenance Notebook – U.S. Department of Transportation -Federal Highway Administration. Forest Service Technology & Development Program. 2007a; and
- Equestrian Design Guidebook for Trail, Trailheads, and Campgrounds - U.S. Department of Transportation – Federal Highway Administration. Forest Service Technology & Development Program. 2007b.

The following summarizes general and specific information pertaining to pedestrian and equestrian stream crossing based on the existing literature, augmented with information provided by the focus group participants.

General Information Pertaining to Stream/River Crossing

According to the existing literature, water depth and velocity are the primary safety and ease considerations when crossing streams. In addition to water depth and current velocity, other considerations for safe stream crossing include substrate conditions, ingress and egress bank conditions, water temperature, and potential downstream hazards. Water clarity is also a concern and it is advantageous when water is clear enough to see the bottom to avoid submerged hazards. Stream bank condition and access hardening are factors to consider regarding environmental acceptability of crossings.

The information provided in published reports is consistent with comments made by the Trail User/Stream Crossing Focus Group. In general, the focus group indicated that

stream crossing is primarily dependent upon a combination of activity type (hiking, biking, horse back riding), channel morphology, water depth, and velocity. For example, hikers are particularly sensitive to stream velocities. Equestrian users prefer to cross in locations where the substrate is relatively homogenous and free of large boulders or deep center channels.

Pedestrian Stream Crossing

Water depth and velocity criteria for pedestrian stream wading and crossing are summarized in Table REC 4-4, along with information developed through the focus group for specific crossing locations. As indicated, preferred water depth for wading ranges from .75 to 2.5 feet; maximum water depth ranges from 3.9 to 4.0 feet, although crossing at these depths would only be possible if current velocities are low. Preferred current velocities (numeric values) range from 0.25 to 2.0 feet per second (ft/sec). Maximum current velocities range from 2.2 to 3.0 feet/second (ft/sec).

In reality, pedestrian wading and crossing is dependent upon a combination of both depth and velocity, and other factors such as substrate. For example, it is possible to cross a stream that is deep if current velocities are low. Conversely, it is possible to cross a stream with relatively high current velocities if water depth is shallow. In both cases, crossing is more difficult if the substrate is uneven, slippery, or dominated by large cobbles and boulders.

The relationship between current velocity and water depth is discussed in Flow Requirements for Recreation and Wildlife in New Zealand Rivers (Mosley 1983). The report includes a figure showing depth-velocity limits for safe wading for different age and size groups, recognizing that wading is partly dependant upon the physical characteristics of the individual. Two of the velocity/depth curves on Mosley's figure (B and C) were utilized as a basis for the stream crossing analysis presented in Section 6.3.2 of this report. Mosley's curves pertain to "average adults and teenagers" (B) and sub-teen children (C). The analytical purposes, the Mosley curves were used in this report as follows:

- The lower curve (C) was used to define the transition from easy/moderate to moderate/difficult crossing conditions. The area under the curve represents the combination of water depths and velocities that would result in easy to moderate crossing conditions, based on information contained in the existing literature. Crossing conditions become more difficult as the threshold is approached.
- The upper curve (B) was used to define the transition from moderate/ difficult to difficult crossing conditions. The area between curves B and C represents the combination of water depths and velocities that would result in moderate to difficult crossing conditions, based on information contained in the existing literature. Crossing conditions become more difficult as the threshold is approached. The combination of velocities and water depth above this threshold would likely be too difficult to cross by most pedestrians or equestrians.

The resulting wading/crossing velocity and depth suitability relationship is shown in Figure REC 4-4. PCWA recognizes that crossing is dependent upon a variety of factors including water temperature, substrate, and the physical characteristics of the individual crossing the stream. As such, both of the crossing thresholds were utilized for the analyses contained in this report. If the higher crossing threshold flows appear to be too difficult, the lower threshold can be used instead to interpret the report results.

Equestrian Crossing

Water depth and velocity criteria described in the existing literature for equestrian stream crossing is summarized in Table REC 4-5, along with information developed through the focus group for specific crossing locations. As indicated, preferred water depth for equestrian crossing ranges from 1.5 to 2.0 feet; maximum water depth ranges from 2.5 to 3.3 feet. Information about preferred crossing velocities for equestrians was not found in the existing literature. A qualitative comment found in Trailblazer Magazine indicates that 5.0 ft/sec is “very fast”.

Most of the information available regarding equestrian stream crossing addresses the construction of suitable ingress and egress bank conditions and suitable conditions for locating stream crossings. As with pedestrian crossing, suitable streambed composition, optimally a consistent sand/gravel bed, is an important consideration for safe equestrian stream crossings. Ideally, a stream crossing should provide solid footing at a consistent depth from one bank to the other. The literature also suggests that equestrian users avoid crossing upstream from any hazards that they would not be comfortable swimming or floating through.

Depth/velocity relationships for equestrians were not found in the existing literature. However, based on comments made by the focus group participants, crossing requirements for equestrian users are fairly similar to those for pedestrians, although horses can tolerate higher current velocities due to their size and weight. For analytical purposes, it was assumed that the maximum crossing flow for pedestrians would also be applicable to equestrian crossings, particularly because equestrians often dismount when crossing a stream.

5.3.4 Stream Crossing Flow Studies

PCWA developed stage/discharge relationships at five specific crossing locations in the peaking reach identified by the Trail User/Stream Crossing Focus Group, as follows:

- Fords Bar;
- Ruck-a-Chucky Recreation Area (Greenwood Bridge);
- Poverty Bar;
- Mammoth Bar; and
- Coffer Dam (Birdsall Access).

The locations of each of these crossings are shown on Map REC 4-1 (Sheet 1 of 2). Photographs of each crossing at different flows are included in Appendix C.

Transects representing the most likely perpendicular path across the river at each stream crossing location were identified in the field with Patricia Gibbs, a local equestrian user, during a site visit conducted on September 27, 2008. During this initial site visit, the channel morphology was examined to determine whether it would be possible to safely enter, cross, and exit the river under low flow conditions, with consideration to different users. The end points of the crossing paths (transects) were marked on both banks for reference during future surveys. The crossing transects are shown on Map REC 4-2 (Fords Bar), Map REC 4-3 (Ruck-a-Chucky Recreation Area), Map REC 4-4 (Poverty Bar), Map REC 4-5 (Mammoth Bar), and Map REC 4-6 (Coffer Dam). Note that the distances shown on the maps represent the transect distance, not the width of the stream channel. The actual crossing width changes with flow.

After establishing the transects, the topography of the stream bed and bank along each transect was surveyed during low flow conditions using an auto level and stadia rod. Substrate types (e.g., sand, cobbles, boulders, bedrock) were also recorded. At Fords Bar, high resolution aerial photogrammetry was available and used to develop the out-of-water channel topography as part of the 2D instream flow study work being conducted at the site (AQ1 – Instream Flow TSP).

Water surface elevations were surveyed at each of the transects at low, intermediate, and high flows (Table REC 4-6). Velocities were measured across the transects at low and medium flows using a Marsh McBurney velocity meter. Data was collected at approximately one to two foot intervals. At Fords Bar, velocities were also measured at high flows using an Acoustic Doppler Profiler (ADP) during the instream flow modeling surveys (AQ1 – TSP).

The information recorded in the field was used to generate profiles showing the bed profile, water depth, and measured velocities across each transect at the three measured flows. In addition, the measured data were used as input to a hydraulic model (RHABSIM software; http://trpafishbiologists.com/rindex.html) to model water depths and velocities over a range of unmeasured flows, ranging from a low flow of 70 cfs to a maximum flow of 1,000 cfs (AQ 1 – TSP). The hydraulics were modeled at the trail crossings in approximately 50 cfs increments for the low end of the flow range (70 to 400 cfs) and then in 100 cfs increments for the high end of the flow range (400 to 1,000 cfs). The resulting plots are included in Appendix D.

Determining Suitable Stream Crossing Flows

The hydraulic modeling results at each trail crossing were combined with the wading/crossing criteria to determine the range of flows that were crossable by pedestrians and equestrians. At each stream crossing, the modeled water depth and current velocity values over the range of flows modeled (70 to 1,000 cfs) were tested against the wading/crossing suitability criteria to determine which flows were crossable at each of the crossing thresholds defined above. Velocity and depth were modeled at

points every 1-2 feet across the trail crossing transects. If at a particular modeled flow only a single isolated depth or velocity location on the crossing exceeded the wading criteria, the crossing was assumed to be crossable; however, if two or more consecutive locations across the stream exceeded the wading/crossing threshold for a particular difficulty level, the stream was assumed to not be crossable at that wading difficulty level.

For each trail crossing, plots of depth and velocity at the two flows that bracketed a wading/crossing threshold (i.e., one flow was crossable and the next higher flow was not) were developed to help illustrate the process of determining which flows were crossable and to show whether depth or velocity was the primary factor controlling crossing suitability at each location. For example, at a particular flow all of the modeled depth and velocity points across the crossing were plotted on the wading criteria depth/velocity plots. If two or more consecutive locations on the crossing exceeded the wading criteria, then it was assumed the trail crossing was not crossable at that flow.

Two crossing flows were determined at each site, as shown below. These flows represent: (1) the flow at which crossing suitability shifts from easy/moderate to moderate/difficult and; (2) the flow at which crossing shifts from moderate/difficult to difficult. Again, both of the crossing thresholds were utilized for the analyses contained in this report. If the higher crossing threshold flows appear to be too difficult, the lower threshold can be used instead to interpret the report results.

Location	Easy/Moderate to Moderate/Difficult Crossing Threshold Flow (cfs)	Moderate/Difficult to Difficult Crossing Threshold Flow (cfs)
Fords Bar	275	550
Ruck-a-Chucky	125	450
Poverty Bar	225	550
Mammoth Bar	175	375
Coffer Dam	175	375

Analyzing Stream Crossing Opportunities

After it was determined which flows were crossable at each trail crossing, the historic hydrology was used to determine the amount of time that each crossing in the peaking reach was crossable under impaired and unimpaired conditions. Specifically, the flow data were used to determine: (1) the average number of hours that easy/moderate and moderate/difficult crossing conditions were available at each stream crossing location under impaired conditions; and (2) the average number of hours per day that easy/moderate and moderate/difficult crossing conditions would have been available under unimpaired conditions. For the purposes of this analysis, a “day” was defined as the 12-hour period between 7:00 AM and 7:00 PM.

In addition, the flow data were used to determine: (1) the average number of days per

season that easy/moderate and moderate/difficult crossing conditions were available at each stream crossing location under impaired conditions; and (2) the average number of days per season that easy/moderate and moderate/difficult crossing conditions would have been available under unimpaired conditions. The results were expressed as a percentage of the total number of days counted. As recommended by a stakeholder (Pat Gibbs), and discussed with the stakeholders during a Recreation TWG meeting held on April 20, 2010, a "crossable day" was counted if flow was below the threshold for a minimum of one hour during the 7 A.M. – 7 P.M. time period.

For impaired conditions, the crossing opportunities analysis relied on 15-minute flow data (1988–2007) available from the Middle Fork American River Gage below Oxbow Powerhouse. For unimpaired conditions, the analysis relied on average daily flow data (1975–2007) developed for PCWA's operation model. In both cases, daily mean accretion flows from the primary tributaries (e.g., Otter Creek and Canyon Creek) and from the North Fork American River were added, as appropriate, using daily mean data developed for PCWA's operation model (1975–2007).

The results of the crossing opportunities analysis were tabulated by five water year types (critically, dry, normal, above normal, and wet), and by season (Summer, Fall, Winter, and Spring). The tabulated results were used to generate bar graphs depicting the average number of hours per day crossing was possible under impaired and unimpaired conditions, by season.

Accounting for Flow Travel Time

To account for travel time between Oxbow Powerhouse and the crossing locations, the flow data was "shifted" by travel time between points to better represent flow conditions at each crossing. As explained in Section 6.1.2, flow rates at the downstream locations are similar to those measured at Middle Fork American River Gage during the up-ramp. However, flows do not correlate as well during the down-ramp, which limits the accuracy of the analysis.

5.4 WHITEWATER BOATING

The REC 4 – TSP included a study element that focused on developing information about whitewater boating in the bypass and peaking reaches. This study element included four primary tasks as follows:

- Describe whitewater boating opportunities;
- Implement structured group interviews (Focus Group Session);
- Develop information about the whitewater boating opportunities in the bypass reaches, with the purpose of using the information to determine whether boating studies on any of the bypass reaches are necessary; and
- Conduct whitewater boating flow studies in the peaking reach to identify boatable flows in the peaking reach.

The methods used to accomplish the tasks related to each of these study elements are described in the following subsections.

5.4.1 Whitewater Boating Opportunities

Information available through existing information sources was used in conjunction with information developed during a focus group session and through consultation with local boaters to describe whitewater boating opportunities and/or resources in the bypass and peaking reaches, as outlined in the following:

- Published maps and existing literature were used in conjunction with information developed through the Whitewater Boating Focus Group session and through follow-up conversations with local boaters to develop maps showing the locations of the existing whitewater boating runs in the bypass and peaking reaches.
- Published maps and literature were used to describe and characterize each whitewater boating run identified on the peaking and bypass reaches, including: access points (put-in/take-outs), shuttle routes, length of run, gradient, portages, level of difficulty, types of water craft, estimated boatable flow ranges, support facilities, safety concerns, and any known limiting factors. The information available through existing sources was verified in the field and augmented with information developed through the Whitewater Boating Focus Group session and through follow-up conversations with local boaters.
- A preliminary list of channel and flow-dependent factors that could influence boatable flows was developed using aerial photographs and the Project video. This information was discussed and verified during the Whitewater Boating Focus Group session.
- Information developed during the Whitewater Boating Focus Group session and through follow-up conversations with local boaters was used to develop a list of comparable regional whitewater boating resources.
- Records maintained by ASRA were used to summarize commercial boating use in the peaking reach. Commercial boating records for 2007 and 2008 were originally provided by Bill Deitchman. Updated records were provided by Kris Dey, an ASRA Boating Program Assistant.
- Information developed as part of the REC 2 – TSP (PCWA 2007a) was used to characterize visitor perceptions as they pertain to whitewater boating based on interviews conducted at Ruck-a-Chucky Recreation Area.

In addition, information developed as part of the REC 1 – Recreation Use and Facility Assessment TSP (PCWA 2007a) was used to characterize private boating use in the peaking reach. The methods and results of this effort are presented in the REC 1 – Recreation Use and Facilities TSR (PCWA 2010b), and are summarized below.

Whitewater Boating Counts

PCWA counted private boaters putting-in and taking-out at Ruck-a-Chucky Recreation

Area. The counts were performed in 2007, on randomly selected weekdays, weekends, and holidays, from Memorial Day weekend through September 25, 2007. (Note that in 2007, PCWA's annual maintenance outage began on September 28, 2007.)

The observations were made over an 8-hour period, extending from 10:00 AM to 6:00 PM. Boating flows are generally not present at Ruck-a-Chucky Recreation Area before 10:00 AM or after 6:00 PM. Therefore, all boaters either putting in or taking out at Ruck-a-Chucky Recreation Area on the days when observations were made are presumed to have been counted and no multiplier was applied to the data to account for uncounted boaters. The private boating count use data is included in Appendix E for reference, organized as follows:

- All Counts – Includes all observations that were made during the study period, including private boaters taking out at Ruck-a-Chucky Recreation Area, boaters putting in at Ruck-a-Chucky Recreation Area, and private boaters who floated past Ruck-a-Chucky Recreation Area. The data set includes all observations and breakdowns organized by weekday totals, weekend totals, and holiday totals.
- Tunnel Chute Run – Includes only private boaters who were observed taking-out at Ruck-a-Chucky Recreation Area, meaning they boated the Tunnel Chute Run.
- Mammoth Bar Run– Includes only private boaters who were observed putting-in at Ruck-a-Chucky Recreation Area, meaning they boated the Mammoth Bar Run.
- Combined – Includes private boaters that did not either take-out or put-in at Ruck-a-Chucky Recreation Area but floated past Ruck-a-Chucky Recreation Area, meaning they boated both runs in combination. (Note that the raw data, which is included in Appendix E, includes 6 people on inner tubes. These people are not considered whitewater boaters and were therefore excluded from the results presented later this report.

In each case, the average number of people observed each day was multiplied by the number of days in the observation period (86 weekdays, 36 weekend days, and 3 holidays) to determine the total number of boaters. The resulting totals for each run are included in Appendix E and are discussed in Section 6.4.2 of this report.

5.4.2 Structured Group Interviews (Focus Group Session)

PCWA conducted a focus group session with whitewater boaters to develop information about whitewater boating opportunities in the bypass and peaking reaches. A list of potential Whitewater Boating Focus Group participants was identified in consultation with the Recreation TWG (Appendix F). PCWA sent written invitations to each potential participant by e-mail dated April 3, 2008 and by letter dated April 3, 2008 (Appendix F). The issues and questions to be discussed during the Whitewater Boating Focus Group session were also developed in consultation with the Recreation TWG (Appendix F). The list of issues and questions was used to help guide the focus group session and to address specific information needs identified by the Recreation TWG.

The Whitewater Boating Focus Group session was held on April 23, 2008 at PCWA's headquarters in Auburn. The focus group was attended by 10 people affiliated with the following activities: private boating (3); commercial boating (4); and angling (3). The meeting materials, including the sign-in sheet and participant profiles, are included in Appendix F for reference. To support the discussion, PCWA provided large scale aerial orthophotographs and other map products showing reservoirs, streams, rivers, roads, trails, and the locations of known whitewater boating runs. Information discussed during the meeting was documented and edited live on an excel spreadsheet projected on a screen. Copies of the spreadsheets are included in Appendix F.

The information that was developed during the focus group session was used to supplement information available from existing information sources and to develop additional details about: (1) specific boating runs; (2) existing and potential uses; (3) access conditions or constraints; (4) boatable flow ranges; (5) types of watercraft used; and (6) timing. In addition, the information was used to refine the study logistics for subsequent flow studies on the peaking reach.

The discussion focused on: (1) identifying and characterizing boater opportunities on the bypass and peaking reaches and (2) identifying boating flows specific runs based on the experience of the focus group participants. The focus group discussed boating opportunities on the following reaches:

- Rubicon River – RM 25-Ellicott Bridge;
- Rubicon River – Ellicott Bridge to Ralston Afterbay;
- Middle Fork American River – Middle Fork Interbay to Ralston Afterbay;
- Middle Fork American River – Oxbow Powerhouse to the Confluence (3 runs); and
- North Fork American River – Confluence and Oregon Bar (1 run).

Summary information about each of the reaches identified and discussed during the focus group session is provided in Table REC 4-7. This summary is intended to provide an overview of the information discussed during the meeting. The Foothills Water Network (FWN) and its members provided comments about the information developed at the focus group session in a letter dated February 9, 2009, which is included in Appendix F for reference. The Foothills Water Network's comments have been incorporated into Table REC 4-7, as appropriate.

The focus group participants had only limited experience on the Rubicon River and the Middle Fork American River downstream of Middle Fork Interbay. None of the focus group participants had any experience on the Middle Fork American River between French Meadows Reservoir and Middle Fork Interbay, Duncan Creek, or Long Canyon Creek. Accordingly, the focus group suggested that PCWA conduct follow-up interviews with other local boaters who were not present at the focus group session.

Follow-up Consultation with Whitewater Boaters

As suggested, contacted 13 boaters to obtain additional information about the runs on bypass reaches, and to refine the boatable flow ranges discussed during the focus group session. The following boaters were contacted: Phil DeReimer, Chris Tulley, Nathan Hunkapillar, Jared Noceti, Trevor Haagensen, James McCloud, Carleton Goold, Brad Brewer, Scott Lindgren, Ron Thompson, Charlie Center, Todd Stanley, and Zachary Lannoy. All of these contacts are considered highly experienced boaters and have boated at least one of the bypass reaches. All of these boaters have boated the Rubicon reach below Ellicott Bridge. One of the boaters has boated the lower part of the French Meadows reach and all of the Interbay reach. None of them had boated the reach from French Meadows Dam to the confluence with Duncan Creek.

Each of these contacts was asked a series of questions aimed at refining the information developed during the focus group session and to solicit new information. The results of these conversations are summarized in Table REC 4-8. As indicated, these follow-up conversations with whitewater boaters yielded additional information about the following bypass reaches:

- Rubicon River – RM 25- Ellicott Bridge;
- Rubicon River – Ellicott Bridge to Ralston Afterbay;
- Middle Fork American River – Duncan Creek Confluence to Middle Fork Interbay;
- Middle Fork American River – Middle Fork Interbay to Ralston Afterbay;
- Long Canyon Creek – Confluence of North and South Forks of Long Canyon Creek to Rubicon River Confluence; and
- Duncan Creek – Gold Dollar Trail to Middle Fork American River Confluence.

None of the boaters contacted had any experience boating North Fork Long Canyon Creek, South Fork Long Canyon Creek, or Duncan Creek, upstream of the Gold Dollar Trail.

5.4.3 Whitewater Boating Opportunities on the Bypass Reaches

The information available in the existing published literature, augmented by information developed through the Whitewater Boating Focus Group and through follow-up conversations with experienced boaters, was used to characterize each of the bypass reaches and potential boating resources. As required, the characterization includes information about access, shuttle routes, comparable runs, limiting factors, and boatable flow ranges.

Whitewater Boating Opportunities Analysis

The boatable flow ranges were utilized in conjunction with daily average flow data (1975-2007) to evaluate boating opportunities under impaired and unimpaired conditions. For the purposes of this analysis, the boatable flow range was defined as the minimum acceptable flow to maximum acceptable flow. The evaluation was limited

to those reaches where boating flows were identified in the published literature, by the focus group, or through conversations with experienced boaters, as shown below.

River/Stream	Reach or Segment	Boatable Flow Range (cfs)
Rubicon River	RM 25 to Ellicott Bridge	400–1500
Rubicon River	Ellicott Bridge to Ralston Afterbay	400–1500 1501–3000
Middle Fork American River	Duncan Creek Confluence to Middle Fork Interbay	150–200
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	200–800
Long Canyon Creek	Confluence of North and South Fork Long Canyon Creeks to Confluence with Rubicon River	200–600

In the case of the Rubicon River – Ellicott Bridge to Ralston Afterbay reach, two flow ranges were analyzed, a lower range and a higher range. The lower flow range represents the range of flows that both Class IV and V boaters can utilize, based on information developed through the focus group and through follow-up conversations with experienced boaters. The higher range represents that range of flows preferred by Class V expert boaters.

The boating opportunities analysis was conducted using existing and modeled flow data covering the period 1975-2007. In all cases, the flow data (e.g., the model arc) was selected to represent flow at the top of the reach (e.g., the put-in).

The following criteria were used to constrain the opportunities analysis.

- The analysis was limited to the period of April 1–October 1. The upper portions of the bypass reaches (e.g., the put-ins) are typically not accessible prior to April due to snow. After October there are no boating opportunities under either impaired or unimpaired conditions until spring run off, regardless of water year type.
- Flows within the defined boatable range must be present for a minimum of 3 consecutive days to allow the boating opportunity to be utilized.

The boating opportunities analysis results were tabulated by reach and by water year type. In some cases, hydrographs were developed to illustrate certain points.

5.4.4 Whitewater Boating Flow Studies in the Peaking Reach

PCWA conducted whitewater boating studies on three runs located in the peaking reach, which are identified on Map REC 4-7 and referred to as follows:

- Tunnel Chute Run: Middle Fork American River – Indian Bar Rafter Access to Ruck-a-Chucky Recreation Area;

- Mammoth Bar Run: Middle Fork American River – Ruck-a-Chucky Recreation Area to Mammoth Bar; and
- Confluence Run: North Fork American River – Confluence of Middle Fork American River to Oregon Bar.

A whitewater boating study was not conducted on the Murderer's Bar Run (Middle Fork American River – Mammoth Bar to North Fork American River Confluence). The characteristics of this run were developed using information available in published guide books augmented by information developed through the Whitewater Boating Focus Group session. According to the focus group participants, flow preferences for this run are the same as those on the Mammoth Bar Run, located immediately upstream.

The boating flow studies were developed in consultation with the Recreation TWG and focused on identifying boatable flow ranges for a variety of watercraft used by both commercial and private boaters, representing a range of interests and skill levels. Target flows for each run were developed using existing information sources and information developed through the Whitewater Boating Focus Group. The target flows and study dates were agreed to by the Recreation TWG during a meeting held on July 21, 2008, and are identified in Table REC 4-9.

Specific methods used to carry out the flow studies are described in the following subsections.

Identification of Study Participants

An initial list of potential study participants was developed in consultation with the Whitewater Boating Focus Group and the Recreation TWG (Appendix G). After identifying potential study participants, PCWA sent written invitation letters to each potential participant, along with information about the target flows, study schedule, and logistics. Copies of invitation letters are included in Appendix G. Accompanying the invitation letter was a Boating Flow Study Boater Profile Form.

In order to ensure ample participation, follow-up calls were made to stakeholder groups and local businesses to inform them of the study process and encourage participation in the flow studies. In addition, PCWA followed up with e-mails and telephone calls to notify study participants of meeting locations and times. It should be noted that the final study teams were not limited to previously confirmed study participants. In a few cases, additional team members were added on the study date.

The study team consisted of volunteers with the requisite skill level to boat each run. The study team composition was different for each run for two primary reasons. First, not all of the study participants had the appropriate skills to boat all of the runs. Second, not all of the study team participants were available on all of the study dates. The study team members are identified on Table REC 4-10, along with information about their craft type, skill level, and number of years of experience. Copies of the completed boater profile forms are provided in Appendix H. (Note that all personal

information, such as contact information, has been removed at the request of the stakeholders.)

Development of a Whitewater Boating Survey Instrument

Prior to conducting the flow studies, PCWA developed a Boating Flow Study Evaluation Form (survey instrument) in coordination with the Recreation TWG. This Boating Flow Study Evaluation Form was divided into six main sections, each addressing a specific evaluation topic, as follows: flow assessment; difficulty; time; hazards; flow estimates; and access. A blank Boating Flow Study Evaluation Form is contained in Appendix I

Study Logistics

Logistical support for the flow studies was provided by PCWA. A local rafting company, Adventure Connections, was contracted by PCWA to provide transportation for study teams and gear, and to provide food and beverages during the flow studies.

Study team participants met at pre-determined locations on the morning of the day of each study. Study participants were asked to complete a Boater Profile Form (Appendix H). All study team members also completed a PCWA liability release forms. In addition, each participant was given an opportunity to review the Boating Flow Study Evaluation Form (Appendix I) and to ask questions.

Study teams were shuttled from the meeting location to the put-in. Prior to each flow study, an orientation meeting was conducted, covering the following topics: study objectives; study process; logistics; and emergency protocols. Study team members were instructed to boat the run in a manner consistent with their typical boating outing, or in the case of commercial boaters, in a manner consistent with commercial trip operations. The team members were reminded that they were assessing conditions at the flow experienced that day. Team members were instructed to evaluate flow conditions related to:

- Overall nature and character of the resource;
- Types of channel conditions found in the run;
- Difficulty of the whitewater (initial class rating based on the International Scale of River Difficulty Classification System); and
- Flow conditions as related to navigability, safety, and recreational values.

Immediately following each run, the study team participants were asked to complete the Boating Flow Study Evaluation Form (Appendix I). After collecting the forms, the run was discussed as a group. The purpose of the group discussion was to gather additional information, and/or impressions to support of the information gathered during the flow study. These discussions were video-documented for future reference. Video tape recordings of all of the post-run discussions were digitally recorded for future reference. The resulting DVDs (DVD 2 of 3 and 3 of 3) are available for review upon request.

Photo-documentation

River conditions during the flow studies were photo-documented by a professional video team. A total of 13 photo-documentation locations were established in the peaking reach with the goal of capturing: (1) representative channel conditions associated with each run; and (2) changes associated with different flow conditions.

Photo-documentation locations were selected prior to initiating the flow studies by first reviewing previously recorded aerial video coverage of each target run and then visiting each location to ensure that it could be used to adequately document flow conditions during the boating studies. Each photo-documentation location was recorded using Global Positioning System (GPS) coordinates for future reference. The photo-documentation locations are summarized in Table REC 4-11, and depicted by run on Map REC 4-8, Map REC 4-9, and Map REC 4-10.

The photo-documentation team accompanied the boating study team on the water during all flow study runs. During each run, the photo-documentation team paddled ahead of the boating study team to set up cameras at the pre-selected photo-documentation sites before the boating study team arrived at the site. Conditions as viewed from each photo-documentation location were recorded at every test flow, with and without boaters, using a digital camera and digital video equipment. In addition to photo-documenting flow conditions on the water, the photo-documentation crew recorded process-related activities, including pre- and post- run discussions. Photographs and video captured in the field was later processed to create a digital video showing flow conditions from each vantage point at each of the target flows. Representative views along each run at the various test flows were video documented for future reference and analytical purposes. The resulting DVD is available for review upon request (DVD 1 of 3).

Data Analysis

Data from the Boating Study Flow Evaluation Forms were reviewed, coded and entered into a database. Video documentation of the post-run group discussions was reviewed to supplement and to help interpret information recorded on the Boating Study Flow Evaluation Forms. The data was then analyzed to develop Minimum Acceptable, Optimum, and Maximum Acceptable boatable flow ranges. In addition, the data were used to develop additional information about physical logistics and experiential values for each run.

Boating Opportunities Analysis

The boatable flow ranges identified through PCWA's whitewater boating studies were utilized in conjunction with the hydrologic data to evaluate boating opportunities under impaired and unimpaired conditions. The analysis relied on 15-minute flow data available from the Middle Fork American River gage below Oxbow Powerhouse (1988-2007, excluding 1996). Accretion flows (daily mean) from the primary tributaries (e.g.,

Otter Creek, Canyon Creek) and from the North Fork American River were added, as appropriate, using modeled daily mean data developed for PCWA's operation model.

The specific criteria used to analyze the boating opportunities on each run in the peaking reach are summarized in Table REC 4-12. In general, the following criteria were used to constrain the opportunities analysis.

- Whitewater Boating Flow Range: The analysis was limited to the flow range identified through PCWA's flow studies, bracketed by the minimum acceptable flow and the maximum acceptable flow.
- Boating Season: The analysis was limited to the period of April 1–October 1. This timeframe was selected because the vast majority of whitewater boating use on the peaking reach is related to commercial rafting and almost all commercial rafting activity takes place between these dates. However, PCWA acknowledges that private whitewater boating use occurs outside of this window.
- Flow Continuity: The analysis considered the amount of time that a target flow range must be continuously present to constitute a boating opportunity. The amount of time required to boat a specific run is dependent upon the length of the run. Therefore, the amount of time used in the analysis varies by run, as identified in Table REC 4-12.
- Flow Timing: The analysis considers the time of day that water typically arrives at each of the put-ins and allows for boaters to be at the appropriate take-out by 6:00 PM at the latest. Flow timing varies by run, depending upon distance from Oxbow Powerhouse, and the length of the run, as identified in Table REC 4-12.

The results of the boating opportunities analysis were tabulated by five water year types (critically dry, dry, normal, above normal, and wet) and by month (April–September).

5.5 ANGLING

This study element involved two primary tasks: (1) implementing structured group interviews (focus group session); and (2) conducting angling flow studies. The methods used to accomplish these two tasks are described in the following.

5.5.1 Structured Group Interviews (Focus Group Session)

PCWA conducted two focus group sessions with local anglers to develop information about angling opportunities in the bypass and peaking reaches. The first focus group session was conducted on May 20, 2008. At the request of angler stakeholders, a second focus group session was conducted on March 4, 2010. The purpose of the second focus group session was to clarify and expand upon the information collected at the first focus group session. Each focus group session is further described in the following subsections. All materials related to the Angler Focus Group Sessions are included in Appendix J, including correspondence provided by the Horseshoe Bar Fish and Game Preserve (HBP), and the Foothills Anglers.

May 20, 2008 Angler Focus Group Session

A list of potential Angler Focus Group participants was identified in consultation with the Recreation TWG and is included in Appendix J. PCWA sent written invitations to each potential participant by letter dated April 4, 2008 and by e-mail dated April 4, 2008 (Appendix J). The focus group discussion topics were developed with the Recreation TWG and were distributed with the invitation (Appendix J).

The Angler Focus Group session was held on May 20, 2008 at PCWA's headquarters in Auburn and was attended by eight anglers representing local fishing guides, outfitters, local anglers, and business owners. The meeting materials, including the sign-in sheet and participant profiles, are included in Appendix J. To support the discussion, PCWA provided large scale aerial orthophotographs and other map products showing reservoirs, streams, rivers, roads, and trails. Information discussed during the meeting was documented and edited live on an excel spreadsheet projected on a screen. A complete set of the notes that were captured during the Angler Focus Group session are included in Appendix J.

The information developed during the focus group session was used to: (1) supplement information available from existing information sources; (2) characterize angling opportunities on the peaking and bypass reaches; (3) identify the locations of popular fishing spots and fishing access; and (4) define flow related issues that are unique to anglers. Information developed during the focus group session was also used to refine the study approaches outlined in the REC 4 – TSP to more directly address the flow-related issues associated with angling.

Commenting on the Draft REC 4 – TSR, Bill Carnazzo, a professional fishing guide, provided PCWA with a letter containing additional information about angling opportunities and conditions on the bypass and peaking reaches (B. Carnazzo, January 18, 2010). Mr. Carnazzo's letter is included in Appendix J, for reference.

March 4, 2010 Angler Focus Group Session

At the request of the anglers, PCWA conducted a second Angler Focus Group Session. The second Angler Focus Group session was held on March 4, 2010 at the Canyon View Community Center in Auburn. The session was attended by 13 anglers representing local fishing guides, outfitters, local anglers, and business owners. The meeting materials, including the sign-in sheet and participant profiles, are included in Appendix J. Information discussed during the meeting was documented and edited live on an excel spreadsheet projected on a screen. A complete set of the notes that were captured during the Angler Focus Group session are included in Appendix J.

During the meeting, the meeting participants provided PCWA with two documents related to angling on the bypass and peaking reaches, as follows:

- Bypass Reach Anglers Comments for Angler Focus Group Meeting (March 4, 2010)

- Letter from Horseshoe Bar Fish and Game Preserve, including the results of surveys conducted by Horseshoe Bar Fish and Game Preserve representatives at the Horseshoe Bar Fish and Game Preserve (February 19, 2010).

These letters are included in Appendix J for reference and supplement the March 4, 2010 Focus Group Notes.

5.5.2 Angling Flow Studies

The REC 4 – TSP indicated that PCWA would assemble a group of anglers to assess fishing conditions over a range of flows at specific locations in the peaking reach and on the Rubicon River below Ellicott Bridge. Based on the information developed during the May 20, 2008 Angler Focus Group session, PCWA proposed to address flow-related fishing issues in the peaking reach by analyzing ramping conditions in lieu of assembling a group of anglers to assess fishing conditions. PCWA did not propose to conduct angler flow studies on the Rubicon River because sufficient information to characterize fishing opportunities as they relate to flow was developed during the May 20, 2008 Angler Focus Group session. These refinements were documented in writing and provided to the Recreation TWG members by e-mail on July 14, 2008 for review. The refinements were then discussed and approved by the Recreation TWG at the July 21, 2008 meeting. The refined study approaches were filed with the FERC as Attachment D of PCWA's 2008 Study Implementation Progress Report for the Middle Fork American River Project (PCWA 2009).

Bypass Reaches

According to the anglers present at the May 20, 2008 Angler Focus Group meeting, flows on the bypass reaches, including on the Rubicon River, are generally conducive to fishing when the area is accessible Anglers expressed an interest in being able to access the bypass reaches earlier in the spring. (Currently, snow prohibits vehicle access because the roads are not plowed). Otherwise, the Project's stable summer flows make the rivers wadeable. Spring flows with accretion from tributaries make it more difficult to wade in the river. Because flows in the bypass reaches are already generally conducive to angling, flow studies were not necessary to assess fishing conditions or angling flow ranges on the bypass reaches. Impaired and unimpaired flow conditions on the bypass reaches for different water year types are discussed in the hydrology section of this report (Section 6.1.1).

Peaking Reach

According to the Angler Focus Group participants, the primary flow-related effect on fishing in the peaking reach is associated with ramping. Specifically, fishing quality and success reportedly decline as ramping begins, and remains depressed through the ramping period (about 2 hours), and for about one hour after ramping is completed. To address this issue, PCWA characterized the frequency, timing, and duration of ramping in the peaking reach under current Project operations. The ramping analysis focuses on the area immediately downstream of Oxbow Powerhouse.

The ramping analysis was conducted using existing 15-minute flow data recorded at the Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300), covering the period 1988 through 2007.

The objective of the analysis was to determine the average number of hours per day ramping occurs. For the purposes of this analysis, the following criteria were applied:

- A "day" was defined as a 12-hour period extending from 7:00 AM to 7:00 PM, for two reasons. First, this is the window of time that anglers would most likely be present in the river and effected by ramping. Anglers may be on the river earlier than 7:00 A.M. but ramping typically does not begin before 7:00 A.M. Similarly, anglers may be on the river after 7:00 P.M. but down ramping near the powerhouse is typically complete by 7:00 P.M. Second PCWA used the same time period that was used for the trail crossing analyses, so that the results would be comparable.
- "Ramping" was defined as any period during the "day" that flows changed more than 40 cfs in 15-minutes. The ramping rate was established after reviewing the historic hydrologic data and testing a variety of alternatives. The ramping rate of 40 cfs per 15 minutes was selected for analytical purposes because it captures changes that can be attributed to Project operations while eliminating: (1) small changes that result from natural diurnal fluctuations; and (2) larger changes that occur during run off events. For reference, the normal Project operational ramping rate is about 60 – 110 cfs/15 minutes. Therefore, the 40 cfs/15 minutes used in the analysis is conservative.
- The ramping analysis was limited to periods when river flow was less than 2,000 cfs for two reasons: (1) the river stage change associated with ramping is reduced at higher flows; and (2) at flows of this magnitude or greater, the MFP generally is managing local run-off with Oxbow Powerhouse operating at capacity (approximately 1,000 cfs) 24-hours a day (no peaking), and Ralston Afterbay is spilling all other flow.

The output was used to characterize the frequency, timing, and duration of ramping in the peaking reach, below Oxbow Powerhouse. The ramping analysis results were tabulated by water year type and by month, and summarize: (1) the number of days each month that ramping occurred while flows were less than 2,000 cfs; and (2) the number of hours that ramping occurred during those days. The output was also averaged and used to generate hydrographs, which visually display the data for comparison purposes.

5.6 MINING

This study element involved two primary tasks: (1) identifying and mapping mining locations in the bypass and peaking reaches; and (2) identifying and mapping the location of existing mining claims along the bypass and peaking reaches using information maintained by the BLM. The methods used to accomplish these two tasks are described in the following.

5.6.1 Mining Locations in the Bypass and Peaking Reaches

Mining locations, and areas with mining restrictions, along the peaking and bypass reaches were identified and mapped based on information available from ASRA and the USDA-FS. This information was supplemented by observations made by recreation and aquatic study crews in 2007 and 2008.

5.6.2 Existing Mining Claims

Existing unpatented and patented mining claims within or immediately adjacent to the bypass and peaking reaches were identified using information recorded and maintained by the BLM, as described in the following.

Unpatented Claims

Unpatented mining claims are portions of public lands that are claimed by an individual for the purpose of extracting minerals. Unpatented claims provide the claimant with the right of possession, but the right is restricted to the extraction and development of a mineral deposit (www.mine-engineer.com). No land ownership is conveyed.

The BLM maintains records regarding unpatented mining claims. These records are managed in a database referred to as the Land and Mineral Legacy Rehost 2000 System, or LR2000. This database is available on the BLM website and can be queried to produce reports showing unpatented mining claims located within a specified Township, Range, and Section. The output-includes mining claim serial number, the quadrant that the claim is located in, the claim name, the claimant, file number, case type, location date, and date of last assessment (www.blm.gov/lr2000).

The “Mining Claims Geographic Report” section of the LR2000 database was queried on December 22, 2008 and was used to identify the active unpatented mining claims located within specific sections bisected by a bypass or peaking reach. The resulting report was used to identify the number of active unpatented mining claims located within any section bisected by the bypass and peaking reaches. The BLM office was visited on December 18, 2008 to verify that the methods used to query the database would produce the appropriate data needed for this report. Note that the mining claim data presented in this report represents the best information available on the date the BLM database was queried (December 22, 2008). The BLM requires annual assessment work and renewal of mining claims. Therefore, the information gathered in 2008 is a “snap shot” in time and represents the claims registered at the time the data base was queried.

Patented Claims

With a patented mining claim, title to the land is passed from the Federal government to the claimant. Accordingly, the claimant owns the land and the minerals on or beneath the land. A mineral patent gives the owner exclusive title to the locatable minerals. It also gives the owner title to the surface and other resources (www.mine-engineer.com).

Since October 1, 1994, the BLM has been prohibited by Act of Congress from accepting any new mineral patent applications.

The BLM maintains records regarding patented mining claims. Claims that were recorded prior to 1984 are available electronically on the BLM website, in their Public Status Reports. Patented claims recorded between 1984 and 1994 are not yet available electronically and could not be provided by the BLM's Information Access Center when requested (Pers. Comm. Gary Catledge, 2009). Therefore, patented claims recorded between 1984 and 1994 were not reviewed.

PCWA reviewed the Public Status Reports on December 24, 2008. The Public Status Reports were used to identify the active patented mining claims located within the specific sections bisected by either a bypass or peaking reach. The resulting report was used to identify the number of active patented mining claims located within any sections bisected by the bypass and peaking reaches. Note that the presented mining claim data represents the best available information available as of December 24, 2008, when the BLM database was queried for patented claims.

5.7 FLOW INFORMATION DISSEMINATION

This effort involved three tasks, as follows: (1) describe existing stream gaging stations present in the bypass and peaking reaches; (2) characterize flow information that is currently available to the public; and (3) identify reaches where flow information may enhance stream-based recreational opportunities. The methods associated with these three tasks are explained in the following subsections.

5.7.1 Existing Stream Gaging Stations

Information regarding stream gaging stations located on the bypass and peaking reaches was compiled early in the relicensing process and is documented in detail in the Hydrology Study Status Report (PCWA 2007b). Among other things, the Hydrology Study Status Report identifies: (1) the location and name of each stream and reservoir gage in the Watershed; (2) the period of record that is available for each gage; (3) data gaps; and (4) recording increment (e.g., 15-minute, hourly, daily). Pertinent information from the Hydrology Study Status Report is summarized in this report, including whether any of the existing stream gages have the ability to report real-time flow information.

5.7.2 Existing Flow Information Sources

Boaters, anglers and other stream users find information on flows for some of the reaches under study online, through flow phones, and may also be obtained from local outfitters and specialty stores. In general, flow information is not available at any of the aforementioned information outlets for any of the bypass reaches – French Meadows to Interbay, Interbay to Ralston, or Hell Hole to Ralston. Flow information is most widely available and most easily accessible in real time at Oxbow. To characterize the types of flow information that is available to the public, on line search engines were used to identify existing websites that may contain flow information about the rivers and streams in the Watershed. In addition, local users and recreation guidebooks were consulted to

identify potential flow phones or other sources of flow information. The results of this effort are discussed in Section 6.7.2.

5.7.3 Flow Information Enhancement Opportunities

Reaches where flow information may enhance stream-based recreational opportunities were identified based on analysis of the Recreation Visitor Survey conducted as part of the REC 2 – TSP, discussions during the focus group meetings, and follow-up conversations with anglers, equestrian users, and whitewater boaters. The results of this effort are described in Section 6.7.3.

5.8 PUBLIC SAFETY

Public safety was evaluated as part of the LAND 3 – TSP (PCWA 2007a). As part of the LAND 3 – TSP, compiled, PCWA reviewed and evaluated the following information related to public safety:

- FERC's regulations and requirements concerning public and worker safety, including FERC's Safety Signage at Hydropower Projects (FERC 2001) and Public Safety at Hydropower Projects (FERC 1992);
- PCWA's communication procedures with its employees and contractors, and the public, in the event of a non-Project emergency in the vicinity of the MFP, including the public using Project recreation facilities;
- PCWA's existing programs and measures aimed at protecting public health and safety, including buoy lines, signage, and alarms; and,
- PCWA's procedures for addressing non emergency situations, such as fluctuating flows.

Specific study methods and the results of this effort are described in detail in the LAND 3 – Emergency Action and Public Safety TSR (PCWA 2010d).

5.8.1 Signs Warning of Potential Flow Fluctuations

All public safety signs were inventoried and assessed in the field in conjunction with the LAND 3 – TSP (PCWA 2007a). The inventory included documenting the location of each sign, sign type, condition, and mounting method. In addition, representative photographs were taken for reference. The complete inventory is included in the LAND 3 – TSR (PCWA 2010d).

As part of this effort, any signs located at key river access and crossing points that specifically warn the public of potential flow fluctuations were extracted from the inventory and summarized in this report.

5.8.2 Potential Safety Concerns

Potential safety concerns were identified through analysis of information collected as

part of the REC – 2 TSP. In addition, information about potential safety concerns was developed through consultation with resource agencies and local user groups. Consultation consisted of: (1) meeting with local anglers, hikers, boaters and with resource agency representatives during three focus group sessions; and (2) conducting follow-up conversations with boaters. Representatives of the USDA-FS, California State Parks, and Placer County were present at the focus group sessions. Information regarding potential safety concerns associated with whitewater boating in the in the peaking reach were also identified during the whitewater boating flow studies.

6.0 STUDY RESULTS

The following sections describe the results of the REC 4 – TSP studies. An overview of the hydrologic conditions in the bypass and peaking reaches associated with the MFP is presented first, emphasizing information that pertains to stream-based recreation activities. The hydrology section is followed by detailed information about stream-based recreation use on the bypass and peaking reaches including activity-specific information regarding: (1) trail use at stream crossings; (2) whitewater boating; (3) angling; and (4) mining. Safety concerns and flow information sources are addressed at the end of this section.

Note that the study results described below are not organized in the order that the study elements appeared in the REC 4 – TSP. To facilitate reporting, similar subject material was combined together. For example, all material related to whitewater boating appears together. Similarly, all material related to angling appears to together and all material related to trail use at stream crossings appears together. Table REC 4-2 provides a “crosswalk” showing where the material associated with each study element can be found in this report.

6.1 HYDROLOGIC INFORMATION

The following subsections describe the hydrologic conditions in the bypass and peaking reaches associated with the MFP, under impaired and unimpaired conditions.

6.1.1 Bypass Reaches

In the bypass reaches, operations of the MFP produce two general patterns of flow alteration from the unimpaired (natural) pattern, depending on the size of the streams. In the large river bypass reaches, flows are altered all year long (Figure REC 4-5). In the smaller stream bypass reaches flows typically are altered only during the winter/spring season (Figure REC 4-6).

Large River Bypass Reaches

The Rubicon River and the Middle Fork American River are large river bypass reaches. Appendix K includes example hydrographs showing impaired and unimpaired flows at the top, middle, and bottom of the Rubicon River and at the top and bottom of the Middle Fork American River and during different water years.

Winter/Spring Season

As indicated on the hydrographs (Appendix K), flows in the large bypass reaches are typically reduced and more stable during the winter/spring season under impaired conditions than under unimpaired conditions because water is diverted from the reaches into storage or for power generation. High flows in the large river bypass reaches that naturally occurred during storm events and during the spring runoff season are typically captured in French Meadows or Hell Hole reservoirs. Currently, high flows in the upper end of these river reaches generally only occur when the reservoirs are spilling. Under current MFP operations, these high flows primarily occur in the wettest years and are of shorter duration and magnitude than natural high flows.

During the winter and spring periods, substantial accretion inflow may occur along the Rubicon River between Hell Hole Dam and Ralston Afterbay and along the Middle Fork American River between French Meadows Dam and Middle Fork Interbay. More accretion occurs during the wetter water years than during the drier water years. This accretion inflow, to some degree, restores the shape of the natural winter/spring hydrograph in the lower portions of these bypass reaches.

Summer/Fall Season

During the summer and fall season, flows in the Rubicon River and the Middle Fork American River are typically equal to or slightly higher than under natural conditions as water is released from storage to meet minimum instream flow requirements mandated in the FERC License.

Accretion flow during the summer/fall period is relatively small and has limited effect on the flow patterns in the large bypass reaches. Accretion flow in the Middle Fork American River between Middle Fork Interbay Dam and Ralston Afterbay has less effect on the hydrology than occurs in the longer bypass reaches.

Small Stream Bypass Reaches

Duncan Creek, North and South Fork Long Canyon Creeks, and Long Canyon Creek are small stream bypass reaches. Appendix L includes example hydrographs showing impaired and unimpaired flows at the top and bottom of each of these small stream bypass reach during different water years.

Winter/Spring Season

As indicated on the hydrographs (Appendix L), during the winter/spring season a portion of the flow in the small stream bypass reaches is diverted for storage and power generation during most water year types. Therefore, flows in the small stream bypass reaches during this time period are typically lower and more stable (less variation in flow volume) than natural flows. The exception occurs during winter storms or during spring runoff when flows often exceed the capacity of the diversion facilities, which results in a large portion of the flow passing downstream.

During the winter and spring period, accretion occurs along the Long Canyon Creek bypass reach (downstream of North and South Fork diversions) and in the Duncan Creek bypass reach and creates relatively natural shaped hydrographs in the lower portions of the reaches.

Summer/Fall Season

During the summer/fall season, the diversions are not operated because of low inflow. Therefore, natural flow entering the diversion facilities is passed downstream into the bypass reaches. Accretion from tributary streams is typically minimal.

6.1.2 Peaking Reach

The peaking reach extends from Oxbow Powerhouse downstream to the high-water mark of Folsom Reservoir and includes two river segments: (1) the Middle Fork American River from Oxbow Powerhouse to the confluence of the North Fork American River; and (2) the North Fork American River from the confluence of the Middle Fork American River to the high water mark of Folsom Reservoir.

Appendix M includes example hydrographs showing impaired and unimpaired flows at the top, middle, and bottom of the peaking reach during different water years. Appendix N shows how flows in the peaking reach fluctuate during different seasons and water years based on the 15 minute flow data from Middle Fork American River gage below Oxbow Powerhouse (USGS Gage No. 11433300).

The magnitude and timing of flows in the peaking reach are affected by releases from Oxbow Powerhouse. Oxbow Powerhouse is typically operated to follow daily power demand and to provide whitewater boating flows, and is not operated 24 hours per day (except in the wettest of water years and/or seasons of the year) leading to daily and within-daily flow fluctuations in the reach. Except during high flow times of the year, releases from the Oxbow Powerhouse result in daily fluctuations in flow in the peaking reach between about 200 cfs and 1,080 cfs, which is the capacity of Oxbow Powerhouse (approximately 1,080 cfs) (Figure REC 4-7).

Figure REC 4-8 shows idealized examples of peaking events in different months (May to September) by different water year types. The examples are based on an idealized unimodal peak, but frequently the daily events are more complicated and variable. Daily peaking duration can be short (a few hours) or longer (most of the day). In addition, the amount of base flow can vary and there can be multiple peaks and declines in flow over the day.

During the summer (June through Labor Day), Project operations at Oxbow Powerhouse are voluntarily modified on weekdays and weekends to accommodate commercial whitewater boating. Commercial whitewater boating requires high flows (approximately 900+ cfs) for a minimum of approximately 3 hours beginning at 9-10 am. If normal peaking operations at Oxbow Powerhouse (based on power demand) are not projected to provide high flow releases within the whitewater boating window (e.g., 9 am to 12 pm), then the Oxbow Powerhouse release pattern is modified to accommodate

whitewater boating. If Oxbow Powerhouse was operated solely to meet peak energy demand, then in drier years, when limited water is available, high flow releases would typically start several hours later in the day and high flows would not be released on some weekend days.

Summer/Fall Season

During the summer season flows in the peaking reach often consist of a daily peaking event starting from a low nighttime base flow (e.g., 100–200 cfs, being released from the Oxbow Powerhouse) followed by a morning up-ramp (approximately 250–450 cfs/hr) to a high peak flow of approximately 1,000 cfs and then an evening down-ramp (approximately 250–450 cfs/hr) back to the base flow. Each up-ramping and down-ramping period lasts for approximately 2 hours.

During the fall, the powerhouses are shut down for approximately a 2-4+ week period for maintenance and flows in the peaking reach are held at a relatively steady flow close to, but greater than the 75 cfs minimum flow requirement. Low flow "outage" days are highly variable from year to year and are independent of water year type. PCWA evaluated the MFP hydrology model data for the 1975-2008 period of record and determined that outages occurred an average of 23 days during the fall period. The analysis was limited to the period of September 1 through November 30, which is when most outages occur. During the period of record, two outages continued beyond this window (11/7/75 – 1/19/76 and 9/29/07 – 3/18/08).

Winter/Spring Season

During the winter/spring season, flows in the peaking reach can exceed 3,000 cfs due to natural runoff. Considerable accretion can occur along the length of the peaking reach, particularly during the winter period from the North Fork of the Middle Fork American River, Volcano Creek, Otter Creek, Canyon Creek, and North Fork American River watersheds. Appendix M shows mean daily unimpaired and 15 minute impaired flows at the top, middle and bottom of the peaking reach to illustrate the effects of accretion flows during the winter/spring period.

In terms of high flows, the impaired and unimpaired flow patterns in the peaking reach are very similar during the winter. The primary effect of the MFP on flows in the peaking reach typically occurs in the late spring when snowmelt water from the headwaters is captured in the large upstream reservoirs (Appendix M).

Flow Timing Versus Location in the Peaking Reach

The time of day that water released from Oxbow Powerhouse arrives at downstream locations is dependent upon distance, the base flow present in the stream when ramping begins, and the peak flow reached during ramping. As indicated on Figure REC 4-2, the lower the base flow prior to the peaking event the slower the travel time. If the base flow is 100 cfs, water released from Oxbow Powerhouse travels at 2.3 mph. If the base flow is 300 cfs, water released from Oxbow Powerhouse travels at 2.8 mph. During the summer recreation season, flow in the peaking reach typically fluctuates on

an almost daily basis (e.g., 200 cfs–1,000 cfs). At a base flow of 200 cfs and a peak flow of 1,000 cfs, water released from Oxbow Powerhouse travels at a rate of 2.5 mph.

Distances between specific points in the peaking reach and water travel time between those points are summarized on Table REC 4-13. Table REC 4-14 shows the times flows would be at specific locations in the peaking reach given a specific starting time, in two hour increments. The information presented in both of these tables is based on a flow travel rate of 2.5 mph. As an example, flow released from Oxbow Powerhouse takes 8.9 hours to reach Mammoth Bar, which is located 22.2 miles downstream. Accordingly, flow released from Oxbow Powerhouse at 8:00 AM doesn't reach Mammoth Bar until almost 5:00 PM.

Note that the velocity that a pulse flow travels down the peaking reach is not the same as the average water velocity in the channel or the velocity at various locations across the channel. The velocity that a pulse of flow travels downstream is described by the St. Venant equations (equations of continuity and momentum) and is typically greater than the average velocity of water in the channel. In the Middle Fork peaking reach, for a typically pulse of flow (200 to 1000 cfs) the travel time is about 2.5 MPH.

The velocity of water across the channel (or across a trail crossing) is different and is related to the shape of the channel at that location and the discharge in the channel at a particular time. The velocities across each trail crossing in the peaking reach for a range of flows is shown in Appendix D.

Shape of Peaking Flow Curve

The shape of the peaking flow curve varies by time and location in the peaking reach. In general, the up-ramp from low base flow to high peaking flow, in terms of discharge (e.g., change in cfs per hour) remains the same throughout the reach (Figure REC 4-9). The only thing that changes with regard to the up-ramp is the amount of stage change. The amount of stage change from base flow to the peak flow varies depending on the local slope and channel shape at any particular location in the reach. The total stage change for typical summer peaking events ranges from approximately 1 to 2.3 feet (average 1.8 feet), depending on location.

The duration of the high flow peak changes, getting shorter, as water released from Oxbow Powerhouse moves downstream. This occurs because some of the release is "used up" filling the channel as it moves downstream. For example, below Mammoth Bar, the duration of the peak is shortened by approximately 2 hours compared to the peak at Oxbow Powerhouse. The duration of the peak is generally shortened by approximately 1 hour per 10 miles of travel distance downstream. At Fords Bar, which is 9.25 miles downstream, the duration of the peak is shortened on average by 56 minutes. Overall, the same amount of water from a peaking event at Oxbow Powerhouse must pass through downstream locations, but the shape (width of top and slope of down-ramp) of the curve is changed as the water released from Oxbow Powerhouse travels along the river.

The slope of the down-ramp changes as the peak travels downstream. At the top of the reach, the down-ramps are relatively rapid with decreases in flow at a rate similar to the up-ramp rate (250–450 cfs/hr). As shown on Figure REC 4-9, down-ramps are slower and have a longer duration (slower down-ramp rate) depending on the distance down stream.

This occurs because during the down-ramp the channel upstream of any particular location is full of water and must drain. The longer the length of channel upstream of any particular location in the peaking reach, the slower the down-ramp rate and the longer the down- ramp duration (i.e., the more channel there is to drain). For example, just downstream of Mammoth Bar (22.35 miles downstream of Oxbow Powerhouse), the down-ramp is at least three times slower than at Oxbow. Specifically, completely down-ramping from 900 cfs below Oxbow Powerhouse takes about 3 hours. Just below Mammoth Bar a 900 cfs down-ramp takes approximately 9 hours at about 100 cfs/hr. The 6-hour difference occurs because the 22.35 miles of channel between Oxbow Powerhouse and Mammoth Bar is full of water that drains down to the base flow during the down-ramp.

6.2 STREAM-BASED RECREATION ON THE BYPASS AND PEAKING REACHES

The following generally describes stream-based recreation activities and opportunities along the bypass and peaking reaches. The discussion is based on information provided by the Recreation TWG participants, the results of PCWA's REC 2 – Recreation Visitor Surveys conducted in 2008 (PCWA 2010c), and ASRA surveys conducted in 2006 as part of their GP/RMP update (California State Parks 2007).

6.2.1 Bypass Reaches

The bypass reaches bisect steep and rugged terrain, which limits access and recreation opportunities. For the most part, recreation use along the bypass streams is concentrated near the area immediately upstream of Ralston Afterbay and in a few areas where Forest Service roads and trails provide access to the bypass reaches (e.g. Ellicott Bridge, Hunter Trail, etc.).

During a series of meetings held in 2006, the Recreation Technical Working Group identified a variety of areas in the vicinity of the MFP where dispersed use has been observed. These areas, referred to by the USDA-FS as dispersed concentrated use areas (DCUAs), are identified on Table REC 2-1 of the REC 2 – Recreation Visitors Surveys TSR (PCWA 2010) and are shown on Map REC 4-11 of this TSR for reference. Seven of these DCUAs are located along the bypass streams, as follows:

- Middle Fork American River, immediately downstream of French Meadows Dam (both sides of river);
- Area located immediately northwest of French Meadows Dam;
- Area surrounding South Fork Long Canyon Diversion Dam;

- Areas along South Fork Long Canyon Creek, downstream of South Fork Long Canyon Diversion Dam;
- Area along Middle Fork American River, between Ralston Picnic Area and the new gage;
- Area surrounding Ralston Afterbay; and
- Area surrounding Middle Fork Interbay.

Observations and vehicle count data collected by PCWA in 2007 and 2008 as part of the REC 1 – TSP (PCWA 2007) indicate that these areas experience very little recreation use, even on weekend and holidays (PCWA 2010b). Observations and survey data collected by in 2008 as part of the REC 2 – TSP (PCWA 2007a) also indicate that these areas receive very little use (PCWA 2010c), as discussed in the following.

- The two dispersed concentrated use areas located immediately downstream of French Meadows Dam and the dispersed concentrated use area located immediately northwest of French Meadows Dam were visited as part of the REC 2 – Recreation Visitor Surveys a total of 13 times throughout the survey period. A total of 2 people were encountered in these areas during the entire survey period.
- Surveys were not conducted at the dispersed concentrated use areas surrounding or downstream of the South Fork Long Canyon Diversion Dam because vehicle count data collected in 2007 and 2008 indicated use in these locations was not heavy enough to warrant surveys. However, surveys were conducted at the Middle Meadows Campground, which is located immediately upstream of these dispersed concentrated use areas. Nobody interviewed at Middle Meadows Campground identified recreation along a stream/river as their primary activity. Twelve of 51 (24%) respondents intercepted at Middle Meadows Campground identified day use along a stream/river as a secondary activity.
- Surveys were not conducted at dispersed concentrated use area located along the Middle Fork American River, between the Ralston Picnic Area and the new gage. However, visitor surveys were conducted at Ralston Picnic Area and Car Top Boat Ramp, and in along the accessible areas of the Ralston Afterbay shoreline. A total of 21 people encountered in these areas identified day use along a stream/river as their primary activity. Of these, three indicated they used the Middle Fork American River upstream of Ralston Afterbay and three indicated they used the Rubicon River upstream of Ralston Afterbay. The remaining 15 did not specify the bypass reach they used.
- Visitor surveys were not conducted along the shoreline surrounding Middle Fork Interbay because recreation use levels did not warrant surveys. One survey participant intercepted elsewhere indicated they fished at the Middle Fork Interbay.

People intercepted as part of the REC 2 – Recreation Visitor Survey primarily recreated in two locations, the Middle Fork American River and Rubicon River immediately upstream of the Ralston Afterbay. Of the 249 people who participated in the Recreation Visitor Survey and indicated that they participated in day use along a stream/river, only 21 respondents indicated that they used a bypass stream/river (Appendix O). All 21 of these respondents were encountered at Ralston Afterbay and those that specified a stream reach indicated they used either the Middle Fork American River or the Rubicon River. Those that did not specify a stream reach are assumed to have recreated on the Middle Fork American River or the Rubicon River immediately upstream of Ralston Afterbay. When asked to identify other stream reaches used, one person identified the Rubicon River (Table O-1, Appendix O).

The following subsections describe recreation use on the Middle Fork American River and the Rubicon River just upstream of Ralston Afterbay, as determined through the REC 2 – Recreation Visitor Surveys conducted in 2008. The data was assessed together because there are not enough surveys on either reach to assess individually. Not all of the 21 respondents answered all of the questions on the survey form. Therefore, the number of responses to a specific question does not always equal 21.

Flow in these two reaches remains relatively constant during the summer months and does not fluctuate substantially during the day, as summarized in the following:

- Based on a review of the average daily flow data, flow in the Rubicon River just above Ralston Afterbay ranged from a low of 35 cfs to a high of 74 cfs on the survey days. Based on a review of 15-minute flow data, on all but one of the survey days, flow never varied by more than 3.4 cfs. On one day (July 5, 2008), the flow varied by 9.9 cfs.
- Based on a review of the average daily flow data, flow in the Middle Fork American River upstream of Ralston Afterbay ranged from a low of 28 cfs to a high of 32 cfs on the survey days.

Stream-based Recreation Activities

The survey participants were asked to identify their main recreation activity. As indicated in Table O-2 (Appendix O), 33.3 percent of the respondents (7 people) indicated that swimming/water play/wading as their primary recreation activity, followed by fishing (19.0%), picnicking (14.3%), whitewater rafting (9.5%), relaxing/reading/outdoors (9.5%), walking/hiking (4.8%), and sunbathing/tanning (4.8%). The following discussion considers all user types combined together.

Arrival Time and Length of Stay

Sixteen respondents identified an arrival time. All of these respondents arrived at the river between 10:00 AM and 4:00 PM. Most respondents (61.1%) stayed between 3 and 6 hours.

Acceptability of Flow Related Factors

The survey participants were asked to rate various flow-related factors, including: availability of beach/useable areas; ability to enter/exit water; ability to stand or wade; ability to safely swim; and ability to safely cross the river/stream. A total of 20 people rated these factors. The responses to this question are tabulated in Table O-2 (Appendix O) and summarized below.

- 75% of the respondents (15 of 20 people) said that the availability of beach areas were acceptable;
- 70% (14 of 20 people) said that their ability to enter/exit the water was acceptable;
- 65% (13 of 20 people) said that their ability to stand or wade in the river/stream was acceptable;
- 75% (15 of 20 people) said that their ability to safely swim in the river was acceptable; and
- 70% (14 of 20 people) said that their ability to safely cross the river/stream was acceptable.

Acceptability of Non-Flow Related Factors

The survey participants were also asked to rate various non-flow related factors, including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream; and adequacy of law enforcement. The responses to this question are tabulated in Table O-2 (Appendix O) and are summarized below.

- 66.7% of the respondents (12 of 18 people) said that the adequacy of the put-in/take-out was acceptable;
- 85.0% (17 of 20 people) said that the road access to the stream was acceptable ;
- 84.2% (16 of 19 people) said that the trail access to the stream was acceptable and
- 65.0% (13 of 20 people) said that the adequacy of law enforcement personnel was acceptable.

Perception of Flow

The survey participants were asked whether they perceived a change in the river/stream level during their visit. A total of 19 people responded to this question, of which 68.4% (13 people) indicated that they did not perceive a change in the river/stream level during their visit. Conversely, 31.6 percent (6 people) indicated they did perceive a change. As mentioned above, flow in the Middle Fork American River and the Rubicon River was relatively constant during the survey period and did not substantially change during any of the survey days. Therefore, the flow data indicates

that the survey respondents did not actually experience a perceptible change in flow, despite their response.

Those respondents that indicated that they did perceive a change in the river/stream level were asked if the change in the river/stream level affected their recreation experience. None of the respondents were negatively affected by their perceived change in river/stream level during their visit.

Recreation Experience

The survey participants were asked whether their recreation experience was negatively affected by crowding, other activities taking place, river/stream flow, or other factors. One person out of 20 (5%) indicated that crowding negatively affected their recreation experience. Otherwise, none of the respondents indicated that their recreation experience was negatively affected, other activities taking place (n = 18), or river/stream flow (n = 17).

Overall Satisfaction

The survey participants were asked to rate their overall river/stream experience using a satisfaction scale. The tabulated survey results are shown on Table O-2 (Appendix O). A total of 21 people responded to this question, of which 20 people (95.3%) indicated that they were either very satisfied or satisfied with their overall river/stream experience.

6.2.2 Peaking Reach

The peaking reach bisects ASRA, which is managed by State Parks. Like the bypass reaches, the terrain surrounding the peaking reach is steep and rugged, which limits stream-based recreation activities primarily to areas where developed recreation facilities are available or where roads and/or trails provide access to the stream. The developed recreation facilities and primary roads and trails that provide access to the peaking reach are shown on Map REC 4-12.

California State Parks is currently updating the ASRA GP/RMP in coordination with the Bureau of Reclamation (USBOR). To help inform the GP/RMP process, State Parks conducted on-site recreation surveys in 2006. The purpose of the State Park's recreation surveys was to learn more about visitor use patterns and visitor preferences within ASRA. A total of 528 useable surveys were completed by visitors at a variety of locations throughout ASRA from May through October of 2006. The survey was not oriented specifically to stream-based recreation and did not include any flow-related questions. Furthermore, the survey was not administered at all stream-side recreation areas. The results only provide limited information about stream-based recreation along the peaking reach.

According to the survey report, "the most visited areas and favorite areas to visit within ASRA are, in order of response rate: the Confluence, Lake Clementine, river beaches and swim holes, and trails." The survey report also states that ASRA's "water resources and the extensive trail system clearly surfaced as features that are extremely important

to visitors". Four key findings derived through the ASRA surveys are summarized below.

- Survey participants were asked which activities were the most important to them while visiting ASRA. Trail hiking was ranked highest as the most important activity (19%), followed by swimming/sunbathing (16%). A total of 9% said whitewater rafting or kayaking was most important, 8% said horseback riding, and 2% said fishing.
- Survey participants were asked reasons why ASRA is important. The majority of respondents (42%) stated "outdoor reaction activities/wide variety of recreation/multi-use/offers diversity." Fourteen percent identified "river/water/river canyon/lake/staying cool" as a main reason why ASRA is important to visitors.
- When asked about areas visited on the day of the survey, most said "Lake Clementine" (15%), followed by the "Confluence area" (13%), then "river/all areas by river/all up and down river" (12%). All of the other responses identified specific trails in ASRA.
- When asked about their favorite areas to visit in ASRA, 14% said river/any of the river areas/beaches/swimming holes and 14% said the Confluence area.

PCWA's REC 2 – Recreation Visitor Surveys yielded additional information about stream-based recreation along the peaking reach. Of the 249 people who participated in the Recreation Visitor Survey and indicated that they participated in day use along a stream/river, 219 respondents indicated that they primarily used the peaking reach. (The remaining 30 identified either a bypass stream or another stream). These respondents were encountered at five specific locations in the peaking reach, as follows:

- Indian Bar Rafter Access (17);
- Ruck-a-Chucky Recreation Area (61);
- Mammoth Bar (28);
- Confluence/Quarry Trail Head (93); and
- Birdsall Access/Oregon Bar Access (20).

The primary activities identified by the 219 respondents are tabulated on Table O-3 (Appendix O). The two most popular stream-based activities were swimming/waterplay/wading (33.7%) and whitewater rafting/kayaking (20.5%). The majority of people who indicated whitewater boating as their primary activity were encountered at Ruck-a-Chucky Recreation Area. Accordingly, at Ruck-a-Chucky Recreation Area, the data was separated into two activity types: whitewater boating and "other" activities. The whitewater boating results are discussed in Section 6.4.2.

The remainder of the data is discussed below, by site. With the exception of Ruck-a-Chucky Recreation Area, the site-by-site discussion considers all activity types

combined because no one activity dominated the data at any site. Note that the site-by-site discussion relies on numerous individual queries and cross tabulations of the survey data. The summary statistics for all of the responses combined (excluding whitewater boaters intercepted at Ruck-a-Chucky Recreation Area) are included in Appendix O for reference (Table O-4).

Indian Bar Rafter Access

The Indian Bar Rafter Access is located on the Middle Fork American River, adjacent to the Oxbow Powerhouse. It is primarily used by whitewater boaters but also supports other stream-based recreation users. The site includes a large unloading area, approximately 9-10 unmarked parking spaces, a boat ramp and vault toilets. Indian Bar is located within the boundaries of the TNF and the facilities were constructed by the USDA-FS. However, the site is primarily operated and maintained by California State Parks.

Stream-based Recreation Activities.

Survey participants were asked to identify their main recreation activity. Of the 17 people that responded to this question, 9 people stated whitewater boating as their primary activity, 4 people did not specify their activity, 2 people stated fishing, 1 person stated picnicking, and 1 person stated camping.

Arrival Time and Length of Stay

Eight of eleven respondents (72.7%) arrived at Indian Bar Rafter Access between 8:00 AM and noon, which is approximately when water released from Oxbow Powerhouse typically reaches maximum flow. Eight of 13 respondents (61.5%) stayed on the river 3-6 hours. One stayed on the river less than three hours and the remainder stayed more than six hours.

Acceptability of Flow Related Factors

Survey participants were asked to rate various flow-related factors, including: (1) availability of beach/useable areas; (2) ability to enter/exit water; (3) ability to stand or wade; (4) ability to safely swim; and (5) ability to safely cross the stream/river. Their responses are summarized below.

- 50% of the respondents (8 of 16 people) said that the availability of beach areas was acceptable;
- 93.8% (15 of 16 people) said that their ability to enter/exit the water was acceptable;
- 81.2% (13 of 16 people) said that their ability to stand or wade in the water was acceptable;
- 75% (12 of 16 people) said that their ability to safely swim in the water was acceptable; and

- 86.7% (13 of 15 people) said that their ability to safely cross the river was acceptable.

Acceptability of Non-Flow Related Factors

The survey participants were asked to rate various non-flow related factors, including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream; and adequacy of law enforcement. Their responses are summarized below:

- 80% (12 of 15 people) said that the adequacy of the put-in/take-out was acceptable;
- 78.6% (11 of 14 people) said that the road access to the stream was acceptable;
- 71.4% (10 of 14 people) said that the trail access to the stream was acceptable; and
- 80% (12 of 15 people) said that the adequacy of law enforcement personnel was acceptable.

Flow Perception

The survey respondents were asked whether they perceived a change in the river/stream level during their visit. A total of 14 people provided sufficient information to analyze against actual river flow. Based on a review of the hydrologic information, 7 of the 14 respondents actually experienced a change in water level during their visit.

Survey respondents were also asked whether the change in the river/stream level negatively affected their recreation experience. None of the respondents who actually experienced a change in flow stated that they were negatively affected.

Recreation Experience

Survey participants were asked whether their recreation experience was negatively affected by crowding, other activities taking place, river/stream flow, or other factors.

- 85.7% (12 of 14 people) said that they were not affected by crowding;
- 75.9% (9 of 12 people) said that they were not affected by other activities taking place; and
- 76.9% (10 of 13 people) said that their recreation experience was not affected by river or stream flow.

None of the respondents who indicated they were negatively affected by one of these factors explained why.

Overall Satisfaction

Survey participants were asked to rate their overall river/stream experience. A total of 14 people responded to this question. All except one person stated that they were either very satisfied or satisfied with their overall river/stream experience.

Ruck-a-Chucky Recreation Area

Ruck-a-Chucky Recreation Area is located about 15 miles downstream of Oxbow Powerhouse and can be accessed via Drivers Flat Road. It can also be accessed via the Western States Trail (WST) and the McKeon-Ponderosa Road Trail. Ruck-a-Chucky Recreation Area includes five sites that may be used for either day use or overnight camping. It also includes parking areas, vault toilets, and a boat ramp. Ruck-a-Chucky Recreation Areas is operated and maintained by State Parks.

This site is used as a take-out/put-in by whitewater boaters but is also popular with other recreation users, including anglers, swimmers, waders, and stream-side users such as picnickers and campers.

Due to the distance between Oxbow Powerhouse and Ruck-a-Chucky Recreation Area, flow released from Oxbow Powerhouse takes about 6 hours to arrive at Ruck-a-Chucky Recreation Area, using a travel time of 2.5 mph. Accordingly, water released from Oxbow Powerhouse at 7:00 AM does not reach Ruck-a-Chucky Recreation Area until about 1:00 PM. This travel time was considered in the discussion below.

Stream-based Recreation Activities

Survey participants were asked to identify their main recreation activity. Of the 61 people who responded to this question, over half of the respondents (54.1%) identified whitewater boating as their primary activity. Other responses included: swimming/waterplay/wading (9.8%), gold panning, (6.6%) relaxing/reading (6.6%), fishing (4.9%), walking/hiking (1.6%), and boating (1.6%). Accordingly, the survey results were divided into whitewater boating and “other” responses. The whitewater boating responses are discussed in Section 6.4.2 and the “other” responses are discussed below.

Arrival Time and Length of Stay

Eleven of 25 respondents (44%) arrived at Ruck-a-Chucky Recreation Area between 12:00 PM and 2:00 PM, which is typically when water released from Oxbow Powerhouse arrives at Ruck-a-Chucky Recreation Area. Fourteen of 25 respondents (56%) stayed on the river between 3 and 6 hours.

Acceptability of Flow Related Factors

The survey participants were asked to rate various flow-related factors, including: availability of beach/useable areas; ability to enter/exit water; ability to stand or wade;

ability to safely swim; and ability to safely cross the river/stream. The responses are summarized below.

- 74.1% (20 of 27 people) said that the availability of beach areas were acceptable;
- 88.9% (24 of 27 people) said that their ability to enter/exit the water was acceptable;
- 77.8% (21 of 27 people) said that their ability to stand or wade in the water was acceptable;
- 76.9% (20 of 26 people) said that their ability to safely swim in the water was acceptable; and
- 53.8% (14 of 26 people) said that their ability to safely cross the river was acceptable.

Acceptability of Non-Flow Related Factors

The survey respondents were asked to rate various non-flow related factors, including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream; and adequacy of law enforcement. Their responses are summarized below:

- 78.3% (18 of 23 people) said that the adequacy of the put-in/take-out was acceptable;
- 69.2% (18 of 26 people) said that the road access to the stream was acceptable;
- 84.6% (22 of 26 people) said that the trail access to the stream was acceptable; and
- 72% (18 of 25 people) said that the adequacy of law enforcement personnel was acceptable.

Flow Perception

The survey respondents were asked whether they perceived a change in the river/stream level during their visit. A total of 27 people provided sufficient information to analyze against actual river flow. Based on a review of the hydrologic information, 19 of the 27 respondents actually experienced a change in water level during their visit.

Survey respondents were also asked whether the change in the river/stream level negatively affected their recreation experience. Eighteen of the 19 respondents who actually experienced a change in flow indicated that they were not negatively affected by the change.

Recreation Experience

Survey participants were asked whether their recreation experience was negatively

affected by crowding, other activities taking place, river/stream flow, or other factors.

- 96.4% (27 of 28 people) said that they were not affected by crowding;
- 100% (28 people) said that they were not affected by other activities taking place; and
- 96.4% (27 of 28 people) said that their recreation experience was not affected by river or stream flow.

Overall Satisfaction

Survey participants were asked to rate their overall river/stream experience using a satisfaction scale. A total of 28 people responded to this question, of which 27 stated that they were either very satisfied or satisfied with their overall river/stream experience.

Mammoth Bar

Mammoth Bar is located on the Middle Fork of the American River about 22 miles downstream of Oxbow Powerhouse. It is managed, operated, and maintained by State Parks as a day use facility and during the summer is open to the public from 8:00 AM until one half hour after sunset from April 1 through September 30. In 2008, the site received 10,653 visitors (pers. com., L. Bartlett, April 2009). The use data is based on fee receipts and does not include commercial whitewater boaters. In 2008, use of the site required a $5.00 entrance fee. The day use fee was recently raised to $10.00 per vehicle.

The majority of the site has been developed for off-highway-vehicle (OHV) use and amenities include a motocross track and numerous trails that are designated for OHV use. During the summer, the OHV trails are open for use on Sundays, Mondays, and Thursdays. There is very little use of this site by other types of users during the days that Mammoth Bar is open to OHVs. In fact, during PCWA's visitor surveys, use of this site by other users on OHV days was so low that it was difficult to find visitors to survey. In order to complete the required number of surveys, the survey timing was modified so that surveys were conducted only on non-OHV days.

Due to the distance between Oxbow Powerhouse and Mammoth Bar, flow released from Oxbow Powerhouse takes about 8.9 hours to arrive at Mammoth Bar, using a travel time of 2.5 mph. Accordingly, water released from Oxbow Powerhouse at 7:00 AM does not reach Mammoth Bar until almost 4:00 PM. This travel time was considered in the discussion below.

Stream-based Recreation Activities

Of the 28 people who provided an answer to this question, 14 (50%) identified swimming and waterplay as their primary recreation activity. Four respondents (14.3%) identified gold panning as their primary activity. Other responses included: fishing (7.1%), whitewater rafting/kayaking (7.1%), relaxing/reading (3.6%), and sunbathing

(3.6%). Four respondents did not specify an activity. The following discussion considers all user types combined together.

Arrival Time and Length of Stay

Eleven of 22 people (50%) who specified an arrival time arrived at Mammoth Bar before noon. The other half (50%) arrived after noon. Thirteen of 24 respondents (54.2%) stayed on the river 3-6 hours.

Acceptability of Flow Related Factors

The survey respondents were asked to rate various flow-related factors, including: availability of beach/useable areas; ability to enter/exit water; ability to stand or wade; ability to safely swim; and ability to safely cross. The responses are summarized below.

- 88.9% (24 of 27 people) said that the availability of beach areas were acceptable;
- 96.3% (26 of 27 people) said that their ability to enter/exit the water was acceptable;
- 92.6% (25 of 27 people) said that their ability to stand or wade in the water was acceptable;
- 88.9% (24 of 27 people) said that their ability to safely swim in the water was acceptable; and
- 57.7% (15 of 26 people) said that their ability to safely cross the river was acceptable.

Acceptability of Non-Flow Related Factors

Survey participants were asked to rate various non-flow related factors, including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream; and adequacy of law enforcement. The responses are summarized below:

- 73.9% (17 of 23 people) said that the adequacy of the put-in/take-out was acceptable;
- 84.6% (22 of 26 people) said that the road access to the stream was acceptable;
- 84.0% (21 of 25 people) said that the trail access to the stream was acceptable; and
- 78.3% (18 of 23 people) said that the adequacy of law enforcement personnel was acceptable.

Flow Perception

The survey respondents were asked whether they perceived a change in the

river/stream level during their visit. A total of 27 people provided sufficient information to analyze against actual river flow. Based on a review of the hydrologic information, only 3 of the 27 respondents actually experienced a change in water level during their visit.

Survey respondents were also asked whether the change in the river/stream level negatively affected their recreation experience. None of the respondents who actually experienced a change in flow stated that they were negatively affected.

Recreation Experience

The survey participants were asked whether their recreation experience was negatively affected by crowding, other activities taking place, river/stream flow, or other factors.

- None of the respondents felt that crowding negatively affected their recreation experience;
- 21 of 24 people (87.5%) indicated that other activities did not negatively affect their recreation experience; and
- 20 of 24 people (83.3%) said that their recreation experience was not negatively affected by river or stream flow.

Overall Satisfaction

The survey participants were asked to rate their overall river/stream experience using a satisfaction scale. A total of 28 people responded to this question, of which 27 stated that they were either very satisfied or satisfied with their overall river/stream experience.

Confluence Area

This area is located at the confluence of the North Fork and Middle Fork American Rivers, about 24 miles downstream of Oxbow Powerhouse. The area is easily accessible from Auburn, via Highway 49. Accordingly, it is the most heavily used recitation site within the Auburn SRA (CSP, April 1, 2010). Chemical portable toilets and a limited amount of parking are available in three locations near the Confluence. Otherwise, the area is not well defined and dispersed use occurs over a broad area along both the North and Middle Forks of the American River, where trails, Highway 49, and Old Foresthill Road provide ample access to the rivers. The Confluence is one of the most popular use areas for swimming, sunbathing, and trail access in ASRA (California State Parks, 2007).

The facilities and parking areas in the Confluence Area are maintained by State Parks. During the primary recreation season, April through September, State Parks seasonal staff is on site seven days per week. While on site, State Parks staff cleans and maintains the facilities, and manages recreation use and parking. During the primary recreation season, State Parks peace officers patrol this location daily and on average, there is a ranger on site 8 hours per day during the summer making public contacts, resolving disputes, and addressing illegal behavior (State Parks, April 1, 2010).

Due to the distance between Oxbow Powerhouse and the Confluence, flow released from Oxbow Powerhouse takes about 9.7 hours to arrive at the Confluence, using a travel time of 2.5 mph. Accordingly, flow released from Oxbow Powerhouse at 7:00 AM would not arrive at the Confluence until about 4:42 PM. Since releases from Oxbow Powerhouse do not arrive until the late afternoon, flow in the Middle Fork American River and the North Fork American River downstream of the Confluence is relatively low most of the day. Flow in the North Fork American River upstream of the Confluence is unregulated and is typically very low during the summer and early fall months (e.g. <200 cfs in July, decreasing to <100 cfs in August, September, and October) and relatively warm.

Stream-based Recreation Activities

Survey participants were asked to identify their main recreation activity. Of the 93 people that responded to this question, 48 people (51.6%) stated swimming/water play/wading as their primary activity. Other responses included: (1) relaxing/reading/outdoors (12.9%); (2) walking/hiking (6.5%); (3) sunbathing/tanning/enjoying sun (5.4%); (4) biking, horseback riding, picnicking (3.2% each); (5) fishing (2.3%); (6) gold panning (1.1%); and (7) playing with dogs (1.1%). Nine respondents (9.7%) did not specify a response.

Arrival Time and Length of Stay

The majority of respondents (81.7%) arrived at the Confluence between 10:00 AM and 4:00 PM. Most respondents (64%) stayed on the river 3-6 hours, but a large percentage (33.7%) stayed less than 3 hours.

Acceptability of Flow Related Factors

The survey participants were asked to rate various flow-related factors, including: availability of beach/useable areas; ability to enter/exit water; ability to stand or wade; ability to safely swim; and ability to safely cross. The responses are summarized below.

- 80.4% (74 of 92 people) said that the availability of beach areas were acceptable;
- 79.3% (73 of 92 people) said that their ability to enter/exit the water was acceptable;
- 86.7% (78 of 90 people) said that their ability to stand or wade in the water was acceptable;
- 83.5% (76 of 91 people) said that their ability to safely swim in the water was acceptable; and
- 76.7% (69 of 90 people) said that their ability to safely cross the river was acceptable.

Acceptability of Non-Flow Related Factors

The survey participants were asked to rate various non-flow related factors including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream flow; and adequacy of law enforcement. The responses are summarized below:

- 65.9% (54 of 82 people) said that the adequacy of the put-in/take-out was acceptable;
- 81.8% (72 of 88 people) said that the road access to the stream was acceptable;
- 85.7% (78 of 91 people) said that the trail access to the stream was acceptable; and
- 64.0% (55 of 86 people) said that the adequacy of law enforcement personnel was acceptable.

Flow Perception

The survey respondents were asked whether they perceived a change in the river/stream level during their visit. A total of 91 people provided sufficient information to analyze against actual river flow. Based on a review of the hydrologic information, only 9 of the 91 respondents actually experienced a change in water level during their visit.

Survey respondents were also asked whether the change in the river/stream level negatively affected their recreation experience. None of the respondents who actually experienced a change in flow stated that they were negatively affected.

Recreation Experience

The survey participants were asked whether their recreation experience was negatively affected by crowding, other activities taking place, river/stream flow, or other factors.

- 74% (74 of 92 people) said that crowding negatively affected their recreation experience;
- 91.0% (81 of 89 people) indicated that other activities did not negatively affect their recreation experience; and
- 96.6% (86 of 89 people) said that their recreation experience was not negatively affected by river or stream flow.

Overall Satisfaction

The survey participants were asked to rate their overall river/stream experience using a satisfaction scale. A total of 92 people responded to this question, of which 90 stated that they were either very satisfied or satisfied with their overall river/stream experience.

Birdsall Access/Oregon Bar

The Birdsall and Oregon Bar River Access points are located within the China Bar Recreation Area. The China Bar Recreation Area was constructed to provide access to the North Fork American River, in the vicinity of the former Auburn Dam site. Although the China Bar Recreation Area was opened to the public in 2008, it is closed to vehicle access during the weekdays. In 2008, a $5.00 vehicle entrance fee was required. The vehicle entrance fee was recently raised to $10.00 per vehicle.

During the weekdays, the China Bar area is primarily used by hikers, bikers and equestrian users. During the weekends, the area is used primarily by hikers, bikers, equestrian users, and whitewater boaters, and other day users such as anglers.

The Birdsall and Oregon Bar River Access areas are the two primary river access points within the China Bar Area. The Birdsall Access consists of a boat ramp, a loading and turn-around area, and handicapped parking. The Oregon Bar River Access is located downstream of the Birdsall Access and consists of a steep trail connecting the river and a gated unpaved road. Unpaved roads provide access from the parking area to the Birdsall Access and the Oregon Bar Access. Parking is not allowed in the immediate vicinity of the Oregon Bar Access Point so boaters and other stream side users must hike up the road to retrieve their vehicles. During the 2009 summer season, parking was allowed near the river at the Birdsall Access at a small parking area immediately above the put-in/take-out location.

The China Bar Recreation area is managed, operated, and maintained by State Parks. Currently, the entrance station is staffed two days per week during the primary recreation season. A State Parks peace officer patrols the area an average of one hour per day during the season. The roads to the Birdsall and Oregon Bar access points require annual maintenance in order to provide continued access. This work includes grading, replacing base rock and brushing. Additionally, the river access ramp/trail at the Birdsall Access area requires annual maintenance to repair winter wash outs (CSP, April 1, 2010).

Due to the distance between Oxbow Powerhouse and the Birdsall Access, flow released from Oxbow Powerhouse takes about 11.2 hours to arrive at Birdsall Access and about 11.9 hours to arrive at Oregon Bar, located 1.65 miles downstream. Therefore, flow releases from Oxbow Powerhouse at 7:00 AM would not reach Birdsall Access until about 6:00 PM. Since releases from Oxbow do not arrive until the evening, river flows are typically relatively low (at or near base flow) nearly all day long during the summer, except during some mornings. Flows may exceed base flow conditions at this location during some mornings because the site is located so far downstream of Oxbow Powerhouse that releases made from Oxbow Powerhouse the previous day may not have completely down-ramped by the following morning.

<u>Stream-based Recreation Activities</u>

Survey participants were asked to identify their main recreation activity. Of the 20

people that responded to this question, 8 people (40.0%) identified walking/hiking as their primary activity and 7 people (35.0%) identified swimming/water play/wading. Other responses included: fishing, picnicking, whitewater rafting/kayaking and relaxing/reading/outdoors (5% each).

Arrival Time and Length of Stay

The majority of respondents (94%) arrived at Birdsall/Oregon Bar between 12:00 and 4:00 PM. Most respondents (55.6%) stayed 3-6 hours, but a large percentage (44.4%) stayed less than 3-hours.

Acceptability of Flow Related Factors

The survey participants were asked to rate various flow-related factors, including: availability of beach/useable areas; ability to enter/exit water; ability to stand or wade; ability to safely swim; and ability to safely cross. The responses are summarized below.

- 95.0% (19 of 20 people) said that the availability of beach areas were acceptable;
- 85.0% (17 of 20 people) said that their ability to enter/exit the water was acceptable;
- 78.9% (15 of 19 people) said that their ability to stand or wade in the water was acceptable;
- 78.9% (15 of 19 people) said that their ability to safely swim in the water was acceptable; and
- 57.9% (11 of 19 people) said that their ability to safely cross the river was acceptable

Acceptability of Non-Flow Related Factors

The survey participants were asked to rate various non-flow related factors, including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream flow; and adequacy of law enforcement. The responses are summarized below:

- 88.9% (16 of 18 people) said that the adequacy of the put-in/take-out was acceptable;
- 78.9% (15 of 19 people) said that the road access to the stream was acceptable;
- 94.4% (17 of 18 people) said that the trail access to the stream was acceptable; and
- 61.1% (11 of 18 people) said that the adequacy of law enforcement personnel was acceptable.

Perception of Flow

The survey respondents were asked whether they perceived a change in the river/stream level during their visit. A total of 17 people provided sufficient information to analyze against actual river flow. Based on a review of the hydrologic information, none of the respondents actually experienced a change in water level during their visit.

Overall Satisfaction

The survey participants were asked to rate their overall river/stream experience using a satisfaction scale. A total of 19 people responded to this question. All of the respondents stated that they were either very satisfied or satisfied with their overall river/stream experience.

Flow Perception Summary

The percentage of people who actually experienced a change of flow (river level) during their visit were plotted with respect to the percentage of people who said that they were negatively affected by the change of flow (river level), by location. The resulting histogram is shown in Figure REC 4-10.

As indicated, with the exception of Ruck-a-Chucky Recreation Area, the percentage of respondents who actually experienced a change in flow progressively decreased with distance from Oxbow Powerhouse. At Birdsall/Oregon Bar, located about 28 miles downstream of Oxbow Powerhouse, none of the people interviewed actually experienced a change in flow mainly because flow released from Oxbow Powerhouse does not reach this location until the late afternoon/early evening. The percentage of people who experienced a change in flow at Ruck-a-Chucky Recreation Area is higher for two reasons: (1) flow arrives around the same time that most day users arrive at the site; and (2) some of the responses include overnight visitors who therefore experienced a change in flow regardless of their arrival time.

Overall, the people who actually experienced a change of flow were not adversely affected by the change. A total of 38 people interviewed at Indian Bar, Ruck-a-Chucky Recreation Area, Mammoth Bar, and the Confluence actually experienced a change in flow. Of these, only one person (encountered at Ruck-a-Chucky Recreation Area) stated that the change in flow adversely affected their recreation experience.

6.3 TRAIL USE AT STREAM CROSSINGS

The REC 4 – TSP included a study element that focused on developing information about trail use as it pertains to stream crossing in the bypass and peaking reaches. This study element included four primary tasks as follows:

- Describe Western States and Tevis Cup Trail Routes and Crossings;
- Implement Structured Group Interviews (Focus Group Session);
- Conduct Stream Crossing Flow Studies; and

- Determine Flow Travel Times.

Although it was not included in the REC 4 – TSP, the Recreation TWG participants also requested that PCWA acquire and review published information to document preferred stream crossing depths and velocities for different activity types.

This results section is not organized according to these specific tasks. Instead, all of the information developed through these efforts was combined to provide a comprehensive and cohesive description of each of the specific trail crossings identified by the stakeholders. The information is organized into two main sections: (1) bypass reaches; and (2) peaking reach.

6.3.1 Bypass Reaches

The primary trails that provide access to or cross the bypass reaches are shown on Map REC 4-1, sheet 2 of 2. All of the trails in the vicinity of the bypass reaches are considered multi-purpose and are used for general reaction access such as picnicking and swimming, as well as hiking, mountain biking and equestrian use. Most of the trails in the vicinity of the bypass reaches are managed and maintained by the USDA-FS. Some of the trails that provide access to the bypass reaches are not USDA-FS system trails.

Several trails provide access to the Rubicon River between Hell Hole Dam and Ralston Afterbay:

- Parsley Bar Trail (14E10);
- Deer Creek Trail (14E11);
- South Fork Trail (14E14);
- Hunters Trail (14E09);
- Hales Crossing Trail (connecting forest road 14N11 to Hunters Trail near RM 25);
- Unnamed trail on south side of Rubicon near RM 10;
- Nevada Point Trail (12E07); and
- Blacksmith Flat Trail (12E06), connecting Forest Roads 14N25B and 13NY01.

According to focus group participants, these trails are used to access specific segments of the Rubicon River for fishing, and to a lesser extent whitewater boating. Two footbridges, one located on the Blacksmith Flat Trail and the other located on the Nevada Point Trail, facilitate pedestrian crossing across the Rubicon River.

As indicated on Map REC 4-1 (Sheet 2 of 2), trail access to the other bypass streams is very limited. The Dollar Creek Trail provides access to Duncan Creek from near the Big Trees Grove and has been used on at least one occasion to access Duncan Creek for whitewater boating. The Mosquito Ridge Trail provides access from Mosquito Ridge Road to the Middle Fork American River just upstream of Ralston Afterbay. The Middle

Fork American River upstream of Ralston Afterbay may also be accessed from Ralston Afterbay Picnic Area via an unnamed trail that begins at the picnic area.

Operation of the MFP reduces flow in the bypass reaches thereby improving stream crossing conditions. Existing flows in the bypass reaches have allowed for safe and reasonable crossing of the streams. Therefore, stream crossing along the bypass reaches is not discussed further in this report.

6.3.2 Peaking Reach

The peaking reach bisects ASRA where more than 100 miles of trails provide hiking, biking, and equestrian opportunities. Within ASRA, the trails are designated for separate uses, typically equestrian, pedestrian, or multi-use. Conflict (both real and perceived) between different trail users is a common issue, particularly between equestrians and bikers (JSA 2007). Accordingly, trail use planning within ASRA focuses on addressing and alleviating potential conflicts.

Numerous trails and unpaved roads (sometimes used as trails) provide access to the peaking reach either directly or indirectly, via connecting trails and roads. One of the primary connecting trails is the WST, which parallels much of the peaking reach and crosses the peaking reach in three locations: Ruck-a-Chucky Recreation Area; Poverty Bar; and “No Hands Bridge”. (Note that “No Hands Bridge” does not involve a wet crossing so crossing at this location is not discussed further in this report.)

During the focus group meeting and the Recreation TWG meetings, five trails and one access road that is used as a trail (Drivers Flat Road) were identified as relevant to the MFP relicensing because they provide access to a specific stream crossing location, as follows:

- WST – Ruck-a-Chucky Recreation Area and Poverty Bar Crossings;
- Roanoke Trail – Fords Bar Crossing;
- Drivers Flat Road – Ruck-a-Chucky Recreation Area Crossing;
- American Canyon Trail – Poverty Bar Crossing;
- Quarry Road Trail – Mammoth Bar Crossing; and
- Auburn to Cool Trail (ACT) – Coffer Dam Crossing.

These trails and their associated stream crossings are shown on Map REC 4-1 (Sheet 1 of 2) and are described in detail in the following subsections.

Western States Trail

The WST traverses the entire Watershed, intersecting the Middle Fork American River near Fords Bar and then paralleling most of the peaking reach westward to the North Fork American River confluence. The WST connects many of the trails and roads in

ASRA and is used by hikers and equestrians. Mountain bikers are not allowed on the WST. The WST trail is shown on Map REC 4-1 (2 sheets).

The WST originated as a Native American track, and in the mid-1800's was used by early settlers and gold miners as the principal foot and pack stock route between the silver fields of Nevada and the gold fields of California. The WST has retained its single track character and looks very much the same as it did in the 1800's. It remains the most intact historic trans-Sierra crossing, unaffected by the presence of roads or railroads (Placer County 2007).

In California, the WST begins at the California/Nevada border, near Tahoe City northwest of Lake Tahoe and extends to Auburn, California, passing through Placer County. The Secretary of the Interior has designated a portion of the WST as a National Recreation Trail. In addition, a portion of the WST, from Last Chance to Michigan Bluff has been listed in the National Register of Historic Places (NRHP). The Mountain Quarries Bridge, also known as "No Hands Bridge" was added to the NRHP in 2004. This bridge crosses the North Fork American River near its confluence with the Middle Fork American River.

In a resolution dated June 12, 2007 and forwarded to Senators Boxer and Feinstein, the Placer County Board of Supervisors expressed its support for Congressional designation of the WST (with Tevis Cup Loop) as a National Historic and Scenic Trail. Similarly, on August 16, 2007, the PCWA Board of Directors adopted a resolution authorizing support, study and designation of the 100-mile WST from Squaw Valley to Auburn as a National Historic & Scenic Trail in support of the WST Foundation. In 2008, and again in 2009, Senator Barbara Boxer introduced a bill to amend the National Trails System Act to provide for the study of the WST, from Squaw Valley to Auburn, for designation as a National Historic and Scenic Trail. This designation would be made by Congress, pending the results of the study.

The WST is used for two world class endurance races, the Western States 100 Endurance Run (WS 100) and the Tevis Cup Equestrian Ride (Tevis Cup). The routes for these races vary slightly and are shown on Map REC 4-1 (2 sheets). As indicated, the WS 100 route crosses the Middle Fork American River at Ruck-a-Chucky Recreation Area and the Tevis Cup route crosses the Middle Fork American River at Poverty Bar. These two races, including their routes and crossings, are described in more detail under the Ruck-a-Chucky Recreation Area Crossing and Poverty Bar Crossing discussions below.

Roanoke Trail (Fords Bar Crossing)

The Roanoke Trail begins at the end of Bottle Hill Road near Georgetown and descends into the Middle Fork American River Canyon to Fords Bar, where it is possible to cross the Middle Fork American River. This trail is used primarily by hikers and mountain bikers. Segments of this trail cross private property. According to the USDA-FS, there is not a public right-of-way or easement for the segments of the Roanoke Trail that cross private land at this time.

River Crossing Location

The Fords Bar Crossing is located about 10 miles downstream of Oxbow Powerhouse, at the Otter Creek confluence (Map REC 4-1, Sheet 1 of 2). It connects the Roanoke Trail on the south side of the Middle Fork American River to the WST and an unpaved road used as a trail, on the north side of the river. Based on a review of an aerial orthophoto, the nearest rapid is located about 750 feet downstream of this crossing.

Water released from Oxbow Powerhouse takes about 4 hours to arrive at this crossing. Accordingly, water released from Oxbow Powerhouse beginning at 7:00 AM arrives at Fords Bar at about 11:00 AM.

Primary River Crossing Users

According to the focus group participants, the Fords Bar crossing is primarily used by hikers, and to a lesser extent mountain bikers. It was historically used by equestrians but is no longer used by equestrians due to changes in the stream morphology. During conversations that occurred after the focus group session, Bill Deitchman of ASRA indicated that he has observed this trail crossing being used by and hikers, bikers, and equestrians.

Physical Characteristics of the River Crossing

This crossing is characterized by two main channels separated by a bar, the center of which is exposed at flows below about 250 cfs (Appendix P, Figures P-1 and P-2). The mid-channel bar simplifies crossing by providing shallow footing in the middle of the stream. Conversely, it forces the water into the two side channels, elevating current velocities in both channels. This effect is evident on Figure P-2, which shows the modeled current velocities at this stream crossing location.

River Crossing/Wading Suitability

The focus group did not identify any specific crossing flows for this location because none of the focus group participants use this crossing. Accordingly, the measured and modeled depth and velocity data were used along with the stream crossing criteria obtained through the existing literature review to determine the flows at which crossing/wading would be possible at this location, with the following results:

- 275 cfs – Flow at which crossing shifts from easy/moderate to moderate/difficult; and
- 550 cfs – Flow at which crossing shifts from moderate /difficult to difficult.

As shown on Figures P-1 and P-2, current velocities affect stream crossing/wading suitability more than water depth at this location. Specifically, as current velocities increase, wading/crossing becomes more difficult.

Based on the modeled stage/discharge relationship for this crossing, the maximum depth and velocity encountered at these flows are as follows.

Threshold Flow	Max Depth (ft)	Max Velocity (ft/sec)
275 cfs	1.9	2.7
550 cfs	2.3	3.8

The data indicate that crossing the river at Fords Bar at flows above 550 cfs would be difficult due to high current velocities at various locations across the channel.

River Crossing Opportunities

Stream crossing opportunities (in hours per day) under impaired and unimpaired conditions were tabulated by season for five water year types using the two crossing flows identified above. For the purposes of this analysis, a day was defined as the period between 7:00 AM and 7:00 PM. The results of this effort are summarized in Table REC 4-15a (impaired) and Table REC 415b (unimpaired) and are graphically depicted on Figures REC 4-11 through REC 4-15. Stream crossing opportunities in days per year by season (expressed in a percentage of the total days counted) are provided in Table REC-4 15c (impaired conditions) and Table REC 4 15d (unimpaired conditions) and are graphically depicted on Figures REC 4-16 through REC 4-20.

Crossing opportunities decreased as runoff increased by water year type. On an annual basis, there were fewer crossing opportunities under impaired conditions than would have occurred under unimpaired conditions However, the number of opportunities changes by season, depending upon water year type (Figures REC 4-11 through REC 4-15). Therefore, on a seasonal basis, there were sometimes more crossing opportunities under impaired conditions than would have occurred under unimpaired conditions, as explained further in the following.

- During critically dry water years, under impaired conditions, crossing opportunities were available an average of 7.8 hours per day, ranging from 4.6 hours per day in winter to 10.0 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 8.9 hours per day, ranging from 2.4 hours per day in spring to 11.7 hours per day in summer. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions than would have occurred under impaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During dry water years, under impaired conditions, crossing opportunities were available an average of 6.4 hours per day, ranging from 4.1 hours per day in summer to 8.7 hours per day in winter. Under unimpaired conditions, crossing

opportunities would have been available an average of 8.1 hours per day, ranging from 0.3 hours per day in spring to 11.7 hours per day in fall. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

- During below normal water years, under impaired conditions, crossing opportunities were available an average of 4.2 hours per day, ranging from 1.0 hours per day in spring to 7.3 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 6.3 hours per day, ranging from 0.0 hours per day in spring to 10.9 hours per day in fall. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During above normal water years, under impaired conditions, crossing opportunities were available an average of 3.8 hours per day, ranging from 0.1 hours per day in spring to 6.9 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 5.5 hours per day, ranging from 0.0 hours per day in spring to 11.7 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. However, during the winter and spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During wet water years, under impaired conditions, crossing opportunities were available an average of 2.4 hours per day, ranging from 0.2 hours per day in spring to 6.0 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 4.5 hours per day, ranging from 0.0 hours per day in spring to 10.4 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. However, during the winter and spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

Drivers Flat Road (Ruck-a-Chucky Recreation Area Crossing)

Drivers Flat Road is an unpaved road extending from Foresthill Road to the Middle Fork American River. The road provides access to Ruck-a-Chucky Recreation Area where it is possible to cross the Middle Fork American River. The road also provides access to the WST and the McKeon-Ponderosa Road Trail.

The road is primarily used by private and commercial whitewater boaters who take-out at Ruck-a-Chucky Recreation Area, and by day and overnight users utilizing the campground and day use area at Ruck-a-Chucky Recreation Area. The road is also used as a trail by equestrians and mountain bikers. A large unpaved parking area

located at the top of the Drivers Flat Road, near its intersection with Foresthill Road, is used as a staging area by equestrians and mountain bikers.

Equestrians who participated in the focus group session expressed a concern about the possibility of Drivers Flat road being improved (e.g., paved) to accommodate other recreation uses. According to this group, paved roads are not desirable for horseback riding and may lead to conflicts with other users, particularly speeding drivers and bicyclists. Comments provided after the focus group session indicate that equestrians are not opposed to paving Drivers Flat Road, provided an alternative trail route is constructed, connecting the staging area to the WST (P. Gibbs, September 22, 2009).River Crossing Location

The Ruck-a-Chucky Recreation Area crossing is located about 15 miles downstream of Oxbow Powerhouse (Map REC 4-1, Sheet 1 of 2). This crossing connects Drivers Flat Road and the McKeon-Ponderosa Road Trail on the north side of the river to the WST and Sliger Mine Road on the south side of the river. It also connects WST trail segments located on the north and south side of the river. Based on a review of an aerial orthophoto, the nearest rapid is located about 50 feet downstream of this crossing.

Water released from Oxbow Powerhouse takes about 6 hours to arrive at this crossing. Accordingly, water released from Oxbow Powerhouse beginning at 7:00 AM arrives at Ruck-a-Chucky Recreation Area at about 1:00 PM.

Primary River Crossing Users

The Ruck-a-Chucky Recreation Area crossing is used mainly by runners and hikers. Based on comments made during the focus group session, it is not suitable as a crossing for equestrians due to the rocky, uneven substrate and the presence of a deep center channel. The focus group participants indicated that mountain bikers use this crossing, although the substrate and deep center channel make it challenging to cross with a bike. This crossing is also used during the Western States Run 100 Endurance Run, as described in the following.

Western States 100 Endurance Run. The Western States Run 100 Endurance Run (WS 100) is a 100-mile endurance run. From Squaw Valley, the route ascends to Emigrant Pass. From the pass, racers travel westward, climbing 15,540 feet and descending 22,970 feet before reaching Auburn (www.ws100.com). The route crosses the Middle Fork American River at Ruck-a-Chucky Recreation Area (also known as Greenwood Bridge). After crossing, the race route traverses the south side of the Middle Fork American River to the North Fork American River where racers cross the river on “No Hands Bridge”, just downstream of the confluence of the North and Middle forks of the American River.

The WST race is sponsored by the Western States Endurance Run Foundation and occurs annually on the last weekend of June. The race begins at 5:00 AM and runners must reach the finish line no later than 11:00 AM the following day.

When possible, PCWA and PG&E coordinate MFP operations to accommodate river crossing during the WS 100 race. Specifically, releases from Oxbow Powerhouse are scheduled so that a target flow of 125 cfs is present at Ruck-a-Chucky Recreation Area during the period when racers cross the river.

During some years, for example 2005, natural spring flows are too high to adjust flows to accommodate river crossing by race participants. During these years, race participants are ferried across the river on a raft. The raft is connected to a cable that is stretched across the river and attached to the bank at both ends. Race participants are then transported in the boat along the cable, which provides a static route across the river. In the past, Adventure Connection has helped set up the cable and has provided a raft and guides during the race (Pers. Comm. Nate Rangel, April 2009).

The target and maximum flows that have historically been used for the WS 100 endurance race are shown below, along with the corresponding maximum depth and velocity values derived from the modeled stage/discharge relationships. (Note that the target flow and the maximum crossing flows for the WS 100 are conservative to allow for relatively safe crossing by race participants who are exhausted after running over 70 miles before arriving at the site.)

Focus Group Comments re: WS 100	Max Depth (ft)	Max Velocity (ft/sec)
Target flow is 125 cfs	3.1	1.0
Max crossing flow without a cable – 200 cfs	3.5	1.4
Max crossing flow with a cable – 350 cfs	4.0	1.8

The timing of flow releases for the WS 100 is coordinated between PCWA, PG&E, a WS 100 representative, and a commercial boating representative (Pers. Comm. Nate Rangel, April 2009). The race participants begin crossing the Middle Fork American River at about 5:00 PM and the last runners may come through as much as 12 hours later, or at 5 AM the following day. Accordingly, the releases are timed so that the target flow is present at Ruck-a-Chucky Recreation Area from 5:00 PM to 5:00 AM (Pers. Comm. Tom Johnson, February 2009).

Physical Characteristics of the River Crossing

This crossing is characterized by uneven substrate and a deep center channel (Appendix P, Figures P-3 and P-4). The channel bed consists of sand, cobble, cobble/boulder, and boulder sections. The deepest section, the center channel, is dominated by a boulder substrate.

The uneven substrate complicates crossing, particularly as water depth increases. Due to the center channel, water depth typically exceeds the preferred crossing depths for equestrians and pedestrians, even at very low flows (e.g., <70 cfs).

River Crossing/Wading Suitability

The measured and modeled depth and velocity data were used along with the stream crossing criteria developed through the existing literature review to determine the flows at which crossing/wading would be possible at this location, with the following results:

- 125 cfs – Flow at which crossing shifts from easy/ moderate to moderate/difficult. This is also the target flow for the WS 100; and
- 450 cfs – Flow at which crossing shifts from moderate/difficult to difficult.

As shown on Figures P-3 and P-4, water depth affects wading suitability more than current velocity at this location. Specifically, as water depth increases, wading/crossing becomes more difficult.

Based on the modeled stage/discharge relationship for this crossing, the maximum depth and velocity encountered at these flows are as follows.

Threshold Flow	Max Depth (ft)	Max Velocity (ft/sec)
125 cfs	3.2	1.0
450 cfs	4.2	2.1

The data indicate that crossing the river at Ruck-a-Chucky Recreation Area at flows above 450 cfs would be difficult primarily due to water depth. Despite the low current velocities, crossing at lower flows may be challenging for some trail users due to water depth and the uneven substrate (e.g. large boulders and bedrock).

River Crossing Opportunities

Stream crossing opportunities (in hours per day) under impaired and unimpaired conditions were tabulated by season for five water year types using the two crossing flows identified above. For the purposes of this analysis, a day was defined as the period between 7:00 AM and 7:00 PM. The results of this effort are summarized in Table REC 4-15a (impaired) and Table REC 415b (unimpaired) and are graphically depicted on Figures REC 4-11 through REC 4-15. Stream crossing opportunities in days per year by season (expressed in a percentage of the total days counted) are provided in Table REC-4 15c (impaired conditions) and Table REC 4 15d (unimpaired conditions) and are graphically depicted on Figures REC 4-16 through REC 4-20.

Similar to Fords Bar, crossing opportunities decreased as runoff increased by water year type. On an annual basis, there were fewer crossing opportunities under impaired conditions than would have occurred under unimpaired conditions. However, the number of opportunities changes by season, depending upon water year type Figures REC 4-11 through REC 4-15). Therefore, on a seasonal basis, there were sometimes

more crossing opportunities under impaired conditions than would have occurred under unimpaired conditions, as explained further in the following.

- During critically dry water years, under impaired conditions, crossing opportunities were available an average of 7.6 hours per day, ranging from 4.3 hours per day in winter to 10.4 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 8.3 hours per day, ranging from 2.8 hours per day in spring to 11.7 hours per day in fall. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During dry water years, under impaired conditions, crossing opportunities were available an average of 6.1 hours per day, ranging from 3.3 hours per day in spring to 8.6 hours per day in winter. Under unimpaired conditions, crossing opportunities would have been available an average of 7.4 hours per day, ranging from 1.7 hours per day in spring to 11.8 hours per day in fall. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During below normal water years, under impaired conditions, crossing opportunities were available an average of 4.3 hours per day, ranging from 0.9 hours per day in spring to 7.4 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 5.7 hours per day, ranging from 0.3 hours per day in spring to 11.9 hours per day in fall. During the fall and winter, more crossing opportunities would have been available under unimpaired conditions. However, during the summer and spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During above normal water years, under impaired conditions, crossing opportunities were available an average of 3.9 hours per day, ranging from 0.0 hours per day in spring to 7.4 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 5.1 hours per day, ranging from 0.0 hours per day in spring to 11.8 hours per day in fall. During the fall and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, no crossing opportunities were available under impaired conditions and none would have been available under unimpaired conditions. During the summer, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During wet water years, under impaired conditions, crossing opportunities were available an average of 2.4 hours per day, ranging from 0.0 hours per day in spring to 6.2 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 4.0 hours per day,

ranging from 0.0 hours per day in spring to 11.0 hours per day in fall. During the summer, fall and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, no crossing opportunities were available under impaired conditions and none would have been available under unimpaired conditions.

American Canyon Trail (Poverty Bar Crossing)

The American Canyon Trail extends from the Sweetwater Trailhead off of Highway 193, near Sliger Mine Road to the Middle Fork American River. This trail descends down the American River Creek Canyon, crossing Hoboken Canyon before intersecting the Middle Fork American River near Poverty Bar The American Canyon Trail is actually one segment of a larger loop trail referred to as the American Canyon Loop, and connects to the WST at Poverty Bar. It is open to both hikers and equestrian users. Mountain biking is prohibited on this trail.

River Crossing Location

Poverty Bar is located about 18 miles downstream of Oxbow Powerhouse (Map REC 4-1, Sheet 1 of 2). The Poverty Bar crossing connects the ART on the south side of the river to the WST on the north side of the river. It also connects the WST on the south and north sides of the river. Based on a review of an aerial orthophoto, the nearest rapid is located about 100 feet downstream of this crossing. Water released from Oxbow Powerhouse takes about 7 hours to arrive at this crossing. Accordingly, water released from Oxbow Powerhouse beginning at 7:00 AM does not arrive at Poverty Bar until about 2:00 PM.

Primary River Crossing Users

This crossing is used by hikers and equestrians and is the main crossing used during the Tevis Cup Endurance Ride. This crossing is not used by mountain bikers because mountain biking is not allowed on the trails in this area.

Tevis Cup Endurance Ride. The Tevis Cup is a nationally and internationally recognized 100-mile equestrian endurance trail ride. The race is sponsored by the Western States Trail Foundation (WSTF) and typically occurs at the end of July. In 2007, the race took place on July 28th and was the 53rd running of the Tevis Cup race. The 2008 race was cancelled due to wildfires. The 2009 race is scheduled to occur on August 1 (www.teviscup.org).

The Tevis Cup route begins at Robie Park, which is located east of Squaw Valley and northwest of Lake Tahoe. From there, the route generally follows the same terrain as the WST 100, eventually ending at McCann Stadium in Auburn. Variations in the Tevis Cup and WST 100 trail routes are shown on Map REC 4-1 (2 sheets). As indicated, the Tevis Cup route crosses the Middle Fork American River at Poverty Bar. Crossing occurs at this location rather than at Ruck-a-Chucky Recreation Area because the crossing conditions are better for horses at Poverty Bar. After crossing, the race route

traverses the south side of the Middle Fork American River to the North Fork American River where racers cross the river on “No Hands Bridge”.

PCWA and PG&E schedule MFP operations to accommodate river crossing during the Tevis Cup Race. Specifically, releases from Oxbow Powerhouse are reduced so that a flow of 250 cfs is present at Poverty Bar during the period when racers cross the river. The timing of flow releases for the Tevis Cup event is coordinated between PCWA, PG&E, the WSTF Board, and the commercial outfitters. This coordination begins several months in advance of the race.

For the past three years, the WSTF Board has requested that PCWA and PG&E reduce flows to 250 cfs for a period of 12 hours, as measured at the Middle Fork American River gage below Oxbow Powerhouse. To account for travel time and the race crossing period, 250 cfs is released from Oxbow Powerhouse between 11:00 AM and 11:00 PM, resulting in a flow of 250 cfs at Poverty Bar between about 7:00 PM and 6:00 AM, which correlates closely with the travel time derived by PCWA. This schedule works for all parties, including the commercial rafting outfitters, who coordinate their trips to utilize higher flows that are present in the river prior to 11:00 AM.

The crossing flow of 250 cfs was determined in coordination with members of the WSTF, after spring flows in 2005 substantially altered the morphology of the stream at Poverty Bar. A flow of 250 cfs was released for a ‘test’ period of three or four hours, during which time PG&E and WSTF representatives met on-site at Poverty Bar to evaluate the flow. Several crossings were undertaken by WSTF representatives, and a flow of 250 cfs was judged to be safe for crossing. Project operations were subsequently modified to facilitate river crossing during the Tevis Cup event (Pers. Comm. Tom Johnson, February 2009).

In the past, project operations have also been modified to accommodate other equestrian river crossings for planned events hosted by the WSTF, including a fundraising ride held approximately one month prior to the Tevis Cup Endurance Ride. In recent years the fundraising ride has been scheduled early in the day. As such, PG&E and PCWA have simply adhered to a ‘typical’ peaking schedule with low flows (200 cfs or less) overnight, ramping to 900 to 1100 cfs in the morning to accommodate the event.

Physical Characteristics of the River Crossing

This crossing is characterized by a relatively uniform channel, with a substrate consisting predominately of small cobble and gravel. The even topography and consistent substrate are primary reasons for this location’s suitability for stream crossing. However, the right bank (looking downstream) is relatively steep, which makes egress and ingress somewhat difficult.

River Crossing/Wading Suitability

The focus group indicated that the maximum crossing flow for a hiker is about 200 cfs. The target flow for the Tevis Cup is 250 cfs. The modeled stage/discharge relationships

indicate that these flows correspond to the following maximum depth and velocities at this location.

Focus Group Comments	Max Depth (ft)	Max Velocity (ft/sec)
Max crossing flow for a hiker – 200 cfs	3.0	1.0
Target flow for Tevis Cup – 250 cfs	3.2	1.1

The measured and modeled depth and velocity data were used along with the stream crossing criteria developed through the existing literature review to determine the flows at which crossing/wading would be possible at this location, with the following results.

- 225 cfs – Flow at which crossing shifts from easy/moderate to moderate/difficult; and
- 550 cfs – Flow at which crossing shifts from moderate/difficult to difficult.

As shown on Figures P-5 and P-6, water depth affects wading suitability more than current velocity at this location. Specifically, as water depth increases, wading/crossing becomes more difficult. The easy/moderate to moderate/difficult threshold is exceeded at a flow of about 225 cfs, which is just below the target flow for the Tevis Cup and just above the flow identified by the focus group as the maximum crossing flow for a hiker.

Based on the modeled stage/discharge relationship for this crossing, the maximum depth and velocity encountered at these flows are as follows.

Threshold Flow	Max Depth (ft)	Max Velocity (ft/sec)
225 cfs	3.1	1.1
550 cfs	4.1	1.6

The data indicate that crossing the river at Poverty Bar at flows above 550 cfs would be difficult due to water depth.

Trail Crossing Opportunities

Stream crossing opportunities (in hours per day) under impaired and unimpaired conditions were tabulated by season for five water year types using the two crossing flows identified above. For the purposes of this analysis, a day was defined as the period between 7:00 AM and 7:00 PM. The results of this effort are summarized in Table REC 4-15a (impaired) and Table REC 415b (unimpaired) and are graphically depicted on Figures REC 4-11 through REC 4-15. Stream crossing opportunities in days per year by season (expressed in a percentage of the total days counted) are provided in Table REC-4 15c (impaired conditions) and Table REC 4 15d (unimpaired

conditions) and are graphically depicted on Figures REC 4-16 through REC 4-20. Similar to Fords Bar, crossing opportunities decreased as runoff increased by water year type. On an annual basis, there were fewer crossing opportunities under impaired conditions than would have occurred under unimpaired conditions However, the number of opportunities changes by season, depending upon water year type (Figures REC 4-11 through REC 4-15).. Therefore, on a seasonal basis, there were sometimes more crossing opportunities under impaired conditions than would have occurred under unimpaired conditions, as explained further in the following. Overall, the number of crossing opportunities available annually and seasonally at Poverty Bar is very similar to Fords Bar, mainly because the crossing threshold flows are similar.

- During critically dry water years, under impaired conditions, crossing opportunities were available an average of 8.8 hours per day, ranging from 5.0 hours per day in winter to 11.0 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 8.9 hours per day, ranging from 2.3 hours per day in spring to 11.7 hours per day in summer. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During dry water years, under impaired conditions, crossing opportunities were available an average of 7.1 hours per day, ranging from 4.8 hours per day in spring to 9.2 hours per day in winter. Under unimpaired conditions, crossing opportunities would have been available an average of 8.1 hours per day, ranging from 0.3 hours per day in spring to 11.7 hours per day in fall. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During below normal water years, under impaired conditions, crossing opportunities were available an average of 5.4 hours per day, ranging from 1.5 hours per day in spring to 8.6 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 6.2 hours per day, ranging from 0.0 hours per day in spring to 10.9 hours per day in fall. During the summer, fall, and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During above normal water years, under impaired conditions, crossing opportunities were available an average of 4.6 hours per day, ranging from 0.1 hours per day in spring to 8.6 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 5.5 hours per day, ranging from 0.0 hours per day in spring to 11.7 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. However, during the winter and spring,

more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

- During wet water years, under impaired conditions, crossing opportunities were available an average of 2.8 hours per day, ranging from 0.2 hours per day in spring to 6.7 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 4.4 hours per day, ranging from 0.0 hours per day in spring to 10.4 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. However, during the winter and spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

Quarry Road Trail (Mammoth Bar Crossing)

The Quarry Road Trail parallels the south side of the Middle Fork of the American River, extending from a trailhead located at the Confluence of the North and Middle Forks of the American River to Main Bar, which is located about ¾-mile downstream from Poverty Bar. This trail is a multi-purpose trail and is one of the most popular in ASRA due its easy access and gentle grade. Aside from providing access to the Middle Fork American River, this trail ties into several side trails and the WST. In addition, it is possible to access the Confluence Trail, which parallels the north side of the river by crossing the Middle Fork American River at Mammoth Bar.

River Crossing Location

The Mammoth Bar crossing is located about 22 miles downstream of Oxbow Powerhouse, just downstream of the Mammoth Bar Day Use Area (Map REC 4-1, Sheet 1 of 2). This crossing connects the Quarry Road Trail on the south side of the river to the Confluence Trail and Mammoth Bar OHV area on the north side of the river. The Mammoth Bar Day Use Area is primarily used for OHV use. Based on a review of an aerial orthophoto, the nearest rapid is located about 100 feet downstream of this crossing. A dangerous Class V rapid, Murderer's Bar Rapid, is located about 700 feet downstream of the crossing location.

Water released from Oxbow Powerhouse takes almost 9 hours to arrive at this crossing. Accordingly, water released from Oxbow Powerhouse beginning at 7:00 AM would arrive at nearly 4:00 PM.

Primary River Crossing Users

According to the focus group participants, this crossing is used mainly by hikers and mountain bikers, although it is not a desirable crossing location, particularly on days that OHV use occurs. It was formerly used by equestrians and as a crossing for the Tevis Cup race but is no longer used due to the presence of the OHV area. Furthermore, the presence of Murderer's Bar Rapid downstream dissuades crossing by equestrians at this location.

Physical Characteristics of the River Crossing

This crossing is relatively wide and the channel bed is comprised primarily of cobbles. The north bank is steep and sandy. The channel is relatively uniform and does not contain any deep troughs. Therefore, increased flow does not cause significant increases in water depth (see Appendix P, Figures P-7 and P-8).

River Crossing/Wading Suitability

The focus group did not identify any specific crossing flows for this location. Accordingly, the measured and modeled depth and velocity data were used along with the stream crossing criteria developed through the existing literature review to determine the flows at which crossing/wading would be possible at this location, with the following results:

- 175 cfs – Flow at which crossing shifts from easy/moderate to moderate/difficult; and
- 375 cfs – Flow at which crossing shifts from moderate/difficult to difficult.

As shown on Figures P-7 and P-8 (Appendix P), current velocities affect stream crossing/wading suitability more than water depth at this location. Specifically, as current velocities increase, wading/crossing becomes more difficult.

Based on the modeled stage/discharge relationship for this crossing, the maximum depth and velocity encountered at these flows are as follows.

Threshold Flow	Max Depth (ft)	Max Velocity (ft/sec)
175 cfs	1.7	3.5
375 cfs	2.3	4.8

The data indicate that crossing the river at Mammoth Bar at flows above 375 cfs would be difficult due to high current velocities. The velocities at the lower flow threshold are higher then the preferred and maximum crossing flows identified in the existing literature, indicating that that crossing would be difficult at this location even at the lower flow threshold.

River Crossing Opportunities

Stream crossing opportunities (in hours per day) under impaired and unimpaired conditions were tabulated by season for five water year types using the two crossing flows identified above. For the purposes of this analysis, a day was defined as the period between 7:00 AM and 7:00 PM. The results of this effort are summarized in Table REC 4-15a (impaired) and Table REC 415b (unimpaired) and are graphically depicted on Figures REC 4-11 through REC 4-15. Stream crossing opportunities in days per year by season (expressed in a percentage of the total days counted) are

provided in Table REC-4 15c (impaired conditions) and Table REC 4 15d (unimpaired conditions) and are graphically depicted on Figures REC 4-16 through REC 4-20.

Crossing opportunities decreased as runoff increased by water year type. On an annual basis, there were fewer crossing opportunities under impaired conditions than would have occurred under unimpaired conditions However, the number of opportunities changes by season, depending upon water year type (Figures REC 4-11 through REC 4-15). Therefore, on a seasonal basis, there were sometimes more crossing opportunities under impaired conditions than would have occurred under unimpaired conditions, as explained further in the following.

- During critically dry water years, under impaired conditions, crossing opportunities were available an average of 7.9 hours per day, ranging from 4.1 hours per day in winter to 11.0 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 8.0 hours per day, ranging from 1.2 hours per day in spring to 11.1 hours per day in summer. During the summer and winter, more crossing opportunities would have been available under unimpaired conditions. During the fall, the same number of crossing opportunities were available under impaired conditions than would have been available under unimpaired conditions. During the spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During dry water years, under impaired conditions, crossing opportunities were available an average of 6.2 hours per day, ranging from 2.1 hours per day in spring to 8.4 hours per day in fall and winter. Under unimpaired conditions, crossing opportunities would have been available an average of 7.1 hours per day, ranging from 0.0 hours per day in spring to 11.4 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring and winter, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During below normal water years, under impaired conditions, crossing opportunities were available an average of 4.7 hours per day, ranging from 0.9 hours per day in spring to 8.1 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 5.2 hours per day, ranging from 0.0 hours per day in spring to 10.5 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the winter and spring, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During above normal water years, under impaired conditions, crossing opportunities were available an average of 4.1 hours per day, ranging from 0.0 hours per day in spring to 8.1 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 4.8 hours per day, ranging from 0.0 hours per day in spring to 11.3 hours per day in fall.

During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring, no trail crossing opportunities were available under impaired conditions and none would have been available under unimpaired conditions. During the winter, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

- During wet water years, under impaired conditions, crossing opportunities were available an average of 2.3 hours per day, ranging from 0.0 hours per day in spring to 6.6 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 3.7 hours per day, ranging from 0.0 hours per day in spring to 9.8 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring, no trail crossing opportunities were available under impaired conditions and none would have been available under unimpaired conditions. During the winter, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

Auburn to Cool Trail (Coffer Dam Crossing)

One of the most popular equestrian trails in ASRA is the ACT. The ACT links Auburn and Cool and is a multi-use trail used by pedestrians, equestrians, and mountain bicyclists. It is the only trail downstream of the Highway 49 that may by used by bicyclists (JSA 2007) to cross the river canyon from Auburn to Cool. Equestrians and pedestrians can utilize the WST and cross the canyon at the historic Mountain Quarry Railroad Bridge ("No Hands Bridge") just downstream of Highway 49.

The ACT did not exist as an official trail until 1996, but was likely used by various trail users since construction of the Auburn Dam halted in the late 1970s. The U.S. Bureau of Reclamation (Reclamation) gave State Parks approval to open the trail to the public as an official trail route when the "No Hands" bridge was closed for repairs. In granting this approval, Reclamation noted that the trail could be closed at any time to meet the needs and purposes of the Auburn Dam Project.

The ACT crosses the North Fork American River, about 3.7 miles downstream of the confluence of the Middle Fork and North Fork American Rivers, near the location of the coffer dam that was constructed as part of the former Auburn Dam Project. The crossing is located immediately upstream of the Birdsall River Access and is referred to in this report as the Coffer Dam Crossing.

Until 2008, the river in the vicinity of the Auburn Dam site was routed through a tunnel thereby leaving the river channel dry. The dry river channel provided an easy river crossing for trail users. In 2008, the Auburn Dam Construction Bypass Tunnel was blocked and the river was restored to its natural channel making crossing in this location more difficult. The tunnel closure and river restoration project was conducted in association with the American River Pump Station Project, with the USBOR taking responsibility for the tunnel closure and river restoration elements and PCWA taking

responsibility for the pump station. Before proceeding with the Project the USBOR and PCWA prepared a joint American River Pump Station Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (USBOR and 2002).

The EIR/EIS identified the loss of the ACT trail crossing as a significant and unavoidable impact on recreation resources. To mitigate the impact, the State of California committed to conducting a study to evaluate the feasibility of constructing a river crossing. To mitigate their "fair share" of the impact, PCWA committed to allocating "a maximum of $500,000 towards future construction of a river crossing or similar mitigation – *if*, after a project-specific NEPA/CEQA process, the USBOR and CDPR choose to proceed with such a crossing" (USBOR/PCWA, 2002). State Parks has since completed the feasibility study and CDPR will incorporate the results of that study into their Updated GP/IRMP. The EIR/EIS for the pump station was clear that, in addition to trail bridge crossing options, development of an alternate trail that utilized an existing bridge (Highway 49 or "No Hands") was one of the alternatives to be explored to address the loss of the ACT. By letter dated May 11, 2010, California State Parks notified stakeholders that the GP/IRMP process has been suspended indefinitely at the request of the USBOR.

River Crossing Location

The Coffer Dam crossing is located on the North Fork American River, about 28 miles downstream of Oxbow Powerhouse (Map REC 4-1, Sheet 1 of 2). Based on a review of an aerial orthophoto, the nearest rapid is located about 2,000 feet downstream of this crossing.

Water released from Oxbow Powerhouse takes 11.2 hours to arrive at this crossing. Accordingly, water released from Oxbow Powerhouse beginning at 7:00 AM doesn't arrive at the Coffer Dam Crossing until about 6:00 PM. Flows may exceed base flow conditions at this location during some mornings because the site is located so far downstream of Oxbow Powerhouse that releases made from Oxbow Powerhouse the previous day may not have completely down-ramped by the following morning.

Physical Characteristics of the River Crossing

This crossing is characterized by a relatively uniform channel bed. The uniformity of the stream channel is related to the fact that it is a "constructed" channel. The substrate is comprised entirely of gravel and cobble. The channel banks are relatively steep, which makes egress and ingress relatively challenging for equestrians. These characteristics are evident on the stage/discharge relationships for this trail crossing (Appendix P, Figures P-9 and P-10).

Similar to the Mammoth Bar crossing, the channel in this location is relatively wide and does not contain any deep troughs. Therefore, increased flow does not cause significant increases in water depth (see Figure P-9).

River Crossing/Wading Suitability

The focus group expressed concern that this crossing can no longer be used now that the river has been restored and the water has been rerouted back into the river. However, subsequent to the focus groups session, hikers and equestrian trail users were observed crossing the river at this location at "low" flow with little difficulty. During a field trip conducted on July 19, 2008, a stakeholder, Pat Gibbs, was able to cross the river in this location at an estimated flow of 100-150 cfs. PCWA study crews were able to cross the river at this location at flows of 370 cfs.

The focus group did not identify a crossing flow for this location. Accordingly, the measured and modeled depth and velocity data were used along with the stream crossing criteria developed through the existing literature review to determine the flows at which crossing/wading would be possible at this location, with the following results:

- 175 cfs – Flow at which crossing shifts from easy/moderate to moderate/difficult; and
- 375 cfs – Flow at which crossing shifts from moderate/difficult to difficult.

As shown on Figures P-9 and P-10, current velocities and water depth both affect stream crossing/wading suitability at this location. This is primarily due to the uniformity of the channel in this location.

Based on the modeled stage/discharge relationship for this crossing, the maximum depth and velocity encountered at these flows are as follows.

Threshold Flow	Max Depth (ft)	Max Velocity (ft/sec)
175 cfs	2.2	2.1
375 cfs	3.0	3.0

The data indicate that crossing the river at the Coffer Dam crossing at flows above 375 cfs would be difficult due to a combination of water depth and high current velocities.

River Crossing Opportunities

Stream crossing opportunities (in hours per day) under impaired and unimpaired conditions were tabulated by season for five water year types using the two crossing flows identified above. For the purposes of this analysis, a day was defined as the period between 7:00 AM and 7:00 PM. The results of this effort are summarized in Table REC 4-15a (impaired) and Table REC 415b (unimpaired) and are graphically depicted on Figures REC 4-11 through REC 4-15. Stream crossing opportunities in days per year by season (expressed in a percentage of the total days counted) are provided in Table REC-4 15c (impaired conditions) and Table REC 4 15d (unimpaired conditions) and are graphically depicted on Figures REC 4-16 through REC 4-20.

Overall, there are fewer crossing opportunities in this location than the other crossing locations, mainly due to inflow from the North Fork American River. As with the other crossing locations, crossing opportunities decreased as runoff increased by water year type. On an annual basis, there were fewer crossing opportunities under impaired conditions than would have occurred under unimpaired conditions. However, the number of opportunities changes by season, depending upon water year type (Figures REC 4-11 through REC 4-15). Therefore, on a seasonal basis, there were sometimes more crossing opportunities under impaired conditions than would have occurred under unimpaired conditions, as explained further in the following.

- During critically dry water years, under impaired conditions, crossing opportunities were available an average of 5.2 hours per day, ranging from 0.5 hours per day in spring to 10.2 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 6.5 hours per day, ranging from 0.5 hours per day in spring to 10.2 hours per day in summer. During the summer and winter, more crossing opportunities would have been available under unimpaired conditions. During the spring, the same number of crossing opportunities were available under impaired conditions than would have been available under unimpaired conditions. During the fall, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During dry water years, under impaired conditions, crossing opportunities were available an average of 4.4 hours per day, ranging from 0.0 hours per day in spring to 8.0 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 5.8 hours per day, ranging from 0.0 hours per day in spring to 10.4 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring, there were no crossing opportunities under impaired conditions and none would have been available under unimpaired conditions. During the winter, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During below normal water years, under impaired conditions, crossing opportunities were available an average of 3.4 hours per day, ranging from 0.0 hours per day in spring to 7.0 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 4.5 hours per day, ranging from 0.0 hours per day in spring to 10.0 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring, there were no crossing opportunities under impaired conditions and none would have been available under unimpaired conditions. During the winter, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.
- During above normal water years, under impaired conditions, crossing opportunities were available an average of 2.8 hours per day, ranging from 0.0

hours per day in spring to 7.1 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 4.0 hours per day, ranging from 0.0 hours per day in spring to 10.0 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring, there were no crossing opportunities under impaired conditions and none would have been available under unimpaired conditions. During the winter, more crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

- During wet water years, under impaired conditions, crossing opportunities were available an average of 1.5 hours per day, ranging from 0.0 hours per day in spring to 5.8 hours per day in fall. Under unimpaired conditions, crossing opportunities would have been available an average of 2.9 hours per day, ranging from 0.0 hours per day in spring to 8.6 hours per day in fall. During the summer and fall, more crossing opportunities would have been available under unimpaired conditions. During the spring, no trail crossing opportunities were available under impaired conditions and none would have been available under unimpaired conditions. During the winter, the same number of trail crossing opportunities were available under impaired conditions than would have occurred under unimpaired conditions.

6.4 WHITEWATER BOATING

The REC 4 – TSP included a study element that focused on developing information about whitewater boating in the bypass and peaking reaches. This study element included four primary tasks as follows:

- Describe whitewater boating opportunities;
- Implement structured group interviews (Focus Group Session);
- Develop information about the whitewater boating opportunities in the bypass reaches, with the purpose of using the information to determine whether boating studies on any of the bypass reaches are necessary; and
- Conduct whitewater boating flow studies in the peaking reach to identify boatable flows in the peaking reach

This results section is not organized according to these specific tasks. Instead, all of the information developed through these efforts was combined to provide a comprehensive and cohesive description of the whitewater boating opportunities and runs identified by the stakeholders. The information is organized into two main sections: (1) bypass reaches; and (2) peaking reach.

6.4.1 Bypass Reaches

Potential whitewater boating opportunities on the bypass reaches were discussed during the Whitewater Boating Focus Group meeting and with experienced boaters

identified by the focus group. Summaries of the information developed during the Whitewater Boating Focus Group meeting and through follow-up conversations with the boaters are provided in Tables REC 4-7 and REC 4-8, respectively. The bypass reaches and primary access points identified by the stakeholders are shown on Map REC 4-13.

Based on the information developed to date, very little whitewater boating occurs on the bypass reaches. None of the bypass reaches is boated commercially, and only one reach, the Rubicon River between Ellicott Bridge and Ralston Afterbay is boated with any regularity. Occasional use by advanced or expert boaters was also documented on the following reaches:

- Rubicon River between RM 25 and Ellicott Bridge;
- Long Canyon Creek from Ramsey Crossing to Ralston Afterbay (two boaters);
- Duncan Creek from Gold Dollar Trail to the confluence of the Middle Fork American River (one boater);
- Middle Fork American River between Duncan Creek and Middle Fork Interbay (one boater); and
- Middle Fork American River between Middle Fork Interbay and Ralston Afterbay (two boaters).

No boating use was documented on the following reaches:

- Middle Fork American River between French Meadows Dam and Duncan Creek;
- Duncan Creek between the Duncan Creek Diversion Dam and the Gold Dollar Trail;
- North Fork Long Canyon Creek; and
- South Fork Long Canyon Creek.

In general, boating on the bypass reaches may be limited by a combination of the following factors:

- The bypass reaches bisect remote and rugged terrain, with limited road or trail access.
- Due to snow, the roads to some of the access points along the bypass reaches are not accessible by car during the early spring, when boating flows are available. Specifically, roads that traverse areas above about 4,000 feet in elevation are typically not passable until the end of April, after the snow melts. Roads that traverse areas above about 5,000 feet in elevation may not be passable until the end of May.
- As indicated on Table REC 4-16, the bypass reach gradients are extremely steep. The steep gradients result in difficult rapids and drops that can only be boated by advanced and expert boaters, or portaged. The average gradient on

the bypass reaches ranges from a low of 164 feet per mile on South Fork Long Canyon Creek to as much as 237 feet per mile on Long Canyon Creek. For comparison, the average gradient on the peaking reach is 21 feet per mile between Oxbow Powerhouse and the North Fork American River Confluence and 16 feet per mile between the Confluence and Oregon Bar (Table REC 4-17).

- The overall character of the small bypass reaches, for example Duncan Creek, and North and South Long Canyon Creeks, is not conducive to boating. These streams are relatively narrow, boulder choked, and densely vegetated. These types of streams are only attractive to expert boaters.
- There are no real-time flow gages on any of the bypass reaches. Accordingly, boaters have to determine whether boatable flows are present by sight, word of mouth, and/or estimate flows based on: (1) flows measured downstream at the Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300); and (2) reservoir storage and/or spill information. The absence of real-time flow information may limit use of the bypass reaches because boaters do not know when boating flows are present.

The specific characteristics of each of the bypass reaches and any associated boating opportunities are discussed in detail in the following subsections. The reaches where boating has been documented are discussed first, followed by a description of the reaches that have not been boated.

Rubicon River – RM 25 to Ellicott Bridge

This reach extends 3.9 miles from River Mile (RM) 25 to Ellicott Bridge. The average gradient is 139 feet per mile (fpm). The boaters who participated in the focus group and interviewed after the focus group rate this run as Class V for rafts and kayaks. When boated, it is generally boated in conjunction with the Ellicott Bridge to Ralston Afterbay reach.

Access/Shuttle

The put-in is located at River Mile 25 (RM 25), on river right. Accessing the put-in for this reach involves hiking down the steep, unimproved, approximately two-mile long Hales Crossing Trail that connects Forest Road 14N11 to Hunters Trail (14E09) near the river. The difficult access limits use of this reach to boaters who are willing to hike their boat and gear into the put-in. There are no support facilities at RM 25.

The Hale's Crossing Trail can be reached by taking FR 2 to Forest Road 21, then traveling northeast to Forest Road 14N20 and fooling it until arriving at 14N11. The trail head to the put-in is located about 1.5 miles down 14N11.

The take-out is located at Ellicott Bridge. There are no support facilities at Ellicott Bridge but a limited amount of unpaved parking is available near the bridge. From Foresthill, the take-out can be reached by taking Mosquito Ridge Road (FR 96) to Blacksmith Flat Road (FR 23). Travel east on FR 23 to Eleven Pines Road (FR 2).

Travel south on FR 2, cross Long Canyon Creek and continue along FR 2 until it crosses the Rubicon River at Ellicott Bridge.

From Georgetown, the take-out at Ellicott Bridge can be reached by taking Wentworth Springs Road northeast to FR 2 (Eleven Pines Road). FR 2 descends into the Rubicon River canyon and crosses the Rubicon River at Ellicott Bridge.

The roads to the put-in/take-out are often impassible by car due to snow when boatable flows are present. These roads are not plowed. The take-out at Ellicott Bridge is usually accessible by late April after the snow melts. The put-in may not be accessible until the end of May. Though in some years, when there is an early melt or winter rain on snow, boaters have been able to access the river reach. When there is such an occurrence, boaters will run the reach twice in a row if possible and there is a lot of chat online between boating groups about when to go and what the run is like. Comparable Runs

The following runs where identified by the focus group as comparable to the Rubicon River between RM 25 and Ellicott Bridge.

- North Fork American River: Tadpole Creek to Colfax-Iowa Hill Road (Generation/Giant Gap);
- Middle Fork Feather River: Nelson Point to Misap Bridge (Devils Canyon);
- Fordyce Creek: Fordyce Lake to Lake Spaulding;
- Kings River: South Fork Confluence to Garnet Dike Campground (Kings Canyon); and
- South Fork Merced River: Wawona to Main Merced.

Boatable Flow Ranges

The following summarizes the boatable flow ranges identified by the focus group and through follow-up consultation with experienced boaters. Note that there is no published flow data for this reach.

Acceptable Flow	Flow Range (cfs)		
	Published Information	Focus Group	Follow-up Consultation
Minimum	–	400	500
Optimum	–	500–800	600–1,000
Maximum	–	1,200	1,500

Boating Opportunities

The hydrologic data (daily average flow data) were analyzed to determine how often flows within the boatable flow range (400–1,500 cfs) were available on this reach under

impaired and unimpaired conditions. The results were tabulated by water year type and are presented on Table REC 4-18.

Boatable flows were available more often under unimpaired conditions than under impaired conditions. As water years become wetter, boating opportunities increased under both impaired and unimpaired conditions.

- Under impaired conditions, no boating opportunity days were available during the one extreme dry and five critically dry water years that were analyzed. Under unimpaired conditions, an average of 35 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 21 in 1977 to 43 in 1994. Most of these days would have occurred in April and May.
- Under impaired conditions, no boating opportunity days were available during the five dry water years that were analyzed. Under unimpaired conditions, an average of 47 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 32 in 2001 to 60 in 1991. All of these days would have occurred in April and May, and to a lesser extent (3 on average) in June.
- Under impaired conditions, boating opportunity were available on a total of four days during the six below normal water years that were analyzed. All of these days occurred in June of 2003. Under unimpaired conditions, an average of 61 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 51 in 1979 to 70 in 2004. All of these days would have occurred in April, May, and to a lesser extent (12 on average) in June.
- Under impaired conditions, boating opportunities were available on a total of 12 days during the six above normal water years that were analyzed. All of these days occurred in May and June of 2005. Under unimpaired conditions, an average of 60 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 41 in 1975 to 73 in 1978. All of these days would have occurred in April, May, June, and July, with the most occurring in April and the fewest occurring in July.
- Under impaired conditions, boating opportunities were available an average of 13 days during the 10 wet water years that were analyzed. All of these boating opportunities occurred during six of the 10 years that were analyzed, ranging from a total of 8 in 1996 to 32 in 2006. These boating opportunity days mainly occurred in May and June, and to a lesser extent, April and July. Under unimpaired conditions, an average of 60 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 38 in 2006 to 76 in 1980. All of these days would have occurred in April, May, June, July, and August, with the most occurring in April and decreasing through August.

A review of the hydrologic data indicates that the boating opportunities that occurred on this reach were mainly due to spill events.

Rubicon River – Rubicon River – Ellicott Bridge to Ralston Afterbay

This reach extends 20.5 miles between Ellicott Bridge and Ralston Afterbay and bisects remote terrain. The average gradient is 106 fpm. This reach is rated Class V for all watercraft (catarafts, rafts, kayaks, inflatable kayaks). This reach can be completed in one or two days, and can include from 2 to 10 portages, depending on flow.

Access/Shuttle

The primary put-in is located at Ellicott Bridge, which is the take-out for the RM 25 – Ellicott Bridge reach, described above. The focus group identified an alternative put-in at the confluence of Long Canyon Creek and the Rubicon River. However, using this access point as a put-in would result in a relatively short run (e.g., 3 miles) on the Rubicon River. This access can be accessed via Forest Road 13N66, but the road does not extend to the river and motor vehicle use is not permitted along the trail that extends to the river. The road on the opposite side of the river, Forest Road 14N25G, is no longer designated for motor vehicle use down to the river.

The primary take-out is located at Ralston Afterbay and is located near the Ralston Powerhouse. From Foresthill, the take-out can be reached by taking Mosquito Ridge Road (FR 96) to Blacksmith Flat Road (FR 23). Travel south on Blacksmith Flat Road descending into the Middle Fork American River Canyon. At Ralston Afterbay, turn east on FR 23 and continue towards the end of Ralston Afterbay. Parking is available in unpaved turnouts near Ralston Powerhouse. Alternative access is available at the Ralston Afterbay Car Top Boat Ramp, located at the Ralston Picnic Area. However, reaching this take-out requires paddling down Ralston Afterbay.

Comparable Runs

The following runs where identified by the focus group as comparable to the Rubicon River between Ellicott Bridge and Ralston Afterbay:

- North Fork American River: Tadpole Creek to Colfax-Iowa Hill Road (Generation/Giant Gap);
- North Fork Trinity River;
- North Fork Yuba River; and
- South Fork Yuba River.

Boatable Flow Ranges

The following summarizes the boatable flow ranges for this reach identified in the Best Whitewater of California (Holbeck and Stanley, 1988), on the California Creeks website (www.cacreeks.com), by the focus group, and through follow-up consultation with

experienced boaters. PCWA proposed to conduct a single flow study on this reach (on a spill or high flow runoff event in 2009 or 2010) to develop additional whitewater boating flow information for this reach. However, to date, flows have not reached the target study flow range (500 – 800 cfs). Therefore, PCWA has not been able to conduct the study.

Acceptable Flow	Flow Range (cfs)				
	Published Information			Focus Group	Follow-up Consultation
	Holbeck & Stanley (Measured at take-out)	California Creeks (Inflatable kayaks)	California Creeks (Hardshell kayaks)		
Minimum	500	200	500	400	400
Optimum	1,200	–	–	500–700	700–1,500
Maximum	2,000	500	2,000	1,200	3,000

According to the focus group participants, flows can double or triple between Ellicott Bridge and Ralston Afterbay due to accretions from tributaries. The hydrologic data confirms this information.

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range were available on this reach under impaired and unimpaired conditions. For the purposes of this analysis, two flow ranges were evaluated:

- 400–1,500 cfs, which brackets the minimum and optimum flow ranges identified in the published literature, expressed by the focus group, and by experienced boaters; and
- 1500–3,000 cfs which brackets the maximum flow identified by Holbeck and Stanley and through follow-up consultation with experienced boaters.

The results were tabulated by water year type and are presented on Table REC 4-19.

As indicated, boatable flows are available more often under unimpaired conditions than under impaired conditions. As water years become wetter, boating opportunities progressively increased under both impaired and unimpaired conditions.

Lower Flow Range

- Under impaired conditions, no boating opportunity days in the lower flow range were available during the one extreme dry and five critically dry water years that were analyzed. Under unimpaired conditions, an average of 37 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 22 in 1977 to 47 in 1994. Most of these days would have occurred in April and May.

- Under impaired conditions, no boating opportunity days in the lower flow range were available during the five dry water years that were analyzed. Under unimpaired conditions, an average of 49 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 36 in 2001 to 63 in 1991. All of these days would have occurred in April and May, and to a lesser extent (3 on average) in June.
- Under impaired conditions, boating opportunities in the lower flow range were available on a total of four days during the six below normal water years that were analyzed. All of these days occurred in June of 2003. Under unimpaired conditions, an average of 59 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 50 in 1979 to 71 in 2004. All of these days would have occurred in April, May, and to a lesser extent (14 on average) in June.
- Under impaired conditions, boating opportunities in the lower flow range were available on a total of 16 days during the six above normal water years that were analyzed. All of these days occurred in May and June of 2005. Under unimpaired conditions, an average of 59 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 43 in 1975 to 70 in 1978. All of these days would have occurred in April, May, June, and July, with the most occurring in April and the fewest occurring in May.
- Under impaired conditions, boating opportunities in the lower flow range were available an average of 19 days during the 10 wet water years that were analyzed. All of these boating opportunities occurred during six of the 10 years that were analyzed, ranging from a total of 15 in 1996 to 57 in 2006. These boating opportunity days mainly occurred in May and June, and to a lesser extent, April and July. Under unimpaired conditions, an average of 61 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 42 in 2006 to 76 in 1980. All of these days would have occurred in April, May, June, July, and August, with the most occurring in April and decreasing through August.

Higher Flow Range

- Under impaired conditions, no boating opportunity days in the higher flow range were available during the one extreme dry and five critically dry water years that were analyzed. Similarly, no boating days in the higher flow range would have been available under unimpaired conditions.
- Under impaired conditions, no boating opportunity days in the higher flow range were available during the five dry water years that were analyzed. Under unimpaired conditions, an average of three boating days would have occurred. These days would have occurred in three of the five water years that were analyzed, ranging from a total of three in 1990 to eight in 1981. Most of these days would have occurred in April and May, and to a lesser extent in June.

- Under impaired conditions, no boating opportunities days in the higher flow range were available during the six below normal water years that were analyzed. Under unimpaired conditions, an average of 12 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of four in 1985 and 2004 to 24 in 1979. Most of these days would have occurred in May, and to a lesser extent April and June.
- Under impaired conditions, boating opportunities in the higher flow range were available on a total of three days during the six above normal water years that were analyzed. All of these days occurred in May of 2005. Under unimpaired conditions, an average of 26 boating days would have occurred. These days would have occurred in all except one (2000) of the water years that were analyzed, ranging from a total of 23 in 2005 to 42 in 1993. Most of these days would have occurred in May and June.
- Under impaired conditions, boating opportunities in the higher flow range were available an average of two days during the 10 wet water years that were analyzed. All of these boating opportunities occurred during three of the 10 years that were analyzed, ranging from a total of 4 in 1983 and 1995 to 8 in 2006. These boating opportunity days all occurred in May and June. Under unimpaired conditions, an average of 30 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 12 in 1997 to 49 in 2006. All of these days would have occurred in April, May, June, July, and August, with the most occurring in May.

A review of the hydrologic data indicated that boating opportunities in this reach are a result of accretion, spill, or a combination of both. For example, nearly all of the boating opportunities that occurred in April of wet years were due to natural run off (e.g., storm events resulting in accretion from tributary streams). The one exception was in 1982 when a combination of high accretion flows plus spill pushed flows into the lower boating range. In May of wet years, boating opportunities were sometimes due to accretion, sometimes due to spill, and sometimes due to a combination of accretion and spill. All of the boating opportunities that occurred in June and July of wet years were due to spill events.

The combined boatable flow range (400–3,000 cfs) is graphically depicted on Figures REC 4-21 through REC 4-25 with respect to the annual hydrographs for each water year type. These hydrographs graphically illustrate a couple additional points, as follows:

- When comparing the impaired and unimpaired hydrographs for each water year type, it is evident that operation of the MFP sometimes brings flows down into the boatable range, thereby creating boating opportunities.
- Additional boating opportunities are available outside of the analysis window (April 1 – October 1). For example, in wet years numerous boating opportunities were available prior to April 1 (Figure REC 4-25). However, these boating

opportunities are difficult to utilize because the put-in is typically not accessible before April due to snow.

Middle Fork American River – French Meadow Dam to Middle Fork Interbay

This reach of the Middle Fork American River extends 11.1 miles between French Meadows Reservoir Dam and Middle Fork Interbay. The average gradient is 225 fpm. The Middle Fork American River between French Meadows Dam to the Duncan Creek confluence has not been run by any of the boaters contacted as part of the MFP relicensing process so information about this segment is not available.

Based on the information from the focus group and follow up consultations, PCWA could only find one person who had boated the Middle Fork American River between the Duncan Creek Confluence and Middle Fork Interbay. This person hiked in to Duncan Creek on a snowbound trail. He put in on Duncan Creek and boated to its confluence with the Middle Fork American where he continued to Middle Fork Interbay. The combined run from the hike in put-in on Duncan Creek to the take-out on the Middle Fork Interbay is 5.8 miles (2.1 miles on Duncan Creek and 3.7 on the Middle Fork American River) and was boated in about 5 to 6 hours. The 3.7 miles section of the Middle Fork American River below Duncan Creek is rated Class V with a narrow gorge. The one person who boated this reach reported that he had to portage a narrow gorge in channel. He estimated that this portage might not be possible at flows exceeding 200 cfs. He is a seasoned expert boater who made this flow estimate without the help of a flow gauge at the put-in or take-out.

Access/Shuttle

The put-in for the segment of the Middle Fork American River that has been boated is located on Duncan Creek, and is therefore described under Duncan Creek.

The take-out is located at Middle Fork Interbay. The upstream end of Middle Fork Interbay is not accessible by car. Therefore, taking out requires paddling across Middle Fork Interbay to the dam, where a limited amount of parking is available in unpaved turnouts. There are no support facilities at the take-out.

From Foresthill, the take-out can be reached by taking Mosquito Ridge Road (FR 96) to Middle Fork Interbay Access Road, and descending into the Middle Fork American River Canyon via Middle Fork Interbay Access Road. PCWA plows this road during the winter to access Middle Fork Interbay. Therefore, access to the take-out is not an issue.

Comparable Runs

Comparable runs were not identified by either the focus group or through follow-up consultation.

Boatable Flow Ranges

There is no published flow data for this reach and no flow information was provided by the Whitewater Boating Focus Group. One boater interviewed after the focus group session indicated that he boated a portion of the Middle Fork American River from the Duncan Creek confluence to Middle Fork Interbay. Based on PCWA flow information, estimated flow into Middle Fork Interbay at the time of the run was 163 cfs. The boater reported that a narrow gorge located upstream of the Middle Fork Interbay requires an "in channel" portage which might not be possible at flows exceeding 200 cfs. One other boater subsequently reported that he boated this reach on accretion flows, but the details of this run are unknown. Accordingly, PCWA conducted a controlled single flow study to develop whitewater boating flow information for this reach. The flow study was conducted on May 22, 2010. The flow at the put-in was 252 cfs. The boaters were unable to complete the run due to an extensive amount of downed trees and logs in the river. The flow study methods and results will be described in detail in a separate report.

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range were available on this reach under impaired and unimpaired conditions. A reliable boatable flow range for this reach was not identified. Accordingly, for the purposes of this analysis the boating range was presumed to be 150–200 cfs. The results were tabulated by water year type and are presented on Table REC 4-20.

- Under impaired conditions, no boating opportunity days were available during the one extreme dry and five critically dry water years that were analyzed. Under unimpaired conditions, an average of six boating days would have occurred. These days would have occurred in all except one of the water years that were analyzed (1987), ranging from a total of 3 in 1988 and 1992 to 16 in 1976. All of these days would have occurred in April and May.
- Under impaired conditions, boating opportunity days were available on an average of three days during the five dry water years that were analyzed. Most of these days occurred in April of two water years, 1991 (12) and 2001 (4). One day occurred in May of 1991. Under unimpaired conditions, an average of five boating days would have occurred. These days would have occurred in all except one of the water years that were analyzed (1991), ranging from a total of three in 1981 to 11 in 2001. All of these days would have occurred in April and May.

During the below normal, above normal, and wet water years, more boating opportunity days occurred under impaired conditions than would have occurred under unimpaired conditions, as summarized below.

- Under impaired conditions, boating opportunities were available on an average of nine days during the six below normal water years that were analyzed. Boating days occurred every year, ranging from a total of four in 1989 to 21 in 1979. Most of these opportunities occurred in April, and to a lesser extent, May, earlier

than would have occurred under unimpaired conditions. Under unimpaired conditions, an average of five boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 3 in 1979, 1989, and 2003 to 10 in 2004. All of these days would have occurred in May and June.

- Under impaired conditions, boating opportunities were available on an average of nine days during the six above normal water years that were analyzed. Boating days occurred every year, ranging from a total of three in 1999 and 2005 to 19 in 1978. These opportunities occurred in April, May and June, which is earlier than would have occurred under unimpaired conditions. Under unimpaired conditions, an average of five boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of three in 1999 to nine in 1978. All of these days would have occurred in June and July.
- Under impaired conditions, boating opportunities were available on an average of five days during the 10 wet water years that were analyzed. All of these boating opportunities occurred during five years, ranging from a total of three in 1982 and 1995 to 20 in 1998. These boating days mainly occurred in April and May, which is earlier than would have occurred under unimpaired conditions. Under unimpaired conditions, an average of 5 boating days would have occurred. These days would have occurred during all of the water years that were analyzed, ranging from a total of three in 1986, 1995, 1998, and 2006 to 10 in 1982. Most of these days would have occurred in June and July.

The higher number of boating opportunities on this reach under impaired conditions occurs for two primary reasons:

- As shown on Figure REC 4-26, the boatable flow range is relatively low so unimpaired flows often exceed the boatable flow range. This occurs primarily as a result of accretion flows from the subwatersheds, including Duncan Creek. Operation of the MFP helps reduce flows to the boatable flow range by diverting water from Duncan Creek and by storing water from the Middle Fork American River in French Meadows Reservoir.
- The boatable flow range (150–200) is very narrow so unimpaired flows typically exceed the upper end of the range until mid-June, at which time they abruptly fall below the lower end of the range. Operation of the MFP helps maintain flows within the boating window. This pattern is evident on Figure REC 4-26.

Middle Fork American River – Middle Fork Interbay Dam to Ralston Afterbay

This reach, which is sometimes referred to as the “End of the World Run”, is 9.6 miles long and extends from the Middle Fork Interbay Dam to Ralston Afterbay. The gradient is 135 fpm. The focus group participants and boaters interviewed after the focus group rate this reach Class IV for kayaks and Class V for rafts.

The focus group participants noted that, due to the constrained nature of the channel, the reach is more difficult to run in rafts than in kayaks. Rafts longer than 13 or 14 feet

are not advised. Those that do raft this reach may be required to complete 10 or more technical portages. Kayakers may only need to complete two or three portages.

Access/Shuttle

The put-in is located just below Middle Fork Interbay Dam, which is the take-out for the French Meadows Dam to Interbay reach described above.

The take-out is Ralston Afterbay Car Top Boat Launch, which is located at the Ralston Picnic Area. Ralston Picnic Area is a no-fee day use area with five picnic sites. Each site includes a table and cooking grill. Toilets and a limited amount of day use parking are available. Overnight camping is not allowed.

From Foresthill, the take-out can be reached by taking Mosquito Ridge Road (FR 96) to Blacksmith Flat Road. Turn right on Blacksmith Flat Road and descend into the Middle Fork American River Canyon. At Ralston Afterbay turn east on FR 23 and travel east to the Ralston Picnic Area.

Comparable Runs

One comparable run was identified – Shirttail Creek, North Fork American Watershed.

Boatable Flow Ranges

The following summarizes the boatable flow ranges identified by the focus group and through follow-up consultation with experienced boaters.

Acceptable Flow	Flow Range (cfs)		
	Published Information	Focus Group	Follow-up Consultation
Minimum	–	300	200
Optimum	–	–	600–700
Maximum	–	800	700

There is no published flow information for this reach. Accordingly, PCWA conducted a controlled single flow study on this reach to develop additional information about whitewater boating flows on this reach. The flow study was conducted on May 8, 2010. The flow at the put-in was 425 cfs and 475 cfs at the take-out. The methods and results of the flow study will be described in detail in a separate report.

Boating Opportunities

The hydrologic data were analyzed to determine how often flows between 200 and 800 cfs were available on this reach under impaired and unimpaired conditions. The results were tabulated by water year type and are presented on Table REC 4-21.

As indicated, the flow range was available more often under unimpaired conditions than under impaired conditions. As water years become wetter, boating opportunities progressively increased under both impaired and unimpaired conditions.

- Under impaired conditions, no boating opportunity days were available during the one extreme dry and five critically dry water years that were analyzed. Under unimpaired conditions, an average of 38 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 9 in 1977 to 52 in 1988. All of these days would have occurred in April and May.
- Under impaired conditions, no boating opportunity days were available during the five dry water years that were analyzed. Under unimpaired conditions, an average of 52 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 42 in 2001 to 61 in 1991. Most of these days would have occurred in April and May.
- Under impaired conditions, no boating opportunity days were available during the six below normal water years that were analyzed. Under unimpaired conditions, an average of 44 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 37 in 1979 to 50 in 1985. All of these days would have occurred in April, May, and June.
- Under impaired conditions, boating opportunities were available on an average of five days during the six above normal water years that were analyzed. All of these boating days occurred during two years, ranging from a total of 3 in 2,000 to 24 in 2005. Most of these opportunities occurred in May and June. Under unimpaired conditions, an average of 40 boating days would have occurred. These days would have occurred in all of the water years that were analyzed, ranging from a total of 23 in 1993 to 60 in 1975. Most of these days would have occurred in April and June, and to a lesser extent, May and July.
- Under impaired conditions, boating opportunities were available on an average of 32 days during the 10 wet water years that were analyzed. These boating days occurred during all except two of the water years analyzed (1984 and 1997). The number of boating days ranged from a total of nine in 1980 to 97 in 1983. Most of the boating days occurred in April, May and June. In 1983, a particularly wet water year, 10 boating days were available in July. Under unimpaired conditions, an average of 46 boating days would have occurred. These days would have occurred during all of the water years that were analyzed, ranging from a total of 14 in 2006 to 70 in 1980. Most of these days would have occurred in April, May, June, and July.

A review of the hydrologic data indicates that the boating opportunities that occurred during wet years were a result of either spill from French Meadows Reservoir, accretion, or a combination of both, depending upon the particular water year, and how the MFP was operated. For example, in 1995 all 30 of the boating opportunities that occurred in April were a result of accretion. In May, some of the boating opportunities were a result

of accretion but some were also a result of spill. In June of 1995, all of the boating opportunities (20) were primarily a result of spill from French Meadows Reservoir.

Long Canyon Creek – Confluence of North and South Forks of Long Canyon Creek to Confluence of Rubicon River

Long Canyon Creek extends 11.4 miles from its confluence with the North and South Forks of Long Canyon Creek to its confluence with the Rubicon River. The average gradient is 237 fpm. The upper 2.8 miles of this reach has not been run but the 8.6 mile segment from Ramsey Crossing to the Rubicon River confluence has been run. The average gradient of this segment is 266 fpm. Based on information developed through the focus group, very few boaters have run this segment but those who have rate it Class IV+/V for kayaks. This reach can be boated in one day but there are about 10 portages between flows of 200 and 250 cfs.

Access/Shuttle

The put-in for this reach is Ramsey Crossing. From Ralston Afterbay, the put-in can be reached by traveling up FR 23 to Forest Road 13N65. Turn right on 13N65 and cross Long Canyon Creek at Ramsey Crossing. No support facilities are available at the put-in. This route may be inaccessible due to snow when boatable flows are present.

The take-out is located at the confluence of Long Canyon Creek and the Rubicon River. From Foresthill, the take-out can be reached by taking Mosquito Ridge Road (FR 96) to Blacksmith Flat Road. Turn right on Blacksmith Flat Road and descend into the Middle Fork American River Canyon. At Ralston Afterbay turn east on FR 23 and continue east passing Ralston Afterbay. Ascend out of the Middle Fork American River Canyon to 14N25G. In the past, boaters could access the Rubicon River/Long Canyon confluence via 14N25G. However, this road is no longer designated as open to motor vehicle use down to the Rubicon River. Boaters will need to walk approximately 1.5 miles to the river or out of the river canyon. An alternative take-out is available at Ralston Powerhouse but this requires boating an approximately 3-mile segment of the Rubicon River.

Comparable Runs

No comparable runs were identified by the focus group or through follow-up consultation.

Boatable Flow Ranges

The following summarizes the boatable flow ranges identified through follow-up consultation with experienced boaters. No flow information was provided by the focus group and there is no published flow information for this reach.

Acceptable Flow	Flow Range (cfs)		
	Published Information	Focus Group	Follow-up Consultation
Minimum	–	–	200–250
Optimum	–	–	300–500
Maximum	–	–	500–600

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range (200–600 cfs) were available on this reach under impaired and unimpaired conditions. The results were tabulated by water year type and are presented on Table REC 4-22.

- Under impaired conditions, no boating opportunity days were available during the one extreme dry and five critically dry water years that were analyzed. Similarly, no boating days would have occurred under unimpaired conditions.
- Under impaired conditions, no boating opportunity days were available during the five dry water years that were analyzed. Similarly, no boating days would have occurred under unimpaired conditions.
- Under impaired conditions, no boating opportunity days were available during the six below normal water years that were analyzed. Under unimpaired conditions, a total of four boating days occurred, all in May of 2003.
- Under impaired conditions, no boating opportunity days were available during the six above normal water years that were analyzed. Under unimpaired conditions, an average of 4 boating days would have occurred. These days would have occurred in three of the water years that were analyzed, ranging from a total of six in 1993 to 10 in 1975 and 2005. All of these days would have occurred in April and May.
- Under impaired conditions, boating opportunities were available on an average of nine days during the 10 wet water years that were analyzed. These boating days occurred during April and May of five of the water years analyzed, ranging from a total of 8 in 1996 to 36 in 2006. Under unimpaired conditions, an average of 11 boating days would have occurred. These boating days occurred during April and May of six of the water years analyzed, ranging from a total of 8 in 1996 to 36 in 2006. One boating day occurred in June of 1983.

During wet water years, North and South Forks of Long Canyon Creek Diversions are often turned-out to avoid maintenance issues associated with debris, and because the tunnels are often full with water being conveyed from the large reservoirs. When this occurs, flow in the in Long Canyon Creek is not affected by Project operations. For example, in 1982 and 2006 (wet years), the number of boating opportunities, and the timing of those opportunities (all occurred in April and May), was the same under

impaired and unimpaired conditions. Similar scenarios occurred in April of 1983 and in May of 1995 and 1996.

Duncan Creek – Duncan Creek Diversion Dam to Middle Fork American River Confluence

The reach of Duncan Creek from the Diversion Dam to the Middle Fork American River is 8.6 miles long, with an average gradient of 221 fpm. The upper 6.5 miles of this reach has not been run by any of the boaters contacted as part of the MFP relicensing process. The lower 2.1 miles has been run in combination with the Middle Fork American River, starting at a hike in put-in on Duncan Creek and ending at the Middle Fork Interbay. The combined run from the hike in put-in on Duncan Creek to the take-out on the Middle Fork Interbay is 5.8 miles (2.1 miles on Duncan Creek and 3.7 on the Middle Fork American River) and was boated in about 5 to 6 hours.

The Duncan Creek segment that has been run is very steep and has an average gradient of 317 fpm. It was rated Class IV+/V for kayaks. The average gradient on the Middle Fork American River between the Duncan Creek Confluence and Middle Fork Interbay is 217 fpm. The one person who boated this reach reported that he had to portage a narrow gorge in channel. He estimated that this portage might not be possible at flows exceeding 200 cfs. He is a seasoned expert boater who made this flow estimate without the help of a flow gauge at the put-in or take-out.

Access/Shuttle

The put-in on Duncan Creek was accessed from the Gold Dollar Trail. This trail was identified using a Digital Raster Graphic (DRG), which is a digital image resulting from scanning a paper USGS topographic map for use on a computer. Accessing the put-in for this reach involves hiking down a steep, unimproved, approximately 2.5-mile long trail, extending from near Placer Big Trees Grove to Duncan Creek. The difficult access limits use of this reach to boaters who are willing to hike their boat and gear down to the put-in, potentially through snow. This area is not plowed during the winter/spring and there are no support facilities in this area.

The put-in can be reached by taking Mosquito Ridge Road (FR 96) towards French Meadows Reservoir. Turn right on Forest Road 16-48, which leads to Placer Big Trees Grove. The trail head to the put-in is located southeast of Placer Big Trees Grove.

There is no access to the confluence of Duncan Creek and the Middle Fork American River. Therefore, boaters must boat a portion of the Middle Fork American River and take-out at the Middle Fork Interbay, which is described above under the French Meadows Dam to Middle Fork Interbay reach.

Comparable Runs

No comparable runs were identified by the focus group or through follow-up consultation.

Boatable Flow Ranges

There is no published flow data for this reach. In addition, no flow information was provided by the focus group or during follow-up consultation.

Boating Opportunities

A flow range for boating on this run was not identified. Therefore, boating opportunities were not analyzed.

North Fork Long Canyon Creek – North Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek

North Fork Long Canyon Creek extends 3.1 miles from the North Fork Long Canyon Diversion Dam to the confluence with Long Canyon Creek. The average gradient is 200 fpm. This reach has not been boated by any of the focus group participants or by any of the boaters interviewed after the focus group. In addition, no boating information was found in any of the existing literature sources. As such, whitewater boating information is not available for this reach.

Access

The upper end of this reach can be accessed near the North Fork Long Canyon Diversion Dam. From Foresthill, the North Fork Long Canyon Diversion Dam can be reached by taking Mosquito Ridge Road (FR 96) to Blacksmith Flat Road. Turn right on Blacksmith Flat Road and travel south towards Ralston Afterbay. Travel east on FR 23, past Ralston Afterbay and towards French Meadows Reservoir. Continue on FR 23 until it intersects FR 2 near the confluence North Fork Long Canyon Creek and Long Canyon Creek. Travel northeast on FR 2. FR 2 parallels the north side of North Fork Long Canyon Creek and crosses the creek about ½ mile downstream of the diversion dam. Parking is available in small unpaved turnouts along FR 2 or on the North Fork Long Canyon Creek Diversion Dam Access Road. This area is not plowed during the winter/spring and there are no support facilities in this area.

This reach terminates at the confluence of North Fork Long Canyon Creek and Long Canyon Creek, which can be reached by following the directions described above. There are no support facilities in this location but parking is available in small unpaved turnouts along FR 2 or FR 23.

The bottom of this reach can also be accessed from Georgetown by taking Wentworth Springs Road to FR 2 (Eleven Pines Road). Turn left on FR 2 and descend into the Rubicon River drainage. Cross the Rubicon River at Ellicott Bridge and continue north and then northeast until FR 2 crosses Long Canyon Creek.

Comparable Runs

No comparable runs were identified by the focus group or through follow-up consultation.

Boatable Flow Ranges

There is no published flow data for this reach. In addition, no flow information was provided by the focus group or during follow-up consultation.

Boating Opportunities

A flow range for boating on this run was not identified by the focus group participants or during subsequent interviews. Therefore, boating opportunities were not analyzed.

South Fork Long Canyon Creek – South Fork Long Canyon Creek Diversion Dam to the Confluence of Long Canyon Creek

South Fork Long Canyon Creek extends 3.3 miles from the South Fork Canyon Diversion Dam to the confluence with Long Canyon Creek. The average gradient is 164 fpm. This reach has not been boated by any of the focus group participants or by any of the boaters interviewed after the focus group. In addition, no boating information was found in any of the existing literature sources. As such, whitewater boating information is not available for this reach.

Access/Shuttle

The upper end of this reach can be accessed near the South Fork Long Canyon Diversion Dam. From Foresthill, the South Fork Long Canyon Diversion Dam, can be reached by taking Mosquito Ridge Road (FR 96) to Blacksmith Flat Road. Turn right on Blacksmith Flat Road and travel south towards Ralston Afterbay. Travel east on FR 23 past Ralston Afterbay and towards French Meadows Reservoir. Continue on FR 23 until it eventually intersects FR 2 near the confluence North Fork Long Canyon Creek and Long Canyon Creek. Travel northeast on FR 2 and cross North Fork Long Canyon Creek. Continue on FR 2 towards Hell Hole Reservoir, South Fork Long Canyon Diversion Dam is located on the south side of FR 2, downstream of Middle Meadows Campground. Parking is available in small unpaved turnouts along FR 2 or on short road that leads to the South Fork Long Canyon Creek Diversion Dam. This area is not plowed during the winter/spring and there are no support facilities in this area.

This reach terminates at the confluence of South Fork Long Canyon Creek and Long Canyon Creek, which can be reached by following the directions described above. There are no support facilities in this location but parking is available in small unpaved turnouts along FR 2.

This reach can also be accessed from Georgetown by taking Wentworth Springs Road to FR 2 (Eleven Pines Road). Turn left on FR 2 and descend into the Rubicon River drainage. Cross the Rubicon River at Ellicott Bridge and continue north and then northeast until FR 2 crosses Long Canyon Creek, just downstream of its confluence with South Fork Long Canyon Creek. Parking is available in small unpaved turnouts along FR 2.

Comparable Runs

No comparable runs were identified by the focus group or through follow-up consultation.

Boatable Flow Ranges

There is no published flow data for this reach. In addition, no flow information was provided by the focus group or during follow-up consultation.

Boating Opportunities

A flow range for boating on this run was not identified. Therefore, boating opportunities were not analyzed.

6.4.2 Peaking Reach

Whitewater boating occurs along the entire peaking reach, from Oxbow Powerhouse to Oregon Bar. This area bisects ASRA, so whitewater boating resources along the peaking reach are managed by State Parks, in accordance with the ASRA Interim Resource Management Plan (USBR 1992).

The peaking reach is typically divided into four runs, as follows:

- Tunnel Chute Run – Middle Fork American River – Indian Bar Rafter Access to Ruck-a-Chucky Recreation Area;
- Mammoth Bar Run – Middle Fork American River – Ruck-a-Chucky Recreation Area to Mammoth Bar;
- Murderer's Bar Run – Middle Fork American River – Mammoth Bar to the North Fork American River Confluence; and
- Confluence Run – North Fork American River – Middle Fork American River Confluence to Oregon Bar.

The location of these runs and the primary access points for each of these runs are shown on Map REC 4-2.

The runs on the peaking reach can be boated separately or in combination. Overnight camping associated with whitewater boating occurs at three primitive camping areas found at Cache Rock (managed by the USDA-FS), the confluence with Otter Creek (Fords Bar), and at Cherokee Bar (Map REC 4-2). Commercial outfitters are allowed to camp at theses locations under their Concessions Contract with California State Parks. Non-commercial boaters who plan to camp along the river at locations other than Cache Rock must obtain a River Camping Permit from the ASRA office. Boaters who plan to camp at Cherokee Bar must bring their gear in by boat. Developed camping is available at the Ruck-a-Chucky Recreation Area.

The Middle Fork American River between Oxbow Powerhouse and its confluence with the North Fork American River is boated commercially. PCWA currently coordinates with ASRA and a designated commercial whitewater boating representative to schedule MFP operations during the summer and early fall to accommodate whitewater recreation. Whitewater boating releases are scheduled on a voluntary basis such that they minimize effects to power production and do not compromise maintenance activities or consumptive water deliveries. As of 2008, the North Fork American River downstream of its confluence with the Middle Fork American River is boated privately. Commercial whitewater boating is currently not permitted on the North Fork of the American River downstream of the Confluence. However, future commercial whitewater use on this reach will be determined in the ongoing General Plan/Resource Management Plan being prepared for ASRA. It is likely that some form of commercial use will be permitted on this reach in the future (USDA-FS/CSP, October 15, 2009).

State Parks manages commercial whitewater boating along the North Fork and Middle Fork of the American rivers within the ASRA. Commercial whitewater permits are required annually for the Middle Fork American River downstream of Oxbow Powerhouse; however, no permits are required for private boaters.

Pursuant to the Middle Fork American River Management Plan, whitewater outfitters are allowed to operate commercial trips through a written, signed and approved State Parks Concessions Contract (California State Parks, 2006). The Concessions Contracts or "permits" issued for the Middle Fork American River are divided into two types, as follows:

- Middle Fork Class IV Permit – This permit allows boating along both the Tunnel Chute Run (Class IV) and Mammoth Bar Run (Class II); and
- Middle Fork Class II Permit – This permit is restricted to the Mammoth Bar Run.

According to the Concessions Contract (California State Parks, 2006), the demand for "starting" trips down the river on weekends and holidays during the summer generally exceeds the maximum allowable commercial (concession) use. To address this issue, State Parks worked closely with commercial outfitters, other agencies, the general public, and various user groups to design a system of "Special Requirements", which applies to commercial boating use and does not apply to private boating use. The Special Requirements limits the number of commercial boat launches at the Oxbow Put-In (Indian Bar Rafter Access) to 25 during specified "control dates". The companies allowed to launch on any specific control day are determined each year during the Outfitter Draw meeting (California State Parks, 2006). Currently, there are no limitations on the amount of commercial use on the Mammoth Bar Run.

Private boating occurs in the peaking reach, on both the Middle Fork American River and the North Fork American River below the confluence to the high-water mark of Folsom Lake. However, private boating use in the peaking reach is substantially lower than commercial boating use. Based on counts of private boaters made by PCWA in 2007 and on commercial boating use data for 2007 provided by ASRA, private boating

use was 573 boaters, which represents about 3% of the total boating use on the peaking reach for that year (PCWA 2010b).

The following subsections describe the four runs in the peaking reach. Each of the runs and associated access points are shown on Map REC 4-2.

Tunnel Chute Run

The Tunnel Chute Run extends 15.2 miles from the Indian Bar Rafter Access (also called Oxbow Put-in) to Ruck-a-Chucky Recreation Area (also called Greenwood). The overall gradient is 22.7 fpm. The run is considered Class IV but has long stretches of flat water. One class V-VI rapid (Ruck-a-Chucky Rapid) is usually portaged but can be run by knowledgeable, experienced boaters. The portage around Ruck-a-Chucky Rapid can be time consuming, especially for private boaters who are unfamiliar with the run or for boaters conducting overnight trips with a lot of gear. Another option to portaging both boats and passengers around Ruck-a-Chucky Rapid includes having passengers portage and then lining or "ghost" boating rafts through the rapid and catching them in the pool below.

The Tunnel Chute Run is the most popular run on the Middle Fork American River. It is boated both commercially and privately but commercial use accounts for most of the whitewater boating use.

Commercial Whitewater Boating Use

To help manage commercial boating use, ASRA maintains commercial boating use records. Use on the Tunnel Chute Run in 2007 and 2008 was recorded by ASRA as follows:

- 2007 – 16,774 customers; and
- 2008 – 18,688 customers.

Private Whitewater Boating Use

PCWA counted private boaters taking out at Ruck-a-Chucky Recreation Area from May 26 through September 27, 2007. Ruck-a-Chucky Recreation Area is the take-out for the Tunnel Chute Run so any boaters observed taking out at Ruck-a-Chucky Recreation Area were presumed to have boated the Tunnel Chute Run. Some boaters were observed continuing past Ruck-a-Chucky Recreation Area, indicating they boated both the Tunnel Chute Run and the Mammoth Bar Run. Private boating use as derived through these counts is summarized below.

Run	Weekdays (86 days)		Weekends (36 days)		Holidays (3 days)		Season Total (125 days)
	Avg. # people per day	Total # people	Avg. # people per day	Total # people	Avg. # people per day	Total # people	
Tunnel Chute Run	1.0	86	4.1	148	11.3	34	268
Tunnel Chute Run + Mammoth Bar Run (excludes tubers)	0.2	17	0.3	11	2	6	34

Flow Information

Real-time flow information is available from the Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300). The put-in is located adjacent to the powerhouse so changes in flow are experienced immediately.

Access/Shuttle

The primary put-in is the Indian Bar Rafter Access, which is located adjacent to the Oxbow Powerhouse. Support facilities include a large unloading area, approximately 9–10 unmarked parking spaces, a boat ramp, and vault toilets. It is operated and maintained by State Parks.

From Auburn, Indian Bar Rafter Access, can be accessed by taking Foresthill Road to Foresthill. In Foresthill, turn right on Mosquito Ridge Road and travel southeast, descending into the Middle Fork American River Canyon. Turn right on Blacksmith Flat road and travel south to Ralston Afterbay. Follow the signs to the Indian Bar Rafter Access.

The primary take-out is the Ruck-a-Chucky Recreation Area. Support facilities include a boat ramp, parking, vault toilets, and five day use/camp sites. Site amenities include picnic tables and fire rings with grills.

From Auburn, Ruck-a-Chucky Recreation Area can be reached by taking Foresthill road to Drivers Flat Road. Turn right on Drivers Flat Road and descend to Ruck-a-Chucky Recreation Area. Drivers Flat Road is unpaved and a high clearance vehicle is recommended. A locked gate prohibits vehicular travel beyond Ruck-a-Chucky Recreation Area.

The focus group identified one alternative take-out, as follows:

- Canyon Creek, which is located just upstream of Ruck-a-Chucky Rapid and is accessible via Drivers Flat Road. However, a locked gate prohibits use by the general public, except by hikers, anglers and equestrian users. Canyon Creek is primarily used by commercial outfitters, who have a key to the gate. Commercial outfitters are not allowed to unload passengers at this location but can use it to unload gear. Composting toilets are available at Canyon Creek.

Comparable Runs

The following runs were identified by the focus group as comparable to the Tunnel Chute Run:

- South Fork American River: Riverton (Route 50 Bridge) to Peavine Ridge Road;
- Cache Creek: Bear Creek Confluence to Rumsey;
- North Fork Feather River: Poe Powerhouse to Lake Oroville;
- Sacramento River: Box Canyon to Dunsmuir;
- Sacramento River: Dunsmuir to Castle Cragg;
- Middle Fork Stanislaus River: Sand Bar Flat Dam to Camp 9 Powerhouse;
- South Fork Trinity River: EF/SF Confluence to Scott Flat Campground;
- North Fork Yuba River: Goodyears Bar Bridge to Hwy 49 Bridge;
- South Fork Yuba River: Washington to Edwards Crossing; and
- South Fork Yuba River: Edwards Crossing to Purdon Crossing.

Boatable Flow Ranges

The following table summarizes the boatable flow ranges for this reach identified in The Best Whitewater in California (Holbeck and Stanley, 1988), on the California Creeks website (www.cacreeks.com), and by the focus group. It also summarizes the acceptable flow ranges identified through PCWA's whitewater flow studies.

Acceptable Flow	Flow Range (cfs)				
	Published Information			Focus Group	PCWA Flow Studies
	Holbeck & Stanley	California Creeks (kayaks)	California Creeks (rafts)		
Minimum	800	600	800	600	800–900
Optimum	1,200	–	–	–	1,000–1,250
Maximum	1,500	2,000	2,000	3,000	1,500–2,500

PCWA conducted controlled flow studies on the Tunnel Chute Run at flows of about 600, 800, and 1000 cfs (1000 cfs was video documentation only as no boaters elected to participate in the flow study). The upper limit was established based on information provided by the study team members. The study teams were primarily comprised of professional guides with multiple years of professional guiding experience on the Tunnel Chute run. Additional information supporting the flow ranges determined through PCWA's whitewater boating flow studies, including a list of study participants and their skill levels, is provided in Appendix Q.

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range as determined through PCWA flow studies (800–2,500 cfs) were available on this reach under impaired and unimpaired conditions. The results are tabulated by water year type and are presented on Tables REC 4-23.

In general, boating opportunities occurred more often under impaired conditions than under unimpaired conditions during all water year types. In addition, under impaired conditions, boating opportunities were available for more months and later into the summer than would have occurred under unimpaired conditions. In other words, operation of the MFP not only created whitewater boating opportunities in the peaking reach, it extended the whitewater boating season by 2 to 3 months, depending upon the type of water year.

- In critically dry water years, boating opportunities occurred about 1.8 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the three critically dry water years that were analyzed, an average of 83 boating days were available under impaired conditions when an average of 45 boating days would have been available under unimpaired conditions. In general, operation of the MFP shifted boating opportunities that would have occurred in April and May into the summer. It also provided boating opportunities in June, July, August, and September that would not have occurred under unimpaired conditions.
- In dry water years, boating opportunities occurred 2.4 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four dry water years that were analyzed, an average of 119 boating days were available under impaired conditions when an average of 50 boating days would have been available under unimpaired conditions. Again, operation of the MFP shifted some of the boating opportunities that would have occurred in April and May into the summer. It also provided boating opportunities in July, August, and September that would not have occurred under unimpaired conditions.
- In below normal water years, boating opportunities occurred 3.8 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four below normal water years that were analyzed, an average of 157 boating days were available under impaired conditions when an average of 41 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred more often in April, May and June than would have occurred under unimpaired conditions. In addition, boating opportunities were frequently available in July, August, and September, when no boating opportunities would have been available under unimpaired conditions.
- In above normal water years, boating opportunities occurred about 4.7 times more often under impaired conditions than would have occurred under

unimpaired conditions. Specifically, during the four above normal water years, an average of 155 days boating days were available under impaired conditions when an average of 33 boating days would have been available under unimpaired conditions. Boating opportunities occurred more often in April, May, June, and July under impaired conditions than would have occurred under unimpaired conditions. In addition, boating opportunities were frequently available in August and September, when no boating opportunities would have been available under unimpaired conditions.

- During the four wet water years, boating opportunities occurred about 3.7 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the wet water years, boating days were available on an average of 122 days under impaired conditions when an average of 33 boating days would have been available under unimpaired conditions. Boating opportunities occurred more often in April, May, June, and July under impaired conditions than would have occurred under unimpaired conditions. In addition, boating opportunities were frequently available in August and September, when no boating opportunities would have been available under unimpaired conditions.

Survey Results – Whitewater Boaters Intercepted at Ruck-a-Chucky Recreation Area

The REC 2 – Recreation Visitor Survey provided additional information about whitewater boating in the peaking reach. The survey results are tabulated in Appendix O for reference.

A total of 219 survey respondents recreated in the peaking reach. Of these, 33 people intercepted at Ruck-a-Chucky Recreation Area cited whitewater boating as their primary activity. At least 12 of the 33 people were associated with a commercial rafting trip. Accordingly, the results pertain to both commercial and private boaters. The responses of these 33 people are summarized below.

Arrival Time and Length of Stay

The majority of respondents (26 of 28 people) indicated that they arrived at the river at or before 10:00 AM. All of these people were interviewed after 2:20 PM., meaning they had been at the river four or more hours by the time they were interviewed. The survey instrument did not ask the respondent to identify which run they boated. However, based on the arrival and interview times, it was assumed that all of these respondents put-in at Indian Bar Rafter Access and were intercepted at Ruck-a-Chucky Recreation Area after boating the river. The remainder (2 people) arrived at the river between 10:00 AM and 2:00 PM or did not specify an arrival time (5 people). These respondents did not provide enough information to determine whether they were taking out or putting in at Ruck-a-Chucky Recreation Area.

Eighteen of 29 respondents (62%) indicated that they planned to stay at the river more than 6 hours. The remaining 11 respondents (38%) said they would stay 3–6 hours.

Acceptability of Flow Related Factors

The survey participants were asked to rate various flow-related factors, including: availability of beach/useable areas; ability to enter/exit water; ability to stand or wade; ability to safely swim; and ability to safely cross. The responses are summarized below:

- 100% (30 people) said that the availability of beach areas were either acceptable (86.7%) or somewhat acceptable (13.3%);
- 100% (31 people) said that their ability to enter/exit the water was either acceptable (96.8%) or somewhat acceptable (3.2%);
- 100% (31 people) said that their ability to stand or wade in the water was either acceptable (93.5%) or somewhat acceptable (6.5%);
- 100% (29 people) said that their ability to safely swim in the water was acceptable (100%); and
- 88.4% (29 people) said that their ability to safely cross the river was acceptable (89.7%) or somewhat acceptable (10.3%).

Acceptability of Non-Flow Related Factors

The survey respondents were asked to rate various non-flow related factors, including: adequacy of put-ins/take-outs; adequacy of road access to river or stream; adequacy of trail access to river or stream; and adequacy of law enforcement. Their responses are summarized below:

- 100% (30 people) said that the adequacy of the put-in/take-out was acceptable (93.3%) or somewhat acceptable (6.7%);
- 96.6% (28 people) said that the road access to the stream was acceptable (82.8%) or somewhat acceptable (13.8%);
- 100% (28 people) said that the trail access to the stream was acceptable (96.4%) or somewhat acceptable (3.6%); and
- 96.5% (27 people) said that the adequacy of law enforcement personnel was acceptable (78.6%) or somewhat acceptable (17.9%).

Flow Perception

Most of the survey respondents (81.8%) arrived at the river before 10:00 AM. Accordingly, most of the survey respondents would have experienced a change of flow, presuming they put-in at the Indian Bar Rafter Access. However, boaters move with the water. Therefore, they most likely would not actually perceive a change, unless they stopped somewhere along the run for an extended period of time. This is evident in the survey responses. The survey respondents were asked whether they perceived a change in the river/stream level during their visit. A total of 31 responded to this question. Of these, 7 (22.6%) said that they perceived a change in flow and 24 (77.4%) said they did not perceive a change in flow.

Survey respondents who indicated that they perceived a change in river flow were also asked whether the change in the river/stream level negatively affected their recreation experience. Most of the respondents (6 of 7) said that they were not negatively affected by a change in flow.

Recreation Experience

Survey participants were asked whether their recreation experience was negatively affected by crowding, other activities taking place, river/stream flow, or other factors.

- 82.8% (24 of 29 people) said that they were not affected by crowding;
- 100% (28 people) said that they were not affected by other activities taking place; and
- 90.0% (27 of 30 people) said that their recreation experience was not affected by river or stream flow.

Overall Satisfaction

Survey participants were asked to rate their overall river/stream experience using a satisfaction scale. A total of 31 boaters responded to this question. All of the respondents stated that they were either very satisfied (87.1%) or satisfied (12.9%) with their overall river/stream experience.

Mammoth Bar Run

This reach extends 7.1 miles from Ruck-Chucky Recreation Area (Greenwood) to Mammoth Bar. The average gradient is 14.2 fpm. The run is considered a Class II with long stretches of Class I pools and riffles. This run is typically used for family rafting, instructional boating, and group outings. The Mammoth Bar Run may sometimes be boated in combination with the Murderer's Bar Run located downstream, but according to California State Parks the Murderer's Bar Run is rarely run in combination with the Mammoth Bar Run. However, this requires a relatively difficult portage around a Class V rapid (Murderer's Bar Rapid) which is located immediately downstream of the Mammoth Bar take-out.

The Mammoth Bar Run is boated both commercially and privately. However, it does not receive as much whitewater boating use as the Tunnel Chute Run described above.

Commercial Whitewater Boating Use

To help manage commercial boating use, ASRA maintains commercial boating use records. Commercial use on the Mammoth Bar Run in 2007 and 2008 was recorded by ASRA as follows:

- 2007 – 336 customers; and
- 2008 – 243 customers.

Private Whitewater Boating Use

PCWA counted private boaters taking out at Ruck-a-Chucky Recreation Area from May 26 through September 27, 2007. Ruck-a-Chucky Recreation Area is the put-in for the Mammoth Bar Run so people observed launching at Ruck-a-Chucky Recreation Area were presumed to have boated the Mammoth Bar Run. Some boaters were observed continuing past Ruck-a-Chucky Recreation Area, meaning they boated both the Tunnel Chute Run and the Mammoth Bar Run. Private boating use as derived through these counts is summarized below.

Run	Weekdays (86 days)		Weekends (36 days)		Holidays (3 days)		Season Total (125 days)
	Avg. # people per day	Total # people	Avg. # people per day	Total # people	Avg. # people per day	Total # people	
Mammoth Bar Run	0.3	26	5.7	205	13.3	40	271
Tunnel Chute Run + Mammoth Bar Run (excludes tubers)	0.2	17	0.3	11	2	6	34

Flow Information

Real-time flow information is available from the Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300).

Water released from Oxbow Powerhouse takes about 6 hours to reach the Ruck-a-Chucky Recreation Area put-in, assuming a base flow of 200 cfs and a peak flow of 1,000 cfs. Therefore, boaters cannot typically put-in at Ruck-a-Chucky Recreation Area before about 1:00 PM.

Access/Shuttle

The put-in is located at Ruck-a-Chucky Recreation Area, which is also the take-out for the Tunnel Chute Run, described above.

The take-out is at Mammoth Bar, a multi-use OHV area. Support facilities include portable chemical toilets, picnic tables, a shade structure, and parking. From Auburn, Mammoth Bar can be reached by taking Highway 49 south to “Old Foresthill Road” and then turning right on Mammoth Bar Road. Descend on Mammoth Bar Road to the Mammoth Bar OHV area. Parking is available on the cobble bar near the water.

Comparable Runs

The following runs were identified by the focus group as comparable to the Ruck-a-Chucky Recreation Area to Mammoth Bar run:

- American River: Sunrise Avenue to Watt Avenue;
- South Fork American River: Coloma to Greenwood Creek;

- Mokelumne River: Electra to Middle Bar;
- Stanislaus River: Knight's Ferry to Orange Blossom Bridge; and
- Yuba River: Englebright Dam to Parks Bar (Hwy 20).

Boatable Flow Ranges

The following table summarizes the boatable flow ranges for this reach identified in California Whitewater (Cassidy and Calhoun, 1988), on the California Creeks website (www.cacreeks.com), and by the focus group. It also summarizes the acceptable flow ranges identified through PCWA's whitewater flow studies.

Acceptable Flow	Flow Range (cfs)				
	Published Information			Focus Group*	PCWA Flow Studies
	Cassidy and Calhoun	California Creeks (Inflatable kayaks)	California Creeks (rafts)		
Minimum	800	400	800	800	500–600
Optimum	–	–	–	1,000	800–1,200
Maximum	2,000	–	2,000	1,200	1,500–2,500

*Note. According to the Focus Group, boating flows range between 800 and 1,200 cfs for kayaks, rafts, and canoes. Any flow is suitable for more skilled boaters.

This run is most suited for beginning hard-shell and inflatable kayakers. These user-types participated in the 600 cfs flow study and indicated a minimum flow range of 500-600 cfs. The hard-shell kayaker reported that he was "highly satisfied" with the 600 cfs flow. Rafters who participated in the whitewater boating studies conducted on this reach indicated that 1,000 cfs is the minimum flow for rafts.

The maximum boating flow was determined based on information developed through PCWA's boating flow studies. A flow of 2,500 cfs was determined to be the maximum boatable flow for both reaches. It is not uncommon for an "easier" section of water to be boatable at higher flows.

Additional information supporting the flow ranges determined through PCWA's whitewater boating flow studies, including a list of study participants and their skill levels, is provided in Appendix Q.

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range as determined through PCWA's flow studies (500–2,500 cfs) were available on this reach under impaired and unimpaired conditions. The results are tabulated by water year type and are presented on Table REC 4-24.

In general, boating opportunities on this run occurred more often under impaired conditions than under unimpaired conditions, except during critically dry water years. In

addition, under impaired conditions, boating opportunities were available for more months and later into the summer than would have occurred under unimpaired conditions.

- In critically dry water years, boating opportunities would have occurred about five times more often under unimpaired conditions than did occur under impaired conditions. Specifically, during the three critically dry water years that were analyzed, an average of 12 boating days were available under impaired conditions when an average of 60 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred less often in April, May and June than would have occurred under unimpaired conditions, mainly due to decreased flows on the Middle Fork American River. However, under impaired conditions, boating opportunities were available in July, August, and September, when none would have been available under unimpaired conditions.
- In dry water years, boating opportunities occurred about 1.8 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four dry water years that were analyzed, an average of 108 boating days were available under impaired conditions when an average of 61 boating days would have been available under unimpaired conditions. In general, operation of the MFP shifted boating opportunities that would have occurred in April and May into the summer. It also provided boating opportunities in July, August, and September that would not have occurred under unimpaired conditions.
- In below normal water years, boating opportunities occurred about 2.2 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four below normal water years that were analyzed, an average of 107 boating days were available under impaired conditions when an average of 48 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred much more often in April and May than would have occurred under unimpaired conditions. In addition, boating opportunities were frequently available in July, August, and September, when no boating opportunities would have been available under unimpaired conditions.
- In above normal water years boating opportunities occurred 3.8 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four above normal water years that were analyzed, an average of 155 boating days were available under impaired conditions when an average of 41 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred much more often in April, May, June, and July than would have occurred under unimpaired conditions. In addition, boating opportunities were frequently available in August and September, when no boating opportunities would have been available under unimpaired conditions.

- In wet water years boating opportunities occurred 2.5 times more often under impaired conditions than would have occurred under unimpaired conditions. More boating opportunities were available under impaired conditions in April, May, and July. Specifically, during the four wet water years that were analyzed, an average of 109 boating days were available under impaired conditions when an average of 44 boating days would have been available under unimpaired conditions. Under impaired conditions, many more boating opportunities were available in August than would have occurred under unimpaired conditions. In addition, under impaired conditions, boating opportunities were available in September when none would have occurred under unimpaired conditions.

Murderer's Bar Run

This run extends 2.2 miles from Mammoth Bar to the Confluence with the North Fork American River. The average gradient is 31.9 fpm. The focus group considered this run Class II/III, with 1 portage around Murderer's Bar Rapid and a Class III/IV rapid located just upstream of the Confluence. Murderer's Bar rapid is a Class V rapid, located immediately downstream of the Mammoth Bar put-in. A user-created trail provides a portage route around Murderer's Bar rapid. However, this trail is undesirable due to the rocky, uneven terrain, and the presence of poison oak.

Commercial Whitewater Boating Use

According to the Middle Fork American River 2006 Class IV Concessions Contract – Whitewater Operations Additional Requirements (California State Parks, 2006), this run may be run commercially. However, commercial groups may not take out at the Confluence before 4:00 PM. According to the focus group participants, this reach is not typically run commercially due to the portage around Murderer's Bar Rapid, and the limited availability of parking in the Confluence area.

Private Whitewater Boating Use

This run is boated by private boaters, but no use data is available. Anecdotal information indicates it is boated less frequently than the Mammoth Bar Run, mainly due to the portage around Murderer's Bar Rapid and the short length of the run.

Flow Information

Real-time flow information is available from the Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300).

Water released from Oxbow PH takes about 9 hours to reach the Mammoth Bar put-in, assuming a base flow of 200 cfs and a peak flow of 1,000 cfs. Therefore, boaters cannot typically put-in before about 4:00 PM.

Access/Shuttle

The put-in is located at Mammoth Bar Recreation Area, which is also the take-out for the Mammoth Bar Run, described above.

The take-out is located at the confluence of the North and Middle Forks of the American Rivers. The take-out is on river right just upstream from the Old Foresthill Road Bridge. An alternative take-out is available downstream of the bridge, just past the confluence. Portable chemical toilets and a limited amount of parking are available at both locations. From Auburn, the Confluence can be reached via taking Highway 49 south to Old Foresthill Road.

Comparable Runs

The following runs were discussed by the focus group as comparable to the Murderer's Bar Run:

- American River: Sunrise Avenue to Watt Avenue;
- South Fork American River: Coloma to Greenwood Creek;
- Mokelumne River: Electra to Middle Bar;
- Stanislaus River: Knight's Ferry to Orange Blossom Bridge; and
- Yuba River: Englebright Dam to Parks Bar (Hwy 20).

Note that these comparisons exclude Murderer's Bar Rapid and assume that boaters portage around this rapid.

Boatable Flow Ranges

The following table summarizes the boatable flow ranges for this reach identified in California Whitewater (Cassidy and Calhoun, 1988), on the California Creeks website (www.cacreeks.com), and by the focus group. With the concurrence of the REC TWG, PCWA did not conduct an on-the-water flow study on this reach because: (1) the run is very short (about 2 miles); (2) the presence of Murderer's Bar rapid dissuades use of this run; and (3) the boating characteristics and flow requirements are similar to the reach immediately upstream. Accordingly, the flow range identified under the "PCWA Flow Studies" column in the table below is the same as the range identified for the Ruck-a-Chucky Recreation Area to Mammoth Bar run, described above.

Acceptable Flow	Flow Range (cfs)		
	Published Information	Focus Group	PCWA Flow Studies
	Cassidy and Calhoun		
Minimum	800	400	500–600
Optimum	–	800–1,200	800–1,200
Maximum	2,000	15,000	1,500–2,500

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range (500–2,500 cfs) were available on this reach under impaired and unimpaired conditions. The results are tabulated by water year type and are presented on Table REC 4-25.

In general, boating opportunities occurred more often under impaired conditions than under unimpaired conditions, except during critically dry water years. In addition, under impaired conditions, boating opportunities were available for more months and later into the summer than would have occurred under unimpaired conditions. The results are very similar to the Mammoth Bar run located immediately upstream. Any differences are related to flow timing. Accordingly, the Murderer's Bar run can be considered an extension of the Mammoth Bar Run.

- In critically dry water years, boating opportunities would have occurred about 3.0 times more often under unimpaired conditions than did occur under impaired conditions. Specifically, during the three critically dry water years that were analyzed, an average of 20 boating days were available under impaired conditions when an average of 60 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred less often in April and May than would have occurred under unimpaired conditions, mainly due to decreased flows on the Middle Fork American River. In June, there were slightly more boating opportunities available under unimpaired conditions than would have occurred under unimpaired conditions. Under impaired conditions, boating opportunities were available in July, August, and September, when none would have been available under unimpaired conditions.
- In dry water years, boating opportunities occurred about 1.8 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four dry water years that were analyzed, an average of 111 boating days were available under impaired conditions when an average of 61 boating days would have been available under unimpaired conditions. In general, operation of the MFP shifted boating opportunities that would have normally occurred in April and May into the summer. It also provided boating opportunities in July, August, and September that would not have occurred under unimpaired conditions.

- In below normal water years, boating opportunities occurred about 2.5 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four below normal water years that were analyzed, an average of 120 boating days were available under impaired conditions when an average of 48 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred much more often in April and May than would have occurred under unimpaired conditions, and about the same amount of time in June. Under impaired conditions, boating opportunities were frequently available in July, August, and September, when few or no boating opportunities would have been available under unimpaired conditions.
- In above normal water years boating opportunities occurred 3.7 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four above normal water years that were analyzed, an average of 154 boating days were available under impaired conditions when an average of 41 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred much more often in April, May, June, and July than would have occurred under unimpaired conditions. In addition, boating opportunities were frequently available in August and September, when no boating opportunities would have been available under unimpaired conditions.
- In wet water years boating opportunities occurred 2.6 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four wet water years that were analyzed, an average of 116 boating days were available under impaired conditions when an average of 44 boating days would have been available under unimpaired conditions. More boating opportunities were available under impaired conditions in April, May, June, July and August. In addition, boating opportunities were available in September when none would have occurred under unimpaired conditions.

Confluence Run

This reach extends 5.3 miles from the Confluence to Oregon Bar. The average gradient is 16 fpm. This run was rated a Class II+ by whitewater boating study team participants. The study team included individuals with a variety of skills using different types of watercraft.

Prior to 2008, a portion of North Fork American River below the confluence was dewatered because the river was routed through a tunnel around the former Auburn Dam site. Accordingly, whitewater boating was not allowed on the North Fork American River downstream of the confluence. In 2008, the USBOR and closed the Auburn Dam diversion tunnel and restored the previously dewatered section of the North Fork American River to its natural channel. Concurrently, the USBOR and PCWA constructed two new river access points in the vicinity of the former Auburn Dam site, one referred to as the Birdsall Access and the other referred to as the Oregon Bar

Access (Map REC 4-2). With the river restored and access improved, the North Fork American River downstream of the confluence is now open to whitewater boating.

The river restoration project was conducted concurrent with the construction of PCWA's American River Pump Station, which is located upstream of the Birsdall Access, near the former Auburn Dam site. The pump station is located on river right (looking downstream). The river channel in the adjacent to the pump station was configured to include an "intake channel" and a "main channel", separated by a concrete wall. A screened intake at the bottom of the intake channel allows PCWA to draw water through the pump station. The main channel was constructed to allow for safe passage by boaters. The main passage includes a series of hydraulic features that are attractive to whitewater boaters. Test boaters rated the hydraulics in the channel as Class II+/III, which is consistent with the ratings provided by the boaters who participated in the relicensing boating studies. The test boaters rated the intake channel as class III (slightly more difficult than the main channel).

Commercial Boating Use

To date, State Parks has not permitted commercial boating on the Confluence Run, mainly because a portion of the river channel was dry. Accordingly, commercial use data is not available for this run. Commercial boating use is currently not permitted on the North Fork of the American River downstream of the Confluence. However, future commercial whitewater use on this reach will be determined in the ongoing General Plan/Resource Management Plan being prepared for Auburn SRA. According to California State Parks, it is likely that some form of commercial use will be permitted on this reach in the future (USDA-FS/CSP (October 15, 2009). However, by letter dated May 11, 2010, California State Parks notified stakeholders that the GP/IRMP process has been suspended indefinitely at the request of the USBOR.

Private Boating Use

As of 2008, the Confluence Run can be boated by private boaters. However, no whitewater boating use data is available. PCWA did not conduct counts along this run because this run was closed in 2007 when PCWA conducted boating counts as part of the REC 4 – TSP.

Flow Information

Flow in this reach is contributed by the Middle Fork American River and the North Fork American River. Real-time flow information is also available from the Middle Fork American River Gage below Oxbow. Real time flow information for the North Fork American River is available from the North Fork American River below North Fork Dam gage (NFD). The flow data from both of these gages must be added together to determine the total flow in the river below the confluence.

Water released from Oxbow Powerhouse takes about 10 hours to reach the confluence of the Middle Fork and North Fork American Rivers, assuming a base flow of 200 cfs

and a peak flow of 1,000 cfs. Therefore, water released from Oxbow Powerhouse does not typically reach the put-in until about 5:00 PM.

Access/Shuttle

The put-in is located at the confluence of the Middle Fork and North Fork American Rivers, which is also the take-out for the Murderer's Bar run described above.

Boaters can take-out at either the Birdsall Access or the Oregon Bar Access, both of which are located in the China Bar Recreation Area. The recreation area is located in Auburn and can be reached from Maidu Drive. During the weekdays, vehicle access is prohibited by a locked gate at the entrance to the China Bar Recreation Area. The gate is open on the weekends. In 2008, a fee of $5.00 was required for parking. The parking fee was recently raised to $10.00 per vehicle.

After passing through the kiosk area, visitors drive down a 1¼-mile long paved road to a large, paved parking area, which is sometimes referred to as the "Batch Plant Parking Area". The parking area is striped with stalls for 50 vehicles and handicapped parking. Vault toilets are available at the parking area.

From the parking area, unpaved roads provide access to two access points on the river, the Birdsall Access and the Oregon Bar Access. The Birdsall access is located about ¾-mile from the parking area and includes a boat ramp that can be used for launching boats that can be carried by hand. The ramp is not designed for launching of trailered boats. It is possible to drive a vehicle from the parking area to the Birdsall Access to load and unload gear, but in 2008 parking at Birdsall was prohibited by all except persons with disabilities. During the 2009 summer season, State Parks did allow parking down near the river at the Birdsall Access. This access point has a small parking area immediately above the put-in/take-out location which was made available to all users and not just for accessible parking. According to State Parks, this practice will likely continue until use numbers increase to make use of this parking infeasible.

The Oregon Bar Access is located almost one mile from the parking area. A road connects the parking area to the Oregon Bar Access, but a locked gate located about 600 feet from the river prohibits vehicular access to the river. There is no boat ramp at Oregon Bar and taking-out at requires scrambling up a relatively steep bank, and then hiking uphill 600 feet to a loading area located behind the locked gate. Accordingly, taking out at Oregon Bar requires more effort than taking out at the Birdsall Access but enables boaters to experience a couple of more rapids between Birdsall and Oregon Bar.

For the majority of boaters, the distance between the river and the entrance gate is too far to comfortably carry a boat (raft or kayak) and gear. Therefore, the locked gate at the entrance limits boating on the Confluence Run to the weekends for boaters who wish to take out at the China Bar Recreation Area.

Alternatively, boaters can take out 4.4 miles downstream at Rattlesnake Bar, located in the Folsom Lake SRA. Taking out at Rattlesnake Bar may require a long flat water paddle, depending on the elevation of Folsom Reservoir (see Map REC 4-2).

Comparable Runs

The following runs were identified by the focus group as comparable to the Confluence Run:

- South Fork American River: Coloma to Greenwood Creek;
- Mokelumne River: Electra to Middle Bar;
- Stanislaus River: Knight's Ferry to Orange Blossom Bridge;
- Yuba River: Englebright Dam to Parks Bar (Hwy 20); and
- Cache Creek: Below Boy Scout Camp.

Boatable Flow Ranges

The following table summarizes the boatable flow ranges for this run as identified by California Creeks (www.cacreeks.com), the focus group, and through PCWA's whitewater flow studies.

Acceptable Flow	Flow Range (cfs)		
	Published Information California Creeks (Rafts & kayaks)	Focus Group	PCWA Flow Studies
Minimum	300	300	350–600
Optimum		600–3,000	800–1,500
Maximum	2000*	15,000	1,700–2,500

*California Creeks indicates this run is Class III above 2,000 cfs

Additional information supporting the flow ranges determined through PCWA's whitewater boating flow studies is provided in Appendix Q. As indicated, the study team identified a boatable flow range of 320 – 2,500 cfs. The broad boatable flow range is indicative of the types of craft, and user skill-level that would typically run this reach. The wide flow range further underscores the potential variability in user-types. This run is certainly boatable at higher flows by more skilled boaters, in appropriate watercraft. However, a flow of 2,500 cfs is appropriate for the general whitewater boater that would use this reach (e.g. class II/III level). This run may also be attractive to inner tubers, but inner tubers were not considered in the whitewater boating studies.

Boating Opportunities

The hydrologic data were analyzed to determine how often flows within the boatable flow range as determined through PCWA's flow study (350–2,500 cfs) were available on

this reach under impaired and unimpaired conditions. The results are tabulated by water year type and are presented on Table REC 4-26.

In general, boating opportunities occurred more often under impaired conditions than under unimpaired conditions in all water year types. In addition, under impaired conditions, boating opportunities were available for more months and later into the summer than would have occurred under unimpaired conditions. Under unimpaired conditions, flows would have often fallen below the boatable range by July or August, depending upon the water year. Under impaired conditions, boating flows were available throughout the entire summer.

In general, the number of boating opportunities on the Confluence Run declines in wetter water years. This is because the North Fork American River is uncontrolled and in wetter water years, flows often exceed the upper end of the boating range in April, May and June, due to spring run off. Operation of the MFP reduces the contribution of flow from the Middle Fork American River, which results in increased boating opportunities on the Confluence Run, especially in April and May. Ironically, the highest number of boating opportunities were available in dry water years under both impaired and unimpaired conditions.

- In critically dry water years, boating opportunities occurred about 1.3 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the three critically dry water years that were analyzed, an average of 83 boating days were available under impaired conditions when an average of 66 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities were available in all of the months analyzed, with most available in April. Under unimpaired conditions, boating opportunities would have been available in April, May and June, but not in July, August or September.
- In dry water years, boating opportunities occurred about 2.7 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four dry water years that were analyzed, an average of 141 boating days were available under impaired conditions when an average of 53 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities occurred in all of the months analyzed. Under unimpaired conditions, boating opportunities would have been available in April, May, and June of all of the dry water years, and in July of some dry water years. In general, operation of the MFP increased the number of boating days in all of the months analyzed. It also provided boating opportunities in August and September that would not have occurred under unimpaired conditions.
- In below normal water years, boating opportunities occurred about 2.0 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four below normal water years that were analyzed, an average of 102 boating days were available under impaired conditions when an average of 52 boating days would have been

available under unimpaired conditions. Under impaired conditions, boating opportunities occurred in all of the months analyzed except July of 2002 and May of 2003. Under unimpaired conditions, boating opportunities would have been available in April, May, June, occasionally in July and September, but never in August.

- In above normal water years boating opportunities occurred 2.2 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four above normal water years that were analyzed, an average of 100 boating days were available under impaired conditions when an average of 46 boating days would have been available under unimpaired conditions. In above normal water years, the influence of natural flows in the North Fork American River is particularly evident. For example, under unimpaired conditions, boating opportunities would have been available in June and July, but only rarely in April and May. This is because flow in the North Fork American River combined with natural flow from the Middle Fork American River and its tributaries would have been above the boatable range. During above normal water years, the MFP reduces the contribution of water from the Middle Fork American River, which brings flows down into the boatable range. This pattern is also evident in wet water years.
- In wet water years, boating opportunities occurred about 1.7 times more often under impaired conditions than would have occurred under unimpaired conditions. Specifically, during the four wet water years that were analyzed, an average of 97 boating days were available under impaired conditions when an average of 58 boating days would have been available under unimpaired conditions. Under impaired conditions, boating opportunities were available most often in July and August. Boating opportunities were available less often in April, May and June of wet water years than in an above normal water year, mainly because flows were above the boating range.

6.5 ANGLING

The REC 4 – TSP included a study element that focused on developing information about whitewater boating in the bypass and peaking reaches. This study element included two primary tasks as follows:

- Implement structured group interviews (Focus Group Session); and
- Conduct angling flow studies.

This results section is not organized according to these specific tasks. Instead, all of the information developed through these efforts was combined to provide a more cohesive description of the angling opportunities on the bypass and peaking reaches. A complete set of the notes that were captured during the May 20, 2008 and March 4, 2010 Angler Focus Group sessions is included in Appendix J for reference.

6.5.1 Bypass Reaches

The Angler Focus Group participants identified and characterized fishing opportunities on the Rubicon River, Long Canyon Creek, Duncan Creek, and the Middle Fork American River from French Meadows Reservoir to Middle Fork Interbay. The anglers present at the May 20, 2008 Focus Group Session did not have any experience fishing on the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay. As such, this reach was not discussed.

Popular fishing areas and access point identified by the focus group participants are shown on Map REC 4-14 for reference. As indicated, fishing along the bypass reaches is concentrated near areas where roads and trails provide access to the river. According to the May 20, 2008 focus group participants, angling use decreases the further one travels from the access point. Families with children tend to stay near the access points. More experienced anglers hike and wade upstream and downstream from the access points.

The May 20, 2008 Angler Focus Group notes do not reflect specific flow-related concerns or issues on the bypass reaches, including the Rubicon River. The May 20, 2008 Angler Focus Group participants reported that flows on the bypass reaches are typically conducive to wading and fording in the summertime when the area is accessible (e.g., the roads are no longer closed due to snow and spring run-off has receded.) Therefore, flow studies on the bypass reaches were deemed unnecessary. Flow conditions on the bypass reaches are discussed in the hydrology section of this report (Section 6.1.1).

Comments provided by the anglers present at the May 20, 2008 Angler Focus Group session indicate that lower flows allow easier wading and fording in the river channel, and movement upstream and downstream through the channel. Though the notes do not mention a preference for wading versus fishing from the bank in any of the reaches, anglers may focus on wading due to steep and rugged banks as well as the presence of vegetation that may hinder casting.

Information later provided by Mr. Carnazzo in a letter dated January 18, 2010, indicates that some of the best fishing occurs in situations where the flows are higher than normal summer flows, where there is some color to the water and the larger fish are most inclined feed. Mr. Carnazzo's letter is provided in Appendix J for reference.

Specific fishing areas, access points, and flow-related comments identified by the anglers present at the May 20, 2008 Angler Focus Group session are summarized below, by reach, augmented by information provided by the Foothills Water Network (FWN) in a letter dated September 22, 2009. Additional information developed during a second Angler Focus Group Session conducted on March 4, 2010 is included in Appendix J.

Middle Fork American River – French Meadows Dam to Middle Fork Interbay

Access

- Anglers generally fish the area immediately below the French Meadows Dam (LL Anderson Dam) and about 1-mile downstream from dam. Areas further downstream can be accessed by wet wading or hiking along the bank when the flows are low.
- The area immediately below French Meadows Dam is accessible by trail and unimproved roads.
- Anglers also fish in the vicinity of Middle Fork Interbay. This area upstream of Middle Fork Interbay is difficult to access due to fencing around Project facilities. The area downstream of Middle Fork Interbay can be accessed on foot, but access is difficult due to the steep terrain.

Flow

- If planning to wet wade, anglers have to time their fishing excursions so that they are not there when flows are too high to wet wade (e.g., after spring run off period). At flows that are too high to wade, anglers need space on the banks to hike and cast. Vegetation may hinder angling from the bank.

Rubicon River – Hell Hole Dam to Ellicott Bridge

Access

- The north side of the river can be accessed from Hunters Trail, which parallels nearly the entire reach from Hell Hole Dam to Ellicott Bridge. This is a “well maintained” backpacking trail.
- The south side of the river is accessible using Parsley Bar Trail, Deer Creek Trail and South Fork Trail. However, Deer Creek trail is difficult to find.
- This reach can also be accessed by hiking and wading upstream from Ellicott Bridge.

Flow

- Typical summer flows are easy to fish.
- Flows have usually decreased to levels that are conducive to fishing by the time the area is accessible.
- Difficult to fish when flows are high because it is challenging, if not impossible, to cross the stream to fish upstream and downstream. This typically occurs during the spring runoff when tributary in-flows are high.

Rubicon River – Ellicott Bridge to Ralston Afterbay

Access

- The Rubicon River from Ellicott Bridge downstream to about RM 18 can be accessed from Ellicott Bridge, Slide Point Trail, and Lawyer Trail, which are accessible via FR 2. One of the anglers present at the May 20, 2008 Angler Focus Group session reported accessing the river at the Lawyer Trail and fishing upstream to Ellicott Bridge. Another angler accessed the river from the Lawyer Trail and fished downstream.
- The area between RM 18 and RM 6 is virtually inaccessible.
- The area downstream of RM 6 can be access via the Nevada Point Trial. One angler present at the May 20, 2008 Angler Focus Group session reported that he accesses the river from the Nevada Point Trail and fishes upstream.
- Then anglers present at the May 20, 2008 Angler Focus Group meeting indicated that the area near Long Canyon confluence is accessible from the north via 14N25G and from the south via road 13N66. However, according to the Forest Service, these roads are no longer open to motor vehicle use all the way down to the river.
- Anglers also fish the Rubicon River upstream of Ralston Powerhouse.

Flow

- Standard summer time flow is easy to fish.
- Flows have usually decreased to levels that are conducive to fishing by the time the area is accessible.
- The Rubicon River from Ellicott Bridge to Ralston Afterbay has water when other streams may not.
- Difficult to fish when flows are high because it is challenging, if not impossible, to cross the stream to fish upstream and downstream. This typically occurs during the spring runoff when tributary in-flows are high.

Duncan Creek – Duncan Creek Diversion Dam to Middle Fork American River Confluence

Access

- This reach can be accessed where Mosquito Ridge Road (FR 96) crosses Duncan Creek and from the Duncan Creek Diversion Access Road. Snow on Mosquito Ridge Road limits access by passenger vehicles – specifically pickup trucks, SUVs or cars during the late fall, winter, and early spring.
- Most of the lower portion of this reach is virtually inaccessible either due to a lack of roads or trails, or very steep and rugged terrain.

- According to the USDA-FS, there are numerous non-system foot trails into Duncan Creek between the bridge on Mosquito Ridge Road (FR 96) and the confluence. These access points were not identified by the focus group participants but, according to the USDA-FS, are used for stream-based recreation.

Flow

- No problem fishing or wading under typical summer flows.
- Anglers mainly fish from banks and typically do not wade in the stream.
- The May 20, 2008 Angler Focus Group notes indicate that "anglers report smaller fish than Rubicon River. Duncan Creek is a spring fishery because after that it warms up too much and the fish get spooked."

North and South Fork Long Canyon Creeks and Long Canyon Creek

Access

- These creeks are accessible via Forest Route 2, Forest Road 14N25, at Ramsey Crossing and via Buckeye Flat Road (unpaved). Forest Road 14N25G also provides access to the confluence of the Rubicon River and Long Canyon Creek. However, 14N25G is not open to motor vehicle use down to the Rubicon River. Therefore, anglers must walk approximately 1.5 miles to the river or out of the river canyon.
- Anglers mainly access Long Canyon from dispersed camping areas.
- Access is constrained by snow.

Flow

- The availability of usable instream fishing areas, variety of fishing areas, ability to fish from the streambank, walk the shoreline, and to stand, wade or cross the stream are adequate.
- Flow is fairly stable. The flows decrease during the summer but the creek is fishable.

6.5.2 Peaking Reach

The May 20, 2008 Angler Focus Group participants identified and characterized fishing opportunities on the peaking reach. The peaking reach was discussed as two sections: Oxbow Powerhouse to Ruck-a-Chucky Recreation Area and Ruck-a-Chucky Recreation Area to Oregon Bar Access. According to anglers present at the May 20, 2008 Angler Focus Group Session, fishing in the peaking reach is "not great but close to town."

Specific fishing areas, access points, and flow-related comments identified by the anglers present at the May 20, 2008 Angler Focus Group session are summarized

below, by reach, augmented by information provided by the FWN in a letter dated September 22, 2009. Additional information developed during a second Angler Focus Group Session conducted on March 4, 2010 is included in Appendix J.

Popular Fishing Areas and Access Points

Popular fishing areas and access points identified by the focus group participants are shown on Map REC 4-15. As indicated, fishing along the peaking reach is concentrated near areas where roads and trails provide access to the river. Relative to the bypass reaches, the peaking reach is more accessible, except where private property precludes use by the general public. Land ownership is shown on Map REC 4-15. Specific fishing areas and access points identified by the Angler Focus Group participants are summarized below. The discussion is organized by the reaches discussed during the May 20, 2008 Angler Focus Group session. The peaking reach was divided into two sections for discussion and documentation purposes only. The division is not based on any geomorphic feature, habitat, or any other physical characteristic.

<u>Middle Fork American River – Oxbow Powerhouse to Ruck-a-Chucky Recreation Area</u>

- The area immediately below Oxbow Powerhouse is accessible from the Indian Bar Rafter Access.
- The area around Horseshoe Bend is largely private property and accessible via a gated private road that provides access to the Horseshoe Bar Fish and Game Preserve (HBP). It is PCWA's understanding that the HBP is not open to the general public. However, the HBP allows the public to access their property by invitation. The location of the HBP is shown on Map REC 4-15.
- The mid-portion of this reach is accessible via the Cock Robin Trail, which terminates at Fords Bar. Fords Bar can also be accessed via Todd Valley Road (gated).
- The lower portion of this reach is accessible via Drivers Flat Road and Sliger Mine Road.
- Overall, public fishing in the peaking reach is somewhat limited due to the long distances between public access points, and alternating segments of public and private land.
- Anglers primarily use roads to access this reach. Access is poor for private boat fishing and for anglers who want to do a multi-day trip. Drivers Flat Road is gated at Ruck-a-Chucky Recreation Area, which means that anglers cannot take a boat or gear out above Ruck-a-Chucky Rapid. This results in a difficult portage around Ruck-a-Chucky Rapid.
- It is PCWA's understanding that there are currently at least two commercial rafting/angling outfitters that offer multi-day drift boating and rafting trips down the Middle Fork American River starting at Oxbow and ending at China Bar Recreation Area. (Reference?)

Middle Fork American River and North Fork American River – Ruck-a-Chucky Recreation Area to Oregon Bar Access

- The upper portion of this reach is accessible from the north via Drivers Flat Road and from the south from Sliger Mine Road.
- The mid-portions of this reach are accessible from the north via a gated road that leads to Poverty Bar and from Mammoth Bar Road. From the south the area is accessible via Quarry Trail, the American River Trail and various other trails maintained by ASRA.
- The Confluence area is accessible via Highway 49. The area upstream and downstream of the Confluence can be accessed via the Quarry Trail, the WST, and by walking along the river banks.
- The lower portion of this reach is accessible via roads and trails in the China Bar Recreation Area. However, this area is closed during the weekdays, which limits most use by anglers to weekends.
- The focus group participants reported that all methods of fishing occur between Mammoth Bar and the Confluence, and that fishing along this reach "is pretty good from a boat."
- The lower portion of this reach may also be accessed from Rattlesnake Bar, which is within the Folsom Lake State Recreation Area (SRA), 4.4 miles downstream of the Oregon Bar Access point. According to comments provided by the FWN, when the China Bar Recreation Area is closed, and Folsom Reservoir is low, anglers can wade upstream from Rattlesnake Bar and fish the area near China Bar.

Flow-Related Effects on Fishibility

Two flow-related concerns were expressed by the focus group: (1) high flows make it difficult to cross the river and to move up and down the river; and (2) anglers may be stranded when flows increase during ramping. This second concern is the primary safety concern for anglers in the peaking reach, according to focus group participants. Otherwise, the focus group participants reported that fishing quality is generally good at all flow levels in the peaking reach.

The primary flow-related effect on fishing in the peaking reach reported by the focus group participants is associated with ramping. Specifically, fishing quality and success reportedly decline for about 2-hours during the ramping period and for about one hour after ramping. Based on this information, PCWA addressed flow-related fishing issues in the peaking reach by analyzing ramping conditions. The results of the ramping analysis are discussed in the following subsection.

Ramping Analysis

The objective of the ramping analysis was to determine the average number of hours per day ramping occurs. For the purposes of this analysis, ramping was defined as a change of flow of 40 cfs/15 minutes as measured at the Middle Fork American River Gage below Oxbow Powerhouse. In addition, a day was defined at the 12-hour period between 7:00 AM and 7:00 PM. The ramping analysis results are presented on Table REC 4-27, by water year type and by month. Plots showing the average number days and hours ramping occurred are presented on Figure REC 4-27, by water year type.

The following general patterns are evident in the summary tables and hydrographs.

- The average number of ramping days is lowest in October. Ramping occurs less frequently in October because the MFP is typically shut down for maintenance. During the maintenance outage, flows in the peaking reach are reduced to 100–200 cfs and are relatively stable.
- As indicated on Table REC 4-27, the total number of hours per day that ramping occurred did not exceed an average of four hours per day and generally ranged from an average of about 1.5 to two hours per day.
- The number of hours per day that ramping occurs is generally highest during critically dry and dry water years and decreases as water years become wetter. This primarily occurs because the base flow is lower during drier water years and increases as water years become wetter. For example, during dry water years, base flows are relatively low so a longer period of time is needed to ramp from base flow to peak flow. Conversely, during wetter water years, base flow is relatively high so the amount of time needed to ramp from base flow to peak flow is shorter.

The ramping analysis results are discussed in more detail below, by water year type.

Critically Dry Water Years

- The average number of days that ramping occurred while flows were less than 2,000 cfs ranged from 7.3 days in October to 28.7 days in July. The low number of days in October is due to the maintenance outage.
- The average number of hours per day that ramping occurred ranged from 1.2 hours/day in March and April to 2.8 hours/day in September and November.

Dry Water Years

- The average number of days that ramping occurred while flows were less than 2,000 cfs ranged from 7.8 days in October to 26.5 days in June. The low number of days in October is due to the maintenance outage.
- The average number of hours per day that ramping occurred ranged from 0.9 hours/day in January to 2.3 hours/day in November.

Below Normal Water Years

- The average number of days that ramping occurred while flows were less than 2,000 cfs ranged from 11.8 days in October to 29.8 days in August. The low number of days in October is due to the maintenance outage.
- The average number of hours per day that ramping occurred ranged from 1.1 hours/day in March to 2.1 hours/day in July.

Above Normal Water Years

- The average number of days that ramping occurred while flows were less than 2,000 cfs ranged from 12.5 days in February to 25.5 days in November. The maintenance outage is obvious on the hydrograph (Figure REC 4-27) but February had a fewer number of ramping days.
- The average number of hours per day that ramping occurred ranged from 1.2 hours/day in June to 2.1 hours/day in December.

Wet Water Years

- The average number of days that ramping occurred while flows were less than 2,000 cfs ranged from 2.5 days in October to 18.8 days in July. The low number of days in October is due to the maintenance outage.
- The average number of hours per day that ramping occurred ranged from 0.8 hours/day in February and December to 2.2 hours/day in September.

6.6 MINING

Mining in the MFP Watershed is related to the geologic conditions, which are described in detail in the Geology and Soils Section of SD F of PCWA's PAD (PCWA 2007). In general, the Middle Fork American River, and to a lesser extent, the Rubicon River, were once highly productive placer gold mining areas, particularly in the area immediately upstream and downstream of Ralston Afterbay (CDMG 1970). Placer mining, which generally involves the extraction of unconsolidated materials (e.g., sand and gravel) containing gold or other minerals, continues along these two rivers today. Many parcels along the Middle Fork American River upstream of Ralston Afterbay, on Duncan Creek, and on Long Canyon Creek are claimed, which suggests that placer mining occurs along these reaches. However, relative to the area around Ralston Afterbay, mining is probably less common due to the lack of good access, except along the South Fork of Long Canyon Creek and portions of Long Canyon Creek, where Forest Roads provide relatively good access to the stream channels.

Until 2009, motorized vacuum and suction dredging occurred along the bypass and peaking reaches. However, suction dredging was recently banned on all rivers, streams and lakes in California per Senate Bill 670, which Governor Schwarzenegger signed in to law on August 6, 2009. This ban will remain in effect until the California Department

of Fish and Game (CDFG) completes an environmental review of its vacuum and suction dredge equipment regulations and develops new regulations.

In general, gold panners and dredgers prefer lower flows so that they can work areas lower in the channel, where gold accumulates due to its density. Dredging usually requires having someone in the water to operate a suction hose and high flows make this job difficult, if not impossible. Furthermore, high flows make it difficult to tie off and stabilize the dredge platform.

6.6.1 Bypass Reaches

The bypass reaches primarily bisect land managed by the USDA-FS. Certain protected areas are withdrawn from mineral location and entry. In general, protected areas include, Wilderness Areas, Wild and Scenic Rivers, Research Natural Areas, and Special Interest Areas. In addition, capital investment projects such as power projects, major recreation areas, and USDA-FS administrative sites are routinely withdrawn from mineral entry (USDA-FS 1988).

All of the bypass reaches are open to mining provided they are properly claimed and the activity is authorized and complies with Forest Service regulations. Mining of mineral materials such as gravel, landscape rock, etc. are controlled by conditions of an authorization. Suction dredging is currently not allowed pursuant to SB 670.

Mining Observations on the Bypass Reaches

Placer mining, including panning, sluicing, and dredging, was observed by aquatic and/or recreation study crews in 2007 and 2008 in the following areas located along the bypass reaches:

- Duncan Creek downstream of Forest Road 96.57;
- Middle Fork American River immediately below French Meadows Reservoir Dam;
- Middle Fork American River immediately below Middle Fork Interbay;
- North Fork Long Canyon downstream of FR 2;
- Long Canyon near Ramsey Crossing; and
- Long Canyon near the footbridge located downstream of Ramsey Crossing.

Existing Mining Claims on the Bypass Reaches

A query of the BLM's LR2000 data base and Public Status Reports resulted in the following information regarding patented and unpatented claims along the bypass reaches. The BLM's LR2000 data base was queried on December 22, 2008 and was used to identify the active unpatented mining claims located within the bypass reaches. The BLMs Public Status Reports were queried on December 24, 2008 and were used to identify patented mining claims. The information presented below and in the associated

tables represents the best information available on the dates the databases were queried.

- The BLM's LR 2000 data base indicates that there are a total of 70 unpatented mining claims located within the sections bisected by the bypass reaches. Of these, 61 (87%) are placer claims and nine are lode claims.
- The BLM's Public Status Reports indicate that there are three patented claims totaling 1961.4 acres located within the sections bisected by the bypass reaches.

Table REC 4-28 provides a summary of the number of claims that are present along each of the bypass reaches. In addition, this information is graphically depicted on Map REC 4-16, which shows all of the sections located along the bypass reaches that contain patented and unpatented mining claims, along with the number of claims present in each section. As indicated:

- Nearly all of Duncan Creek between the FR 96 to the Middle Fork American River is claimed.
- Interspersed claims occur along the Middle Fork American River, between French Meadows Dam and Ralston Afterbay.
- Nearly all of the South Fork of Long Canyon Creek is claimed but virtually none of the North Fork of Long Canyon Creek is claimed. About half of the main stem of Long Canyon Creek is claimed.
- The Rubicon River is relatively void of claims.

6.6.2 Peaking Reach

The peaking reach bisects land managed by ASRA. Commercial mining is not allowed within the ASRA boundaries. Recreational gold panning and rock hounding is allowed only in permanent running streambeds in ASRA, subject to specific restrictions (ASRA 2007). Some of the land located within ASRA is part of the National Forest system. Mining activity must be authorized by the Forest Service when on National Forest System lands. Indian Bar is in a mineral withdrawal area and is not open to mining.

Vacuum and suction dredging were previously allowed within ASRA, except in certain areas. However, pursuant to SB 670, these activities are currently prohibited on any river, stream or lake in California, pending environmental review by the California Department of Fish and Game (CDFG).

Mining Observations in the Peaking Reach

Placer mining, including panning and sluicing is common along the peaking reach. Gold panning is a popular recreation activity and has been observed in the vicinity of the following developed recreation areas: Ruck-a-Chucky Recreation Area; Mammoth Bar; the Confluence; Birdsall Access; and various locations in the China Bar recreation area, where trails provide access to the river. Dredging is currently prohibited in the peaking

reach but was observed by aquatic and/or recreation study crews in 2007 and 2008 in the following areas:

- Middle Fork American River downstream of Horseshoe Bend;
- Middle Fork American River near Cache Rock;
- Middle Fork American River upstream of Ruck-a-Chucky Recreation Area; and
- Middle Fork American River near Cherokee Bar.

Existing Mining Claims along the Peaking Reach

A query of the BLM's LR2000 data base and Public Status Reports resulted in the following information regarding patented and unpatented claims along the peaking reach. The BLM's LR2000 data base was queried on December 22, 2008 and was used to identify the active unpatented mining claims located within the peaking reach. The BLMs Public Status Reports were queried on December 24, 2008 and were used to identify patented mining claims. The information presented below and in the associated tables represents the best information available on the dates the databases were queried.

- The BLM's LR 2000 data base indicates that there are a total of 43 unpatented claims located within the sections bisected by the peaking reach. Of these, five are placer claims and 38 are lode claims. Further investigation showed that 39 of the claims along the peaking reach (91%) belong to professional mining companies, which explains the high number of lode claims. Lode claims generally include mineralized veins or lodes with well-defined boundaries. They may or may not intersect the stream.
- The BLM's Public Status Reports indicate that there are 44 patented mining claims totaling 2198.6 acres located in the sections bisected by the peaking reach.

Table REC 4-29 provides a summary of the number of claims that are present in along the peaking reach. In addition, this information is graphically depicted on Map REC 4-16, which shows all of the sections located along the peaking reach that contain patented and unpatented mining claims, along with the number of claims present in each section. As indicated, the entire peaking reach is claimed, with the following three exceptions:

- A 4-mile segment (approx.) upstream of Otter Creek;
- A 1-mile segment (approx.) downstream of Otter Creek; and
- A 3-mile segment (approx.) from the Confluence to Folsom Reservoir.

6.7 FLOW INFORMATION DISSEMINATION

The following subsections: (1) describes the existing stream gaging stations along the

bypass and peaking reaches; (2) characterizes the type of flow information that is currently available to the public; and (3) identifies flow information that may enhance stream-based recreation opportunities. The discussion focuses on flow information that can be used for recreational planning purposes.

6.7.1 Existing Stream Gaging Stations

Numerous stream gaging stations are located throughout the Watershed. Some of these are gages that were installed and are maintained by the USGS and some were installed and are maintained by other agencies, including PCWA, the Sacramento Municipal Utility District (SMUD), and the Georgetown Public Utility District (GPUD). A list of the stream gaging stations in the Watershed is provided in Table REC 4-30, along with the following information: USGS identification number; latitude and longitude; elevation; and period of record. The operational status and the locations of all of the stream gaging stations in the Watershed are shown on Map REC 4-17.

Flow data from the gages in the Watershed is collected and reported in various increments. In general, mean daily flow data for any active stream gage in the Watershed is available on the USGS National Water Information System website at http://waterdata.usgs.gov/nwis. However, this data is not posted until several months after it is collected, after undergoing a quality assurance/control review by the USGS. Therefore, it is not extremely useful for recreational planning purposes.

In general, real-time data is the most useful for recreational planning purposes. Two of the stream gages in the Watershed provide real time flow information (recorded every 15 minutes).

- USGS Gage No. 11433300. – Middle Fork American River near Foresthill. This gage is also referred to as the Middle Fork American River gage below Oxbow Powerhouse. This gage measures flow in the Middle Fork American River approximately one mile downstream of the Oxbow Powerhouse. The data recorded at this station is available to the public on the California Data Exchange Center (CDEC) website at http://cdec.water.ca.gov/cgi-progs/queryF?s=oxb and on the USGS website.
- USGS Gage No. 11427000 – North Fork American River At North Fork Dam (NFD). This gage is located on the North Fork American River, just above North Fork Dam, about 2 miles upstream of the confluence of the Middle Fork and North Forks of the American River. The data is available to the public on the CDEC website at http://cdec.water.ca.gov/cgi-progs/queryF?s=nfd and the USGS website at http://waterdata.usgs.gov/nwis.

6.7.2 Existing Flow Information Sources

Stream flow information for the peaking reach, and to a lesser extent the bypass reaches, is available to the public through a variety of sources, including websites and a flow phone. A list of the more commonly used flow information sources and the

information available through these sources is provided in Table REC 4-31, and summarized in the following.

- Historic flow data (typically daily mean flow data) for many of the gages on the bypass and peaking reaches, covering various periods of record, is available on the CDEC and USGS websites.
- Real-time flow data for the Middle Fork American River (peaking reach) and the North Fork American River is available on the CDEC and USGS websites.
- Various other websites provide flow information that is linked to either the CDEC data, the USGS data, or both. Table REC 4-31 lists various websites that contain flow information or links to flow information for the rivers and streams in the Watershed. Of the websites listed, one of the most popular is Dreamflows.com, which provides real time and daily flow information for Western U.S. Rivers, including the Middle Fork American River downstream of Oxbow Powerhouse and the North Fork American River. No current information for any of the bypass reaches is available on Dreamflows.
- Current flow conditions on the Middle Fork American River (peaking reach) and the North Fork American River can be obtained through a flow phone referred to as K-phone (916-368-8683). The data available on K-phone originates from data available either on the CDEC or National Water Information System (NWIS) websites.

Aside from these sources, flow information is also provided to the public through local businesses. For example, “The Confluence”, a local boating guide and supply store located in Auburn displays current flow conditions and other recreation-oriented information on a dry-erase board. Similar information can be obtained by calling local outfitters or the local Forest Service offices. Again, all information originates from the same primary sources, either the CDEC or NWIS websites.

6.7.3 Flow Information Enhancement Opportunities

Potential flow information enhancement opportunities were identified based on the results of the REC 2 – Recreation Visitor Surveys, on feedback provided the focus group participants, and by boaters interviewed after the Whitewater Boating Focus Group.

REC 2 – Recreation Visitor Surveys

The Background Section (Section A-1, Q-13) of the survey instrument asked the survey respondents to rate the availability and adequacy of river/stream information using an acceptability scale. In addition, the survey instrument provided space for respondents to provide qualitative comments regarding the availability and adequacy of flow information. The responses to Q-13 are tabulated in Appendix O, Table O-7 (Peaking Reach) and Table O-8 (Bypass Reaches). Qualitative comments related to flow information are included in Table O-9 (Appendix O). The results are summarized below, organized by bypass and peaking reaches.

Bypass Reaches

- 56% of the respondents (9 of 16 people) said that the availability and adequacy of flow information was acceptable (43.8%) or somewhat acceptable (12.5%). One person said it was not acceptable and the remainder said it was not applicable.
- None of the respondents provided any qualitative comments related to the availability of river and stream flow information.

Peaking Reach

- 69% of the respondents (132 of 191 people) said that the availability and adequacy of flow information was acceptable (49.7%) or somewhat acceptable (19.4%). Ten percent of the respondents (19 people) said it was not acceptable and the remainder (40 people) said it was not applicable.
- Several respondents intercepted at four sites in the peaking reach provided comments regarding the availability and adequacy of stream flow information (Appendix O, Table O-9). In general, the comments focus on the need for better warnings and signage about river flow and the changes in river level.

Focus Group and Follow-up Conversations

The availability and adequacy of flow information was discussed during the angler, trail user/stream crossing, and Whitewater Boating Focus Group sessions. In addition, this topic was discussed with several boaters contacted after the Whitewater Boating Focus Group session.

In general, all of the focus group participants expressed a desire for better flow information. Specific flow enhancement opportunities expressed by the focus group participants and boaters are summarized in the following.

- Trail users are particularly interested in obtaining better flow information at each of the stream crossing locations. The trail users suggested installing simple staff gages at the primary stream crossing locations. The staff gages could be used by hikers, bikers, and equestrians to ascertain water depth and to judge whether it is safe to cross the river.
- Trail users are also interested in obtaining better information about flow travel times. They suggested posting travel time information on the internet. This information would enable equestrian users, bikers and hikers to plan trips that involve crossing the river.
- Whitewater boaters expressed a desire for real-time flow information on the bypass reaches. This information would enable boaters to know when boating flows are available. Currently, boaters have to estimate when flows are available based on reservoir stage data or on flows in nearby streams, or they have to drive to the river to observe flows.

6.8 PUBLIC SAFETY

PCWA maintains a variety of programs and measures to ensure public health and safety, including visual and audible warnings (e.g., signs, bells, and sirens) and physical restraining devices (e.g., fences and log booms). PCWA's public and worker health and safety programs and measures are described in detail in the LAND 3 – TSR. Measures that specifically warn the public of potential flow fluctuations are discussed below.

6.8.1 Signs Warning of Potential Flow Fluctuations

PCWA has installed signs in the vicinity of the MFP to identify and warn the public about potentially hazardous conditions or areas, including at various river access points. The location and condition of all of PCWA's signs were inventoried as part of the LAND 3 – TSP. Signs that are located at river access points and that specifically warn of potential fluctuating flows are summarized on Table REC 4-32.

As indicated on Table REC 4-32, warning signs are located at some but not all river access points. One sign is located near the Rubicon River, adjacent to the Hell Hole Substation. The others are concentrated in the Middle Fork Interbay area, in the Ralston and Oxbow Powerhouse areas, and near the Confluence. The signs at the Confluence were recently installed in response to a stranding incident, as explained below.

On June 14, 2008, a swimmer was stranded on a rock in the river near the Confluence when water levels increased due to releases from Oxbow Powerhouse. The swimmer was rescued by the Placer County Sherriff's Department Swift Water Rescue Team, and the incident was reported to FERC. Subsequently, the FERC requested that PCWA coordinate with CDPR to design and install new warning signs at several locations in the Confluence Area and to replace other worn signs. In response, PCWA designed a warning sign, which was approved by CDPR and the FERC. As of March 25, 2009, PCWA has installed four new signs and a fifth sign will be installed in the near future.

Other Safety Devices

In addition to warning signs, an audible warning device is located at Middle Fork Interbay, where sudden changes in operation may result in changes in river stage or velocities. The siren is activated when the gates start to open. The siren is intended to warn people who may be downstream in the vicinity of Middle Fork Interbay Dam of a water level change.

PCWA also maintains and operates several gaging stations that monitor water surface elevations in the rivers and reservoirs with alarms that transmit to the PCWA and PG&E communications systems. The alarm systems are activated if changes in river stage or reservoir water surface elevation exceed specified rates. PCWA also maintains alarm systems at all powerhouses and headquarters. PCWA is in the process of installing alarm systems at all locations from which operations can be controlled, including butterfly valve houses and dam houses.

6.8.2 Potential Safety Concerns

Potential safety concerns were identified through the REC 2 – Recreation Visitor Surveys. In addition, potential safety concerns were addressed at each of the focus group sessions and through follow-up conversations with whitewater boaters. Potential safety concerns are summarized in the following, organized by bypass and peaking reaches.

Bypass Reaches

Visitor Surveys

The REC 2 – Recreation Visitor Survey form included several questions pertaining to public safety. The Background Section (A-1, Q-13) of the Recreation Visitor Survey instrument asked survey participants who recreated along a bypass reach to rate the adequacy of safety/warning information.

- 70.6% (12 of 17 people) said that the availability and adequacy of safety/warning information was acceptable. Two people said it was unacceptable and three people said it was not applicable.

Section A-5 of the Survey Instrument asked survey respondents to rate other safety-related factors including: ability to safely swim in the river; ability to safely cross the river; and adequacy of law enforcement personnel. The responses to these questions are tabulated in Table O-2 (Appendix O) and summarized below:

- 95% (19 of 20 people) said that their ability to safely swim in the river was acceptable (75%) or somewhat acceptable (20%);
- 95% (19 of 20 people) said that their ability to safely cross the river was acceptable (70%) or somewhat acceptable (25%); and
- 90% (18 of 20 people) said that the adequacy of law enforcement personnel was acceptable (65%) or somewhat acceptable (25%).

The survey instrument provided space for respondents to provide qualitative comments regarding public safety. None of the respondents who recreated in the bypass reaches provided any qualitative comments related to public safety.

Focus Groups

None of the Trail Use/Stream Crossing Focus Group participants identified any safety issues along the bypass reaches.

The Angler Focus Group participants expressed the following concerns related to safety as it pertains to fishing on the bypass reaches.

- High flows on the Rubicon River during the spring make it difficult to wade and ford.
- Motorcycles on Hunters Trail are hazardous to anglers and hikers.
- It is important to make sure it is possible to get in and out of river canyons. For example, on the Middle Fork American River between French Meadows Dam and Interbay it is possible to end up in a part of canyon where it is difficult to get out due to steep banks.

The Whitewater Boating Focus Group participants expressed the following concerns related to safety as it pertains to boating on the bypass reaches.

- The bypass reaches bisect remote terrain. It is difficult to get help in the case of an injury or accident. The limited access and steep terrain makes it difficult for boaters to get out, and for help to get in.

Subsequent to the Whitewater Boating Focus Group session, PCWA conducted interviews with various boaters to obtain additional information about boating opportunities and flows in the bypass reaches. During these conversations, several boaters indicated that debris in the Rubicon River is a safety concern. In addition, several boaters indicated that overgrown vegetation in the Rubicon River is a safety concern, especially at higher flows. Encroaching vegetation makes it difficult to see the river and rapids while boating and also makes it difficult to scout and/or portage rapids. No other safety concerns were identified during the follow-up interviews.

Peaking Reach

Visitor Surveys

The Background Section (A-1, Q-13) of the Recreation Visitor Survey instrument asked survey participants who recreated along the peaking reach to rate the adequacy of safety/warning information. The responses to this question were summarized on a site-by-site basis in Section 6.2.2. No major safety concerns were identified in the peaking reach, regardless of where the respondent was intercepted. Accordingly, the following summarizes the survey responses for all of the sites located along the peaking reach combined, and includes whitewater boaters intercepted at Ruck-a-Chucky Recreation Area.

- 80.7% of the respondents (159 of 197 people) said that the availability and adequacy of safety/warning information was acceptable (62.4%) or somewhat acceptable (18.3%). Eight respondents (4.1%) said it was not acceptable and 30 respondents (15.2%) said it was not applicable.

Section A-5 of the Survey Instrument asked survey respondents to rate other safety-related factors including: ability to safely swim in the river; ability to safely cross the river; and adequacy of law enforcement personnel. The responses to these questions are summarized below:

- 97.6% of the respondents (203 of 208 people) said that their ability to safety swim in the river was acceptable (84.6%) or somewhat acceptable (13.0%);
- 92.2% of the respondents (189 of 205 people) said that their ability to safety cross the river was acceptable (72.2%) or somewhat acceptable (20.0%); and
- 92% of the respondents (179 of 195 people) said that the adequacy of law enforcement personnel was acceptable (69.7%) or somewhat acceptable (22.1%).

A number of respondents intercepted in the peaking reach provided qualitative comments related to public safety. These comments are itemized in Table O-10 (Appendix O). In general, the comments identify two primary concerns related to public safety:

- Need for more or better information (signage) about water levels and/or changes in flow fluctuations throughout the day; and
- Need for more ranger presence or law enforcement, including control of glass use and leash laws.

Focus Groups

The Trail User/Stream Crossing Focus Group participants expressed a need for better information about water levels and/or changes in flow fluctuations throughout the day, particularly along the peaking reach. Better, and more accessible, flow information would enable recreation visitors to know when they could safely cross the stream and would allow them to plan their trips to avoid being stranded when water levels (or current velocities) increase. The focus group participants also provided the following site-specific comments related to safety:

- The stream bed conditions at Ruck-a-Chucky Recreation Area and Mammoth Bar make these unsafe crossings for horses;
- The crossing at Poverty Bar is hazardous (especially for horses) due to the possibility of being swept into a rapid located immediately downstream; and
- Traffic and congestion in the Confluence area, especially along Highway 49, is hazardous for all users.

The Angler Focus Group participants expressed the following concerns related to safety along the peaking reach:

- Stranding is a concern on peaking reach;
- A dangerous rapid, Murderer's Bar, is located just downstream of the Mammoth Bar take-out. It is possible for anglers to be swept into Murderer's Bar Rapid; and
- There is no take-out upstream of the pump station on the North Fork American River.

The Whitewater Boating Focus Group expressed the following concerns related to safety as it pertains to boating on the peaking reach:

- Two rapids on the Tunnel Chute run (Tunnel Chute and Ruck-a-Chucky rapids) are difficult and may be hazardous, especially to boaters who are unfamiliar with the run;
- A potential hazard area is located just below Cherokee Bar. When the water is low, the channel is constricted and boaters end up in the trees on river right.
- A challenging rapid, Murderer's Bar, is located just downstream of the Mammoth Bar take-out. It is possible for boaters to miss the Mammoth Bar take-out and be swept into Murderer's Bar Rapid;
- Rebar and other debris (e.g., old bridges, mining debris) in the peaking reach is hazardous to boaters; and
- Traffic and congestion in the Confluence area, especially along Highway 49, is hazardous for all users.

Steel, concrete, and other debris in the Middle Fork American River downstream of the confluence of the North Fork American River confluence was noted as a safety concern in two letters provided by Friends of the River (July 3, 2008) and Protect the American River Canyons (PARC) (April 1, 2008). This issue was also expressed during public scoping meetings held as part of the ASRA GP/RMP update process and was noted as a safety issue by boaters participating in PCWA's boating flow studies.

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TABLES

Table REC 4-1. Bypass and Peaking Reaches Associated with the Middle Fork American River Project.

River or Stream	Bypass Reaches[1]
Middle Fork American River	French Meadows Dam to Middle Fork Interbay Middle Fork Interbay Dam to Ralston Afterbay
Duncan Creek	Duncan Creek Diversion Dam to the Middle Fork American River Confluence
Rubicon River	Hell Hole Dam to Ralston Afterbay
North Fork Long Canyon Creek	North Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek
South Fork Long Canyon Creek	South Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek
Long Canyon Creek	Confluence of North and South Forks of Long Canyon Creek to confluence of Rubicon River
	Peaking Reach[2]
Middle Fork American River	Oxbow Powerhouse to the North Fork American River Confluence
North Fork American River	Middle Fork American River Confluence to the Folsom Reservoir High Water Mark

[1]Bypass reaches are those where water is rerouted from the stream or river at a diversion dam and reintroduced below a powerhouse.

[2]Peaking reach is where daily and within-day changes in river flow occur as a result of power releases that are scheduled to follow power demand.

Table REC 4-2. Crosswalk Showing Where Material Associated with Specific Study Elements can be Found in the REC 4 – Stream-based Opportunities Technical Study Report.

Describe General Stream-based Recreation Opportunities	Methods	Results
Using existing information sources, characterize and describe the stream-based recreational opportunities, activities, experiences, and preferences in the bypass and peaking reaches, including angling, water play, equestrian use, mining and whitewater boating. Existing information sources that will be used include, but are not limited to, published guidebooks and maps, brochures available from local guides, outfitters and clubs, and data and reports available from government agencies such as the USDA-FS and the Auburn State Recreation Area (ASRA).	• Section 5.1	• Section 6.2.1 and 6.2.2
Acquire and review data currently being developed by the California State Parks as part of the ASRA Management Plan update. Summarize pertinent information to assist in describing stream-based recreation use and activities along the Middle Fork American River and North Fork American River between Indian Bar Rafting Access and Oregon Bar Access.	• Section 5.1	• Section 6.2.2
Utilize information developed through the REC 2 – Recreation Visitor Surveys TSP to describe stream-based recreation activities, experience, and the relationship between flow and user satisfaction, where appropriate.	• Section 5.1.1	• Sections 6.2.1, 6.2.2, 6.4, 6.7.3, 6.8.2 • Appendices A and O
Based on the existing information review, develop a map or set of maps showing the locations of popular water play, swimming, fishing spots and whitewater boating runs. These maps will also show the locations of developed recreation facilities and land jurisdictional boundaries in the vicinity of the Project.	• Section 5.1	• Maps REC 4-1, REC 4-7, REC 4-11 through REC 4-15.
Develop a map or set of maps showing the primary roads and trails used to access popular water play, swimming, fishing spots, whitewater boating runs and stream crossings located along the Project bypass and peaking reaches. This map will be developed using GIS information obtained from the USDA-FS, ASRA, and other government sources, with specific trails, access roads, and stream crossings highlighted based on information provided by interested stakeholders.	• Section 5.1	• Maps REC 4-1, REC 4-7, REC 4-11 through REC 4-15.
Summarize Hydrologic Information	**Methods**	**Results**
Utilize the available historical flow information to describe flows at specific locations (nodes) in the bypass and peaking reaches under impaired and unimpaired conditions. The data will be presented for five water year types: critically dry, dry, normal, above normal, and wet. The data will be presented graphically and in tabular format and will be reduced to either daily or hourly time steps, depending upon the availability of data. All data will be provided to the Recreation TWG.	• Section 5.2	• Section 6.1 • Appendices K – N

Table REC 4-2. Crosswalk Showing Where Material Associated with Specific Study Elements can be Found in the REC 4 – Stream-based Opportunities Technical Study Report (continued).

Develop Activity Specific Information – Trail Use at Stream X-ings	**Methods**	**Results**
Describe Western States and Tevis Cup Trail Routes and Crossings, including race coordination activities.	• Section 5.3.1	• Section 6.3.2, Map REC 4-1
Implement Structured Group Interviews	• Section 5.3.2	• Section 6.3 (throughout) • Table REC 4-3 • Appendix B
Conduct Stream Crossing Flow Studies	• Section 5.3.4	• Section 6.3.2 • Appendices C, D and P
Determine Flow Travel Times	• Sections 5.2.1	• Sections 6.1.2 and 6.3.2
Develop Activity Specific Information – Mining	**Methods**	**Results**
Identify and map the locations of mining locations in the bypass and peaking reaches based on consultation with recreation specialists.	• Section 5.6.1	• Section 6.6.1 and 6.6.2 • *Note. Mining locations are described in text but are not mapped due to lack of information to map.*
Identify and map the location of existing mining claims within or immediately adjacent to the bypass and peaking reaches using information maintained by the Bureau of Land Management (BLM).	• Section 5.6.2	• Section 6.6.1 and 6.6.2 • Tables REC 4-28 and REC 4-29 • Map REC 4 – 16
Develop Activity Specific Information – Angling	**Methods**	**Results**
Implement Structured Group Interviews	• Section 5.5.1	• Section 6.5 (throughout) • Appendix J
Conduct Angling Flow Studies	• Section 5.5.2	• Section 6.5.2 • Table REC 4-27 • Figure REC 4-27
Develop Activity Specific Information – Whitewater Boating	**Methods**	**Results**
Describe Whitewater Boating Opportunities	• Section 5.4.1	• Sections 6.4 (throughout)
Implement Structured Group Interviews	• Section 5.4.2	• Section 6.4 (throughout) • Tables REC 4-7 and REC 4-8 • Appendix F
Whitewater Boating Flow Study to Identify Boatable Flows in the Peaking Reach	• Section 5.4.4 • Appendix Q	• Section 6.4.2 • Appendix Q
Potential Whitewater Boating Studies on Runs in Bypass Reaches	• Section 5.4.3	• Section 6.4.1 • Map REC 4-13

Table REC 4-2. Crosswalk Showing Where Material Associated with Specific Study Elements can be Found in the REC 4 – Stream-based Opportunities Technical Study Report (continued).

Flow Information Dissemination	**Methods**	**Results**
Characterize the type of flow information that is currently available to the public through, for example, existing web sites and flow phones.	• Sections 5.7.1 and 5.7.2.	• Section 6.7.2 • Table REC 4-31
Identify, map, and characterize existing stream gaging stations (location, equipment, and data collection capabilities) in target reaches.	• Section 5.7.1	• Section 6.7.1 • Table REC 4-30 • Map REC 4-17
Consult with stream-based recreational users, for example whitewater boaters, anglers, equestrians, swimmers, and waders, to identify target reaches or locations where flow information may enhance stream-based recreation opportunities.	• Section 5.7.3	• Section 6.7.3 • Appendix O
Public Safety	**Methods**	**Results**
Public and worker safety will be described in Land 3 – Emergency Action and Public Safety TSP	• Section 5.8	• Section 6.8
Determine whether there are signs present at key river access and crossing points that warn the public of potential flow fluctuations. If present, document the condition and location of these signs and describe their content.	• Section 5.8.1	• Section 6.8.1 • Table REC 4-32
Use the results of surveys completed as part of REC 2 – Recreation Visitor Surveys TSP and consultation with resource agencies and local user groups to identify potential safety concerns along the bypass and peaking reaches.	• Section 5.8.2	• Section 6.8.2 • Appendix O

Table REC 4-3. Summary of Information Developed through Trail User/Stream Crossing Focus Group.

River	Reach	Stream Crossing Location	User Group	Flow/Depth Information Obtained through Focus Group	Other Notes
Rubicon River	Ellicott Bridge to Ralston Afterbay	Nevada Point Trail Crossing	Primarily used by hikers.	Formerly a bridge that was washed out by high flow.	Project operations reduce flows at this location making it easier to cross
Middle Fork American River	Oxbow PH to Confluence	Ford's Bar	Formerly used as an equestrian crossing.	No longer used as a primary stream crossing due to changes in stream morphology.	This area is no longer a primary crossing location. However, it is still used as a crossing by some users. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Ruck-a-Chucky	Hikers/Runners. Important crossing for Western States 100 Endurance Run. Equestrians. Not currently used by equestrians due to boulders, rocky substrate, and deep center channel. Bikers. Sometimes used by bikers. Bikers would use this location more if substrate was better and flows were lower.	Hikers/Runners. PG&E and PCWA consult with the commercial boaters and race event coordinators every year regarding race logistics and flows. Target flow during WS 100 is 125 cfs (knee high). A flow of 125-350 cfs is crossable with just a cable, although it is possible to cross without a cable at flows below 200 cfs. Crossing during the WS 100 is not possible between flows of 350 - 800 cfs because it is too high to wade and too low to boat. Boat crossings can be done at flows ranging from 800-3500 cfs.	Crossing depths and flows for runners and hikers are already understood based annual coordination activities for the WS 100 Endurance Run. Consultation occurs annually because stream morphology sometimes changes resulting in different flow needs. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Poverty Bar	Equestrians. Important crossing for the Tevis Cup Endurance Ride. Hikers/Runners. Not used for the WS 100. Bikers. Not used by bikers because biking on the trails in this area is prohibited.	Equestrians. PG&E reduces flows for the Tevis Cup every year. During 2007, flows from Oxbow PH were reduced to a maximum of 250 cfs for a 12 hours period. Maximum depth for horses is 3 feet. Maximum flow for the average rider is 250 cfs (on horses chest) Ideal crossing depth for horses is 18 inches. Less experienced riders need lower flows. Hikers/runners. Maximum depth for hikers/runners is 18 inches (knee high) 250 cfs is too high a flow for hikers/runners to cross	Crossing depths are already understood based on consultation activities between PG&E and Tevis Cup organizers. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Mammoth Bar	Equestrians. Formerly used as an equestrian crossing. Bikers. Bikers can use this crossing but it is not heavily used because bikers do not want to use the Quarry Trail.	Maximum depth for horses to cross at this location is 18-30 inches. Difficult to carry a bike across the river when flow is over 2 feet.	This is not a desirable crossing location due to presence of OHV area. However, it is still used as a crossing by some users. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
North Fork American River	Confluence to Oregon Bar	No Hands Bridge	Equestrians. Important crossing for equestrian users. Hikers/Runners. Important crossing for hikers/runners. Bikers. Not used by bikers because biking on the trails in this area is prohibited.	Flow is not an issue at this location due to presence of bridge.	Not needed due to presence of existing bridge.
North Fork American River	Confluence to Oregon Bar	Coffer Dam	Equestrians. Formerly used as crossing by equestrians when the river was routed through the coffer dam tunnel. This crossing can no longer be used by equestrians now that the tunnel has been closed and the water has been rerouted back into the river channel. The river banks were graded and armored with rip rap so the banks are now too steep for horses. Hikers/Runners. Would use a crossing at this location. Bikers. Would use a crossing at this location.	Cannot be used as a crossing due to the presence of steep, armored banks.	Not a feasible crossing location at high flows. Crossing may be possible at low flows if deep channel is not present. Observations under low flow conditions indicate crossing by horses and hikers is possible at this location.
North Fork American River	Confluence to Oregon Bar	Oregon Bar	Equestrians. Used by equestrians year round when flow is low enough. Hikers/Runners. Don't tend to use this crossing location. Bikers. Not used by bikers because biking on the trails in this area is prohibited.	Maximum depth for horses to cross at this location is 18 inches. Can be deeper if velocity is lower. Hikers and runners don't use this location. Bikers can't use this location because they are prohibited on the trails in this area.	Crossing location appears to be within the boundaries of the Folsom Lake high water mark and therefore outside the study boundaries. Crossing location will be confirmed with focus group participants.

Table REC 4-4. Pedestrian Stream Crossing Criteria based on Existing Literature and Focus Group Comments.

Source	Water Depth (feet)		Velocity (ft/sec)		Comments
	Preferred	Maximum	Preferred	Maximum	
Recreational Trail Design and Construction (University of Minnesota)	2.0 -		Slow moving	-	Article states "Fords (or natural crossings) often can be used to traverse slow moving stream less then 24 inches deep".
Trail Construction and Maintenance Notebook (USDOT a)	1.3 - 2.0	-	Low to moderate flow	-	Article states that "A ford for hikers…should be no deeper than 16 to 24 inches (about knee high)."
Flow Requirements for Recreation and Wildlife in New Zealand Rivers (Mosley)	1.3 - 1.9	3.9	1.64	(2.2)	Applies to wading. Preferred conditions also apply to "tramping." Max velocity was derived from depth/velocity figure presented in article and applies to average adults to teenagers (B curve).
Methods of Assessing Instream Flows for Recreation (Hyra)	.75 - 2.5	4.0	0.25 – 2.0	3.0	Applies to water contact wading. Preferred = Hyra's "optimum". Max depth and velocity are based on physical criteria, not safety criteria.
Focus Group Consultation (Ruck-a-Chucky)	1.7 -		-	-	Focus group said target depth is about "knee high (assumed to be 20 inches on average).
Focus Group Consultation (Poverty Bar)	1.5		-	-	Focus group said "max" crossing depth for hikers/runners is 18 inches at Poverty Bar. However, this value was placed in the "preferred" category, because velocities drive wading suitability in this location.
Average	**1.9**	**4.0**	**1.8**	**2.6**	

Tests:
Preferred Depth x Preferred Velocity = 3.4
Max Depth x Max Velocity = 10.4

Table REC 4-5. Equestrian Stream Crossing Criteria based on Existing Literature and Focus Group Comments.

Source	Water Depth (feet)		Velocity (ft/sec)		Comments
	Preferred	Maximum	Preferred	Maximum	
Trailblazer Magazine	2.0 -		-	5.0	Qualitative comments in text of article. Article states: "get detailed information on any crossing that may be over 2 feet deep and/or have very fast (5.0 ft/sec) water".
Trail Construction and Maintenance Notebook (USDOT a)	- 3.3		-	-	Applies to constructed shallow stream fords. Notebook states: "A horse ford shouldn't be deeper than 1 meter (3.3 feet).
Equestrian Design Guidebook for Trails, Trailheads, and Campground (USDOT b)	2.0	- - -			Applies to constructed shallow stream fords. Article states: "Locate fords in an area where the stream is straight and shallow, avoiding areas that are deeper than 2 feet."
Focus Group Consultation (Poverty Bar)	1.5	3.0	-	-	Focus group said ideal crossing depth for horses is 18 inches and max crossing depth for horses is 3 feet (chest deep on horse).
Focus Group Consultation (Mammoth Bar)	1.5 2.5		-	-	Focus group stated that crossing depth is 18 to 30 inches.
Average	**1.8**	**2.9**	**-**	**5.0**	

Test:
Max Depth x Max Velocity = 14.5

Table REC 4-6. Measured and Estimated Flows during Trail Crossing Studies.

Trail Crossing Location	River Mile	Date	Time	Flow (cfs)
Fords Bar (Otter Creek Confluence)	14.20	10/7/08	10:00 am	101[1]
		7/26/08	9:15 am	372[1]
		7/31/08	12:15 am	1070[4]
Ruck-A-Chucky	9.22	10/7/08	9:00 am	150[1]
		7/26/08	9:00 am	345[1]
		7/31/08	11:30 am	1070[2]
Poverty Bar	6.30	10/7/08	12:15 pm	150[1]
		7/26/08	12:30 pm	410[1]
		7/31/08	12:25 pm	1070[2]
Mammoth Bar	2.15	10/7/08	3:20 pm	150[1]
		7/27/08	10:00 am	335[1]
		7/31/08	2:10 pm	1070[2]
Coffer Dam (at Birdsall Access)	17.30	10/7/08	4:45 pm	200[1]
		7/27/08	8:30 am	370[1]
		7/31/08	4:30 pm	820[3]

Notes:

[1]Flow was measured on-site using a Marsh McBurney Flow Meter.
[2]Flow was estimated using the OXB gage data and applying a travel time to the crossing location. The resulting value is rounded.
[3]Flow was estimated using OXB gage data and adding the measured average daily streamflow from the North Fork American River (44 cfs), and subtracting the flow removed at the American River Pump Station (50 cfs). The resulting value was rounded.
[4]Flow was measured on-site using an Acoustic Doppler Profiler (ADP).

Table REC 4-7. Summary of Information Developed at Whitewater Boating Focus Group Meeting (April 3, 2008) and Provided by Foothill Water Network (February 9, 2009).

Focus Group Summary						FWN Comments Regarding Focus Group Summary (2/9/09 letter)
River	**Runs**	**Difficulty**	**Potential Use**	**Estimate of Boatable Flow Range**	**Other Notes**	
Bypass Reaches						
Rubicon River	RM 25 to Ellicott Bridge	Class V	Expert kayakers and rafters	Minimum 400 cfs Optimum 500 - 800 cfs Maximum 1,200 cfs	Access is via a hike in put-in. Area is not typically accessible when boating flows are avaialble. Remote wilderness area.	
Rubicon River	Ellicott Bridge to Ralston Afterbay	Class V	Expert kayakers and rafters	Minimum 400 cfs Optimum 500 - 700 cfs Maximum 1,200 cfs	Remote, 2-day wilderness run. Put-in is not typically accessible when boating flows are available.	At certain flows, this run can require 2-3 days to boat from Mile 25 or Ellicott Bridge to Ralston Afterbay. However, at some flows the run has been boated in one day, which could limit the logistical issues with conducting boating test flows on this reach. Infrastructure constraints present challenges to making controlled flow releases for test flows on the Rubicon River below Hell Hole Dam.
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	Class V+ for rafts	Expert kayakers and rafters	Minimum 300 - 400 cfs Optimum - Not Identified Maximum 800 cfs	Lots of rockpiles. Two day run for rafts with many portages (8-10). Some technical portages. Further discussion required regarding need for refinement of flow estimates, logistics, environmental considerations, and liability. Remote wilderness area. Numerous portages. Biological considerations. No ability to release flows in the boating range.	
Peaking Reaches						
Middle Fork American River	Oxbow PH to Ruck-a-Chucky (Tunnel Chute Run)	Class IV with one mandatory portage	Intermediate to advanced kayakers and rafters. Popular commercial run.	Minimum 600 cfs Optimum - not established in focus group Maximum 3,000 cfs		
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar (Mammoth Bar Run)	Class II+	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 800 cfs Optimum 1,000 cfs Maximum 1,200 cfs		Skilled boaters are able to boat a wide range of high flows on this reach. Beginner boaters and those providing kayak instruction are interested in boating this reach.
Middle Fork American River	Mammoth Bar to Confluence (Murderer's Bar Run)	Class II with one mandatory portage	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 400 cfs Optimum 800 - 1,200 cfs Maximum 15,000cfs	Short run. Difficult portage is required to complete run. Flow related characteristics would be similar to those on the Ruck-a-Chucky to Mammoth Bar run.	
North Fork American River	Confluence to Oregon Bar (Confluence Run)	Class II+ to III-	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 300 cfs Optimum 600 - 3,000 cfs Maximum 15,000cfs		

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Contact	Date of Conversation	# of Times Run	Dates of Run	Craft Type	How was Flow Determined Prior to Run	Length of Run	Estimated Flow when Run	Boater's Flow Assessment	Difficulty of Run	Portages	Access	Interest in Repeating the Run	Other Considerations	Notes	General Thoughts about the Area
Rubicon River - RM25 to Ellicott Bridge															
Charlie Center	5/27/2008 1/7/2009 2/27/2009			Hard shell kayak	Word of mouth, downstream gage information - e.g. flow out of Ralston Inference combined with experience seems to work. Hard to judge tributary contributions. Sometimes flow is higher than anticipated.			Boatable Flow range: 500-1,500 cfs Optimal Flow Range 600-1,000 cfs above 1,200 gets dicey	Class V	None					
Rubicon River - Ellicott Bridge to Ralston Afterbay															
Phil DeReimer	12/23/2008 3/6/2009	1	June 3, 2006	Hard shell kayak	This stretch of the Rubicon River only has enough water to boat when Hell Hole Reservoir is spilling. Tracks blogs on boof.com regarding boating on the Rubicon River. Boating window is very small. A gage would be very useful.	Boated the run in two days with 3 other people. Boated 3-4 hours on the first day. Camped above what turned out to be the hardest gorge. Boated 8 hrs on the second day.	1,000 to 1,200 cfs	A little more water would be better. Some of the rapids would fill more. Conversely, holes would get stickier. Would want to run it a bit higher to estimate what flow would be optimal. Boatable flow range - 800 to 1,500 cfs Optimal flow range - 1,000 to 1,200 cfs	Definitely Class V	Portaged 4 to 5 drops. There is a lot of vegetation in the river bed and a lot of debris in the river, which makes portages and scouting difficult.	n/a	Yes	n/a		
Chris Tulley	12/29/2008 3/2/2009	3	April or May 2004 June 11, 2005 May 3, 2006	Hard shell kayak	Estimated flow based on the change in Hell Hole Reservoir elevation.	Definitely a solid 2 day run. Boated 6 hrs each day. Camping is decent.	400-500 cfs 600-700 cfs 700 cfs	The flow during the 2004 run was at the very low end, almost unboatable. 400 cfs is at absolute minimum flow 700-800 cfs would be optimal 1,500 cfs would be very high	Definitely Class V. Difficulty would be a little lower at lower flows. Not suitable for Class IV boaters.	Needed to portage rapids 3 to 4 times during each run. There is a big, steep rapid with significant consequences about 2-3 hrs into the 1st day.	River access is fine. There is good parking at the take-out. The put-in is in the middle of nowhere just like other high-sierra multi-day trips. There is always the fear that your car will get broken into.	Yes	The river bed is overgrown because it has been dewatered so often.	This river is one of the highest quality rivers in California. The quantity and quality of the rapids is phenomenal. It is so good that he would make a lot of sacrifices to get on this river when its running.	
Nathan Hunkapillar	1/2/2009	3	May - 2005 May - 2005 May - 2006	Hard shell kayak	There's no way to find out online if the Rubicon is running, but you can do some calculations based on the drop in acre-feet at the reservoir.	1- 2 day The first two times he boated this run in '05 he did it as an overnight, camping in the same place each time. For the overnighters, they put on at about 10 AM and ran about 10 miles, then finished up the next day. The camp spot wasn't the greatest. When he did it as a 1-day, they paddled from 9 to 4. He likes doing it either way, as an overnighter or all in one day. It doesn't really matter.	700-800 cfs each time.	A little more flow would be optima (about 1000 cfs).	On average, the run is Class IV+ with about 10 stand-out Class V rapids.	They portaged 2 rapids. Most people portage one rapid, a 12-foot drop located about 2/3 of the way down the run. There is another drop further down that they thought looked nasty, but most people run that one. All the rapids have been run by someone, at some point.	The access is pretty good. The roads are paved except at the put in. You park at the bridge and there is a short, steep dirt road down to the river. Not many cars can go down the hill due to its grade. Grading this road would be a great improvement. There aren't really many other opportunities for parking at the put-in. There is room for about 1 or 2 cars at the top of the steep dirt road.	Yes	Debris in the river is mainly brush. In 2005 it was overgrown, because the river hadn't had any water in awhile. In 2006, it was much better. There are willows growing from the shore into the water. It's a hazard to be aware of, especially when catching eddies. Can be challenging, but anyone that is good enough to run the river can deal with it.	This is a very high quality run. It's rare to have a run that is long, consistent, sustained, with few portages, and very little flat water. Similar runs often have a lot of portages.	
Zack Lannoy	3/9/2009	3	June - 2001 June - 2004 June - 2006	Hard shell kayak				Low - 800 cfs Optimal - 1,200- 1,500 cfs High - 2,000 cfs	Class V	Portaged 2 rapids					

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Contact	Date of Conversation	# of Times Run	Dates of Run	Craft Type	How was Flow Determined Prior to Run	Length of Run	Estimated Flow when Run	Boater's Flow Assessment	Difficulty of Run	Portages	Access	Interest in Repeating the Run	Other Considerations	Notes	General Thoughts about the Area
Rubicon River - Ellicott Bridge to Ralston Afterbay (continued)															
Jared Noceti	1/5/2009 3/15/2009	1	2004 or 2005	Hard shell kayak	Relies on word of mouth. Knew Hell Hole was spilling Decided to run the river after observing the flow at the put-in. It definitely took someone going to the put-in and reporting back.	Definitely 2 full days.	3,000 cfs	There were stout rapids the whole way. The willow trees along the shore were definitely a safety consideration due to the higher flow. The dewatered stretches of the river get lots of growth and it gets really dangerous. The willows effect the eddies and makes them dangerous. Ran the middle of the river due to stay out of the willows and scouted less than normal.	He has heard that it is easy Class V at normal flows. Lower flow would be much more manageable than at the flow he ran it.	There is a big portage about half-way.	The access was really good, especially at the take-out due to the hydro facility. The roads are paved roads in and out.	Absolutely	The quality of the run is really high and on par with something like Giant Gap or Cherry Creek. The scenery and lack of society or mining structures make this an awesome run.	He would like to have reliable flow information. He knows that it only spills in high water years and it's unlikely that we'll see flow in this stretch for awhile, given the capacity of the reservoir. A scheduled release would be fantastic. He will run it again.	
Trevor Haagensen	1/6/2009 3/2/2009	1	2006	Hard shell kayak	A post on Dreamflows Visual at the take out.	2 day Ran it as a two day, with long days (6 to 7 hours each day). Good camping is limited but they got a really good spot, good thing they found it when they did, because then the canyon gorges up for awhile.	400 cfs at the put in, 900 cfs at the take out.	Definitely needed a bit more water but it was well within the range of good flow. Definitely above 1,000 cfs it would get significantly more challenging. 800 to 1,200 cfs would be optimal	Class V	They did several portages because of wood, probably 5 to 10 times. Probably could have run them and definitely did more portages than was necessary.	Great access. Easy put-in, and take-out is really easy too. Snow could definitely be an issue if it was running early in the season.	Yes	It's an excellent run, one of the best in California. 5 Stars, especially because its an overnighter, and one of the easier ones. A gauge or scheduled release would be awesome.	Willows were thick on both banks, but wasn't a huge issue for them because of the lower flows. Would probably be an issue at higher flows.	
James McCloud	1/7/2009 3/4/2009	1	2006	Hard shell kayak	They knew it was running via word of mouth. Visual at the take-out.	Boated the run in two days and were on the water for about 6 hrs each day.	Estimated that it was 600 cfs at the put-in, maybe 1,000 cfs at the take out.		Class IV-V There are bedrock features with ledgey holes and sharp corners. The majority of the river is class IV, IV+. The run is similar to the Middle Fork Feather. There was 1 rapid towards the end with fresh rocks from a landslide. It was Class V and much harder than the majority of the other rapids. Break down of the rapids: 20-30% Class III, 60% Class IV, and 10% are really hard Class V. There was one other tough rapid with a 2 story house size rock in it.	Portaged 5 rapids. Some portages involved portaging through alders on the banks. Water was really low most of the time and the trees made portaging difficult.	Pretty "rad" roads in and out.	Yes	Great Run. It's a shorter version of the Middle Feather but not quite as remote. This run would be perfect for boaters that are ready to try out an overnight.		
Carleton Goold	1/7/2009	2-3 times	2005 2006	Hard shell kayak	Looked at Hell Hole Reservoir info and could see that the reservoir had been full for awhile.	It's a very suitable 2-day run. The 2nd year he did ran it in 1 day. If he were to do it again, he would run it in 2 days.	2005 it was about 1,100 cfs 2006 it was about 800 cfs.	800 cfs seemed low 1,100 was nice, could have used a little bit more 1,300 would be optimal 1,500+ cfs would be high	Class V- Run is V-, very low end of Class V. It's higher quality with more water.	He probably did about 4 portages. The river changed because of a landslide the 2nd year, which made things different and more challenging.	Good access, no complaints. Roads need to be cleared of snow. Having nice, paved roads is exceptional.		This is a high quality run. It is about as fun as Clavey and it's similar to the South Merced. It's truly excellent whitewater and an exceptional run.	The only detracting factor is the Alders along the banks because it's been de-watered so often.	

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Contact	Date of Conversation	# of Times Run	Dates of Run	Craft Type	How was Flow Determined Prior to Run	Length of Run	Estimated Flow when Run	Boater's Flow Assessment	Difficulty of Run	Portages	Access	Interest in Repeating the Run	Other Considerations	Notes	General Thoughts about the Area
Rubicon River - Ellicott Bridge to Ralston Afterbay (continued)															
Brad Brewer	1/7/2009 3/10/2009	2	2005 2006	Hard shell kayak	Called PCWA for flow information. A gauge would be really nice. Post flows on dreamflows.com.	He did a 2 day run each time. The 2nd time he camped way too far upstream. He did 5-6 miles the 1st day and 13 the 2nd.	2005 it was about 800-850 cfs 2006 it was about 900-1000 cfs.	800-850 definitely feels optimal. Basically the same flow both years. Both flows seemed great. 600 cfs would be low end of boatable flow	Class IV-V The Rubicon River is a super sweet, Class IV and hard Class V run. There is lots of Class IV "boogie" water. It's a really good IV – V rating. There are lots of good intermediate, continuous, Class IV rapids with pool-drop characteristics. Super Beautiful.	He portaged 1 or 2 times the 1st time he ran the Rubicon. On the second run he portaged 3 or 4 times. The rapids had shifted due to flooding. There's a big drop with a huge hole that most people portage. However, he knows that a few people have run it.	Access is great & super easy. The take out involves a small scramble.	Yes	He didn't recognize some of the rapids the second time he ran the Rubicon because there had been super big water in between the two times he ran it. There was a sweet 12 or 13 foot drop the first time he ran the Rubicon that he couldn't find the 2nd time he ran it. The only detracting factor is the willows along the banks, which makes it somewhat difficult to see. There isn't really any wood in the water.	This run is one of his favorite 2 night trips in California. The camping and scene really feels it like you're out there. There is great camping on beaches. There were a few guys on the trip that were just starting Class V. This run is perfect for people who are looking for somewhere to boat after boating Giant Gap. It's easier than Cherry Creek and the 800 cfs level is really manageable as a 1st time flow.	
Charlie Center	5/27/2008 1/7/2009 2/27/2009			Hard shell kayak	Word of mouth works but inference combined with experience seems to work. Hard to judge tributary contributions. Sometimes flow is higher than anticipated Downstream gage information - e.g. flow out of Ralston .	2 days		Boatable flow range: 600-2000 cfs Optimum: 800-1500 cfs 2000 cfsat the top end possible to double flow on run for the low flow range (600 cfs) 600 would be too low in fall due to lack of water contribution from side creeks	Class V	No madatory portages				One the best two day class V runs in CA	
Scott Lindgren	1/8/2009 2/25/2009	Various	3	Hard shell kayak				500 - 700 cfs IV+ 800 to 1,100 cfs 1,500 to 2,000 cfs V	Class IV+ below 700 cfs - many people can run it. AT 1,500 cfs to 2,000 cfs the turns into a completely different ball game.						

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Contact	Date of Conversation	# of Times Run	Dates of Run	Craft Type	How was Flow Determined Prior to Run	Length of Run	Estimated Flow when Run	Boater's Flow Assessment	Difficulty of Run	Portages	Access	Interest in Repeating the Run	Other Considerations	Notes	General Thoughts about the Area
Long Canyon Creek															
Zach Lannoy	3/9/2009	1	1999 or 2000 April	Hard shell kayak	Drove to put-in and looked	11 miles 1 day - 8 hours 6 hours on Long Canyon 2 hours on Rubicon River	200-250 cfs	Flow was bottom end of runnable Boatable flow range is estimated at 200 to 600 cfs 300-500 cfs would be optimal 500-600 cfs would be maximum	Class IV/V at low flow Class V above 400 cfs	10 +/- About half of the portages were due to low flow conditions	Access is good at put-in and take out Put-in is at Ramsey Crossing Take-out is at Ralston Afterbay	Yes - with more water		Ran with Todd Stanley and Johnny Kern.	Could be a good 2 day run - had to move fast to run in one day
Scott Lindgren	1/8/2009 2/25/2009	0													Scott has walked all of Long Canyon Creek and it seems really "manky"
Ron Thompson	1/6/2009 2/26/2009 3/4/2009	1													Ron thinks this reach is boatable. He has been to Long Canyon Creek but he has not boated it. It looks similar to South Silver Creek.
Duncan Creek															
Ron Thompson	1/6/2009 2/26/2009 3/4/2009	1	2000 - 2001?	Hard shell kayak	n/a	5 to 6 hrs	In flow into Middle Fork Interbay was 163 cfs.	He definitely liked the flow, but he likes low flow. A little higher would probably be better. Up to 200 would make it less bony but not too scary.	This run is "creeking" Class IV+ with a few Vs once you get down river a ways.	The channel is bedrock in nature. It didn't need a ton of water. He doesn't remember many portages, its mainly just pool-drop.	Put in on Duncan Creek and took out at Middle Fork Afterbay. Getting to the put in is definitely difficult. You have to drag boats across snow from a little sequoia grove (Placer Big Trees). There is a forest road that eventually drops down to the creek. Take-out is at Middle Fork Interbay	Yes	Last 2-3 miles are on the Middle Fork American River There is a gorge a little upstream of Middle Fork Interbay that must be portaged in mid-channel. At flows greater than 200 cfs this could be a problem. Portaging the gorge could be very difficult.	Duncan creek is a sweet run, similar to Pauley Creek. It has really nice rapids, its definitely worth doing and is a quality run. He would rather do Duncan Creek than Pauley Creek. He wouldn't do a lot of runs again but he would definitely go back and run Duncan again.	Ron went to Duncan Creek with Todd Stanley. Todd did not boat but Ron did.
Todd Stanley	1/6/2008	0	f												Todd went to Duncan with Ron Thompson but did not boat due to low flow.
Jared Noceti	1/5/2009 3/15/2009	0			Boaters have to drive to Duncan Creek to see if it is flowing.										
Middle Fork American River from French Meadows Reservoir to Middle Fork Interbay															
Ron Thompson	1/6/2009 2/26/2009 3/4/2009	0					In flow into Middle Fork Interbay was 163 cfs.							Put-in on Duncan Creek and ran to Middle Fork Interbay.	He really wants to do the stretch below French Meadows Reservoir, but there is no release. He doesn't think anyone has ever done it.
Scott Lindgren	1/8/2009 2/25/2009	0													Nobody has done the stretch from French Meadows down to Middle Fork Afterbay. He has flown over it in a helicopter and hasn't seen anything in there.

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Middle Fork American River from Middle Fork Interbay to Ralston Afterbay - End of the World Run															
Scott Lindgren	1/8/2009 2/25/2009	1	1998 or 1999	Hard shell kayak	Observed flow at the take-out. He doesn't remember how they knew what the flow was. They may have called a dam operator?		About 200 to 300 cfs.	Very low Could have had more water – 500 or 600 cfs.		They had to portage some sort of dam or diversion about ½ through the run. There were 2-3 portages due to lack of water.		No	It's a "manky" run. The rock is really different, jagged, metamorphized slate and there are not too many great rapids. The best rapid is the one you can see from the road, right above Oxbow (Ralston Afterbay). It's a nice, 10-ft. drop.		The real gem in the area is the North Fork of the Middle Fork.
Charlie Center	5/27/2008 1/0720/09 2/27/2009	1	2004 or 2005	Hard shell kayak	Estimate based on observation. Rubicon was flowing. Looked at the Oxbow gage.	5-6 hours on the river	450 -650 cfs	450 - 650 cfs is definitely a good flow range Opitimum 600-700 cfs	Class IV/V Lots of Class IV rapids 8-9 Class V rapids	No portages	Access is really good - 50-60 foot scramble, but wasn't too bad.	Yes		Quality run, bedrock pool-drop, very manageble read and run class IV, 5-6 clean class V drops No real good boatable flow range information Could be very viable run	Flows provided during spring run off would not be well utilized because there are so many other rivers running.
Jared Noceti	1/5/2009 3/15/2009	0							He has heard that it is IV+ with a few Vs.		The access is easy – can drive to the put in at the dam (Middle Fork Interbay) but it's definitely a steep hike down to the river.				It's a long, deep canyon. It's a fine run for the bulk of the community – like Giant Gap. Could be one of very few runs that are a good intermediates - One for the masses.

Table REC 4-9. Whitewater Boating Flow Study Dates and Target Flows by Run.

Reach	Target Flow (cfs)	Date (2008)
Tunnel Chute Run (Indian Bar Rafting Access to Ruck-a-Chucky)	600	Tuesday, September 16
	800	Tuesday, September 9
	1000	Wednesday, July 30 (cancelled)
Mammoth Bar Run (Ruck-a-Chucky to Mammoth Bar)	600	Wednesday, September 17
	800	Wednesday, September 10
	1000	Thursday, July 31
Confluence Run (Confluence of North Fork American River and Middle Forks American Rivers to Oregon Bar)	368	Saturday, July 26
	600	Wednesday, September 17
	800	Wednesday, September 10
	1000	Thursday, July 31

Table REC 4-10. Whitewater Boating Flow Study Team Members.

Tunnel Chute Run
(Indian Bar Rafter Access to Ruck-a-Chucky)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
600	Brandon Bloodsaw	Self-Bailing Raft	IV	8
	David Stratton	Self-Bailing Raft	V	6
	Thomas Bartus	Self-Bailing Raft	V	20
	Glenn Munshower	Self-Bailing Raft	I	3
	Nicole Doyle	Self-Bailing Raft	IV	24
	Jeremiah Copper	Self-Bailing Raft	V	7
	Robert Townsend	Self-Bailing Raft		10
	Dave Martinez*	Self-Bailing Raft	IV	30
800	Stacey Cheu	Self-Bailing Raft		
	Erin Moore-Dempsey	Self-Bailing Raft	V	6
	Grubby Self-Bailing	Raft	V	9
	David Garcia	Self-Bailing Raft	IV	3
	Frank Root	Self-Bailing Raft	V	20
	Bill Deitchman	Self-Bailing Raft		
	Scott Armstrong	Self-Bailing Raft	V	30
	Nicole Doyle	Self-Bailing Raft	IV	24
	Chafic Khalil	Self-Bailing Raft		
	Scott Buckley	Self-Bailing Raft	V	19
	Sedale Turbovsky	Self-Bailing Raft	III	3
	David Lewis	Self-Bailing Raft	V	12
	Jeremiah Copper	Self-Bailing Raft	V	7
	Dave Martinez*	Hard Shell Kayak	IV	30

* Dave Martinez was the study leader and is not counted as a study participant.

Table REC 4-10. Whitewater Boating Flow Study Team Members (continued).

Mammoth Bar Run
(Ruck-a-Chucky to Mammoth Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
600	Patricia Gibbs	Inflatable Kayak	I	
	Lee Leishman	Inflatable Kayak		
	Tom Van Noord	Hard Shell Kayak	I	2
	Dominic Pugliese	Hard Shell Kayak	III	2
	Dave Martinez*	Hard Shell Kayak	IV	30
800	Steven Boutte	Hard Shell Kayak	IV	2
	Alex Wolfgram	Hard Shell Kayak	V	7
	Patricia Gibbs	Inflatable Kayak	I	
	Jeffrey Hartley	Hard Shell Kayak	V	4
	Lee Leishman	Inflatable Kayak		
	Dave Martinez*	Hard Shell Kayak	IV	30
1000	Howard Penn	Hard Shell Kayak	V	20
	Clint Norrell	Inflatable Kayak	III	
	David Garcia	Self-Bailing Raft	IV	3
	Kathy Norrell	Inflatable Kayak		
	Patricia Gibbs	Inflatable Kayak	I	
	Sandra Perry	Hard Shell Kayak	III	10
	Jillian Aldrin	Cataraft	IV	5
	Jesse Carlson	Cataraft	I	
	Joshua Hill	Self-Bailing Raft	V	12
	Dave Martinez*	Hard Shell Kayak	IV	30

* Dave Martinez was the study leader and is not counted as a study participant.

Table REC 4-10. Whitewater Boating Flow Study Team Members (continued).

Confluence Run
(Confluence to Oregon Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
368	Lester Lubetkin	Inflatable Kayak	II	28
	Laird Thompson	Hard Shell Kayak	III	10
	Tom Van Noord	Hard Shell Kayak	I	2
	Patricia Gibbs	Inflatable Kayak	I	
	Sandra Perry	Hard Shell Kayak	III	10
	David Garcia	Self-Bailing Raft	IV	3
	Guy Cables	Inflatable Kayak	V	30
	Dave Martinez*	Hard Shell Kayak	IV	30
600	John Hauschild	Inflatable Kayak	III	15
	Tom Van Noord	Hard Shell Kayak	I	2
	Patricia Gibbs	Inflatable Kayak	I	
	Lee Leishman	Inflatable Kayak		
	Dominic Pugliese	Hard Shell Kayak	III	2
	Dave Martinez*	Hard Shell Kayak	IV	30
800	Steven Boutte	Hard Shell Kayak	IV	2
	Alex Wolfgram	Hard Shell Kayak	V	7
	Patricia Gibbs	Inflatable Kayak	I	
	Jeffrey Hartley	Hard Shell Kayak	V	4
	Lee Leishman	Inflatable Kayak		
	Dave Martinez*	Hard Shell Kayak	IV	30
1000	Patricia Gibbs	Inflatable Kayak	I	
	Howard Penn	Hard Shell Kayak	V	20
	David Garcia	Self-Bailing Raft	IV	3
	Sandra Perry	Hard Shell Kayak	III	10
	Dave Martinez*	Hard Shell Kayak	IV	30

* Dave Martinez was the study leader and is not counted as a study participant.

Table REC 4-11. Whitewater Boating Flow Study Photo-Documentation Locations.

Run	Location	Name of Rapid	GPS Coordinates
Tunnel Chute Run (Indian Bar Rafting Access to Ruck-a-Chucky)	1	Tunnel Chute	N39 00 03.9 – W120 45 46.9
	2	Boulder Dash	N39 00 03.9 - W120 47 02.3
	3	Kanaka Falls	N38 59 47.7 - W120 47 56.1
	4	Unnamed	N38 58 19.7 - W120 50 21.9
	5	Chunder	N38 57 14.1 - W120 54 17.8
	6	Pop Quiz	N38 57 17.2 - W120 54 43.8
Mammoth Bar Run (Ruck-a-Chucky to Mammoth Bar)	1	Unnamed	N38 56 30.9 - W120 56 19.1
	2	Unnamed	N38 56 15.5 - W120 57 33.8
	3	Unnamed	N38 55 45.6 - W120 58 30.3
	4	Unnamed	N38 85 54 .3 - W120 59 30.9
Confluence Run (Confluence of North Fork and Middle Fork American Rivers to Oregon Bar)	1	Highway 49	N38 54 92 86- W121 02 4.777
	2	Unnamed	N38 53 26.5 – W121 02 42.28
	3	Pump Station	N38 53 00.7 – W121 03 39.7

Table REC 4-12. Whitewater Boating Opportunity Days Analysis Criteria – Peaking Reach.

River	Run	Distance (miles)	Flow Range (cfs)	Season	Flow Continuity	Timing
Middle Fork American River	Tunnel Chute	15	800 – 2,500	April 1 - October 1	Four (4) consecutive hours of flow within flow range	Flow block initiates at Oxbow PH between the hours of 8:00 AM and 2:00 PM
	Mammoth Bar	7	500 – 2,500	April 1 - October 1	Four (4) consecutive hours of flow within flow range	Flow block initiates at Ruck-a-Chucky between the hours of 8:00 AM and 2:00 PM
	Murderer's Bar	2	500 – 2,500	April 1 - October 1	Two (2) consecutive hours of flow within flow range	Flow block initiates at Mammoth Bar between the hours of 8:00 AM and 4:00 PM
North Fork American River	Confluence	5	350 – 2,500	April 1 - October 1	Three (3) consecutive hours of flow within flow range	Flow block initiates at the Confluence between the hours of 8:00 AM and 3:00 PM

Note: Timing allows for boaters to take off the river by 6:00 P.M.

Table REC 4-13. Distances Between Points in Peaking Reach and Associated Water Travel Times.

Location	River Mile	Use	Distance from Oxbow PH to Location (Miles)	Elapsed Travel Time in Hours[1] (Distance/ 2.5 mph)
Middle Fork American River				
Indian Bar Rafter Access	24.35	Put-in	0	0
OXB gage	23.10	Gage	1.25	.5
Fords Bar (Crossing)	14.20	Trail crossing	10.15	4.1
Ruck-a-Chucky	9.22	Take-out/put-in/trail crossing	15.13	6.1
Poverty Bar (Crossing)	6.30	Trail crossing	18.05	7.2
Mammoth Bar	2.15	Take-out/put-in/trail crossing	22.20	8.9
Confluence	0	Take-out/put-in	24.35	9.7
North Fork American River				
Confluence	20.95	Take-out/put-in	24.35	9.7
Birdsall Access (Coffer Dam Crossing)	17.30	Take-out/put-in/trail crossing	28.00	11.2
Oregon Bar	15.65	Take-out	29.65	11.9

[1]Travel time assumes a base flow of 200 cfs and a peak flow of approximately 1,000 cfs. Travel time changes depending upon the base flow and the peak flow. For example, water travel time is faster when the base flow is higher or when the peak flow is higher.

Table REC 4-14. Flow Arrival Time by Location.

Release Time	Indian Bar Rafter Access	OXB Gage	Fords Bar	Ruck-a-Chucky	Poverty Bar	Mammoth Bar	Confluence	Birdsall Access	Oregon Bar Access
12:00 AM	12:00 AM	12:30 AM	4:04 AM	6:03 AM	7:13 AM	8:53 AM	9:44 AM	11:12 AM	11:52 AM
2:00 AM	2:00 AM	2:30 AM	6:04 AM	8:03 AM	9:13 AM	10:53 AM	11:44 AM	1:12 PM	1:52 PM
4:00 AM	4:00 AM	4:30 AM	8:04 AM	10:03 AM	11:13 AM	12:53 PM	1:44 PM	3:12 PM	3:52 PM
6:00 AM	6:00 AM	6:30 AM	10:04 AM	12:03 PM	1:13 PM	2:53 PM	3:44 PM	5:12 PM	5:52 PM
8:00 AM	8:00 AM	8:30 AM	12:04 PM	2:03 PM	3:13 PM	4:53 PM	5:44 PM	7:12 PM	7:52 PM
10:00 AM	10:00 AM	10:30 AM	2:04 PM	4:03 PM	5:13 PM	6:53 PM	7:44 PM	9:12 PM	9:52 PM
11:00 AM	11:00 AM	11:30 AM	3:04 PM	5:03 PM	6:13 PM	7:53 PM	8:44 PM	10:12 PM	10:52 PM
12:00 PM	12:00 PM	2:04 PM	4:04 PM	6:03 PM	7:13 PM	8:53 PM	9:44 PM	11:12 PM	11:52 PM
2:00 PM	2:00 PM	2:30 PM	6:04 PM	8:03 PM	9:13 PM	10:53 PM	11:44 PM	1:12 AM	1:52 AM
4:00 PM	4:00 PM	4:30 PM	8:04 PM	10:03 PM	11:13 PM	12:53 AM	1:44 AM	3:12 AM	3:52 AM
6:00 PM	6:00 PM	6:30 PM	10:04 PM	12:03 AM	1:13 AM	2:53 AM	3:44 AM	5:12 AM	5:52 AM
8:00 PM	8:00 PM	8:30 PM	12:04 AM	2:03 AM	3:13 AM	4:53 AM	5:44 AM	7:12 AM	7:52 AM
10:00 PM	10:00 PM	10:30 PM	2:04 AM	4:03 AM	5:13 AM	6:53 AM	7:44 AM	9:12 AM	9:52 AM
12:00 AM	12:00 AM	12:30 AM	4:04 AM	6:03 AM	7:13 AM	8:53 AM	9:44 AM	11:12 AM	11:52 AM

Distance	0	1.25	10.15	15.13	18.05	22.20	24.35	28.00	29.65
Travel Time (hour:min)	0	0:30	4:04	6:03	7:13	8:53	9:44	11:12	11:52

Note: Travel time is 2.5 mph and assumes a base flow of 200 cfs and a peak flow of 1,000 cfs.
Travel time is faster when either base flow or peak flow increases.

Table Rec 4-15a. Average Number of Hours per Day (7:00 am - 7:00 pm) that River Crossing was Possible at Trail Crossings in the Peaking Reach - Impaired Conditions.

Wet Water Years (1995, 1997, 1998, 2006)

Trail Crossing Location	Summer (368 days)		Fall (303 days)		Winter (360 days)		Spring (364 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	0.3	0.7	4.9	6.0	0.0	2.8	0.0	0.2	**9.6**	**2.4**
Ruck-a-Chucky	0.0	0.8	0.7	6.2	0.0	2.5	0.0	0.0	**9.5**	**2.4**
Poverty Bar	0.2	1.0	3.6	6.7	0.0	3.3	0.0	0.2	**11.3**	**2.8**
Mammoth Bar	0.1	0.8	2.6	6.6	0.0	1.9	0.0	0.0	**9.3**	**2.3**
Coffer Dam	0.0	0.2	0.5	5.8	0.0	0.1	0.0	0.0	**6.1**	**1.5**

Above Normal Water Years (1993, 1999, 2000, 2005)

Trail Crossing Location	Summer (368 days)		Fall (364 days)		Winter (360 days)		Spring (368 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	1.6	2.7	5.6	6.9	3.7	5.6	0.0	0.1	**15.4**	**3.8**
Ruck-a-Chucky	0.9	3.0	1.9	7.4	0.0	5.3	0.0	0.0	**15.8**	**3.9**
Poverty Bar	1.5	3.8	4.1	8.6	2.7	6.1	0.0	0.1	**18.6**	**4.6**
Mammoth Bar	1.4	3.2	3.5	8.1	1.5	5.1	0.0	0.0	**16.5**	**4.1**
Coffer Dam	0.7	2.3	0.8	7.1	0.0	1.9	0.0	0.0	**11.3**	**2.8**

Below Normal Water Years (1989, 2002, 2003, 2004)

Trail Crossing Location	Summer (368 days)		Fall (364 days)		Winter (360 days)		Spring (364 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	3.6	4.6	5.8	7.3	2.0	4.0	0.2	1.0	**16.8**	**4.2**
Ruck-a-Chucky	1.2	5.6	2.4	7.4	0.8	3.3	0.0	0.9	**17.2**	**4.3**
Poverty Bar	4.4	6.8	5.6	8.6	1.8	4.5	0.1	1.5	**21.5**	**5.4**
Mammoth Bar	4.2	7.0	4.8	8.1	1.6	3.0	0.0	0.9	**18.9**	**4.7**
Coffer Dam	0.4	5.4	2.1	7.0	0.0	1.1	0.0	0.0	**13.5**	**3.4**

Dry Water Years (1990, 1991, 2001, 2007)

Trail Crossing Location	Summer (368 days)		Fall (299 days)		Winter (270 days)		Spring (364 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	3.0	4.1	6.6	7.7	7.5	8.7	0.9	5.1	**25.5**	**6.4**
Ruck-a-Chucky	1.3	4.7	5.6	7.9	6.0	8.6	0.0	3.3	**24.4**	**6.1**
Poverty Bar	2.8	5.7	6.7	8.8	7.1	9.2	0.6	4.8	**28.5**	**7.1**
Mammoth Bar	2.5	5.8	6.5	8.4	6.5	8.4	0.4	2.1	**24.7**	**6.2**
Coffer Dam	0.9	4.5	4.9	8.0	2.6	5.1	0.0	0.0	**17.7**	**4.4**

Critical Dry Water Years (1988, 1992, 1994)

Trail Crossing Location	Summer (276 days)		Fall (273 days)		Winter (270 days)		Spring (276 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	5.9	6.5	9.3	10.0	3.0	4.6	4.3	10.2	**31.2**	**7.8**
Ruck-a-Chucky	5.7	7.9	7.5	10.4	0.3	4.3	0.4	8.0	**30.5**	**7.6**
Poverty Bar	7.9	9.1	10.1	11.0	2.8	5.0	3.0	10.0	**35.0**	**8.8**
Mammoth Bar	8.1	9.5	10.1	11.0	1.8	4.1	1.8	7.0	**31.6**	**7.9**
Coffer Dam	5.4	8.8	8.3	10.2	0.3	1.2	0.0	0.5	**20.7**	**5.2**

Notes:

Easy/Mod = Average number of hours trail crossing was available below the easy to moderate/moderate to difficult threshold
Mod/Dif = Average number of hours trail crossing was available below the moderate to difficult/difficult threshold.
Summer = June, July, August
Fall = September, October, November
Winter = December, January, February
Spring = March, April, May

Table REC 4-15b. Average Number of Hours per Day (7:00 A.M. - 7:00 P.M.) that River Crossing was Possible at Trail Crossings in the Peaking Reach - Unimpaired Conditions.

Wet Water Years (1980, 1982, 1983, 1984, 1986, 1995, 1996, 1997, 1998, 2006)

Trail Crossing Location	Summer (920 days)		Fall (910 days)		Winter (903 days)		Spring (920 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	3.4	5.8	9.0	10.4	0.2	1.6	0.0	0.0	**17.8**	**4.5**
Ruck-a-Chucky	0.0	1.4	2.0	11.0	0.2	3.5	0.0	0.0	**16.0**	**4.0**
Poverty Bar	2.5	5.7	7.8	10.4	0.0	1.6	0.0	0.0	**17.7**	**4.4**
Mammoth Bar	1.6	4.4	6.3	9.8	0.0	0.8	0.0	0.0	**14.9**	**3.7**
Coffer Dam	0.1	3.1	1.6	8.6	0.0	0.1	0.0	0.0	**11.8**	**2.9**

Above Normal Water Years (1975, 1978, 1993, 1999, 2000, 2005)

Trail Crossing Location	Summer (552 days)		Fall (546 days)		Winter (541 days)		Spring (552 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	4.7	6.3	10.4	11.7	2.0	4.1	0.0	0.0	**22.1**	**5.5**
Ruck-a-Chucky	0.0	1.8	2.8	11.8	0.9	6.9	0.0	0.0	**20.5**	**5.1**
Poverty Bar	3.8	6.3	9.3	11.7	1.3	4.0	0.0	0.0	**22.0**	**5.5**
Mammoth Bar	2.4	5.4	8.0	11.3	0.6	2.6	0.0	0.0	**19.3**	**4.8**
Coffer Dam	0.1	4.4	2.9	10.0	0.1	1.7	0.0	0.0	**16.1**	**4.0**

Below Normal Water Years (1979, 1985, 1989, 2002, 2003, 2004)

Trail Crossing Location	Summer (552 days)		Fall (546 days)		Winter (541 days)		Spring (552 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	7.4	9.3	10.1	10.9	1.0	4.8	0.0	0.0	**25.0**	**6.3**
Ruck-a-Chucky	0.1	4.8	7.5	11.9	0.8	5.8	0.0	0.3	**22.8**	**5.7**
Poverty Bar	6.6	9.3	9.7	10.9	0.8	4.7	0.0	0.0	**24.9**	**6.2**
Mammoth Bar	5.3	8.4	9.1	10.5	0.4	2.0	0.0	0.0	**20.9**	**5.2**
Coffer Dam	1.9	7.0	6.3	10.0	0.0	1.0	0.0	0.0	**18.1**	**4.5**

Dry Water Years (1981, 1990, 1991, 2001, 2007)

Trail Crossing Location	Summer (460 days)		Fall (455 days)		Winter (450 days)		Spring (460 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	8.9	10.9	10.5	11.7	5.3	9.6	0.0	0.3	**32.5**	**8.1**
Ruck-a-Chucky	1.8	6.3	8.9	11.8	2.3	10.0	0.0	1.7	**29.8**	**7.4**
Poverty Bar	8.2	10.8	9.6	11.7	3.6	9.5	0.0	0.3	**32.3**	**8.1**
Mammoth Bar	7.1	9.7	7.6	11.4	2.2	7.1	0.0	0.0	**28.2**	**7.1**
Coffer Dam	4.9	8.6	5.6	10.4	1.6	4.4	0.0	0.0	**23.4**	**5.8**

Critical Dry Water Years (1976, 1977, 1987, 1988, 1992, 1994)

Trail Crossing Location	Summer (552 days)		Fall (546 days)		Winter (541 days)		Spring (552 days)		Total	Average
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif		
Fords Bar	10.4	11.7	10.2	11.5	6.4	9.9	0.7	2.4	**35.5**	**8.9**
Ruck-a-Chucky	3.4	8.1	9.4	11.7	2.2	10.6	0.2	2.8	**33.3**	**8.3**
Poverty Bar	9.8	11.7	9.7	11.5	5.1	9.9	0.3	2.3	**35.4**	**8.9**
Mammoth Bar	8.9	11.1	9.1	11.0	3.1	8.5	0.0	1.2	**31.8**	**8.0**
Coffer Dam	7.0	10.2	6.6	10.1	1.4	5.3	0.0	0.5	**26.0**	**6.5**

Notes:

Easy/Mod = Average number of hours trail crossing was available below the easy to moderate/moderate to difficult threshold
Mod/Dif = Average number of hours trail crossing was available below the moderate to difficult/difficult threshold.
Summer = June, July, August
Fall = September, October, November
Winter = December, January, February
Spring = March, April, May

Table Rec 4-15c. Percent of Days (7:00 am - 7:00 pm) that River Crossing was Possible at Trail Crossings in the Peaking Reach - Impaired Conditions.

Wet Water Years (1995, 1997, 1998, 2006)

Trail Crossing Location	Summer (368 days)		Fall (303 days)		Winter (360 days)		Spring (364 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	9%	18%	58%	71%	8%	37%	0%	2%
Ruck-a-Chucky	0%	15%	8%	69%	1%	30%	0%	1%
Poverty Bar	5%	17%	36%	71%	4%	35%	0%	1%
Mammoth Bar	3%	14%	28%	71%	3%	21%	0%	0%
Coffer Dam	0%	4%	5%	61%	0%	1%	0%	0%

Above Normal Water Years (1993, 1999, 2000, 2005)

Trail Crossing Location	Summer (368 days)		Fall (364 days)		Winter (360 days)		Spring (368 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	31%	57%	81%	94%	46%	61%	0%	2%
Ruck-a-Chucky	8%	51%	20%	91%	0%	58%	0%	1%
Poverty Bar	17%	56%	42%	96%	29%	61%	0%	1%
Mammoth Bar	17%	43%	39%	90%	20%	53%	0%	0%
Coffer Dam	5%	27%	9%	80%	0%	23%	0%	0%

Below Normal Water Years (1989, 2002, 2003, 2004)

Trail Crossing Location	Summer (368 days)		Fall (364 days)		Winter (360 days)		Spring (364 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	73%	89%	78%	89%	29%	52%	6%	20%
Ruck-a-Chucky	18%	88%	29%	87%	11%	43%	0%	14%
Poverty Bar	61%	90%	60%	90%	26%	55%	1%	20%
Mammoth Bar	55%	86%	53%	88%	23%	37%	0%	12%
Coffer Dam	4%	63%	23%	75%	0%	14%	0%	0%

Dry Water Years (1990, 1991, 2001, 2007)

Trail Crossing Location	Summer (368 days)		Fall (299 days)		Winter (270 days)		Spring (364 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	65%	77%	80%	94%	70%	86%	11%	56%
Ruck-a-Chucky	24%	74%	61%	91%	54%	81%	0%	35%
Poverty Bar	41%	80%	67%	94%	64%	86%	7%	50%
Mammoth Bar	36%	76%	66%	90%	59%	78%	6%	24%
Coffer Dam	16%	56%	51%	84%	26%	45%	0%	0%

Critical Dry Water Years (1988, 1992, 1994)

Trail Crossing Location	Summer (276 days)		Fall (273 days)		Winter (270 days)		Spring (276 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	100%	100%	98%	99%	44%	55%	53%	91%
Ruck-a-Chucky	84%	100%	79%	99%	6%	53%	7%	75%
Poverty Bar	96%	100%	96%	99%	38%	54%	41%	90%
Mammoth Bar	94%	100%	96%	99%	26%	52%	28%	68%
Coffer Dam	69%	95%	79%	94%	2%	15%	0%	5%

Notes:

Easy/Mod = Percent of days trail crossing was available below the easy to moderate/moderate to difficult threshold.

Mod/Dif = Percent of days trail crossing was available below the moderate to difficult/difficult threshold.

Summer = June, July, August

Fall = September, October, November

Winter = December, January, February

Spring = March, April, May

Table Rec 4-15d. Percent of Days (7:00 A.M. - 7:00 P.M.) that River Crossing was Possible at Trail Crossings in the Peaking Reach - Unimpaired Conditions.

Wet Water Years (1980, 1982, 1983, 1984, 1986, 1995, 1996, 1997, 1998, 2006)

Trail Crossing Location	Summer (920 days)		Fall (910 days)		Winter (903 days)		Spring (920 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	29%	48%	75%	87%	2%	14%	0%	0%
Ruck-a-Chucky	0%	12%	17%	92%	1%	29%	0%	0%
Poverty Bar	21%	48%	65%	86%	0%	14%	0%	0%
Mammoth Bar	14%	37%	52%	81%	0%	6%	0%	0%
Coffer Dam	1%	26%	13%	72%	0%	1%	0%	0%

Above Normal Water Years (1975, 1978, 1993, 1999, 2000, 2005)

Trail Crossing Location	Summer (552 days)		Fall (546 days)		Winter (541 days)		Spring (552 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	39%	53%	86%	97%	17%	34%	0%	0%
Ruck-a-Chucky	0%	15%	24%	98%	7%	58%	0%	0%
Poverty Bar	32%	52%	77%	97%	11%	34%	0%	0%
Mammoth Bar	20%	45%	66%	94%	5%	22%	0%	0%
Coffer Dam	1%	36%	24%	83%	1%	14%	0%	0%

Below Normal Water Years (1979, 1985, 1989, 2002, 2003, 2004)

Trail Crossing Location	Summer (552 days)		Fall (546 days)		Winter (541 days)		Spring (552 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	62%	78%	84%	91%	9%	40%	0%	0%
Ruck-a-Chucky	1%	40%	63%	99%	7%	48%	0%	2%
Poverty Bar	55%	78%	81%	91%	7%	39%	0%	0%
Mammoth Bar	44%	70%	76%	87%	3%	17%	0%	0%
Coffer Dam	16%	59%	53%	84%	0%	9%	0%	0%

Dry Water Years (1981, 1990, 1991, 2001, 2007)

Trail Crossing Location	Summer (460 days)		Fall (455 days)		Winter (450 days)		Spring (460 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	74%	90%	87%	98%	44%	80%	0%	3%
Ruck-a-Chucky	15%	52%	74%	99%	20%	83%	0%	14%
Poverty Bar	68%	90%	80%	98%	30%	79%	0%	3%
Mammoth Bar	60%	81%	63%	95%	19%	60%	0%	0%
Coffer Dam	41%	72%	46%	87%	13%	36%	0%	0%

Critical Dry Water Years (1976, 1977, 1987, 1988, 1992, 1994)

Trail Crossing Location	Summer (552 days)		Fall (546 days)		Winter (541 days)		Spring (552 days)	
	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif	Easy/Mod	Mod/Dif
Fords Bar	87%	97%	85%	96%	53%	83%	5%	20%
Ruck-a-Chucky	28%	67%	79%	98%	18%	88%	1%	24%
Poverty Bar	81%	97%	81%	96%	42%	83%	3%	19%
Mammoth Bar	74%	93%	76%	91%	26%	71%	0%	10%
Coffer Dam	59%	85%	55%	84%	11%	44%	0%	4%

Notes:

Easy/Mod = Percent of days trail crossing was available below the easy to moderate/moderate to difficult threshold.

Mod/Dif = Percent of days trail crossing was available below the moderate to difficult/difficult threshold.

Summer = June, July, August

Fall = September, October, November

Winter = December, January, February

Spring = March, April, May

Table REC 4-16. Distances and Gradients associated with the MFP Bypass Reaches.

Bypass Reaches	Distance (miles)	Gradient (ft/mile)	Total Distance (miles)	Average Gradient (ft/mile)
Middle Fork American River				
French Meadows Dam to Middle Fork Interbay	11.1	225	20.7	187
Middle Fork Interbay Dam to Ralston Afterbay	9.6	135		
Duncan Creek				
Duncan Creek Diversion to Put-in below Big Trees Grove (Gold Dollar Tree Trail)	6.5	190	8.6	221
Big Trees Grove Put in (Gold Dollar Tree Trail) to Middle Fork American River Confluence	2.1	317		
Rubicon River				
Hell Hole Dam to RM 25	5.3	73	29.7	104
RM 25 to Ellicott Bridge	3.9	139		
Ellicott Bridge to Ralston Afterbay	20.5	106		
North Fork Long Canyon Creek				
North Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek	3.1	200	3.1	200
South Fork Long Canyon Creek				
South Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek	3.3	164	3.3	164
Long Canyon Creek				
Confluence of North and South Forks of Long Canyon Creek to Ramsey Crossing	2.8	146	11.4	237
Ramsey Crossing to Confluence of Rubicon River	8.6	266		

Table REC 4-17. Distances and Gradients associated with the MFP Peaking Reach and Runs.

Bypass Reaches	Distance (miles)	Gradient (ft/mile)	Total Distance (miles)	Average Gradient (ft/mile)
Middle Fork American River				
Indian Bar Rafter Access to Ruck-a-Chucky	15.2	22.7	24.5	21.0
Ruck-a-Chucky to Mammoth Bar	7.1	14.2		
Mammoth Bar to Confluence	2.2	31.9		
North Fork American River				
Confluence to Birdsall Access	3.7	14.1	5.3	16.0
Birdsall Access to Oregon Bar	1.6	20.6		

Note. Distances are the same as those associated with trail crossing locations.

Table REC 4-18. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Rubicon River: RM25 - Ellicott Bridge

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Extreme Dry															
1977	400 - 1500 cfs	0	0	0	0	0	0	**0**	5	12	4	0	0	0	**21**
Critical Dry															
1976	400 - 1500 cfs	0	0	0	0	0	0	**0**	11	17	0	0	0	0	**28**
1987	400 - 1500 cfs	0	0	0	0	0	0	**0**	25	15	0	0	0	0	**40**
1988	400 - 1500 cfs	0	0	0	0	0	0	**0**	22	15	0	0	0	0	**37**
1992	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	8	0	0	0	0	**38**
1994	400 - 1500 cfs	0	0	0	0	0	0	**0**	24	19	0	0	0	0	**43**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	19.5	14.3	0.7	0.0	0.0	0.0	**34.5**
Dry															
1981	400 - 1500 cfs	0	0	0	0	0	0	**0**	18	29	0	0	0	0	**47**
1990	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	15	6	0	0	0	**50**
1991	400 - 1500 cfs	0	0	0	0	0	0	**0**	24	26	10	0	0	0	**60**
2001	400 - 1500 cfs	0	0	0	0	0	0	**0**	13	19	0	0	0	0	**32**
2007	400 - 1500 cfs	0	0	0	0	0	0	**0**	26	20	0	0	0	0	**46**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	22.0	21.8	3.2	0.0	0.0	0.0	**47.0**
Below Normal															
1979	400 - 1500 cfs	0	0	0	0	0	0	**0**	25	11	15	0	0	0	**51**
1985	400 - 1500 cfs	0	0	0	0	0	0	**0**	27	29	6	0	0	0	**62**
1989	400 - 1500 cfs	0	0	0	0	0	0	**0**	18	26	18	0	0	0	**62**
2002	400 - 1500 cfs	0	0	0	0	0	0	**0**	28	27	14	0	0	0	**69**
2003	400 - 1500 cfs	0	0	4	0	0	0	**4**	25	18	9	0	0	0	**52**
2004	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	28	12	0	0	0	**70**
Average		0.0	0.0	0.7	0.0	0.0	0.0	**0.7**	25.5	23.2	12.3	0.0	0.0	0.0	**61.0**

Table REC 4-18. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Rubicon River: RM25 - Ellicott Bridge (continued)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Above Normal															
1975	400 - 1500 cfs	0	0	0	0	0	0	**0**	5	11	14	11	0	0	**41**
1978	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	12	17	15	0	0	**73**
1993	400 - 1500 cfs	0	0	0	0	0	0	**0**	28	3	19	8	0	0	**58**
1999	400 - 1500 cfs	0	0	0	0	0	0	**0**	17	14	20	5	0	0	**56**
2000	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	25	16	0	0	0	**70**
2005	400 - 1500 cfs	0	3	9	0	0	0	**12**	26	4	17	13	0	0	**60**
Average		0.0	0.5	1.5	0.0	0.0	0.0	**2.0**	22.3	11.5	17.2	8.7	0.0	0.0	**59.7**
Wet															
1980	400 - 1500 cfs	0	0	0	0	0	0	**0**	14	17	29	16	0	0	**76**
1982	400 - 1500 cfs	5	20	0	0	0	0	**25**	16	6	21	17	0	0	**60**
1983	400 - 1500 cfs	0	0	12	8	0	0	**20**	23	17	0	23	4	0	**67**
1984	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	10	20	0	0	0	**60**
1986	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	22	19	0	0	0	**70**
1995	400 - 1500 cfs	0	0	15	10	0	0	**25**	25	14	0	20	0	0	**59**
1996	400 - 1500 cfs	0	8	0	0	0	0	**8**	25	13	13	0	0	0	**51**
1997	400 - 1500 cfs	0	0	0	0	0	0	**0**	24	25	20	0	0	0	**69**
1998	400 - 1500 cfs	0	0	9	8	0	0	**17**	14	21	0	12	0	0	**47**
2006	400 - 1500 cfs	0	23	9	0	0	0	**32**	22	0	16	0	0	0	**38**
Average		0.5	5.1	4.5	2.6	0.0	0.0	**12.7**	22.2	14.5	13.8	8.8	0.4	0.0	**59.7**

Table REC 4-19. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Rubicon River: Ellicott Bridge - Ralston Afterbay

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Extreme Dry															
1977	400 - 1500 cfs	0	0	0	0	0	0	**0**	6	12	4	0	0	0	**22**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Critical Dry															
1976	400 - 1500 cfs	0	0	0	0	0	0	**0**	11	17	0	0	0	0	**28**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1987	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	15	0	0	0	0	**45**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1988	400 - 1500 cfs	0	0	0	0	0	0	**0**	22	19	0	0	0	0	**41**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1992	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	9	0	0	0	0	**39**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1994	400 - 1500 cfs	0	0	0	0	0	0	**0**	27	20	0	0	0	0	**47**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Average (400 - 1500 cfs)		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	21.0	15.3	0.7	0.0	0.0	0.0	**37.0**
Average (1501 - 3000 cfs)		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dry															
1981	400 - 1500 cfs	0	0	0	0	0	0	**0**	18	29	0	0	0	0	**47**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	6	2	0	0	0	0	**8**
1990	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	16	7	0	0	0	**52**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	2	1	0	0	0	**3**
1991	400 - 1500 cfs	0	0	0	0	0	0	**0**	27	26	10	0	0	0	**63**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	3	3	0	0	0	**6**
2001	400 - 1500 cfs	0	0	0	0	0	0	**0**	17	19	0	0	0	0	**36**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2007	400 - 1500 cfs	0	0	0	0	0	0	**0**	28	20	0	0	0	0	**48**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Average (400 - 1500 cfs)		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	23.8	22.0	3.4	0.0	0.0	0.0	**49.2**
Average (1501 - 3000 cfs)		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	1.2	1.4	0.8	0.0	0.0	0.0	**3.4**

Table REC 4-19. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Rubicon River: Ellicott Bridge - Ralston Afterbay (continued)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Below Normal															
1979	400 - 1500 cfs	0	0	0	0	0	0	**0**	26	7	17	0	0	0	**50**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	24	0	0	0	0	**24**
1985	400 - 1500 cfs	0	0	0	0	0	0	**0**	22	29	8	0	0	0	**59**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	4	0	0	0	0	0	**4**
1989	400 - 1500 cfs	0	0	0	0	0	0	**0**	9	26	19	0	0	0	**54**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	12	5	0	0	0	0	**17**
2002	400 - 1500 cfs	0	0	0	0	0	0	**0**	24	25	15	0	0	0	**64**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	3	6	1	0	0	0	**10**
2003	400 - 1500 cfs	0	0	4	0	0	0	**4**	30	18	10	0	0	0	**58**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	6	8	0	0	0	**14**
2004	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	27	14	0	0	0	**71**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	4	0	0	0	0	**4**
Average (400 - 1500 cfs)		0.0	0.0	0.7	0.0	0.0	0.0	**0.7**	23.5	22.0	13.8	0.0	0.0	0.0	**59.3**
Average (1501 - 3000 cfs)		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	3.2	7.5	1.5	0.0	0.0	0.0	**12.2**
Above Normal															
1975	400 - 1500 cfs	0	0	0	0	0	0	**0**	7	10	14	12	0	0	**43**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	19	10	0	0	0	**29**
1978	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	9	17	15	0	0	**70**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	22	13	0	0	0	**35**
1993	400 - 1500 cfs	0	0	0	0	0	0	**0**	27	0	19	13	0	0	**59**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	2	29	11	0	0	0	**42**
1999	400 - 1500 cfs	0	0	0	0	0	0	**0**	14	10	18	8	0	0	**50**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	14	12	0	0	0	**26**
2000	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	23	17	0	0	0	**69**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2005	400 - 1500 cfs	0	3	13	0	0	0	**16**	30	4	16	15	0	0	**65**
	1501 - 3000 cfs	0	3	0	0	0	0	**3**	0	14	9	0	0	0	**23**
Average (400 - 1500 cfs)		0.0	0.5	2.2	0.0	0.0	0.0	**2.7**	22.7	9.3	16.8	10.5	0.0	0.0	**59.3**
Average (1501 - 3000 cfs)		0.0	0.5	0.0	0.0	0.0	0.0	**0.5**	0.3	16.3	9.2	0.0	0.0	0.0	**25.8**

Table REC 4-19. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Rubicon River: Ellicott Bridge - Ralston Afterbay (continued)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Wet															
1980	400 - 1500 cfs	0	0	0	0	0	0	**0**	16	16	27	17	0	0	**76**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	4	15	3	0	0	0	**22**
1982	400 - 1500 cfs	11	29	0	0	0	0	**40**	15	5	15	18	0	0	**53**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	10	23	13	0	0	0	**46**
1983	400 - 1500 cfs	0	11	8	7	0	0	**26**	30	15	0	23	7	0	**75**
	1501 - 3000 cfs	0	0	4	0	0	0	**4**	0	5	8	7	0	0	**20**
1984	400 - 1500 cfs	0	0	0	0	0	0	**0**	30	9	22	0	0	0	**61**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	20	0	0	0	0	**20**
1986	400 - 1500 cfs	0	0	0	0	0	0	**0**	29	22	20	0	0	0	**71**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	0	9	4	0	0	0	**13**
1995	400 - 1500 cfs	3	3	17	10	0	0	**33**	24	12	0	22	0	0	**58**
	1501 - 3000 cfs	0	0	4	0	0	0	**4**	0	14	23	8	0	0	**45**
1996	400 - 1500 cfs	0	12	3	0	0	0	**15**	24	11	19	0	0	0	**54**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	5	15	6	0	0	0	**26**
1997	400 - 1500 cfs	0	0	0	0	0	0	**0**	24	25	21	0	0	0	**70**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	6	6	0	0	0	0	**12**
1998	400 - 1500 cfs	0	0	7	8	0	0	**15**	21	20	0	12	0	0	**53**
	1501 - 3000 cfs	0	0	0	0	0	0	**0**	7	8	23	9	0	0	**47**
2006	400 - 1500 cfs	28	19	10	0	0	0	**57**	13	0	21	8	0	0	**42**
	1501 - 3000 cfs	0	8	0	0	0	0	**8**	12	28	9	0	0	0	**49**
Average (400 - 1500 cfs)		4.2	7.4	4.5	2.5	0.0	0.0	**18.6**	22.6	13.5	14.5	10.0	0.7	0.0	**61.3**
Average (1501 - 3000 cfs)		0.0	0.8	0.8	0.0	0.0	0.0	**1.6**	4.4	14.3	8.9	2.4	0.0	0.0	**30.0**

Table REC 4-20. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Middle Fork American River - French Meadows Dam - Middle Fork Interbay

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Extreme Dry															
1977	150 - 200 cfs	0	0	0	0	0	0	**0**	0	7	2	0	0	0	**9**
Critical Dry															
1976	150 - 200 cfs	0	0	0	0	0	0	**0**	16	0	0	0	0	0	**16**
1987	150 - 200 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1988	150 - 200 cfs	0	0	0	0	0	0	**0**	0	3	0	0	0	0	**3**
1992	150 - 200 cfs	0	0	0	0	0	0	**0**	0	3	0	0	0	0	**3**
1994	150 - 200 cfs	0	0	0	0	0	0	**0**	0	7	0	0	0	0	**7**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	2.7	3.3	0.3	0.0	0.0	0.0	**6.3**
Dry															
1981	150 - 200 cfs	0	0	0	0	0	0	**0**	0	3	0	0	0	0	**3**
1990	150 - 200 cfs	0	0	0	0	0	0	**0**	0	5	0	0	0	0	**5**
1991	150 - 200 cfs	12	1	0	0	0	0	**13**	0	0	0	0	0	0	**0**
2001	150 - 200 cfs	4	0	0	0	0	0	**4**	8	3	0	0	0	0	**11**
2007	150 - 200 cfs	0	0	0	0	0	0	**0**	0	4	0	0	0	0	**4**
Average		3.2	0.2	0.0	0.0	0.0	0.0	**3.4**	1.6	3.0	0.0	0.0	0.0	0.0	**4.6**
Below Normal															
1979	150 - 200 cfs	14	7	0	0	0	0	**21**	0	0	3	0	0	0	**3**
1985	150 - 200 cfs	5	0	0	0	0	0	**5**	0	0	7	0	0	0	**7**
1989	150 - 200 cfs	4	0	0	0	0	0	**4**	0	0	3	0	0	0	**3**
2002	150 - 200 cfs	6	0	0	0	0	0	**6**	0	0	4	0	0	0	**4**
2003	150 - 200 cfs	10	5	0	0	0	0	**15**	0	0	3	0	0	0	**3**
2004	150 - 200 cfs	5	0	0	0	0	0	**5**	0	6	4	0	0	0	**10**
Average		7.3	2.0	0.0	0.0	0.0	0.0	**9.3**	0.0	1.0	4.0	0.0	0.0	0.0	**5.0**

Table REC 4-20. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Middle Fork American River -French Meadows Dam - Middle Fork Interbay (continued)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Above Normal															
1975	150 - 200 cfs	9	0	0	0	0	0	**9**	0	0	0	5	0	0	**5**
1978	150 - 200 cfs	4	14	1	0	0	0	**19**	0	0	0	9	0	0	**9**
1993	150 - 200 cfs	0	6	0	0	0	0	**6**	0	0	2	6	0	0	**8**
1999	150 - 200 cfs	3	0	0	0	0	0	**3**	0	0	3	0	0	0	**3**
2000	150 - 200 cfs	11	0	0	0	0	0	**11**	0	0	5	0	0	0	**5**
2005	150 - 200 cfs	0	0	3	0	0	0	**3**	0	0	0	6	0	0	**6**
Average		4.5	3.3	0.7	0.0	0.0	0.0	**8.5**	0.0	0.0	1.7	4.3	0.0	0.0	**6.0**
Wet															
1980	150 - 200 cfs	17	0	0	0	0	0	**17**	0	0	0	4	0	0	**4**
1982	150 - 200 cfs	3	0	0	0	0	0	**3**	0	0	0	10	0	0	**10**
1983	150 - 200 cfs	0	0	0	0	0	0	**0**	0	0	0	6	2	0	**8**
1984	150 - 200 cfs	0	0	0	0	0	0	**0**	0	0	4	0	0	0	**4**
1986	150 - 200 cfs	0	0	0	0	0	0	**0**	0	0	3	0	0	0	**3**
1995	150 - 200 cfs	0	0	0	3	0	0	**3**	0	0	0	3	0	0	**3**
1996	150 - 200 cfs	9	2	0	0	0	0	**11**	0	0	4	0	0	0	**4**
1997	150 - 200 cfs	0	0	0	0	0	0	**0**	0	2	3	0	0	0	**5**
1998	150 - 200 cfs	13	4	3	0	0	0	**20**	0	0	0	3	0	0	**3**
2006	150 - 200 cfs	0	0	0	0	0	0	**0**	0	0	3	0	0	0	**3**
Average		4.2	0.6	0.3	0.3	0.0	0.0	**5.4**	0.0	0.2	1.7	2.6	0.2	0.0	**4.7**

Table REC 4-21. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Middle Fork American River: Middle Fork Interbay - Ralston Afterbay

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Extreme Dry															
1977	200 - 800 cfs	0	0	0	0	0	0	**0**	0	9	0	0	0	0	**9**
Critical Dry															
1976	200 - 800 cfs	0	0	0	0	0	0	**0**	21	15	0	0	0	0	**36**
1987	200 - 800 cfs	0	0	0	0	0	0	**0**	30	13	0	0	0	0	**43**
1988	200 - 800 cfs	0	0	0	0	0	0	**0**	30	22	0	0	0	0	**52**
1992	200 - 800 cfs	0	0	0	0	0	0	**0**	30	8	0	0	0	0	**38**
1994	200 - 800 cfs	0	0	0	0	0	0	**0**	30	21	0	0	0	0	**51**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	23.5	14.7	0.0	0.0	0.0	0.0	**38.2**
Dry															
1981	200 - 800 cfs	0	0	0	0	0	0	**0**	22	26	0	0	0	0	**48**
1990	200 - 800 cfs	0	0	0	0	0	0	**0**	29	20	9	0	0	0	**58**
1991	200 - 800 cfs	0	0	0	0	0	0	**0**	29	20	12	0	0	0	**61**
2001	200 - 800 cfs	0	0	0	0	0	0	**0**	24	18	0	0	0	0	**42**
2007	200 - 800 cfs	0	0	0	0	0	0	**0**	30	21	0	0	0	0	**51**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	26.8	21.0	4.2	0.0	0.0	0.0	**52.0**
Below Normal															
1979	200 - 800 cfs	0	0	0	0	0	0	**0**	23	2	12	0	0	0	**37**
1985	200 - 800 cfs	0	0	0	0	0	0	**0**	15	26	9	0	0	0	**50**
1989	200 - 800 cfs	0	0	0	0	0	0	**0**	8	24	15	0	0	0	**47**
2002	200 - 800 cfs	0	0	0	0	0	0	**0**	11	16	15	0	0	0	**42**
2003	200 - 800 cfs	0	0	0	0	0	0	**0**	26	6	12	0	0	0	**44**
2004	200 - 800 cfs	0	0	0	0	0	0	**0**	15	26	1	0	0	0	**42**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	16.3	16.7	10.7	0.0	0.0	0.0	**43.7**

Table REC 4-21. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Middle Fork American River: Middle Fork Interbay - Ralston Afterbay (continued)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Above Normal															
1975	200 - 800 cfs	0	0	0	0	0	0	**0**	29	6	16	9	0	0	**60**
1978	200 - 800 cfs	0	0	0	0	0	0	**0**	16	3	19	9	0	0	**47**
1993	200 - 800 cfs	0	0	0	0	0	0	**0**	0	0	19	4	0	0	**23**
1999	200 - 800 cfs	0	0	0	0	0	0	**0**	16	0	20	0	0	0	**36**
2000	200 - 800 cfs	0	0	1	2	0	0	**3**	7	18	13	0	0	0	**38**
2005	200 - 800 cfs	0	10	14	0	0	0	**24**	12	0	18	5	0	0	**35**
Average		0.0	1.7	2.5	0.3	0.0	0.0	**4.5**	13.3	4.5	17.5	4.5	0.0	0.0	**39.8**
Wet															
1980	200 - 800 cfs	9	0	0	0	0	0	**9**	15	16	30	9	0	0	**70**
1982	200 - 800 cfs	17	21	19	0	0	0	**57**	9	0	18	15	0	0	**42**
1983	200 - 800 cfs	30	31	26	10	0	0	**97**	20	0	0	22	0	0	**42**
1984	200 - 800 cfs	0	0	0	0	0	0	**0**	30	21	18	0	0	0	**69**
1986	200 - 800 cfs	10	1	3	0	0	0	**14**	22	29	17	0	0	0	**68**
1995	200 - 800 cfs	30	21	20	0	0	0	**71**	12	0	0	16	0	0	**28**
1996	200 - 800 cfs	6	9	1	0	0	0	**16**	4	5	18	0	0	0	**27**
1997	200 - 800 cfs	0	0	0	0	0	0	**0**	20	31	15	0	0	0	**66**
1998	200 - 800 cfs	0	3	13	0	0	0	**16**	20	0	0	16	0	0	**36**
2006	200 - 800 cfs	22	12	7	0	0	0	**41**	0	0	14	0	0	0	**14**
Average		12.4	9.8	8.9	1.0	0.0	0.0	**32.1**	15.2	10.2	13.0	7.8	0.0	0.0	**46.2**

Table REC 4-22. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Long Canyon Creek

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Extreme Dry															
1977	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Critical Dry															
1976	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1987	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1988	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1992	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1994	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dry															
1981	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1990	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1991	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2001	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2007	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Below Normal															
1979	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1985	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1989	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2002	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2003	200 - 600 cfs	0	0	0	0	0	0	**0**	0	4	0	0	0	0	**4**
2004	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	0.0	0.7	0.0	0.0	0.0	0.0	**0.7**

Table REC 4-22. Whitewater Boating Opportunities by Year and Water Year Type - Bypass Reaches

Long Canyon Creek (continued)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Above Normal															
1975	200 - 600 cfs	0	0	0	0	0	0	**0**	0	10	0	0	0	0	**10**
1978	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1993	200 - 600 cfs	0	0	0	0	0	0	**0**	6	0	0	0	0	0	**6**
1999	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2000	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2005	200 - 600 cfs	0	0	0	0	0	0	**0**	3	7	0	0	0	0	**10**
Average		0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	1.5	2.8	0.0	0.0	0.0	0.0	**4.3**
Wet															
1980	200 - 600 cfs	0	0	0	0	0	0	**0**	4	0	0	0	0	0	**4**
1982	200 - 600 cfs	18	9	0	0	0	0	**27**	18	9	0	0	0	0	**27**
1983	200 - 600 cfs	3	1	0	0	0	0	**4**	3	15	1	0	0	0	**19**
1984	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1986	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1995	200 - 600 cfs	3	7	0	0	0	0	**10**	12	7	0	0	0	0	**19**
1996	200 - 600 cfs	0	8	0	0	0	0	**8**	0	8	0	0	0	0	**8**
1997	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
1998	200 - 600 cfs	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**
2006	200 - 600 cfs	26	10	0	0	0	0	**36**	26	10	0	0	0	0	**36**
Average		5.0	3.5	0.0	0.0	0.0	0.0	**8.5**	6.3	4.9	0.1	0.0	0.0	0.0	**11.3**

Table REC 4-23. Whitewater Boating Opportunities by Year and Water Year Type - Peaking Reach

Tunnel Chute Run (Indian Bar Rafting Access to Ruck-a-Chucky)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Critical Dry															
1988	800 - 2500 cfs	0	0	21	25	21	17	**84**	27	20	0	0	0	0	**47**
1992	800 - 2500 cfs	0	9	15	25	23	10	**82**	29	9	0	0	0	0	**38**
1994	800 - 2500 cfs	0	4	27	27	23	3	**84**	30	21	0	0	0	0	**51**
Average		0	4	21	26	22	10	**83**	29	17	0	0	0	0	**45**
Dry															
1990	800 - 2500 cfs	0	2	18	28	28	16	**92**	28	19	8	0	0	0	**55**
1991	800 - 2500 cfs	14	14	24	26	27	12	**117**	28	22	10	0	0	0	**60**
2001	800 - 2500 cfs	12	22	22	28	29	28	**141**	18	16	0	0	0	0	**34**
2007	800 - 2500 cfs	5	16	20	29	31	26	**127**	28	21	0	0	0	0	**49**
Average		8	14	21	28	29	21	**119**	26	20	5	0	0	0	**50**
Below Normal															
1989	800 - 2500 cfs	25	31	27	16	31	15	**145**	7	24	18	0	0	0	**49**
2002	800 - 2500 cfs	24	28	28	28	26	7	**141**	12	16	14	0	0	0	**42**
2003	800 - 2500 cfs	28	25	28	30	31	30	**172**	14	3	11	0	0	0	**28**
2004	800 - 2500 cfs	22	29	29	30	30	30	**170**	16	24	5	0	0	0	**45**
Average		25	28	28	26	30	21	**157**	12	17	12	0	0	0	**41**
Above Normal															
1993	800 - 2500 cfs	22	30	29	30	31	11	**153**	0	0	14	9	0	0	**23**
1999	800 - 2500 cfs	25	31	29	29	30	19	**163**	16	1	17	5	0	0	**39**
2000	800 - 2500 cfs	27	31	29	31	31	20	**169**	11	13	18	0	0	0	**42**
2005	800 - 2500 cfs	30	14	26	22	17	26	**135**	0	0	15	13	0	0	**28**
Average		26	27	28	28	27	19	**155**	7	4	16	7	0	0	**33**
Wet															
1995	800 - 2500 cfs	0	0	5	30	30	15	**80**	0	0	0	17	0	0	**17**
1997	800 - 2500 cfs	30	31	29	29	31	18	**168**	19	23	21	0	0	0	**63**
1998	800 - 2500 cfs	9	15	18	31	30	26	**129**	15	2	0	13	0	0	**30**
2006	800 - 2500 cfs	0	5	30	31	29	17	**112**	0	0	20	1	0	0	**21**
Average		10	13	21	30	30	19	**122**	9	6	10	8	0	0	**33**

Table REC 4-24. Whitewater Boating Opportunities by Year and Water Year Type - Peaking Reach

Mammoth Bar Run (Ruck-a-Chucky to Mammoth Bar)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Critical Dry															
1988	500 - 2500 cfs	3	0	2	1	0	0	**6**	30	30	9	0	0	0	**69**
1992	500 - 2500 cfs	6	2	0	0	1	0	**9**	29	16	0	0	0	0	**45**
1994	500 - 2500 cfs	0	2	8	7	2	3	**22**	30	31	4	0	0	0	**65**
Average		3	1	3	3	1	1	**12**	30	26	4	0	0	0	**60**
Dry															
1990	500 - 2500 cfs	10	2	6	26	28	16	**88**	28	28	16	0	0	0	**72**
1991	500 - 2500 cfs	28	31	25	24	24	11	**143**	28	21	18	1	0	0	**68**
2001	500 - 2500 cfs	19	9	9	19	21	15	**92**	23	20	0	0	0	0	**43**
Total		57	42	40	69	73	42	**323**	79	69	34	1	0	0	**183**
Average		19	14	13	23	24	14	**108**	26	23	11	0	0	0	**61**
Below Normal															
1989	500 - 2500 cfs	23	31	27	11	21	6	**119**	6	24	24	0	0	2	**56**
2002	500 - 2500 cfs	30	21	2	1	0	3	**57**	10	16	21	0	0	0	**47**
2003	500 - 2500 cfs	28	23	27	15	19	22	**134**	11	1	20	0	0	0	**32**
2004	500 - 2500 cfs	23	31	27	11	20	6	**118**	13	24	20	0	0	0	**57**
Average		26	27	21	10	15	9	**107**	10	16	21	0	0	1	**48**
Above Normal															
1993	500 - 2500 cfs	19	30	29	29	31	20	**158**	0	0	14	22	0	0	**36**
1999	500 - 2500 cfs	25	31	30	22	24	12	**144**	16	0	15	18	0	0	**49**
2000	500 - 2500 cfs	30	30	25	29	25	20	**159**	5	12	25	0	0	0	**42**
2005	500 - 2500 cfs	19	30	29	29	31	20	**158**	0	0	15	22	0	0	**37**
Average		23	30	28	27	28	18	**155**	5	3	17	16	0	0	**41**
Wet															
1995	500 - 2500 cfs	0	0	4	28	31	16	**79**	0	0	0	22	15	0	**37**
1997	500 - 2500 cfs	30	27	19	27	31	17	**151**	19	20	29	0	0	0	**68**
1998	500 - 2500 cfs	7	12	18	30	31	25	**123**	14	0	0	19	0	0	**33**
2006	500 - 2500 cfs	0	0	5	29	31	16	**81**	0	0	19	19	0	0	**38**
Average		9	10	12	29	31	19	**109**	8	5	12	15	4	0	**44**

Table REC 4-25. Whitewater Boating Opportunities by Year and Water Year Type - Peaking Reach

Murderer's Bar Run (Mammoth Bar to Confluence)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Critical Dry															
1988	500 - 2500 cfs	7	0	3	9	7	0	**26**	30	30	9	0	0	0	**69**
1992	500 - 2500 cfs	8	2	1	0	1	1	**13**	29	16	0	0	0	0	**45**
1994	500 - 2500 cfs	0	2	14	4	0	2	**22**	30	31	4	0	0	0	**65**
Average		5	1	6	4	3	1	**20**	30	26	4	0	0	0	**60**
Dry															
1990	500 - 2500 cfs	12	4	13	28	30	20	**107**	28	28	16	0	0	0	**72**
1991	500 - 2500 cfs	29	31	26	28	26	16	**156**	28	21	18	1	0	0	**68**
2001	500 - 2500 cfs	21	12	3	11	21	2	**70**	23	20	0	0	0	0	**43**
Total		62	47	42	67	77	38	**333**	79	69	34	1	0	0	**183**
Average		21	16	14	22	26	13	**111**	26	23	11	0	0	0	**61**
Below Normal															
1989	500 - 2500 cfs	23	31	29	22	31	16	**152**	6	24	24	0	0	2	**56**
2002	500 - 2500 cfs	30	13	2	1	0	2	**48**	10	16	21	0	0	0	**47**
2003	500 - 2500 cfs	30	25	28	10	10	25	**128**	11	1	20	0	0	0	**32**
2004	500 - 2500 cfs	24	31	29	22	31	16	**153**	13	24	20	0	0	0	**57**
Average		27	25	22	14	18	15	**120**	10	16	21	0	0	1	**48**
Above Normal															
1993	500 - 2500 cfs	22	31	30	31	31	21	**166**	0	0	14	22	0	0	**36**
1999	500 - 2500 cfs	25	31	30	27	31	16	**160**	16	0	15	18	0	0	**49**
2000	500 - 2500 cfs	30	31	29	17	9	6	**122**	5	12	25	0	0	0	**42**
2005	500 - 2500 cfs	23	31	30	31	31	21	**167**	0	0	15	22	0	0	**37**
Average		25	31	30	27	26	16	**154**	5	3	17	16	0	0	**41**
Wet															
1995	500 - 2500 cfs	0	0	9	31	31	15	**86**	0	0	0	22	15	0	**37**
1997	500 - 2500 cfs	30	31	22	27	31	14	**155**	19	20	29	0	0	0	**68**
1998	500 - 2500 cfs	16	19	23	31	31	17	**137**	14	0	0	19	0	0	**33**
2006	500 - 2500 cfs	0	0	10	31	31	15	**87**	0	0	19	19	0	0	**38**
Average		12	13	16	30	31	15	**116**	8	5	12	15	4	0	**44**

Table REC 4-26. Whitewater Boating Opportunities by Year and Water Year Type - Peaking Reach

Confluence Run (Confluence to Oregon Bar)

Water Year and Year Type	Flow Range	Days Flows Meet Criteria													
		IMPAIRED							UNIMPAIRED						
		Apr	May	Jun	Jul	Aug	Sep	Total	Apr	May	Jun	Jul	Aug	Sep	Total
Critical Dry															
1988	350 - 2500 cfs	30	1	23	18	8	2	**82**	30	31	16	0	0	0	**77**
1992	350 - 2500 cfs	30	22	7	2	3	3	**67**	30	21	0	0	0	0	**51**
1994	350 - 2500 cfs	30	31	21	12	4	3	**101**	30	31	9	0	0	0	**70**
Average		30	18	17	11	5	3	**83**	30	28	8	0	0	0	**66**
Dry															
1990	350 - 2500 cfs	30	1	29	29	30	21	**140**	4	27	26	5	0	0	**62**
1991	350 - 2500 cfs	26	30	30	28	26	17	**157**	6	5	22	13	0	0	**46**
2001	350 - 2500 cfs	28	31	16	5	15	1	**96**	15	13	16	0	0	0	**44**
2007	350 - 2500 cfs	30	31	28	29	30	21	**169**	16	18	26	0	0	0	**60**
Average		29	23	26	23	25	15	**141**	10	16	23	5	0	0	**53**
Below Normal															
1989	350 - 2500 cfs	4	1	29	22	31	18	**105**	6	24	28	0	0	2	**60**
2002	350 - 2500 cfs	14	31	28	0	6	4	**83**	10	16	24	0	0	0	**50**
2003	350 - 2500 cfs	12	0	21	21	12	27	**93**	11	1	21	6	0	0	**39**
2004	350 - 2500 cfs	5	24	29	22	31	17	**128**	13	24	23	0	0	0	**60**
Average		9	14	27	16	20	17	**102**	10	16	24	2	0	1	**52**
Above Normal															
1993	350 - 2500 cfs	0	0	14	31	31	21	**97**	0	0	8	31	5	0	**44**
1999	350 - 2500 cfs	6	0	22	31	31	19	**109**	7	0	9	31	4	0	**51**
2000	350 - 2500 cfs	16	17	30	18	13	5	**99**	0	1	30	14	0	1	**46**
2005	350 - 2500 cfs	0	0	12	31	31	21	**95**	0	0	7	31	4	0	**42**
Average		6	4	20	28	27	17	**100**	2	0	14	27	3	0	**46**
Wet															
1995	350 - 2500 cfs	0	0	0	20	31	18	**69**	0	0	0	18	31	1	**50**
1997	350 - 2500 cfs	24	27	30	31	31	18	**161**	14	10	28	17	0	1	**70**
1998	350 - 2500 cfs	0	0	0	22	31	28	**81**	0	0	0	19	26	14	**59**
2006	350 - 2500 cfs	0	0	0	28	31	18	**77**	0	0	15	31	8	0	**54**
Average		6	7	8	25	31	21	**97**	4	3	11	21	16	4	**58**

Table REC 4-27. Average Hours per Day (7:00 am - 7:00 pm) that Ramping Occurred in the Peaking Reach when Flows were Less then 2,000 cfs

Water Year and Type	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days
Critical Dry																								
1988	4	30	3.6	24	1.6	24	1.6	26	1.8	30	2.6	28	2.3	28	2.4	27	2.7	26	0	0	2.1	17	3.3	29
1992	2	20	0.6	6	0.3	2	1.1	3	1.9	18	2.6	26	2.5	28	2.6	25	2.5	21	2	9	3.4	17	2.4	20
1994	1	5	0.9	18	1.6	7	0.9	5	2.9	25	2.4	29	2.8	30	3.1	31	3.1	11	3.1	13	2.9	26	2.5	26
Average	2.1	18.3	1.7	16.0	1.2	11.0	1.2	11.3	2.2	24.3	2.5	27.7	2.5	28.7	2.7	27.7	2.8	19.3	1.7	7.3	2.8	20.0	2.7	25.0
Dry																								
1990	0	0	1.7	3	1.4	14	1.5	16	2	17	2.5	27	1.6	16	1.8	12	2.3	20	2	17	4	21	1.7	11
1991	2.4	16	1.5	12	1.8	17	0.8	10	1.9	14	1.1	23	1.7	22	1.3	24	1.8	22	2.2	13	3	25	2.1	13
2001	1.1	29	1.2	21	1.5	28	1.6	25	2	30	2.2	26	2.4	24	1.6	24	2	30	1	1	2.1	8	2.4	27
2007	0	0	0	0	1.5	28	1.5	19	2	29	2.9	30	1.6	31	2.8	31	2.2	28	0	0	0	0	0	0
Average	0.9	11.3	1.1	9.0	1.6	21.8	1.4	17.5	2.0	22.5	2.2	26.5	1.8	23.3	1.9	22.8	2.1	25.0	1.3	7.8	2.3	13.5	1.6	12.8
Below Normal																								
1989	2.2	28	2.7	21	1.1	4	0.8	7	0.8	11	1.4	22	1.8	22	1.6	30	1.6	16	1.4	10	2.7	21	3.2	27
2002	1.1	16	1.3	16	1	20	1.2	20	2.1	31	2.5	30	2.5	31	2.8	31	1.5	11	1.5	9	1.4	19	1.6	24
2003	1.1	26	1.3	23	0.9	15	1.1	16	1.6	20	1.6	19	1.6	25	1.4	27	1.2	13	0.8	6	0.7	17	1	22
2004	1.4	28	1.7	21	1.4	25	1.7	28	2.1	31	2.6	30	2.3	31	2.1	31	1.9	29	2	22	1.9	20	1.9	17
Average	1.5	24.5	1.8	20.3	1.1	16.0	1.2	17.8	1.7	23.3	2.0	25.3	2.1	27.3	2.0	29.8	1.6	17.3	1.4	11.8	1.7	19.3	1.9	22.5
Above Normal																								
1993	2.8	22	1.8	8	0.3	2	0.8	12	2.3	18	0.6	14	1.3	12	0.6	7	1.9	6	1.8	26	2.7	22	3.3	27
1999	1.5	25	0.7	13	2.2	18	2.6	24	2.3	26	1.7	20	2.3	27	2.4	29	1.8	18	2	15	2.2	30	1.9	31
2000	1.8	31	2.1	27	1.5	18	1.9	25	1.6	17	1.6	24	2.1	28	1.9	29	1.7	28	1.4	8	1.3	23	1.9	30
2005	0.9	9	1.1	2	0.9	17	0.6	10	1.1	6	0.8	7	1.1	19	1.5	16	1.8	24	1.3	10	1.3	27	1.1	13
Average	1.8	21.8	1.4	12.5	1.2	13.8	1.5	17.8	1.8	16.8	1.2	16.3	1.7	21.5	1.6	20.3	1.8	19.0	1.6	14.8	1.9	25.5	2.1	25.3
Wet																								
1995	1.1	13	1.1	4	1	4	0.5	2	0	0	1	1	1.4	12	1	7	1.6	12	0.3	1	0	0	1.5	26
1997	2.2	18	0.6	7	2	19	1.7	19	1.2	19	2.3	26	2.1	20	1.2	7	3	10	1.6	4	2.1	24	1	19
1998	1.4	30	1.5	24	2	20	0.8	4	1.5	7	1.3	15	2.1	18	1.3	3	2.5	16	2	1	1.3	2	0.7	22
2006	0	0	0	0	0.3	3	0	0	0.5	3	1.2	10	1.1	25	1.1	22	1.7	18	1.1	4	1.4	21	0	0
Average	1.2	15.3	0.8	8.8	1.3	11.5	0.8	6.3	0.8	7.3	1.5	13.0	1.7	18.8	1.2	9.8	2.2	14.0	1.3	2.5	1.2	11.8	0.8	16.8

Table REC 4-28. Sections Containing Mining Claims along the Bypass Reaches as of December 2008.

River or Stream	Bypass Reaches	# of Claims	Township	Range	Sections
Patented Mining Claims (Based on December 24, 2008 query of BLM's Public Status Reports)					
Middle Fork American River	French Meadows Dam to Ralston Afterbay	1	14N	13E	(21)*[a], 28
Duncan Creek	Duncan Creek Diversion Dam to the Middle Fork American River Confluence	2** 14N		13E	4 (21)*[a]
Long Canyon Creek	Confluence of North and South Forks of Long Canyon Creek to confluence of Rubicon River	1 13N		12E	8
Unpatented Mining Claims (Based on December 22, 2008 query of BLM's LR2000 database)					
Middle Fork American River	French Meadows Dam to Ralston Afterbay	1 13N		11E	(3)*
		8	14N	11E	34, 35, 36
		7	14N	12E	21, 22, 26, 32
		9 14N		13E	2, 3, 10, (16, 20)*, 30
Duncan Creek	Duncan Creek Diversion Dam to the Middle Fork American River Confluence	17**	14N	13E	4, 9, (16, 20)*
		18	15N	13E	27, 33, 34
Rubicon River	Hell Hole Dam to Ralston Afterbay	8**	13N	11E	(3)*, 11, 12, 14
		1 13N		13E	23
North Fork Long Canyon Creek	North Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek	2 14N		13E	(26, 34)*
South Fork Long Canyon Creek	South Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek	2** 14N		13E	(26, 34)*
Long Canyon Creek	Confluence of North and South Forks of Long Canyon Creek to confluence of Rubicon River	1 13N		12E	13
		4	13N	13E	4, 5, 7, 8
		1** 14N		13E	(34)*

a. The Forest Service acquired T14N, R13E, Section 21 in 2007, including mineral rights. Therefore, according to the Forest Service, claims in this section may no longer be valid. However, claims in this section were present in the BLMs databases at the time they were queried. Therefore, they are included on this table.

* Parentheses indicate that the section includes claims that overlap more than one bypass stream.

**Number indicates total number of claims in each section, but contains duplicate claims accounted for in previous columns.

Table REC 4-29. Sections Containing Mining Claims along the Peaking Reach as of December 2008.

River or Stream	Peaking Reach	# of Claims	Township	Range	Sections
Patented Mining Claims (Based on December 24, 2008 query of BLM's Public Status Reports)					
Middle Fork American River	Oxbow Powerhouse to the North Fork American River Confluence	1 12N		8E	(12)
		10	12N	9E	4, 5, 6, 7
		18 13N		9E	23, 24, 26, 32, 33, 34, 35
		7	13N	10E	1, 2, 19, 20, 30
		3	13N	11E	4, 5, 6
		1 14N		11E	32, 33
North Fork American River	Middle Fork American River Confluence to the Folsom Reservoir High Water Mark	5*	12N	8E	(12), 15, 22
Unpatented Mining Claims (Based on December 22, 2008 query of BLM's LR2000 Database)					
Middle Fork American River	Oxbow Powerhouse to the North Fork American River Confluence	1 13N		10E	1
		16	13N	11E	4, 5, 6
		26 14N		11E	32, 33

*Number indicates total number of claims in each section, but contains duplicate claims accounted for in previous columns.
Parentheses indicate that the section includes claims that overlap more than one bypass stream.

Table REC 4-30. Streamflow Gages and Locations.

Gage Number	Site Name	Latitude	Longitude	Drainage	Elevation	Start Date	End Date
11426500	NF AMERICAN R NR COLFAX CA	39°2'25"	120°54'6"	308	897 ft	10-1-1911	9-30-1941
11426400	N. SHIRTAIL C NR DUTCH FLAT CA	39°7'49"	120°47'44"	9.1	ND	10-1-1956	9-30-1985
11427000	NF AMERICAN R A NORTH FORK DAM CA	38°56'10"	121°1'22"	715	342 ft	10-1-1941	9-30-2003
11427200	FRENCH MEADOWS PP NR MEEKS BAY C CA	39°4'	120°24'	ND	ND	10-1-1970	9-30-2003
11427500	MF AMERICAN R A FRENCH MEADOWS CA	39°6'35"	120°28'49"	47.9	4920 ft	10-1-1951	9-30-2003
11427700	DUNCAN CYN C NR FRENCH MEADOWS CA	39°8'9"	120°28'39"	9.9	5270 ft	9-1-1960	9-30-2003
11427750	DUNCAN CYN C BL DIV DAM NR FRENCH MEADOWS CA	39°7'59"	120°28'58"	10.5	5210 ft	10-1-1964	9-30-2003
11427760	MF AMERICAN R AB MF PH NR FORESTHILL CA	39°1'31"	120°35'40"	87.8	2540 ft	9-1-1965	9-30-2003
11427765	RALSTON PH NR FORESTHILL CA	39°0'1"	120°43'23"	ND	ND	10-1-1973	9-30-2003
11427770	MF AMERICAN R BL INTERBAY DAM NR FORESTHILL CA	39°1'35"	120°36'9"	89.1	2470 ft	10-1-1965	12-19-2002
11427940	RUBICON-ROCKBOUND TUNNEL NR MEEKS BAY CA	38°59'16"	120°13'29"	ND	6533 ft	10-1-1963	9-30-2003
11427960	RUBICON R BL RUBICON LK CA	38°59'20"	120°13'20"	26.8	ND	2-27-1991	9-30-2003
11428000	RUBICON R A RUBICON SPRINGS NR MEEKS BAY CA	39°1'10"	120°14'46"	31.4	6053 ft	2-1-1910	9-30-1986
11428001	COMBINED RUBICON R-ROCKBOUND TUNNEL CA	39°1'10"	120°14'46"	31.4	ND	1-1-1964	9-30-1983
11428300	BUCK-LOON TUNNEL NR MEEKS BAY CA	39°0'17"	120°15'21"	ND	6425 ft	10-1-1963	9-30-2003
11428400	L RUBICON R BL BUCK ISLAND DAM CA	39°0'20"	120°15'20"	6	ND	10-24-1984	9-30-2003
11428600	MF PH NR FORESTHILL CA	39°1'30"	120°35'43"	ND	ND	10-1-1974	9-30-2003
11428800	RUBICON R BL HELL HOLE DAM CA	39°3'24"	120°24'25"	114	4232 ft	11-6-1965	9-30-2003
11429000	SF RUBICON R A SM NR QUINTETTE CA	38°56'54"	120°23'57"	16.1	ND	2-1-1910	6-30-1914
11429300	ROBBS PEAK PH NR KYBURZ CA	38°53'50"	120°22'38"	ND	4880 ft	10-1-1962	9-30-2003

Table REC 4-30. Streamflow Gages and Locations (continued).

Gage Number	Site Name	Latitude	Longitude	Drainage	Elevation	Start Date	End Date
11429340	LOON LK PH NR MEEKS BAY CA	38°58'57"	120°19'27"	ND	ND	10-1-1974	9-30-2003
11429500	GERLE C BL LOON LK NR MEEKS BAY CA	39°0'20"	120°18'52"	8	6250 ft	9-1-1962	9-30-2003
11429800	ROBBS PEAK TU NR RIVERTON CA	38°54'12"	120°22'18"	ND	ND	10-1-1962	9-30-1967
11430000	SF RUBICON R BL GERLE C NR GEORGETOWN CA	38°57'17"	120°24'2"	47.6	4970 ft	8-1-1961	9-30-2003
11430500	SF RUBICON R A MOUTH NR GEORGETOWN CA	38°58'5"	120°27'55"	56.9	ND	7-27-1956	9-30-1962
11431000	RUBICON R NR GEORGETOWN CA	38°57'30"	120°29'5"	195	3350 ft	4-1-1910	11-30-1964
11431500	GEORGETOWN DIVIDE DITCH ABOVE PILOT CREEK	38°56'18"	120°28'42"	ND	ND	10-1-1950	12-31-1961
11431800	PILOT C AB STUMPY MEADOWS RES CA	38°53'41"	120°35'2"	11.7	4280 ft	10-1-1960	9-30-2003
11432000	GEORGETOWN DIVIDE DITCH NR GEORGETOWN CA	38°54'12"	120°36'12"	ND	ND	3-29-1947	9-30-1960
11432500	PILOT C NR GEORGETOWN CA	38°54'14"	120°36'11"	15.1	4120 ft	4-1-1946	9-30-1960
11433040	PILOT C BL MUTTON CANYON NR GEORGETOWN CA	38°55'25"	120°38'27"	21.1	3760 ft	7-1-1961	9-30-2003
11433060	SF LONG CANYON C DIV TUNNEL NR VOLCANOVILLE CA	38°55'25"	102°38'27"	ND	4630 ft	10-1-1965	9-30-2003
11433065	SF LONG CYN C F REL BL DIV TU NR VOLCANOVILLE CA	39°3'4"	120°28'14"	ND	4630 ft	11-27-1988	6-11-2003
11433080	NF LONG CANYON C DIV TU NR VOLCANOVILLE CA	39°2'57"	120°28'56"	ND	4700 ft	10-1-1965	9-30-2003
11433085	NF LONG CYN C F REL BL DIV TU NR VOLCANOVILLE CA	39°2'57"	120°28'56"	ND	4700 ft	11-26-1988	6-5-2003
11433100	LONG CANYON C NR FRENCH MEADOWS CA	39°1'16"	120°30'53"	18	ND	9-1-1960	9-30-1992
11433200	RUBICON R NR FORESTHILL CA	38°59'33"	120°43'14"	315	1362 ft	10-1-1958	9-30-1984
11433212	OXBOW PH NR FORESTHILL CA	39°0'14"	120°44'44"	ND	ND	10-1-1973	9-30-2003
11433260	NF OF MF AMERICAN R NR FORESTHILL CA	39°1'27"	120°43'3"	88.9	ND	8-1-1965	9-30-1985
11433300	MF AMERICAN R NR FORESTHILL CA	39°0'22"	120°45'35"	524	1070 ft	10-1-1958	9-30-2003

Table REC 4-30. Streamflow Gages and Locations (continued).

Gage Number	Site Name	Latitude	Longitude	Drainage	Elevation	Start Date	End Date
11433400	CANYON C NR GEORGETOWN CA	38°56'3"	120°52'21"	12.5	ND	7-1-1966	10-10-1979
11433420	MAINE BAR CANYON C NR GREENWOOD CA	38°55'34"	120°56'51"	0.8	ND	10-1-1972	9-30-1986
11433500	MF AMERICAN R NR AUBURN CA	38°55'5"	121°0'51"	614	552 ft	10-1-1911	1-31-1986
11433799	COMB FLOW N FK AMERICAN R + M FK AMERICAN CA	38°52'20"	121°3'18"	ND	ND	10-1-1973	9-30-1981
11433800	NF AMERICAN R BL AUBURN DAMSITE NR AUBURN CA	38°52'20"	121°3'18"	973	ND	5-11-1972	2-6-1986
11434000	NF AMERICAN R A RATTLESNAKE BAR CA	38°48'50"	121°5'35"	996	344 ft	10-1-1930	3-31-1955

ND- No data available
N/A- Not applicable

Table REC 4-31. Common Sources of River and Stream Flow Information Available to the Public.

Organization	Source	Information Provided
California Data Exchange Center (CDEC)	cdec.water.ca.gov/	Real-time data for the Middle Fork of the American River below Oxbow Gage (OXB) and the North Fork American River at North Fork Dam (NFD) gage. Historical data for various stream gages on the bypass and peaking reaches.
United States Geological Survey (USGS)	water.usgs.gov/	Real-time data for the Middle Fork of the American River below Oxbow Gage (OXB) and the North Fork American River at North Fork Dam (NFD) gage. Historical data for various stream gages on the bypass and peaking reaches.
Dreamflows www.dreamfl	ows.com	Gage descriptions and links to CDEC data.
Auburn State Recreation Area (ASRA)	http://www.parks.ca.gov/?page_id=502 (530) 823-4162	No online flow information, but provides phone number to reach Whitewater Recreation Department for more information.
United States Forest Service, Tahoe National Forest	www.fs.fed.us/r5/tahoe/currentconditions/index/shtml	Link to CDEC
California Department of Boating and Waterways	www.dwr.water.ca.gov/	Link to CDEC
The American River Website	www.theamericanriver.com/resources/river-flows.php	Links to Dreamflows, CDEC, and USGS
American Whitewater Expeditions	www.americanwhitewater.com/streamflow.htm#mf	Current CDEC charts and data
Mariah Wilderness Expeditions	www.mariahwe.com/links.htm#river	Link to CDEC
Friends of the River	www.friendsoftheriver.org	Links to Dreamflows, CDEC, and USGS
California Outdoors	www.caoutdoors.com/Rafting-California.htm	Link to CDEC
W.E.T. River Trips	www.raftwet.com/MFAmerican.html	Links to other sites listed previously (rafting resource page)
KFlow (916	) 368-8682	Telephone recording provides current flow information for Middle Fork American River and North Fork American River

Table REC 4-32. Inventory of Flow Fluctuation Warning Signs along Project Bypass and Peaking Reaches and Access Points (as of March, 2009).

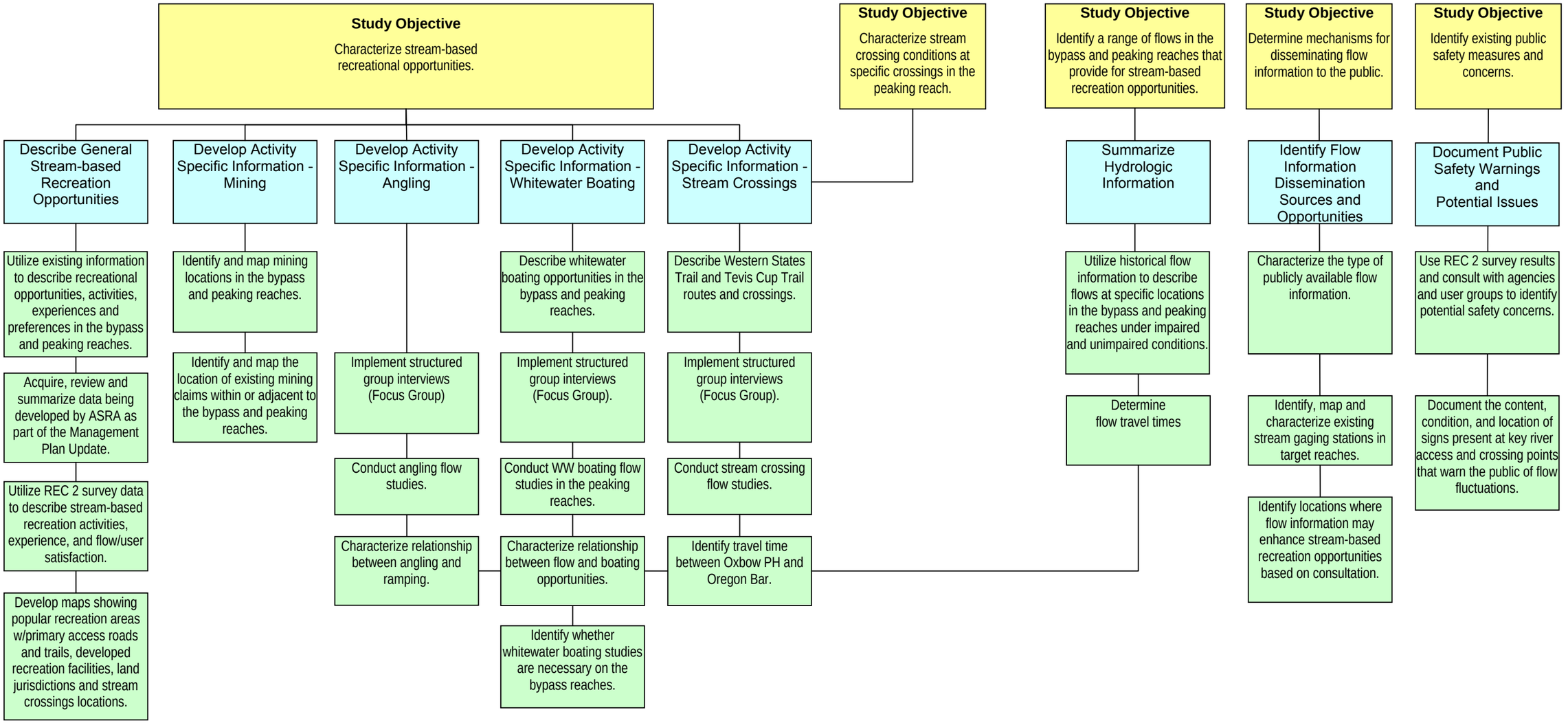
Location		Type of Sign	Quantity	Materials[1]	Dimensions	Condition[2]	Wording/ Graphics	Remarks	Accessibility Notes
Hell Hole Reservoir Area									
Hell Hole Substation	Southeast side of Hell Hole Substation in parking area	Warning	1	Painted aluminum sign mounted on steel post	14” x 20”	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Clear visibility, gravel underfoot
Middle Fork Interbay Area									
Middle Fork Powerhouse Lower Switchyard	On perimeter fence near main gate	Warning	1	Painted aluminum sign mounted on steel chain link fence	15” x 20”	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Good contrast and access
	Above Middle Fork Powerhouse discharge into Interbay	Warning	1	Painted aluminum sign mounted on steel railing	24” x 42” (Est.)	Good	EXTREME DANGER KEEP AWAY	White lettering on green background, intended primarily for boaters and fishermen	Good contrast
Middle Fork Interbay Dam	Top of stairs at southwest end of Middle Fork Interbay Dam	Warning	1	Painted aluminum sign mounted on steel mesh fence	15” x 20”	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Good contrast and access
	Northeast end of Middle Fork Interbay Dam at portal to boat launch	Warning	1	Painted aluminum sign mounted on steel pole	14” x 22”	Fair	WARNING SPILLWAY GATES MAY SUDDENLY OPEN AT ANY TIME IT IS EXTREMELY DANGEROUS PLACER COUNTY WATER AGENCY	Black lettering on yellow background, words may have been painted over	Good contrast and access
	Near PCWA plaque at Road 96.17 turnout	Warning	1	Painted aluminum sign mounted on steel pole	15” x 20”	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Good contrast and access
Ralston - Oxbow Area									
Ralston Powerhouse and Switchyard	Ralston Powerhouse and Switchyard	Warning	3	Painted aluminum signs mounted to steel chain link fence (2) and cement column (1)	14” x 20”	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Easily readable from a distance, clear area underfoot
	Back to back off water side of Ralston Powerhouse	Warning	2	Painted aluminum sign mounted on side of building	24” x 36” (Est.)	Good	EXTREME DANGER KEEP AWAY	White lettering on green background	Readable from boat, not road
Ralston Afterbay Dam Generator Building	Gravel parking area in front of Ralston Afterbay Dam Generator Building	Warning	1	Painted aluminum sign mounted on steel pole	14” x 22”	Good	WARNING WATER MAY BE DISCHARGED IN THIS AREA AT ANY TIME. IT IS EXTREMELY DANGEROUS PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Accessible by road or foot, gravel, clear area
Oxbow Powerhouse and Switchyard	Side of outlet tunnel by rafting put in	Warning	1	Painted aluminum sign mounted on cement side of tunnel	14” x 20”	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background	Seen only if at rafting put in point, but easily visible and clear to read
Indian Bar Rafting Access and General Parking	East side of boat launch, near boat launch toilet	Warning	1	Painted aluminum sign on steel post	15” x 20” (Est.)	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background. Post is slightly rusted.	
	Near parking area, west of parking area toilet	Warning	1	Painted aluminum sign on steel post mounted in barrier rock	15” x 20” (Est.)	Good	WARNING WATER LEVEL MAY SUDDENLY RISE IN THIS AREA AT ANY TIME PLACER COUNTY WATER AGENCY	Black lettering on yellow background. Post is slightly rusted.	
	At top of Indian Bar Rafting Access and General Parking Access Road	Warning	1	Painted aluminum sign on steel post, with steel cross bars	15” x 20” (Est.)	Fair	WARNING WATER MAY BE DISCHARGED IN THIS AREA AT ANY TIME IT IS EXTREMELY DANGEROUS PLACER COUNTY WATER AGENCY	Black lettering on yellow background. Post and cross bars are rusted. Paint is flaking.	Lettering may not be visible to visually impaired.
Mammoth Bar Area									
	Near trail to Murderer's Bar	Warning	1	Painted alumimum sign on steel posts	4' x 4' (Est.)	Fair	WARNING River Flow May Change…	Black lettering on white background. Paint is fading. State Parks symbol.	Lettering may not be visible to visually impaired.
Confluence Area									
	Various locations near parking and trail heads.	Warning	5	Image is on 1/8" non-metalic fomica-like materials mounted on 1/8" thick sheet alumimum, painted to camouflage the aluminum. Mounting posts vary, depending upon site.	5' x 4'	Good (New)	WARNING! River Levels May Change Suddenly! Changes Caused by Upstream Dam Releases. Use Extreme Caution In Or Near The Water At All Times! Dangerous Rapids and Submerged Obstacles Located Dowstream.	Red and black lettering with black and blue symbols on white background.	

[1]Materials Abbreviations: PTDF - Pressure Treated Douglas Fir; MDO Plywood - Medium Density Overlay Plywood

[2]Condition: **Poor** - Sign is no longer functional or it is so damaged it should be replaced; **Fair** - Sign is functional but needs repairs or maintenance (flaking paint, fading, damaged mounts; **Good** - Sign is new or in good, undamaged condition

FIGURES

Figure REC 4-1. REC 4 – Stream-based Opportunities Study Objectives and Related Study Elements.



All of these study elements were completed in 2008 and are documented in the REC 4 – Stream-based Opportunities Technical Study Report – 2008.

Figure REC 4-2. Base Flow/Travel Velocity Relationship.

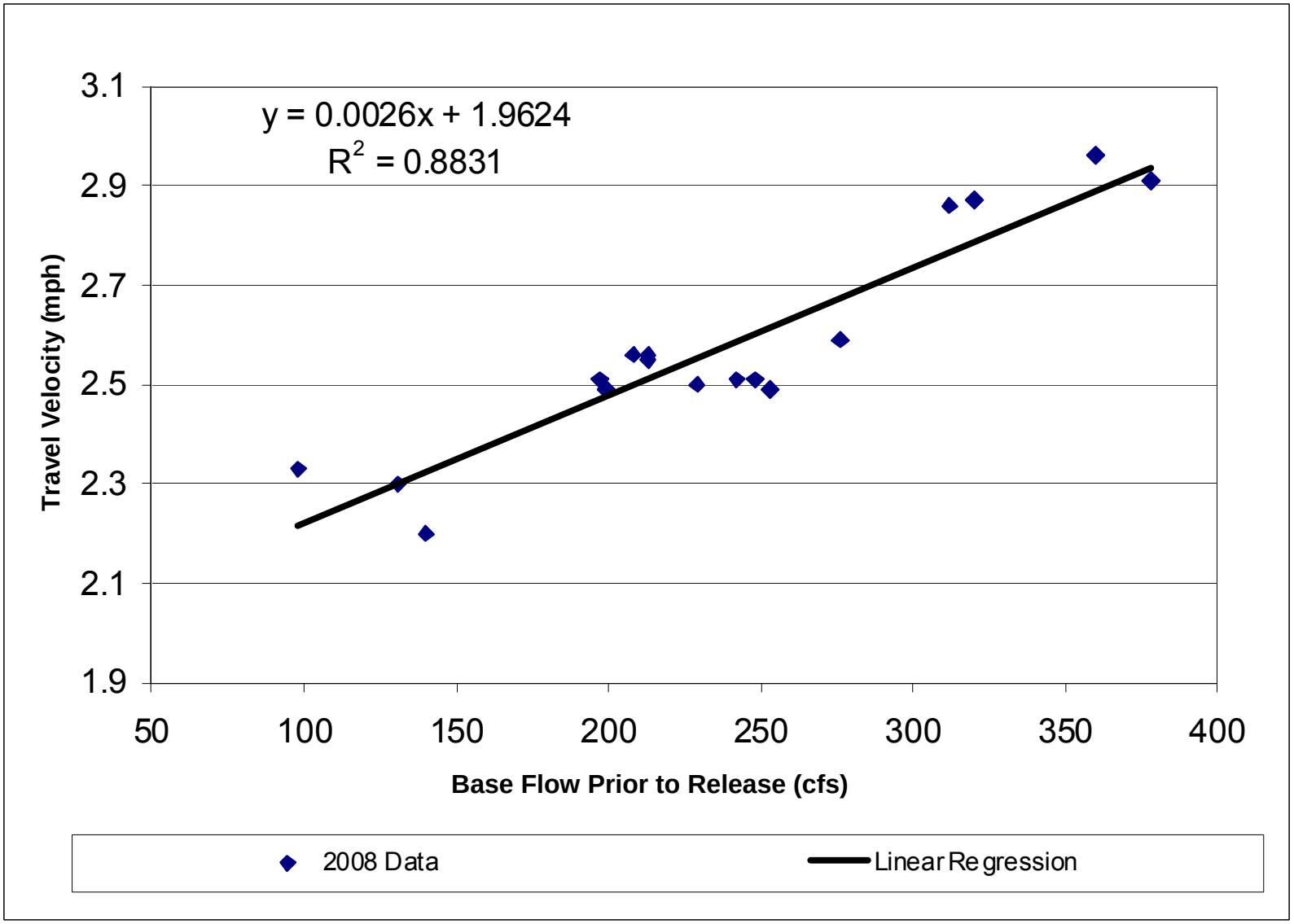
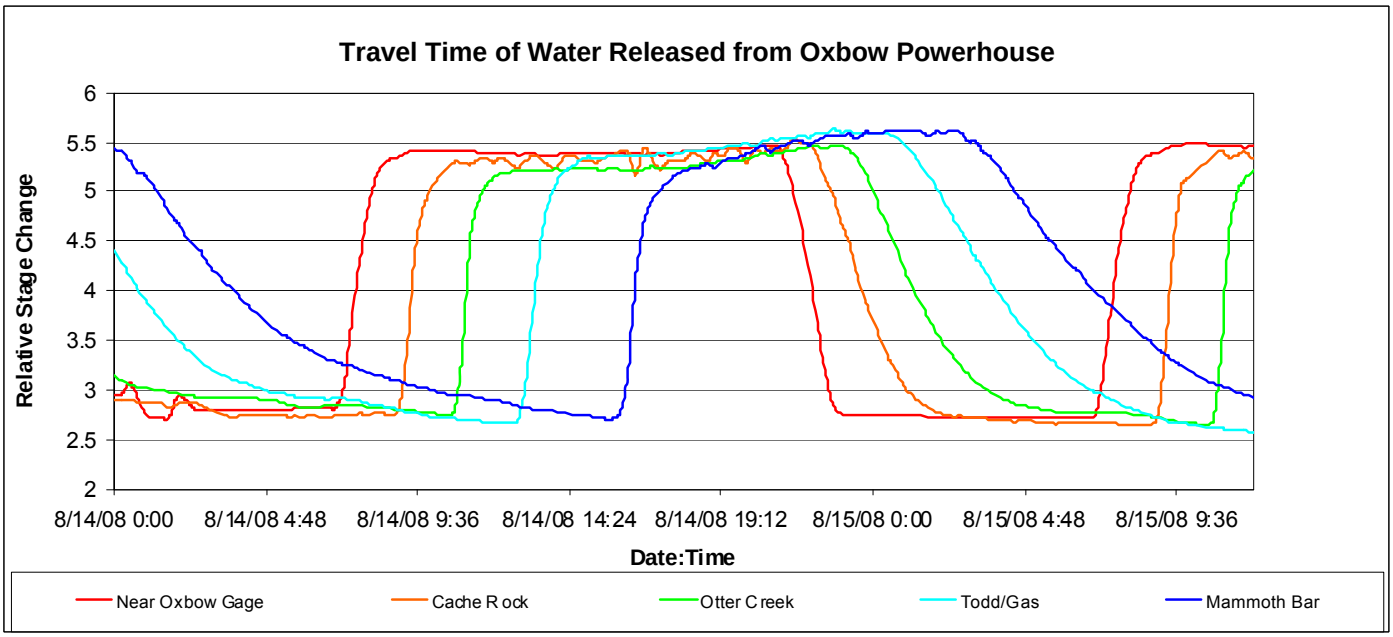


Figure REC 4-3. Water Travel Time during Up-ramp and Down-ramp.



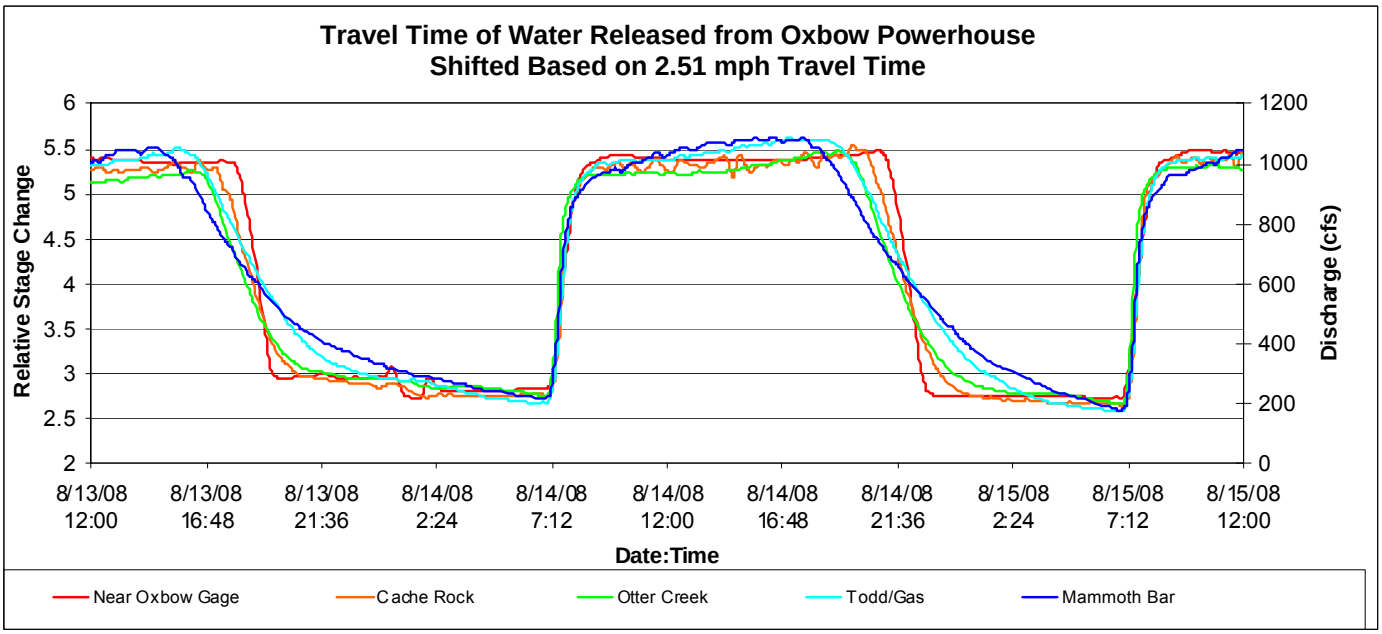


Figure REC 4-4. Wading/Crossing Suitability Relationship.

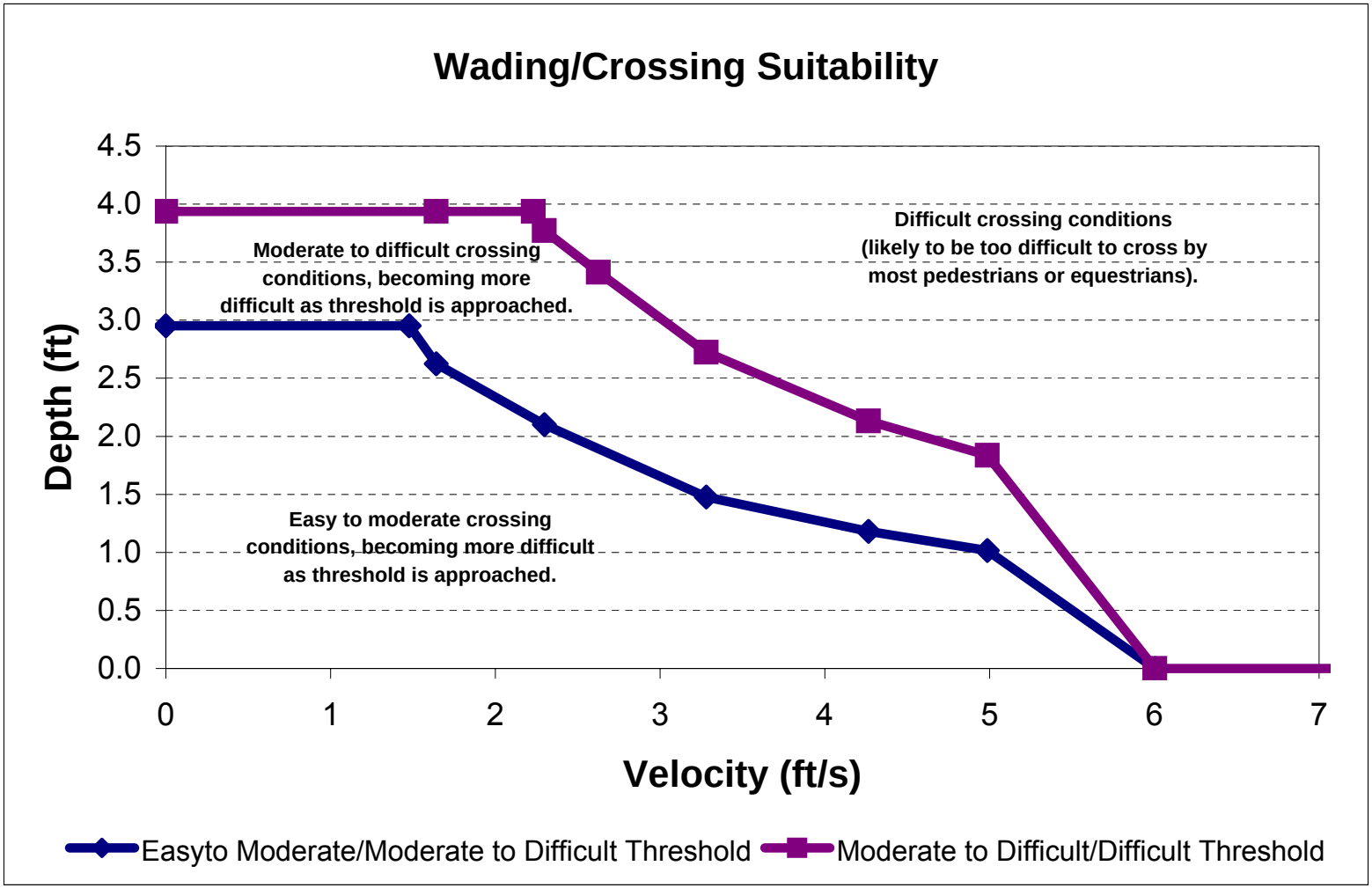
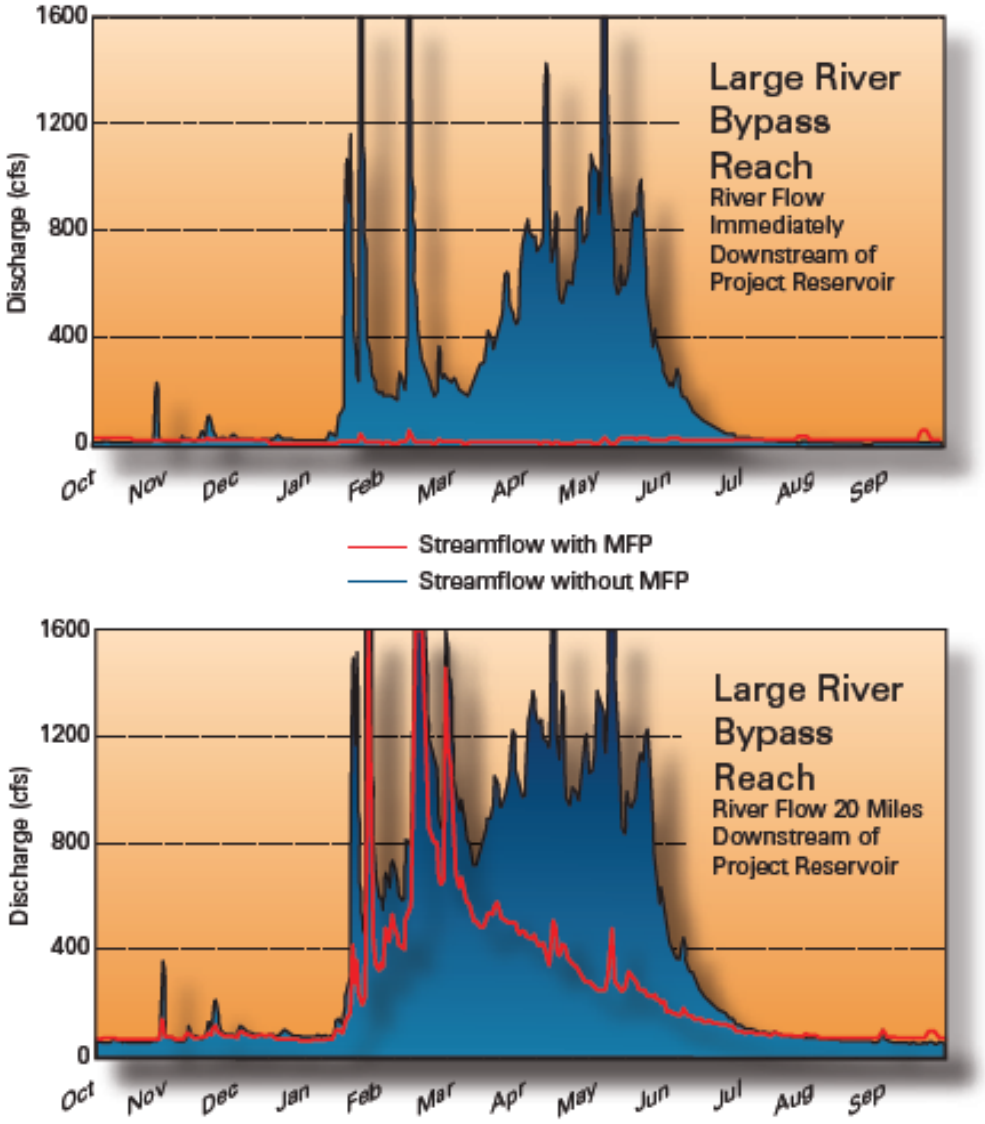
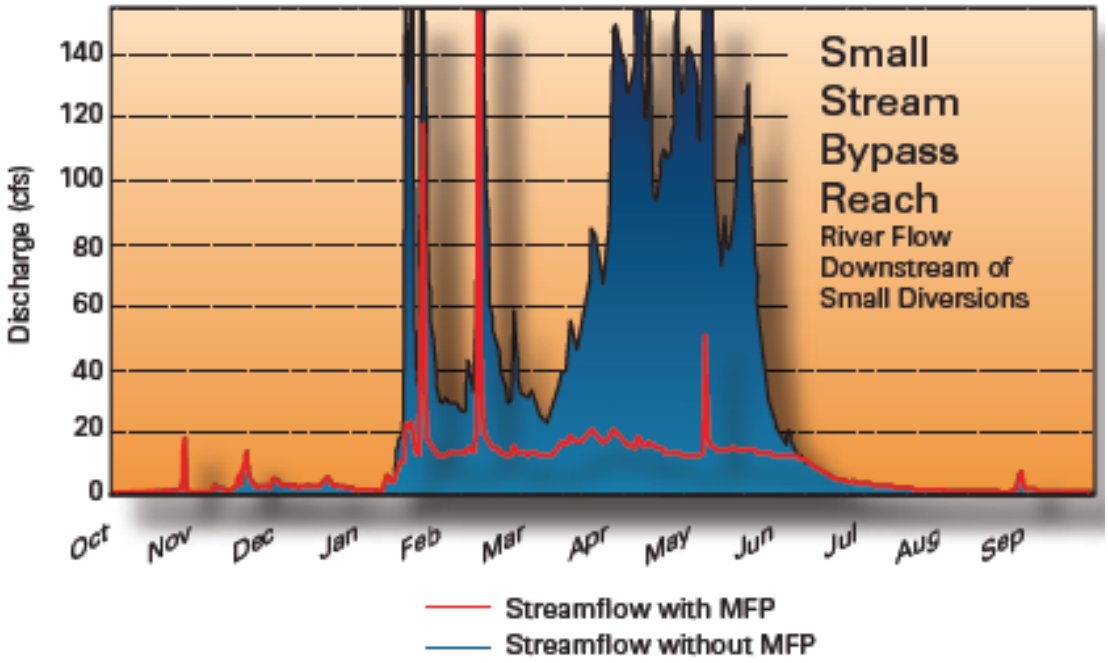


Figure REC 4-5. Example of Project Modification of Flows in the Large River Bypass Reaches of the Middle Fork American and Rubicon Rivers.



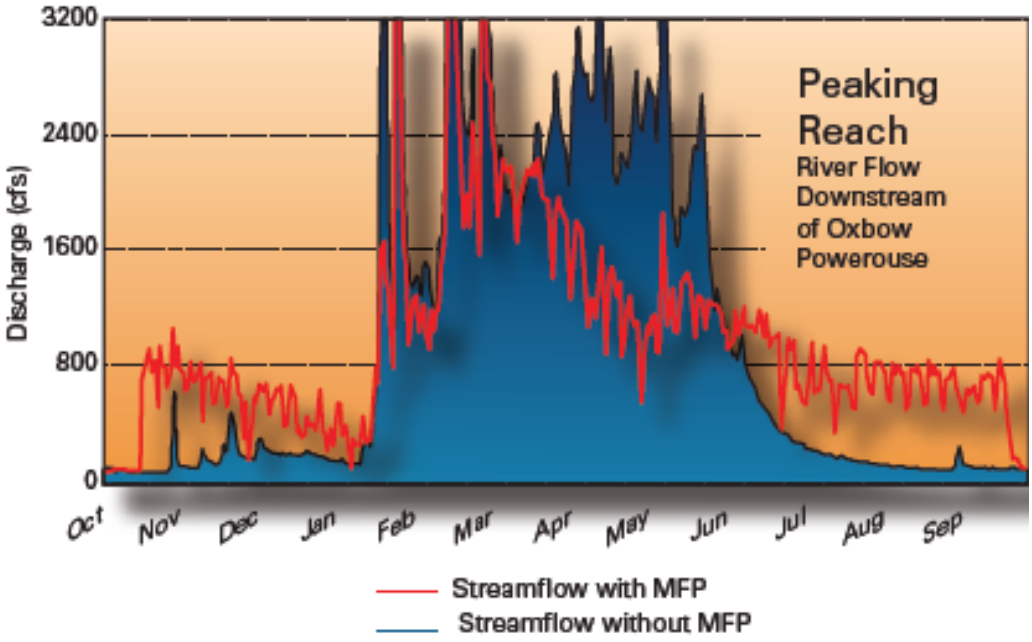
Note: Accretion flows in the lower portions (bottom) of the reaches res tore some of the natural winter and spring high flow variab ility to the hy drograph compared to the upper portions of the reaches (top).

Figure REC 4-6. Example of Project Modification of Flows in the Small Stream Bypass Reaches (Duncan Creek and North and South Fork Long Canyon Creeks).



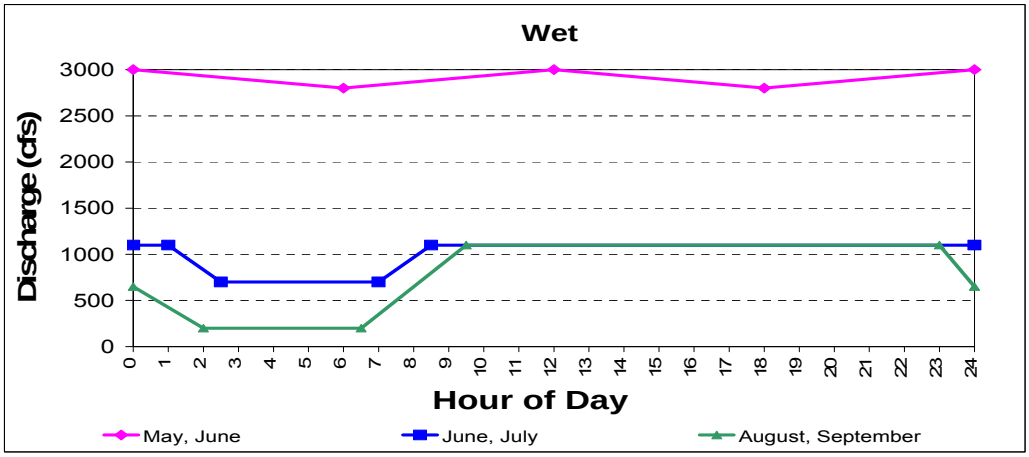
Note: Flows are reduced during the late winter and spring. However, the diversions are shut off during the summer, fall and early winter and flows in the bypass reaches during these periods are unaltered.

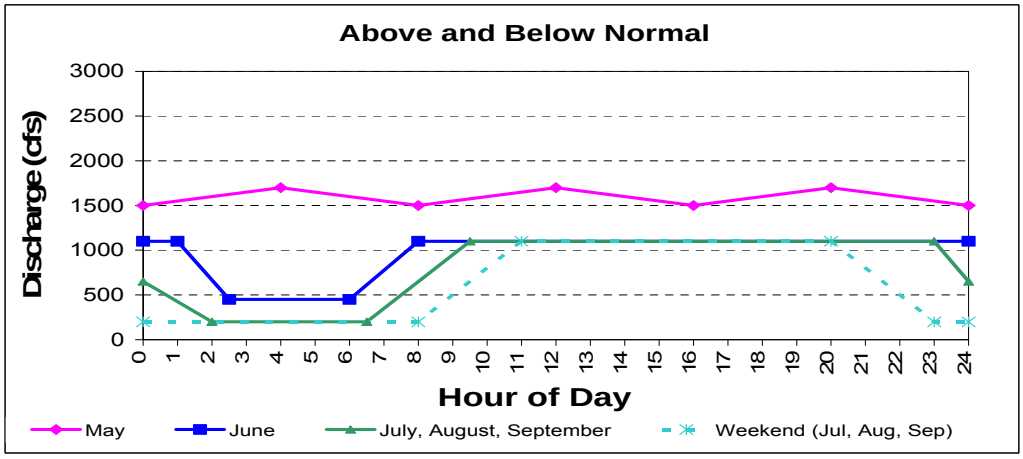
Figure REC 4-7. Example of Project Modification of Flows in the Peaking Reach (Mean Daily Flows).



Note: Peaking operations at Oxbow Powerhouse may result in substantial fluctuations of flow in the peaking reach.

Figure REC 4-8. Idealized Examples of Releases from Oxbow Powerhouse During Wet, Above Normal, Below Normal, Dry, and Critically Dry Years.





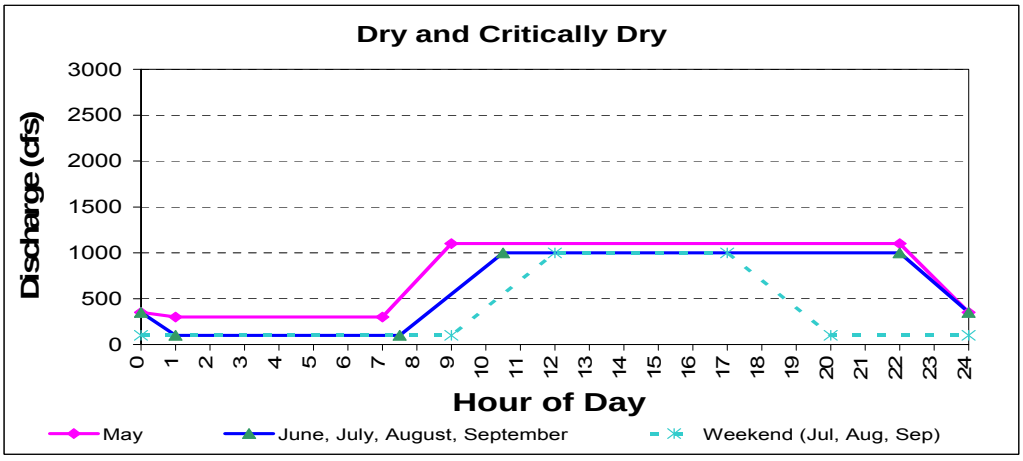
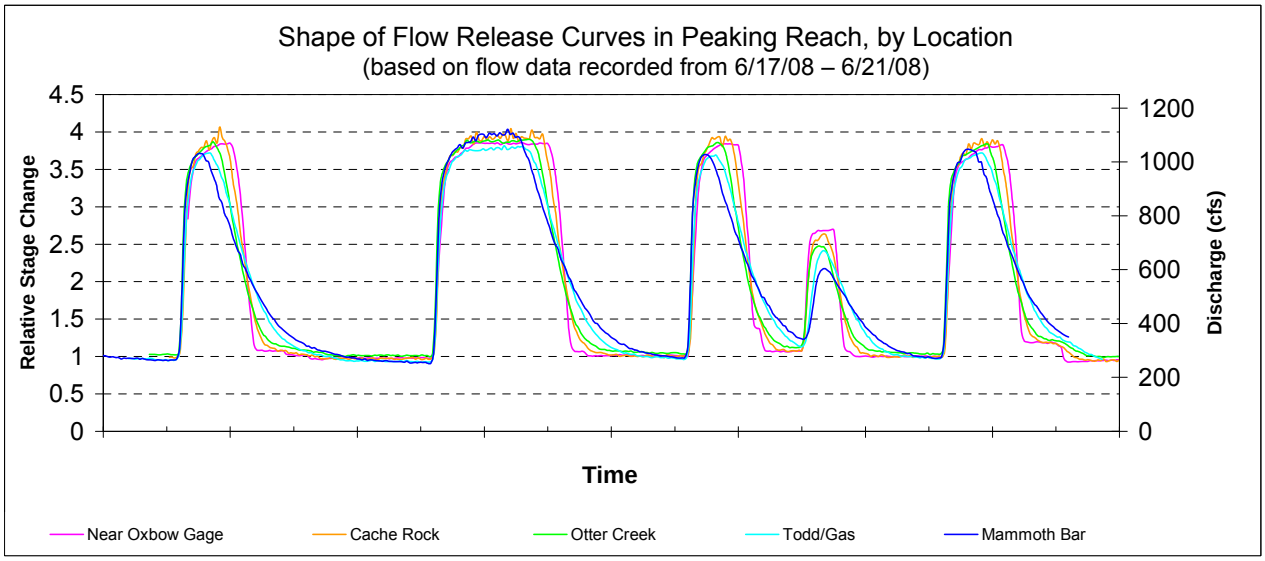


Figure REC 4-9. Shape of Flow Release Curves in Peaking Reach by Location.



This figure shows the shape of the flow release curves at different locations in the peaking reach. Each curve has been shifted to overlie the curve near the Oxbow gage to illustrate the following points:

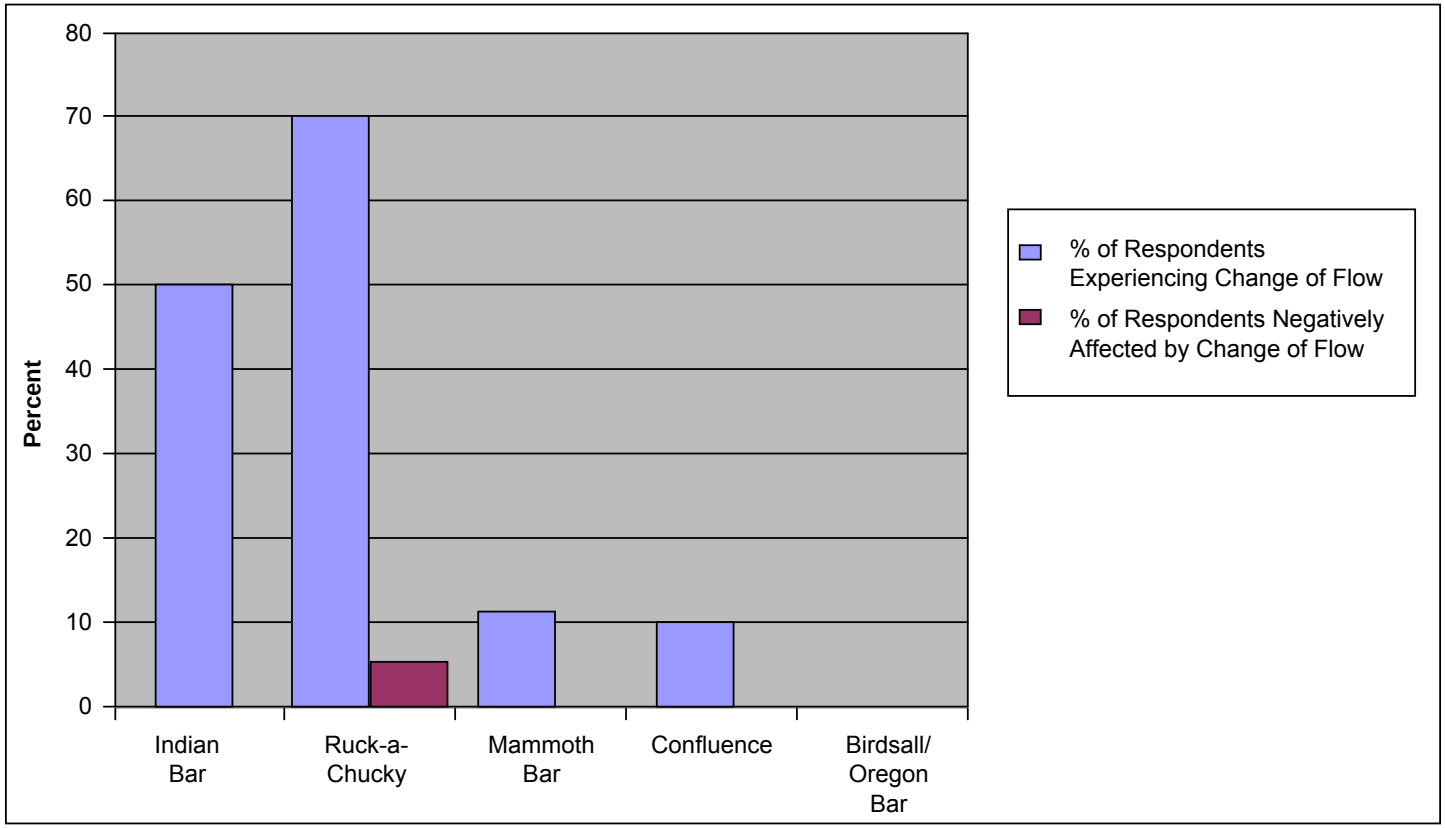
- In general, the up-ramp from low base flow to high peaking flow, in terms of discharge (e.g., change in cfs per hour) remains the same throughout the reach.

- The shape of the flow release curve changes with location in the peaking reach. The farther downstream, the narrower the width of the top of the curve and the slower the down-ramp.

- The slope of the down-ramp changes as the peak travels downstream. At the top of the reach, the down-ramps are relatively rapid with decreases in flow at a rate similar to the up-ramp rate (250 to 450 cfs/hr, 3 hours to down-ramp). Down-ramps are slower and have a longer duration (slower down-ramp rate) depending on the distance down stream.

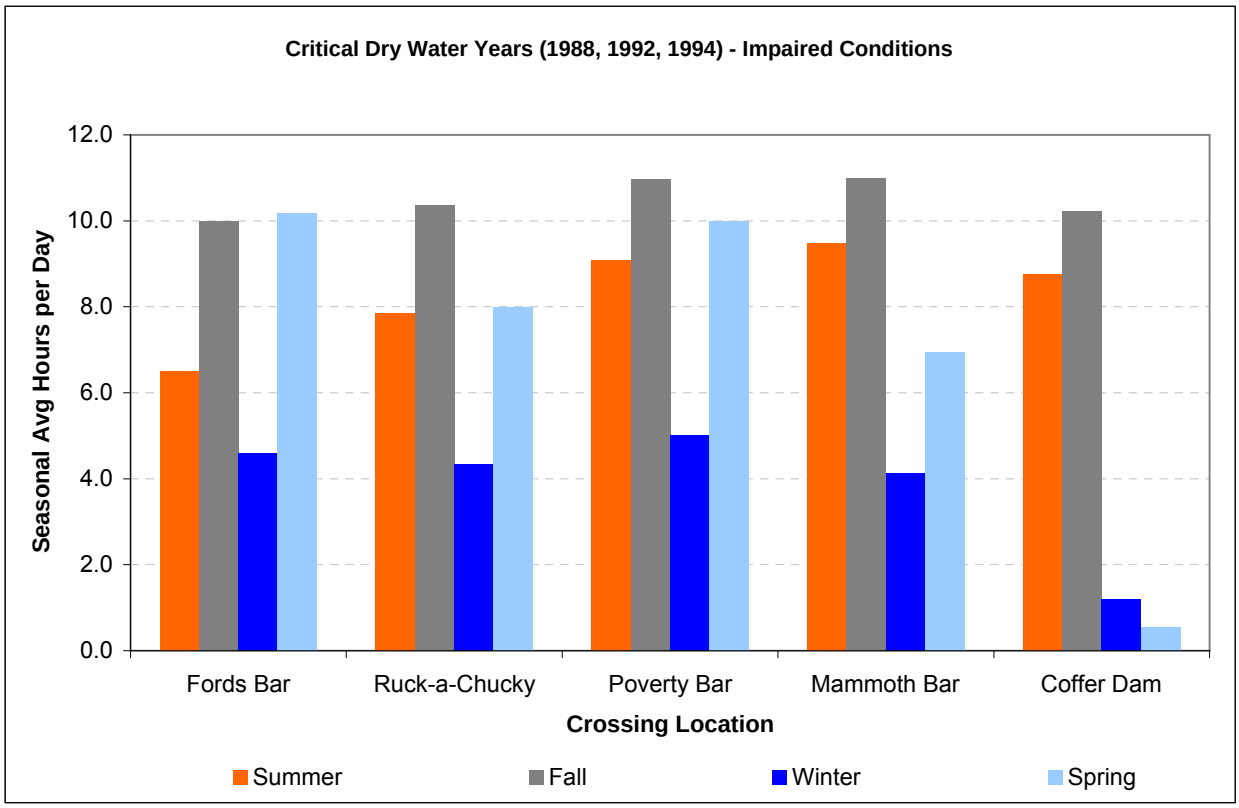
- Note that the x axis does not include a scaled because the curves have been shifted for comparison purposes.

Figure REC 4-10. Percent of Survey Respondents at Sites in ASRA who Experienced a Change in Flow and were Negatively Affected by the Change.



Note: Does not include people intercepted at Ruck-a-Chucky who said their primary recreation activity was whitewater rafting/kayaking.

Figure REC 4-11. Trail Crossing Opportunities (Average Hours per Day) by Season.



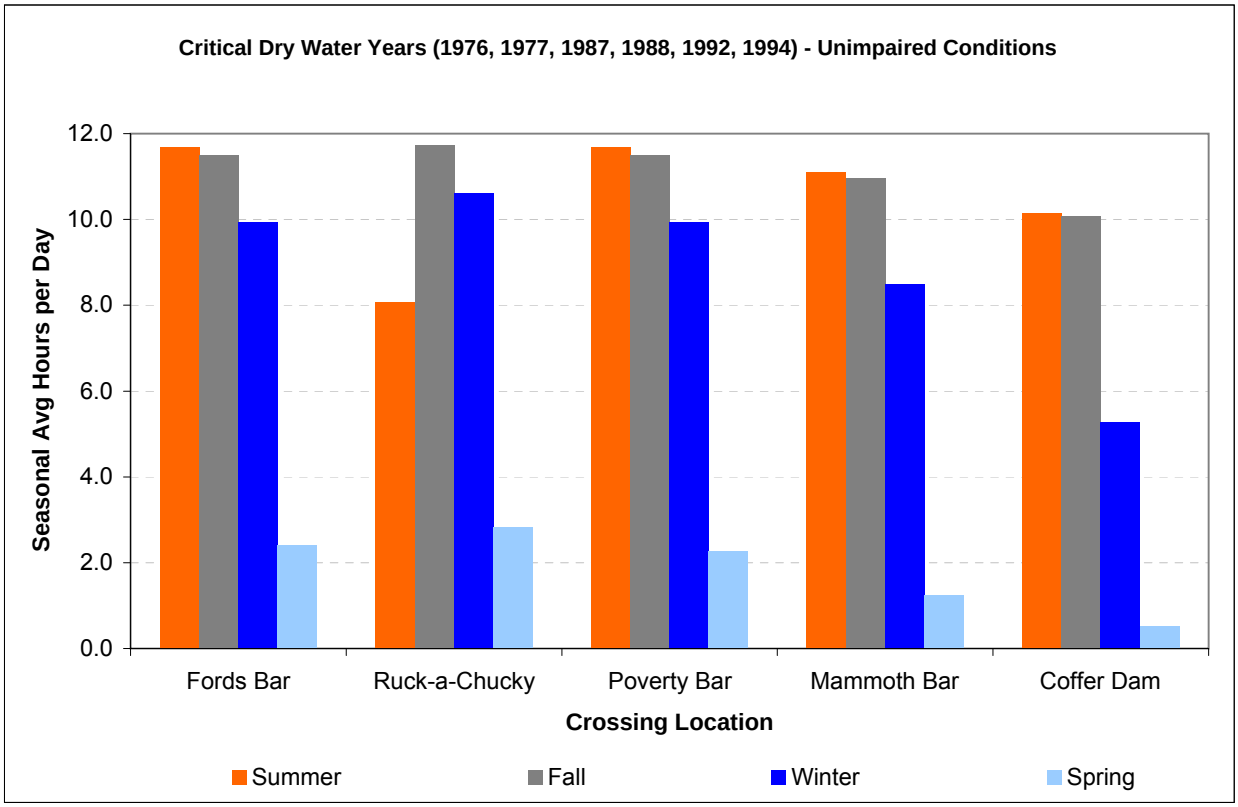
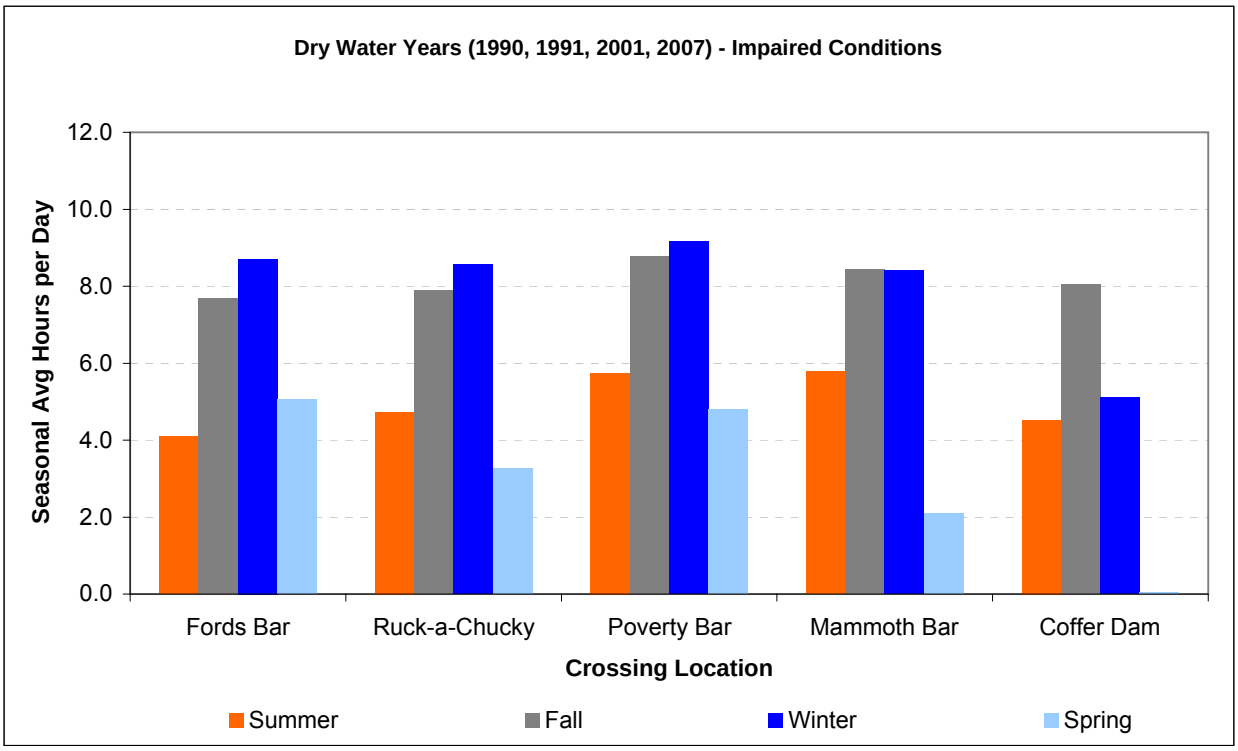


Figure REC 4-12. Trail Crossing Opportunities (Average Hours per Day) by Season.



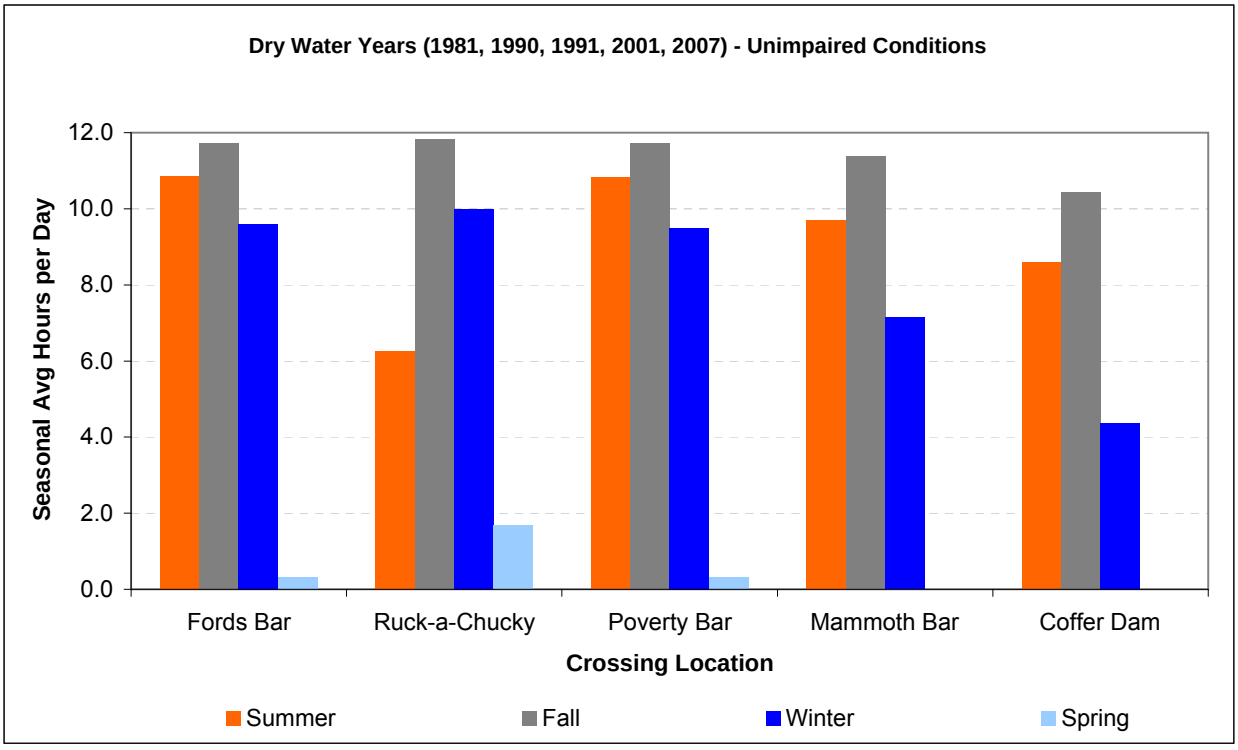
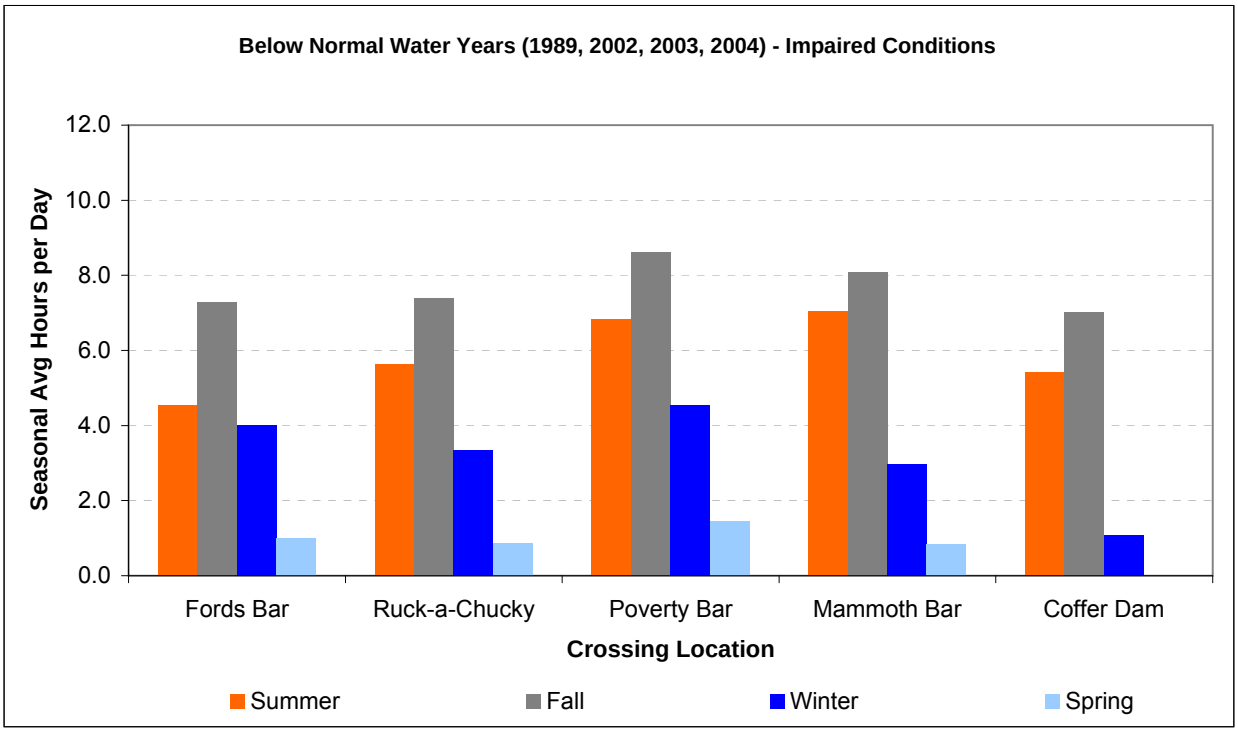


Figure REC 4-13. Trail Crossing Opportunities (Average Hours per Day) by Season.



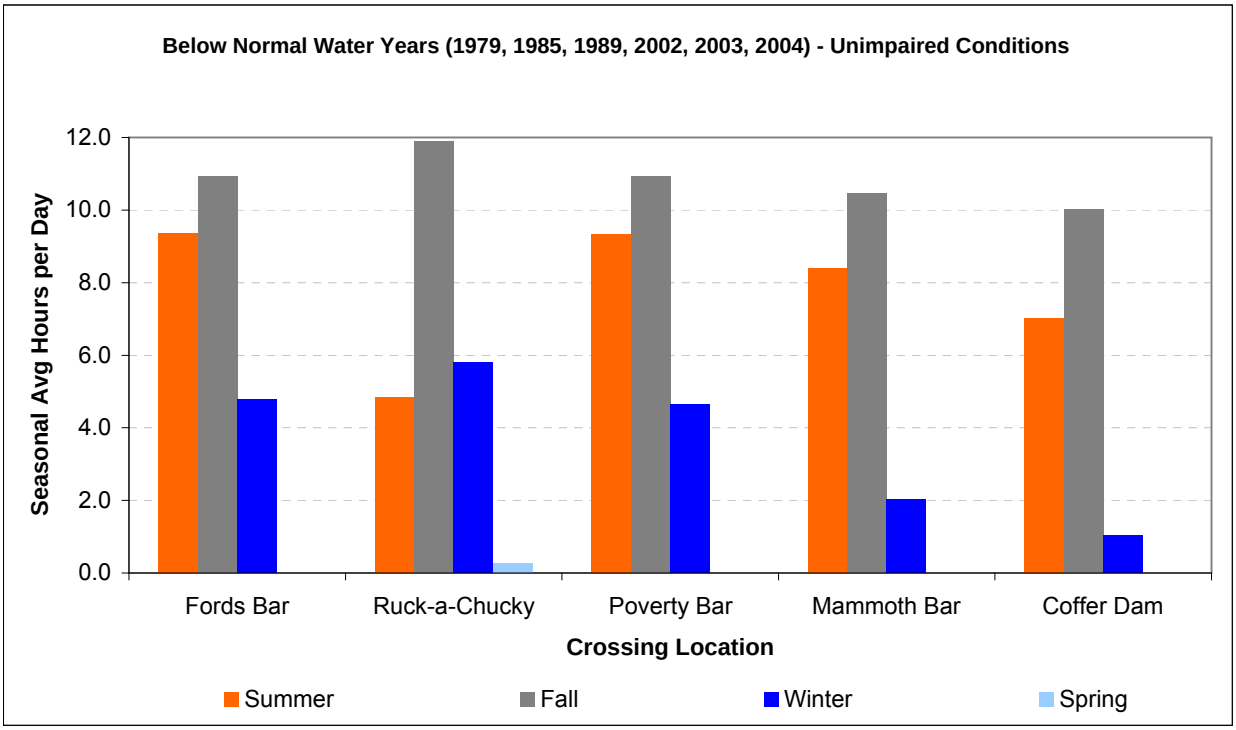
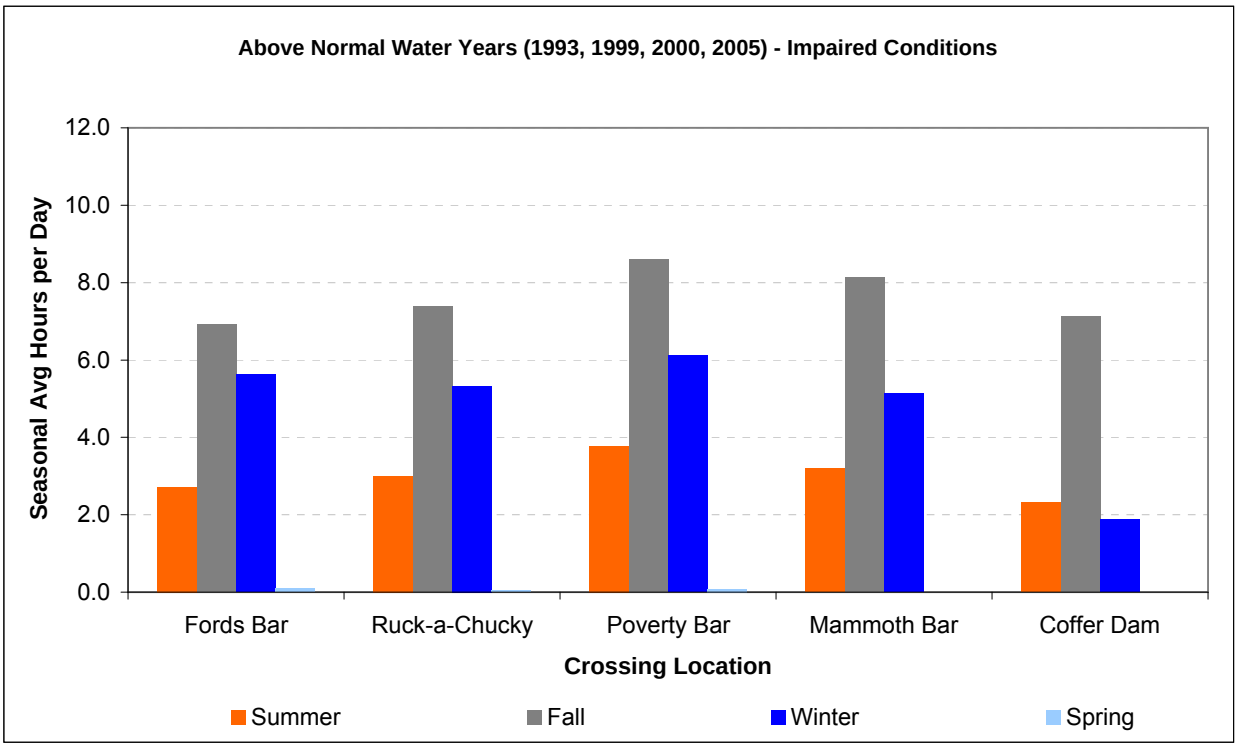


Figure REC 4-14. Trail Crossing Opportunities (Average Hours per Day) by Season.



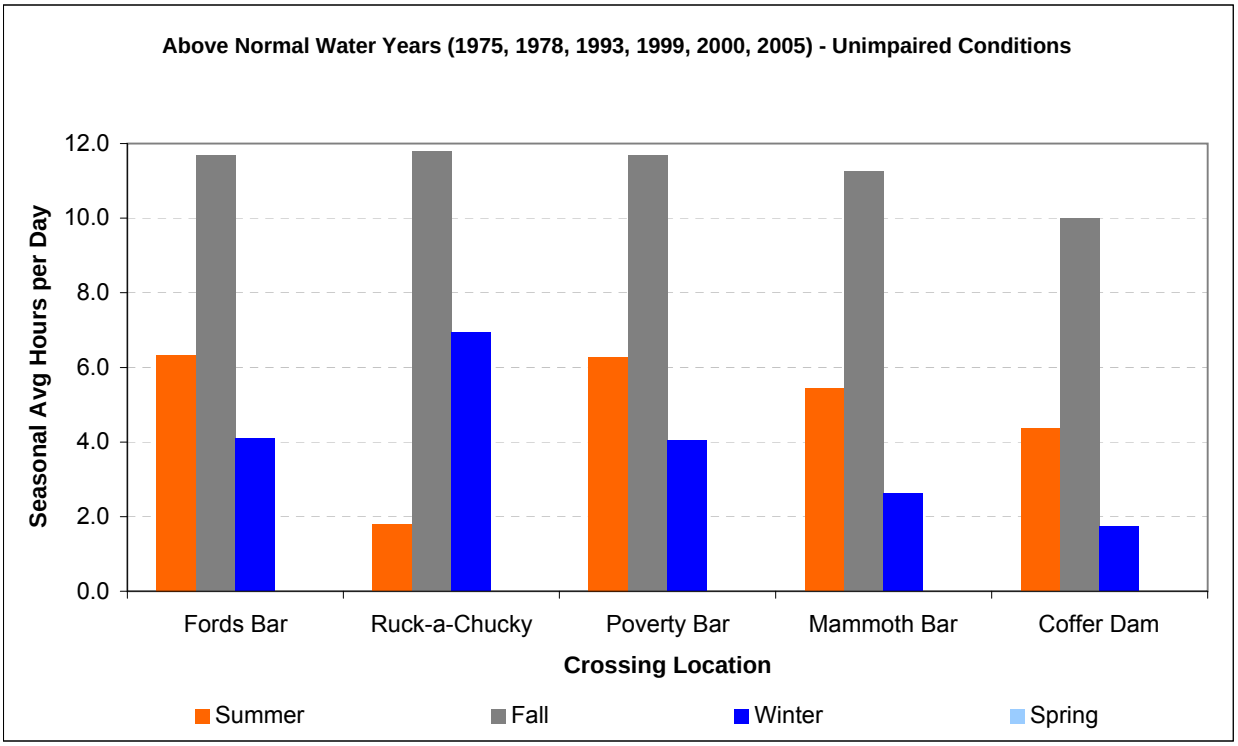
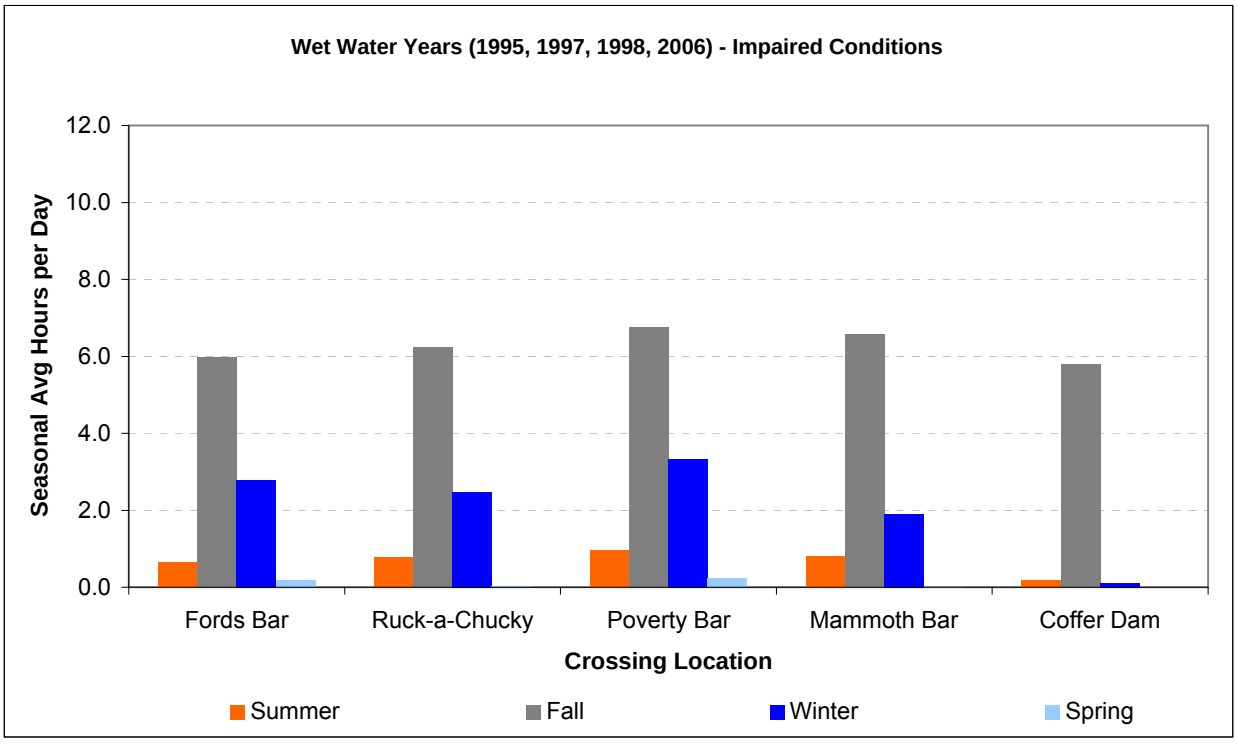


Figure REC 4-15. Trail Crossing Opportunities (Average Hours per Day) by Season.



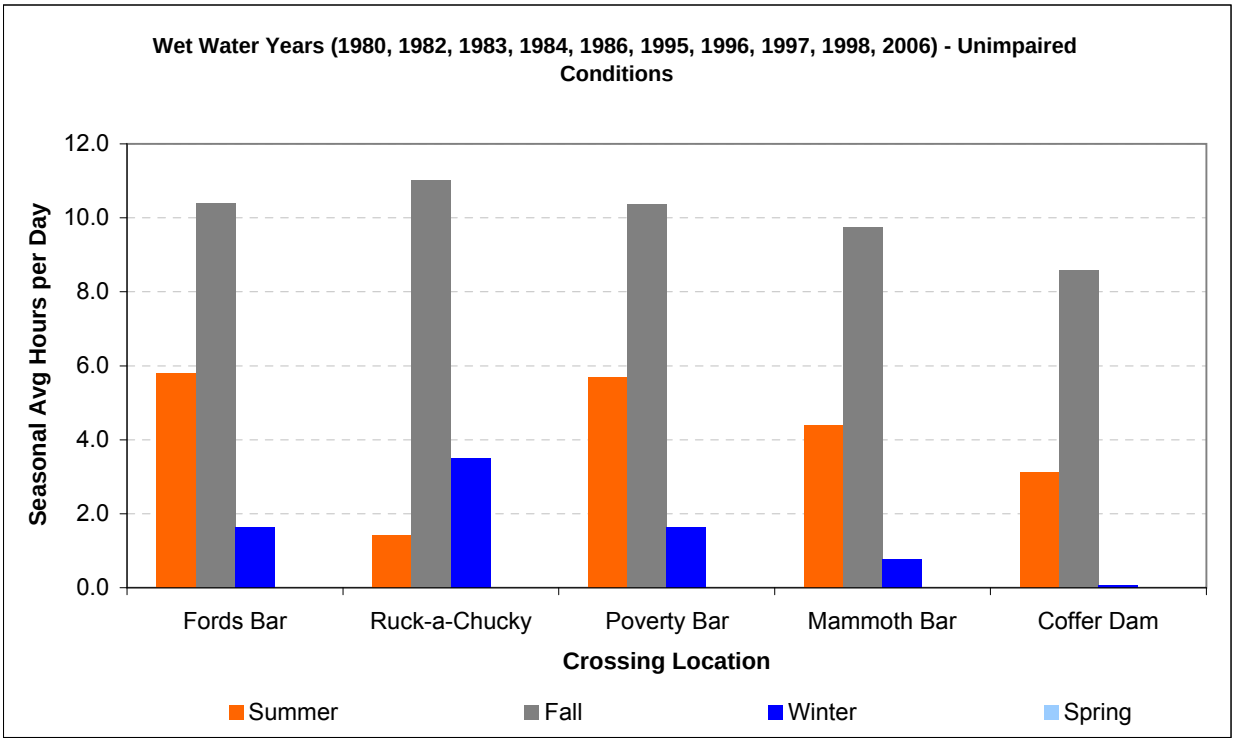
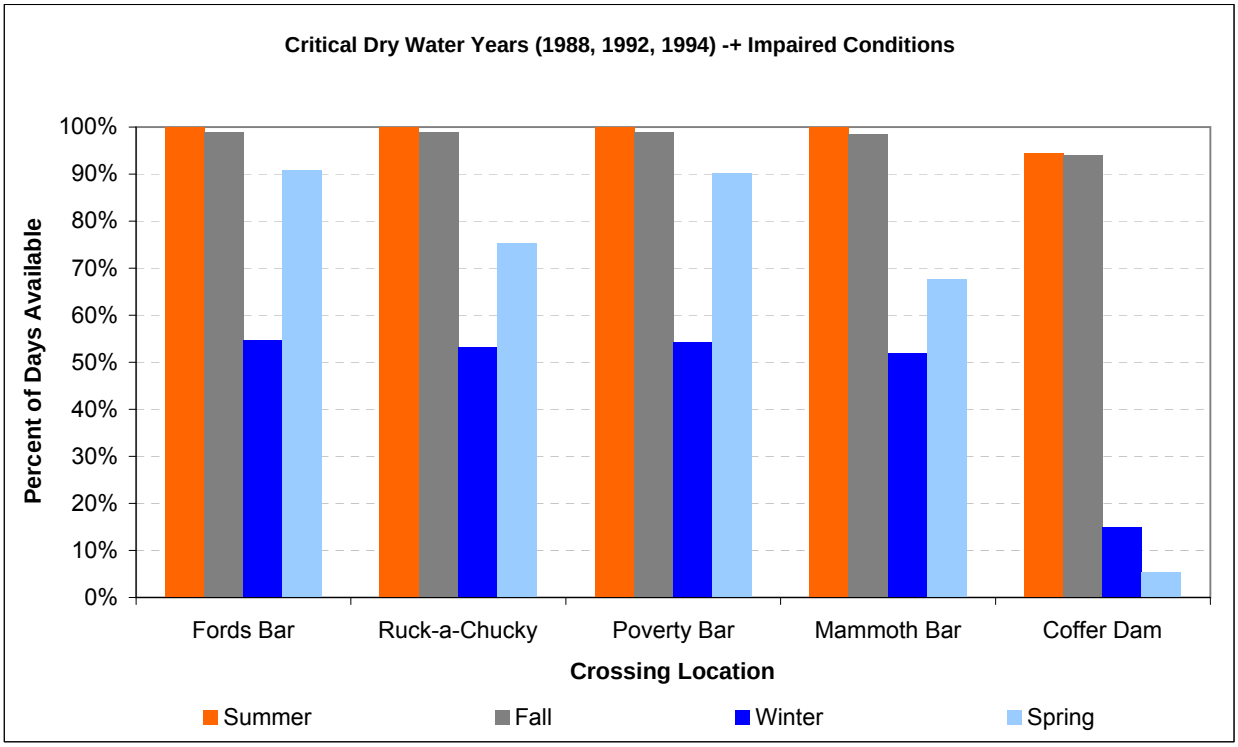


Figure 4-16. Trail Crossing Opportunities (Percent of Days) by Season.



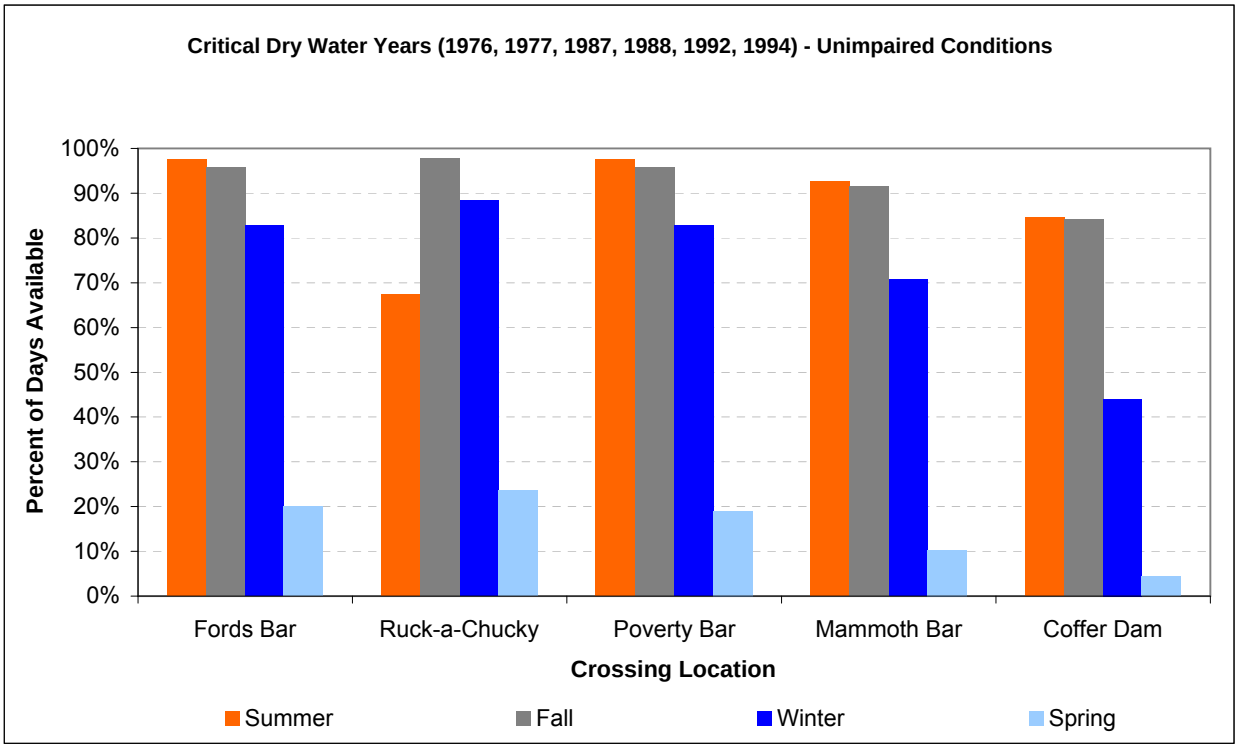
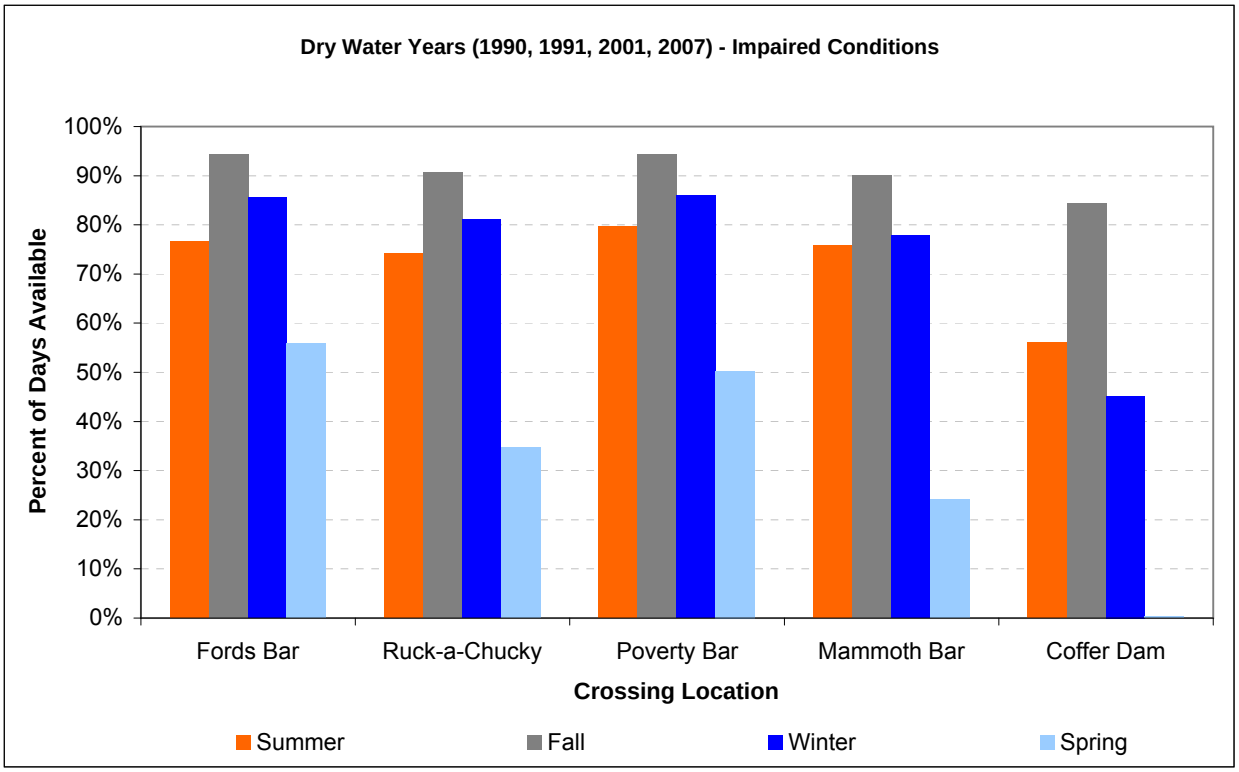


Figure 4-17. Trail Crossing Opportunities (Percent of Days) by Season.



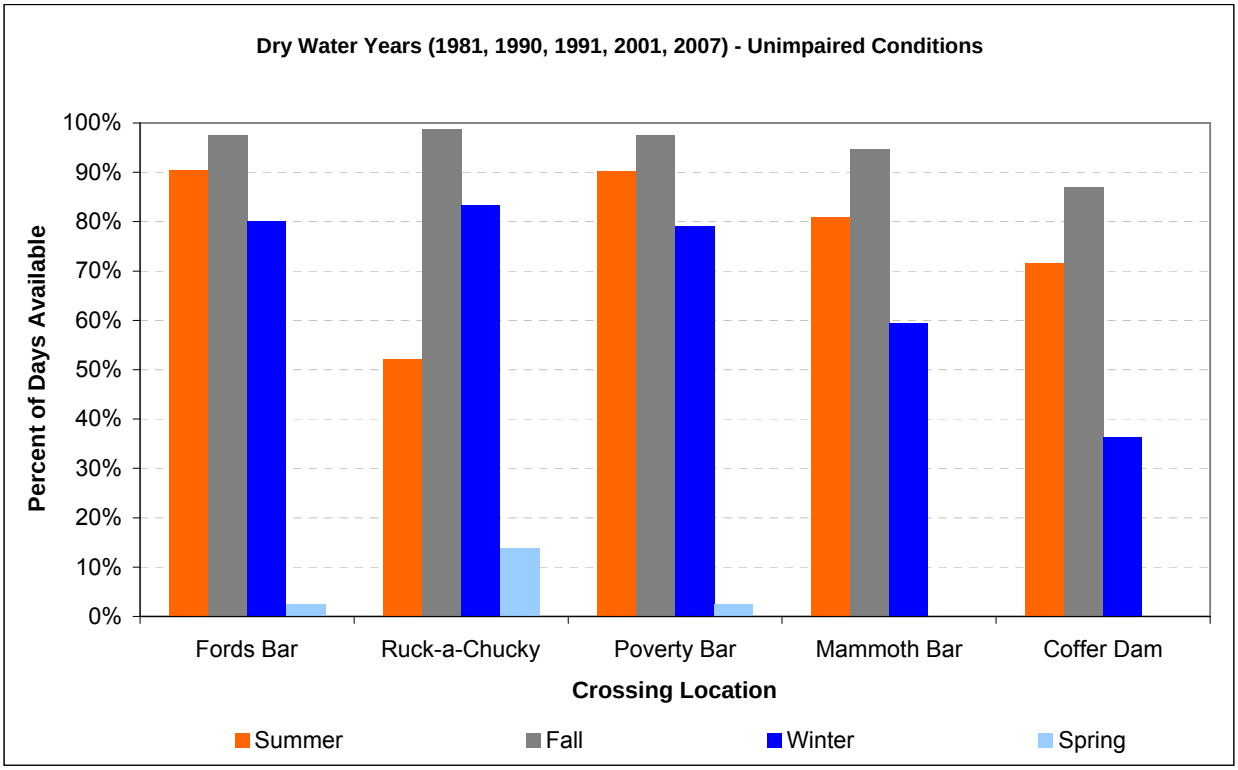
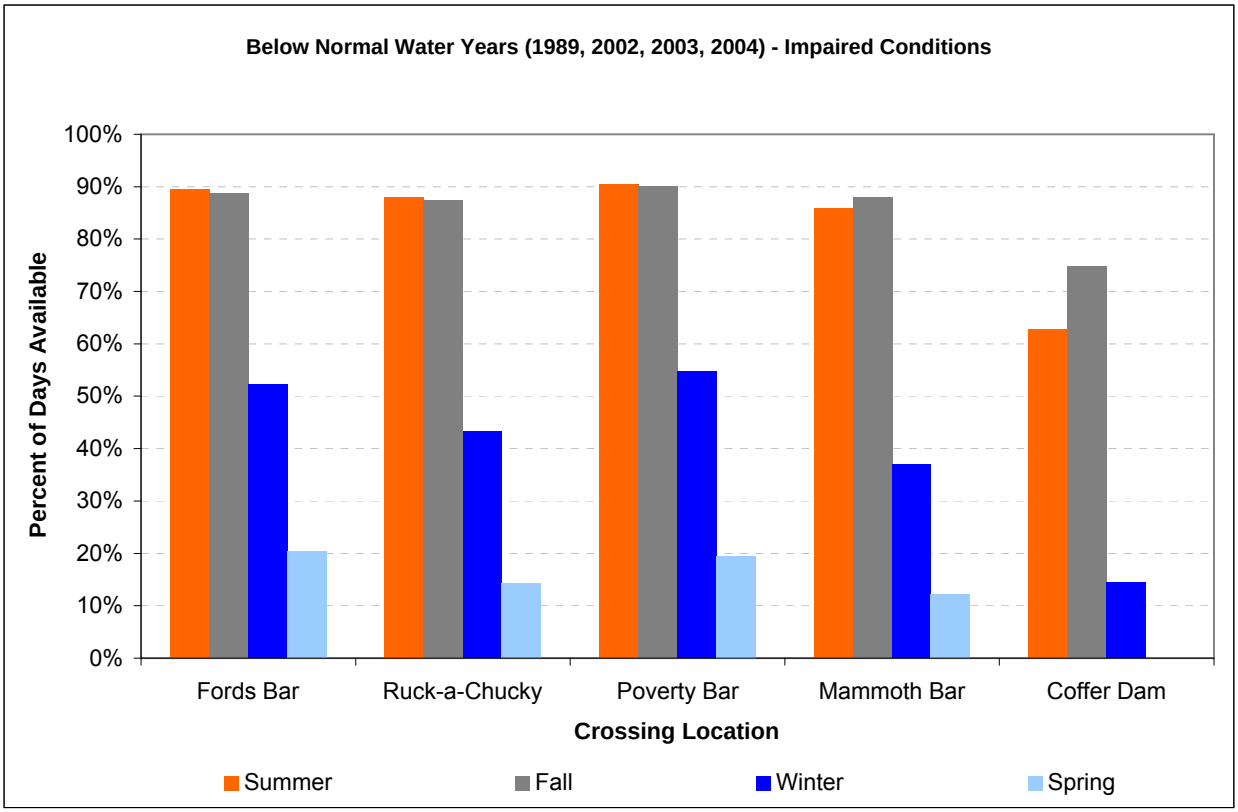


Figure 4-18. Trail Crossing Opportunities (Percent of Days) by Season.



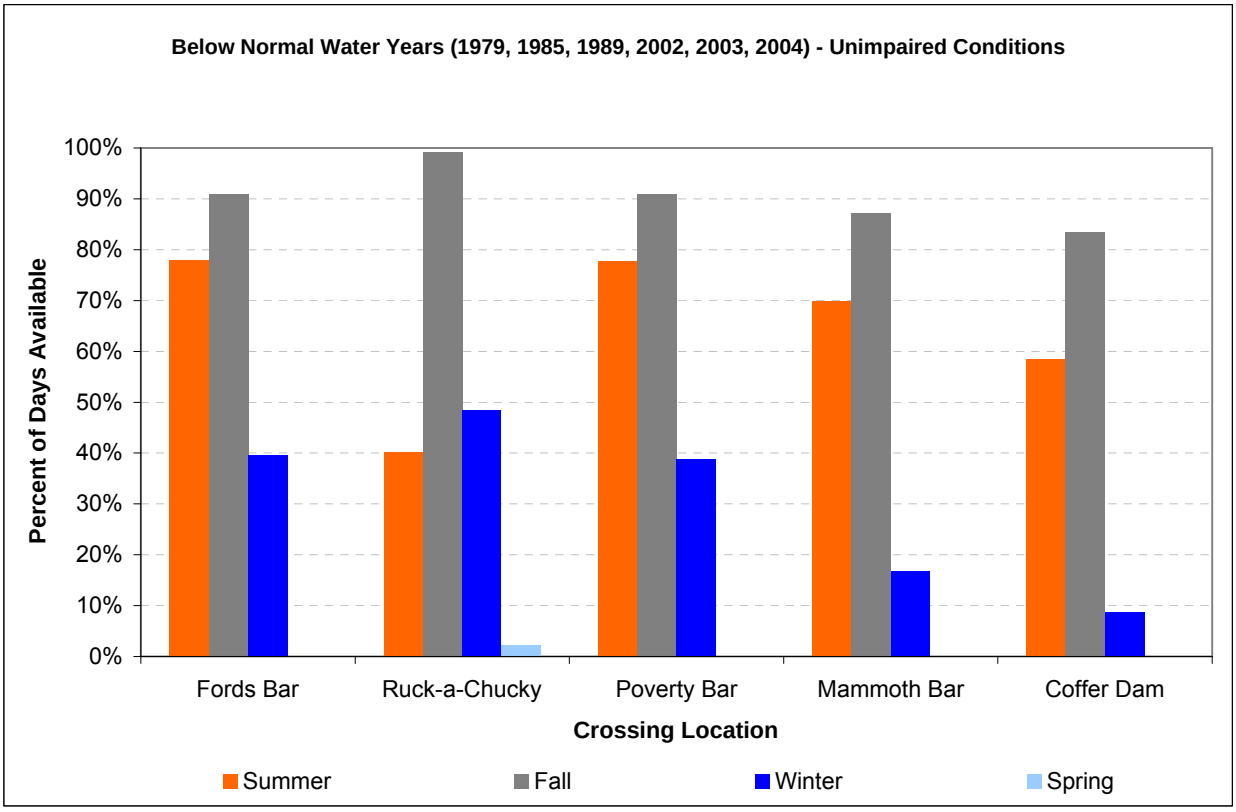
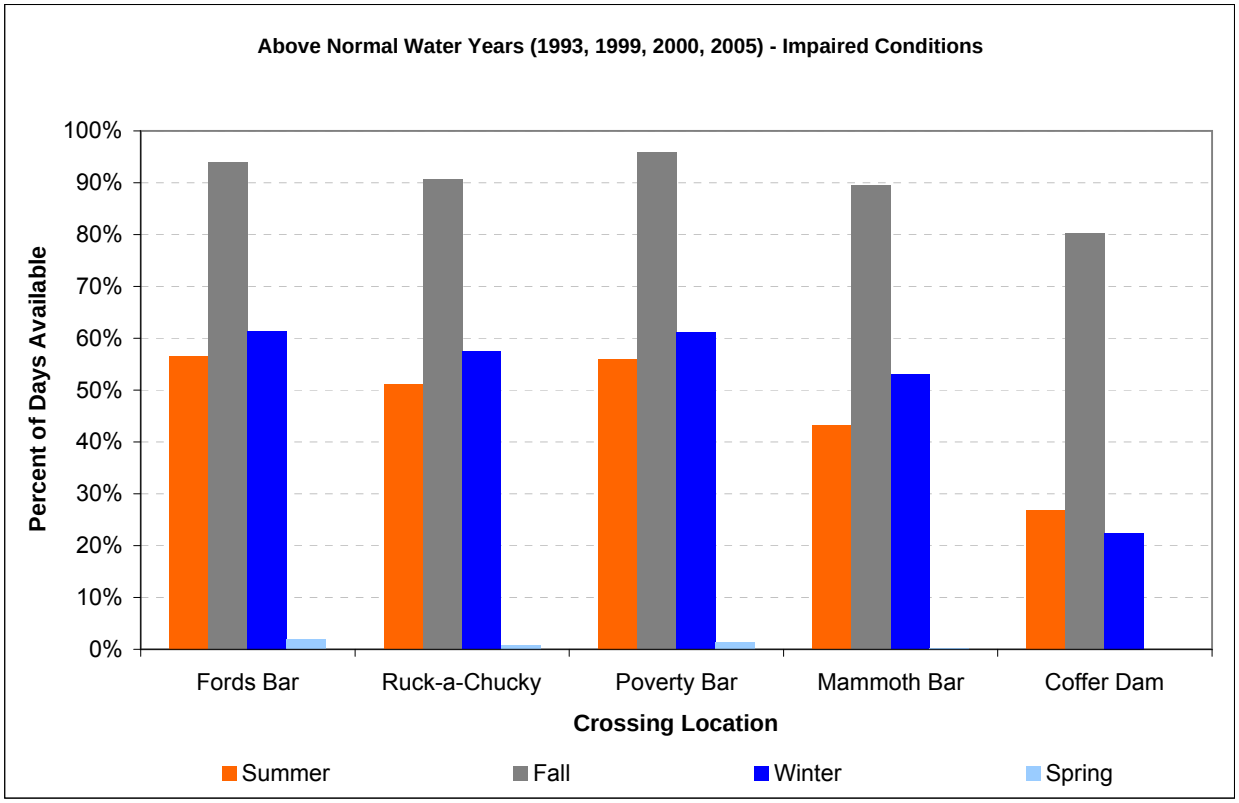


Figure 4-19. Trail Crossing Opportunities (Percent of Days) by Season.



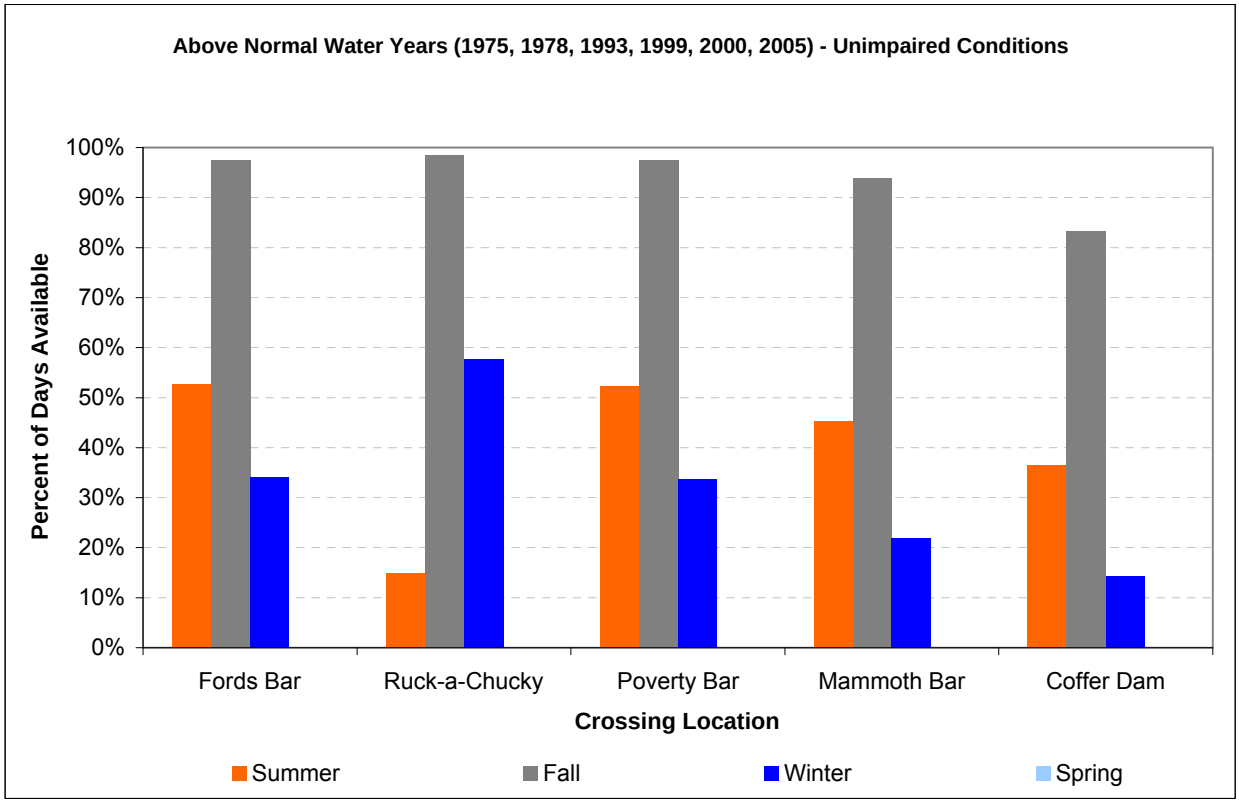
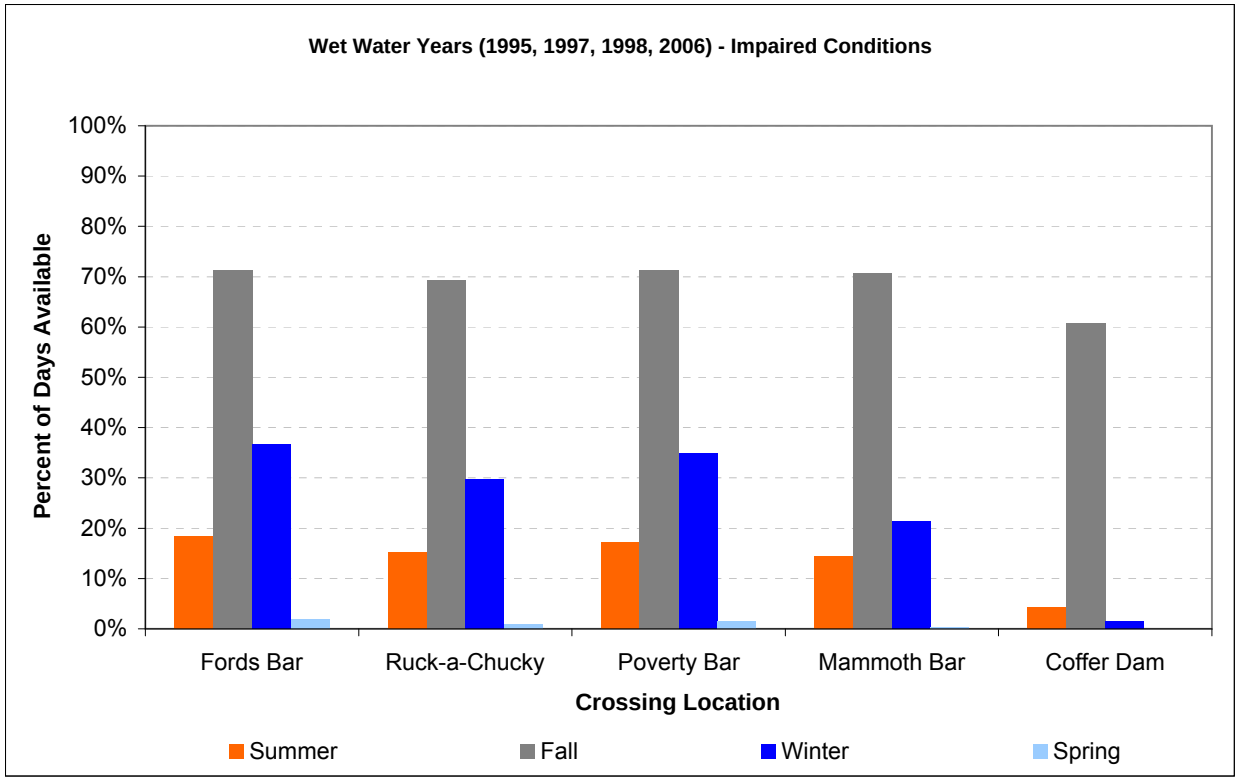


Figure 4-20. Trail Crossing Opportunities (Percent of Days) by Season.



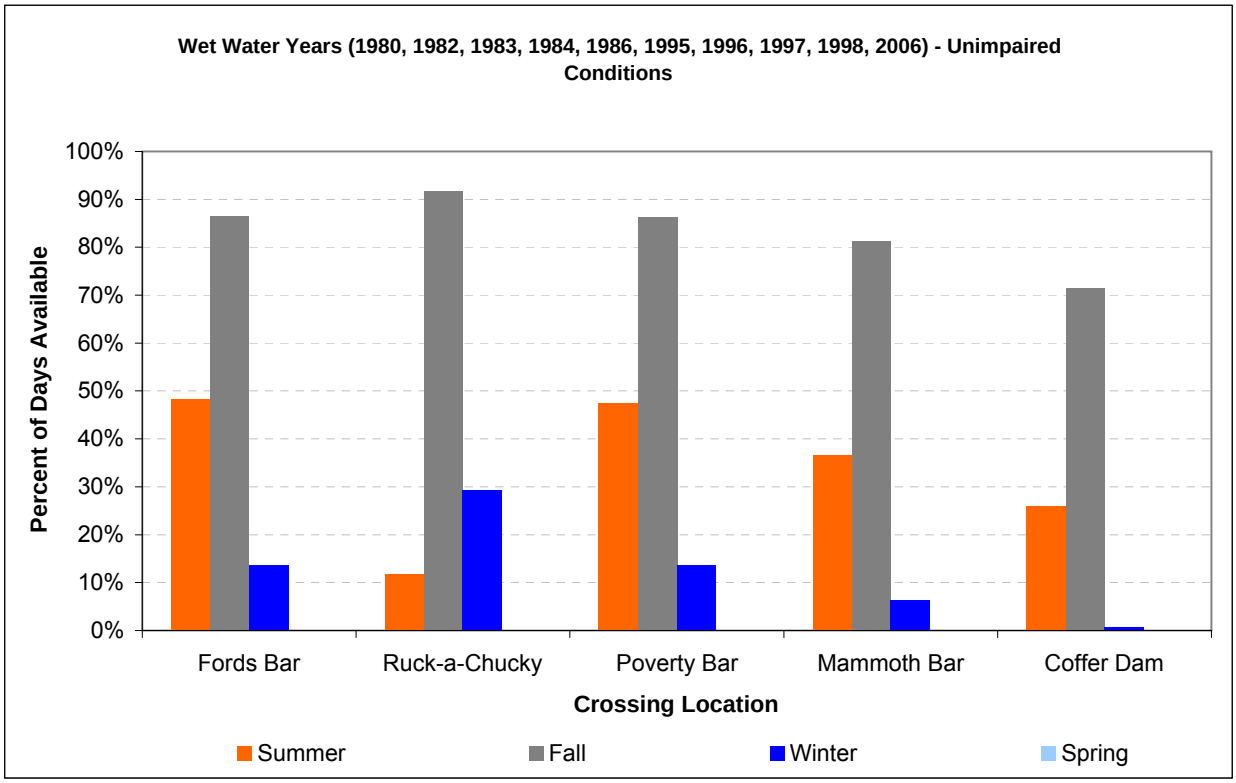
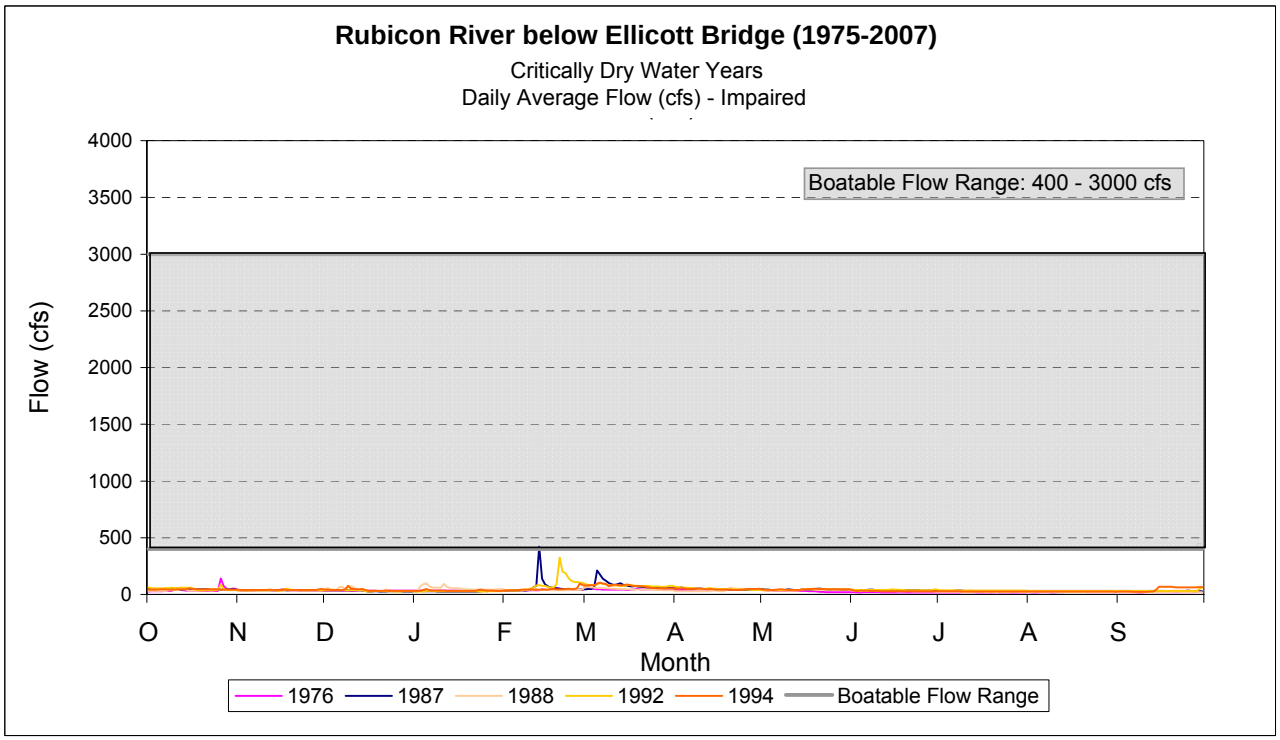


Figure REC 4-21. Whitewater Boating Opportunities on the Rubicon River Below Ellicott Bridge under Impaired and Unimpaired Conditions - Critically Dry Water Years



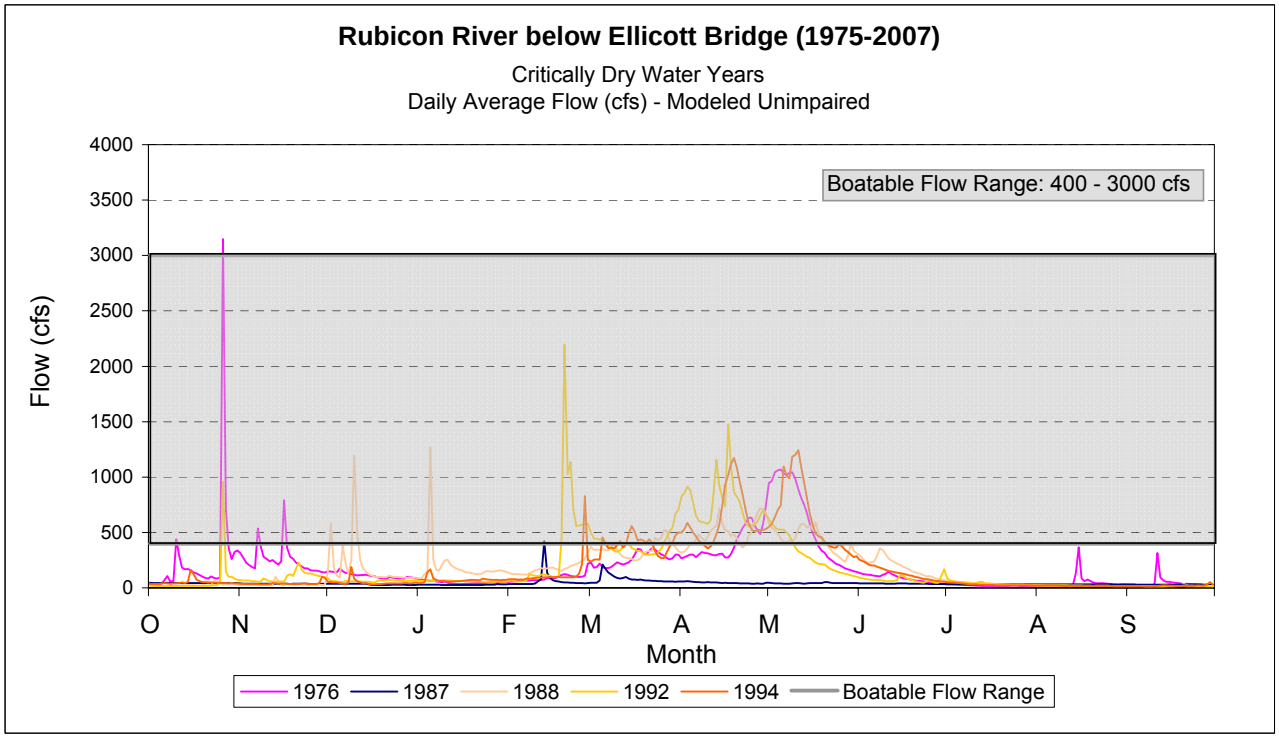
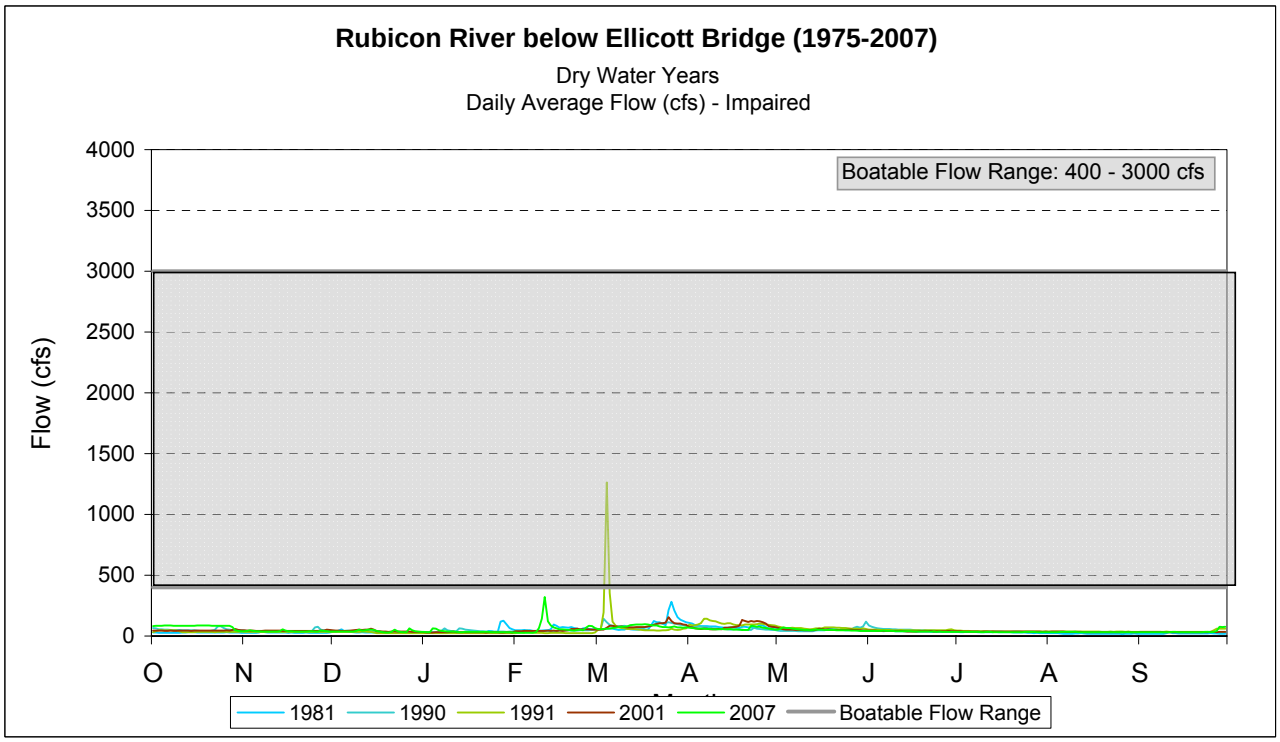


Figure REC 4-22. Whitewater Boating Opportunities on the Rubicon River Below Ellicott Bridge under Impaired and Unimpaired Conditions - Dry Water Years



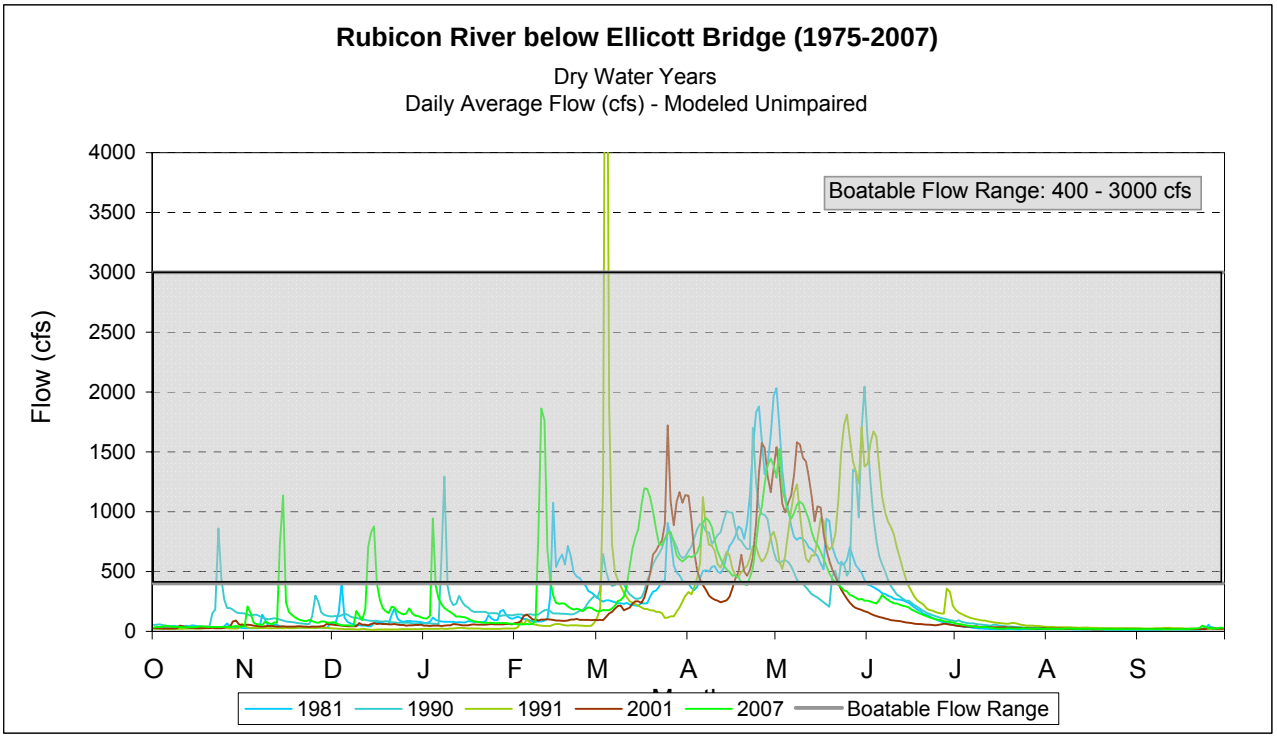
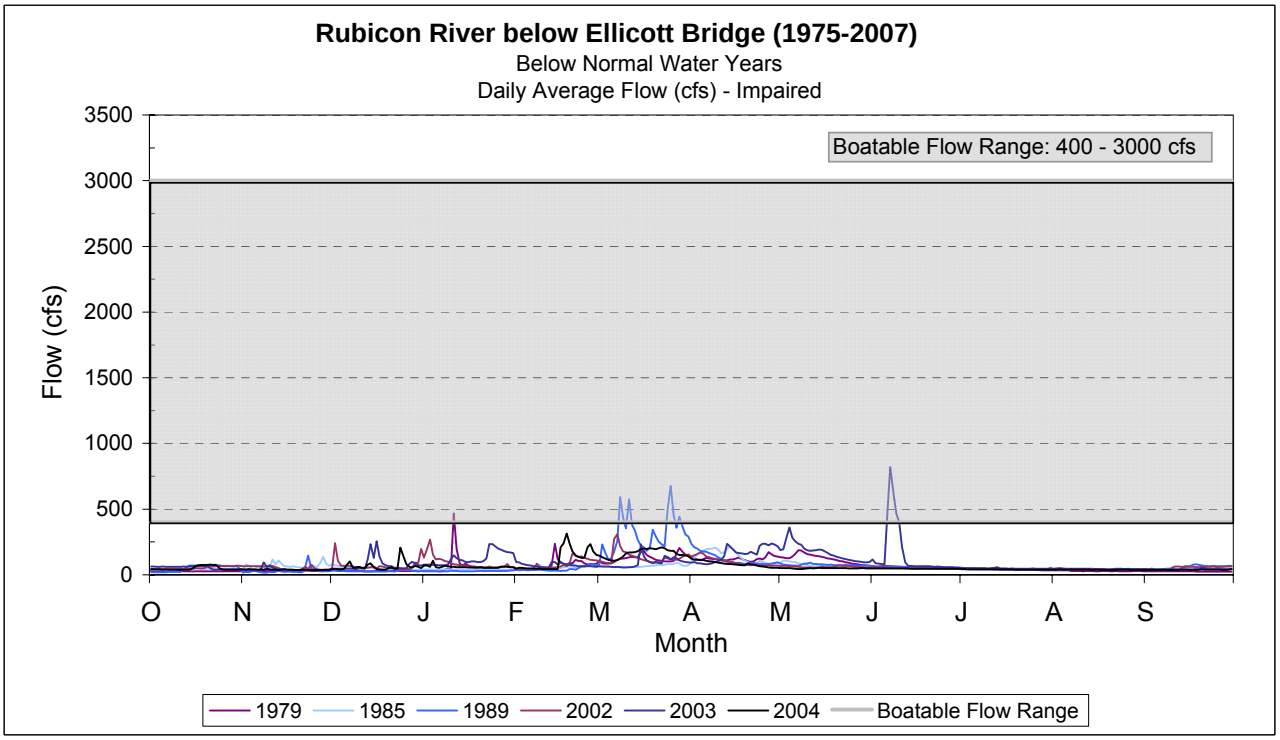


Figure REC 4-23. Whitewater Boating Opportunities on the Rubicon River Below Ellicott Bridge under Impaired and Unimpaired Conditions - Below Normal Water Years



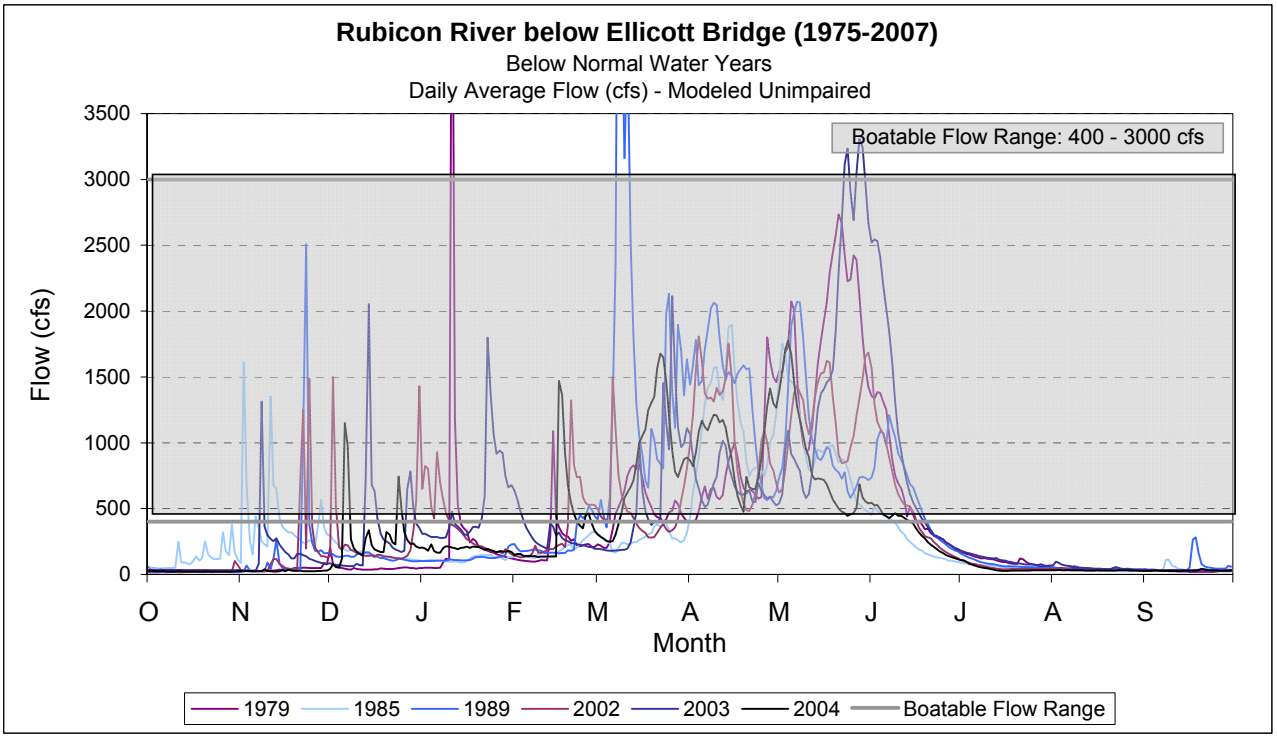
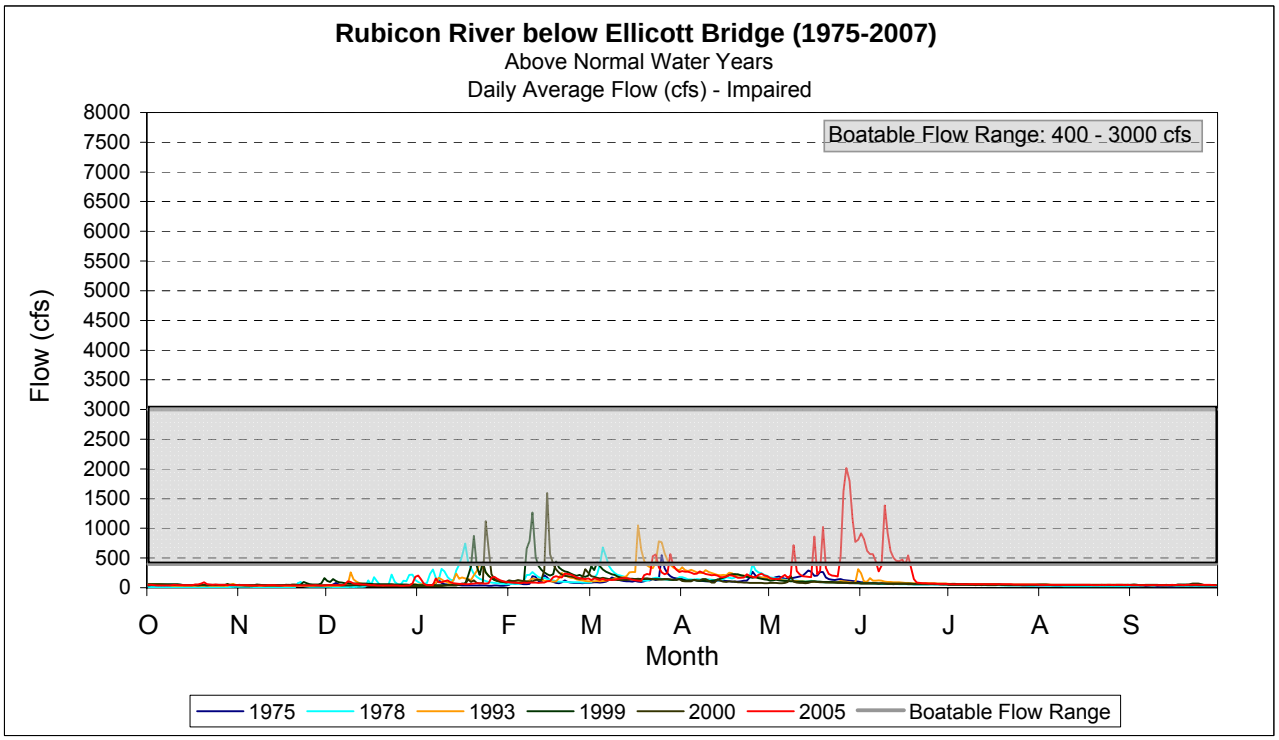


Figure REC 4-24. Whitewater Boating Opportunities on the Rubicon River Below Ellicott Bridge under Impaired and Unimpaired Conditions - Above Normal Water Years



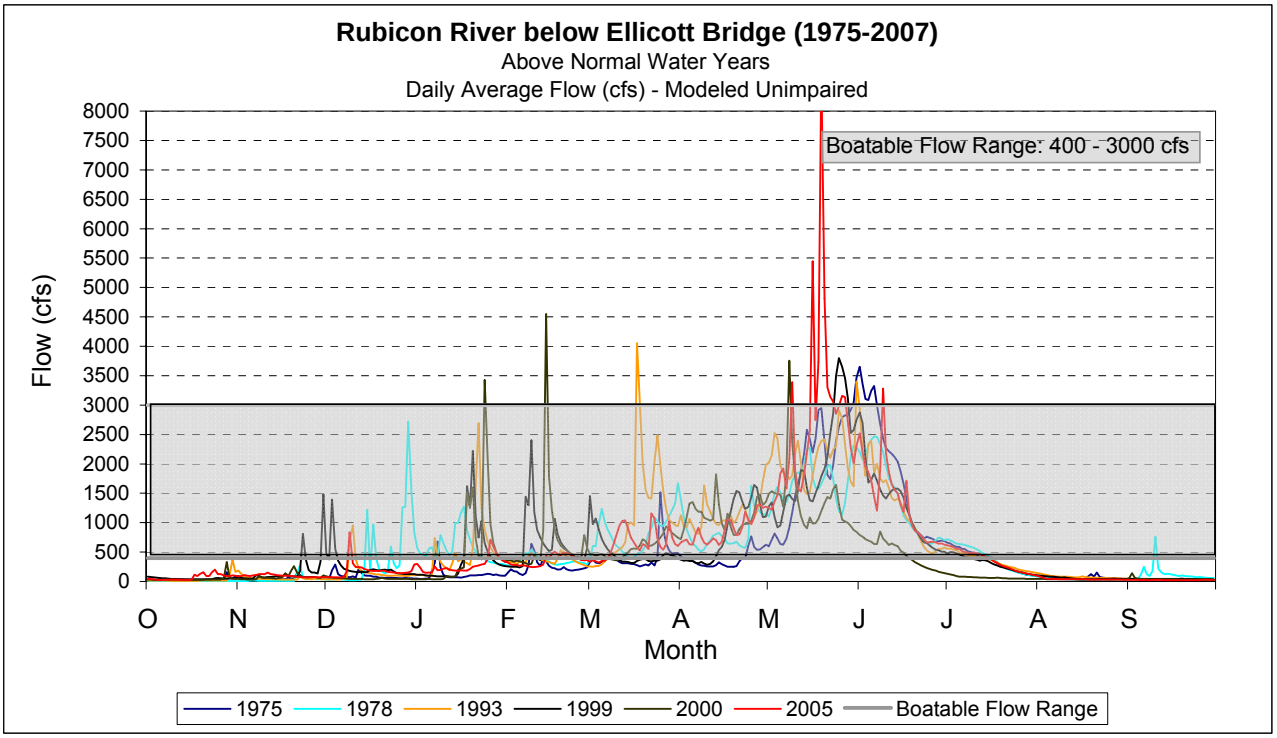
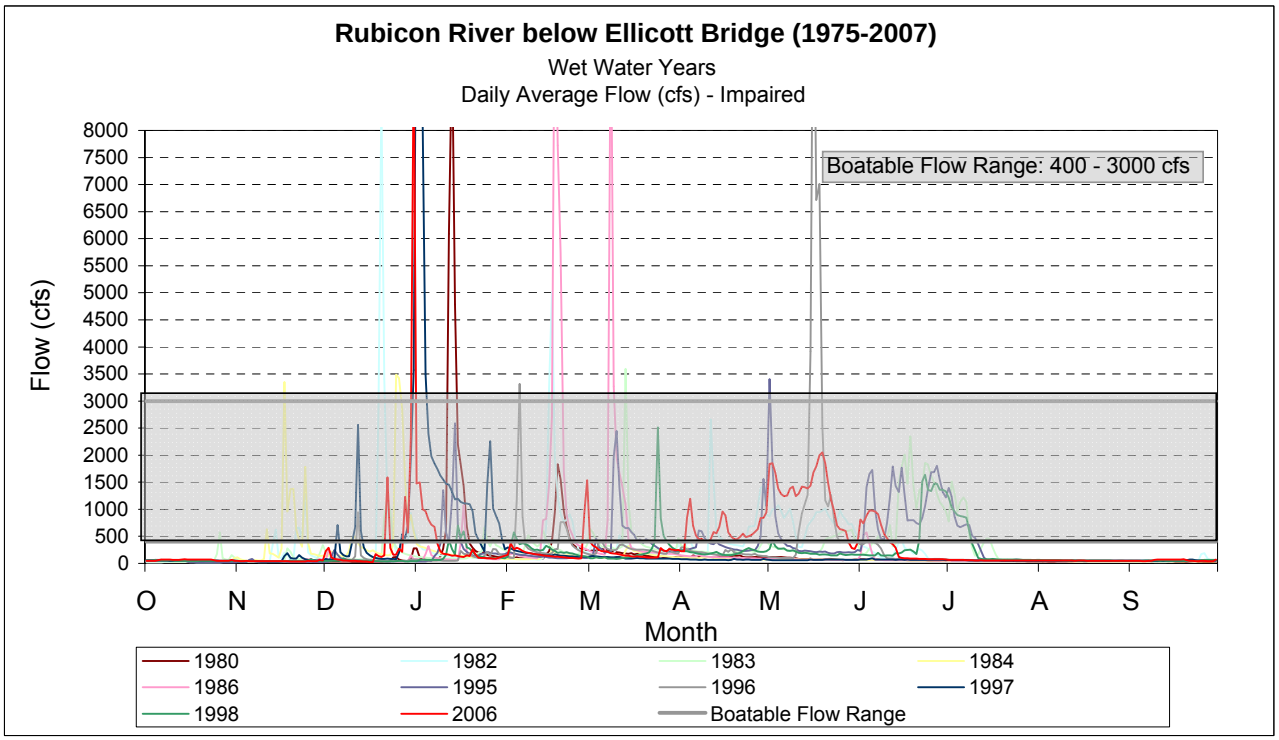


Figure REC 4-25. Whitewater Boating Opportunities on the Rubicon River Below Ellicott Bridge under Impaired and Unimpaired Conditions - Wet Water Years



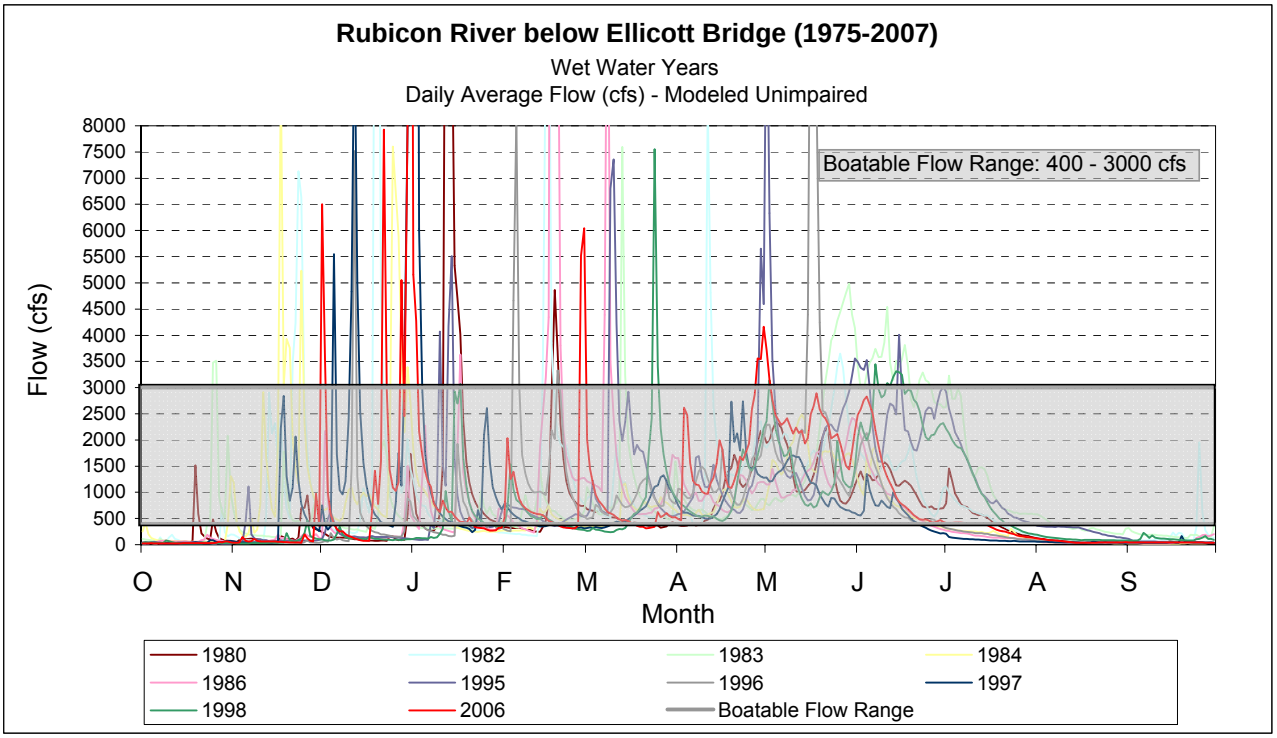
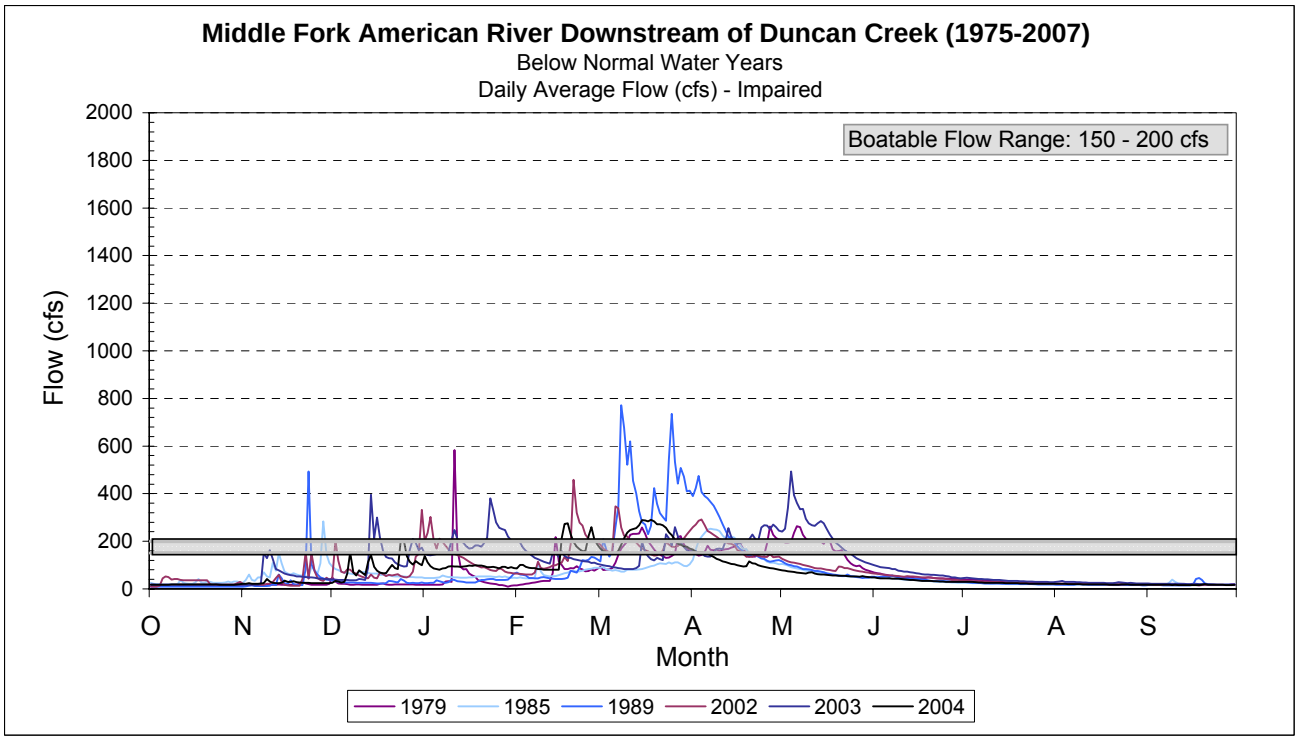


Figure REC 4-26. Whitewater Boating Opportunities on the Middle Fork American River Below Duncan Creek under Impaired and Unimpaired Conditions - Below Normal Water Years



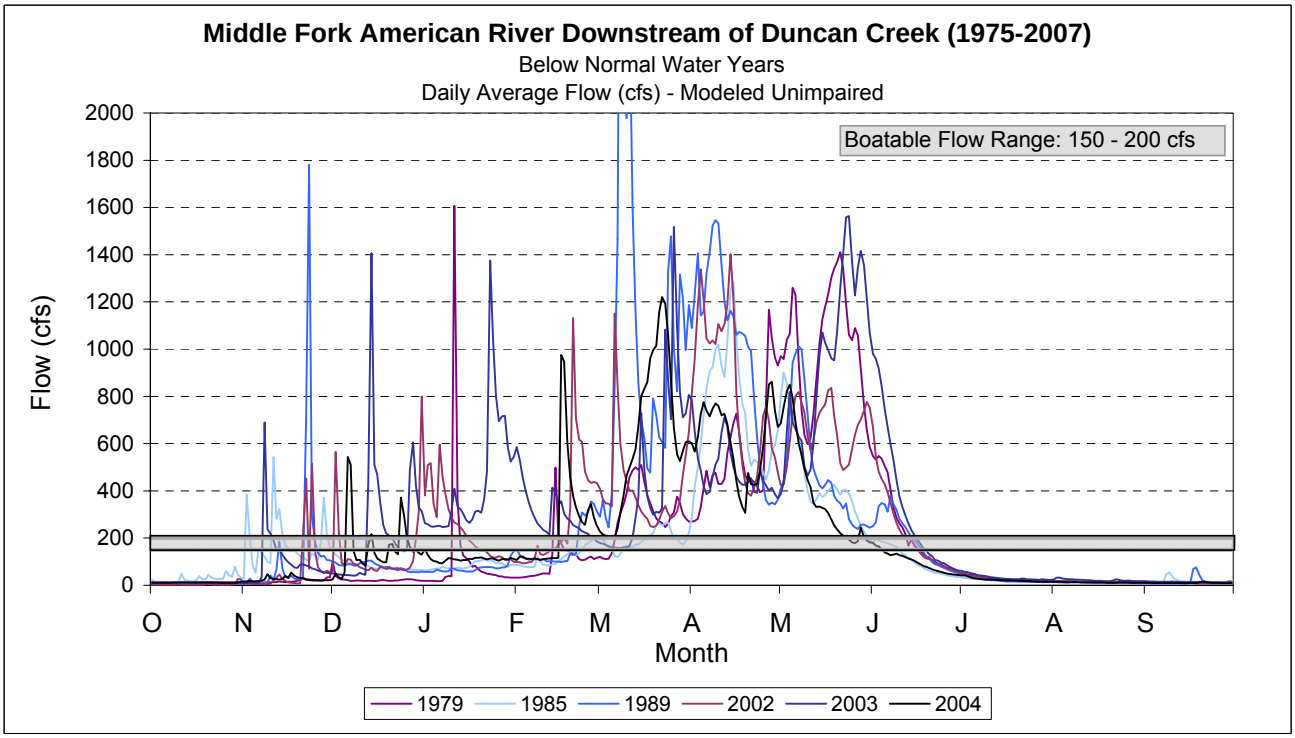


Figure REC 4-27. Average Number of Days and Hours that Ramping Occurred in the Peaking Reach.

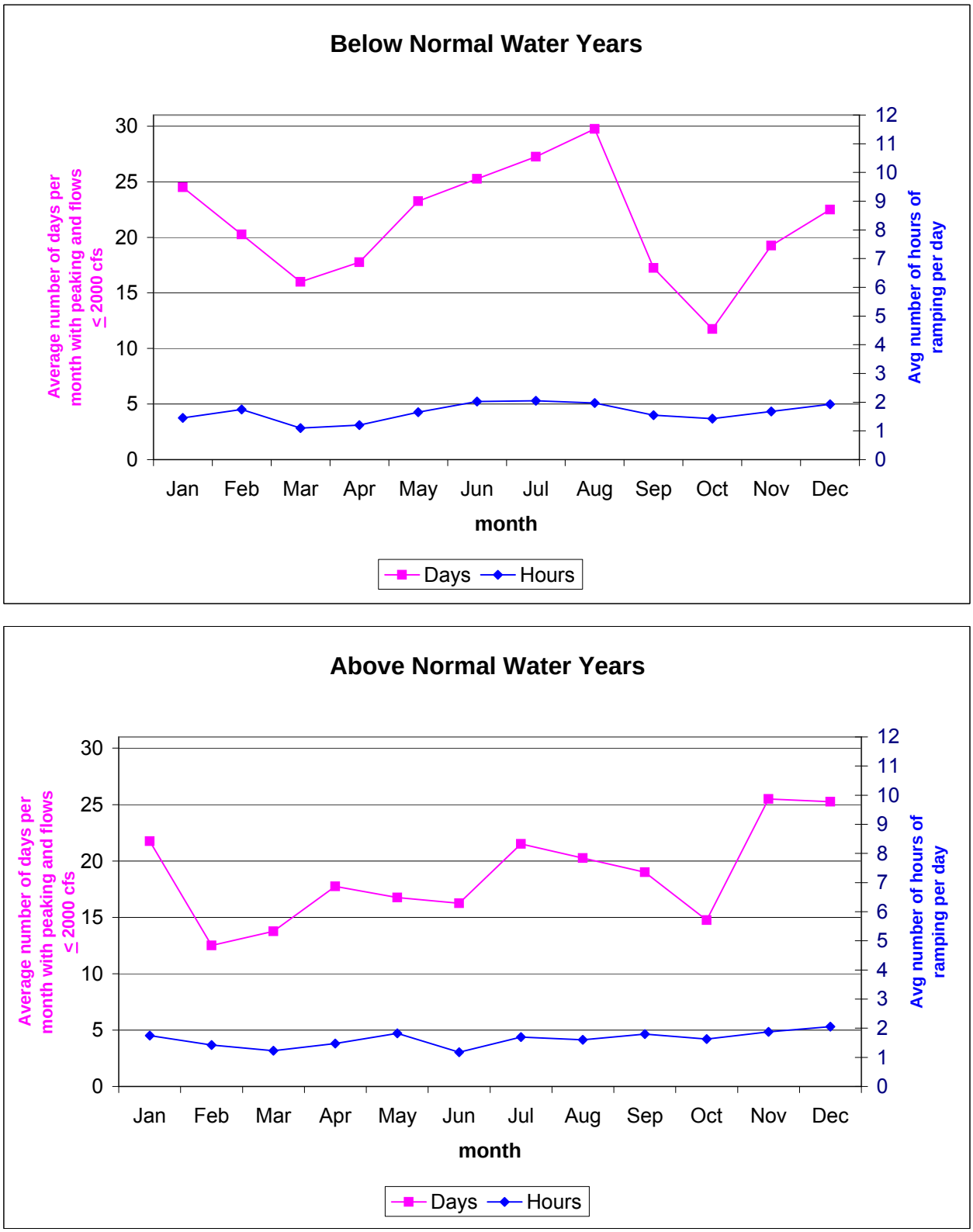
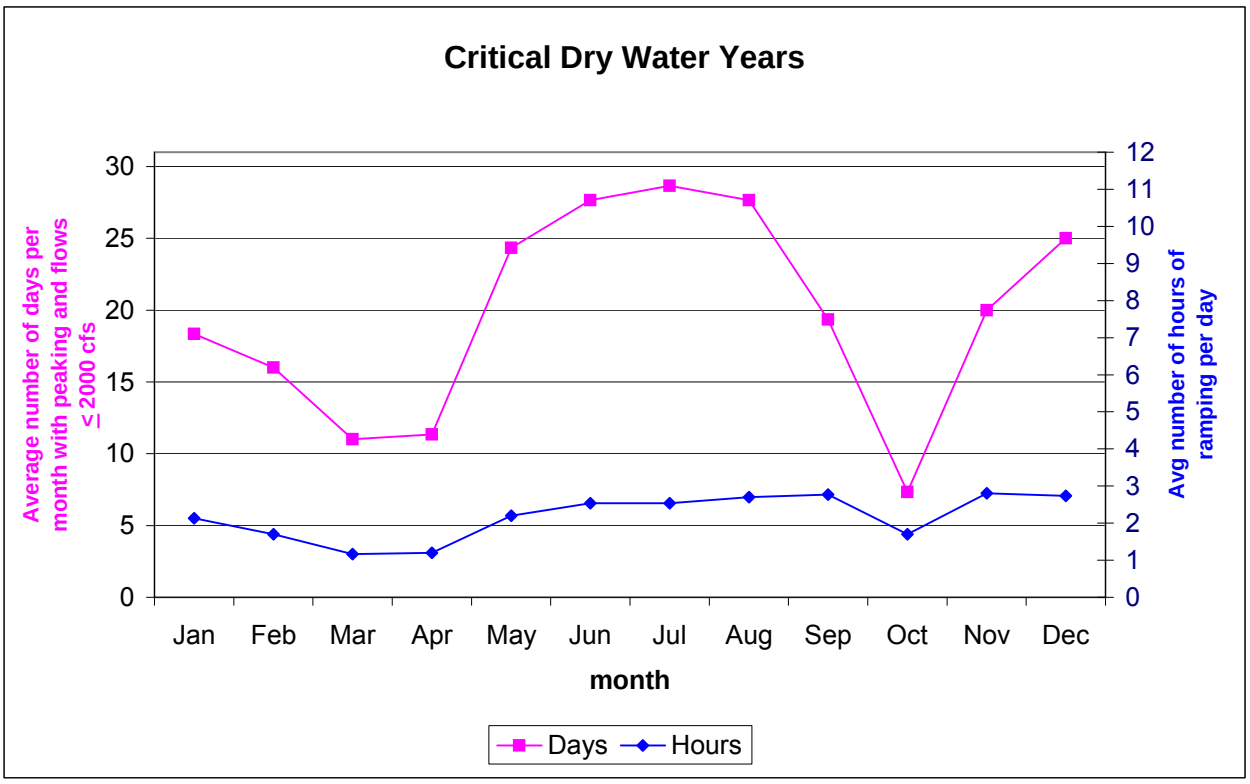


Figure REC 4-27. Average Number of Days and Hours that Ramping Occurred in the Peaking Reach (continued).



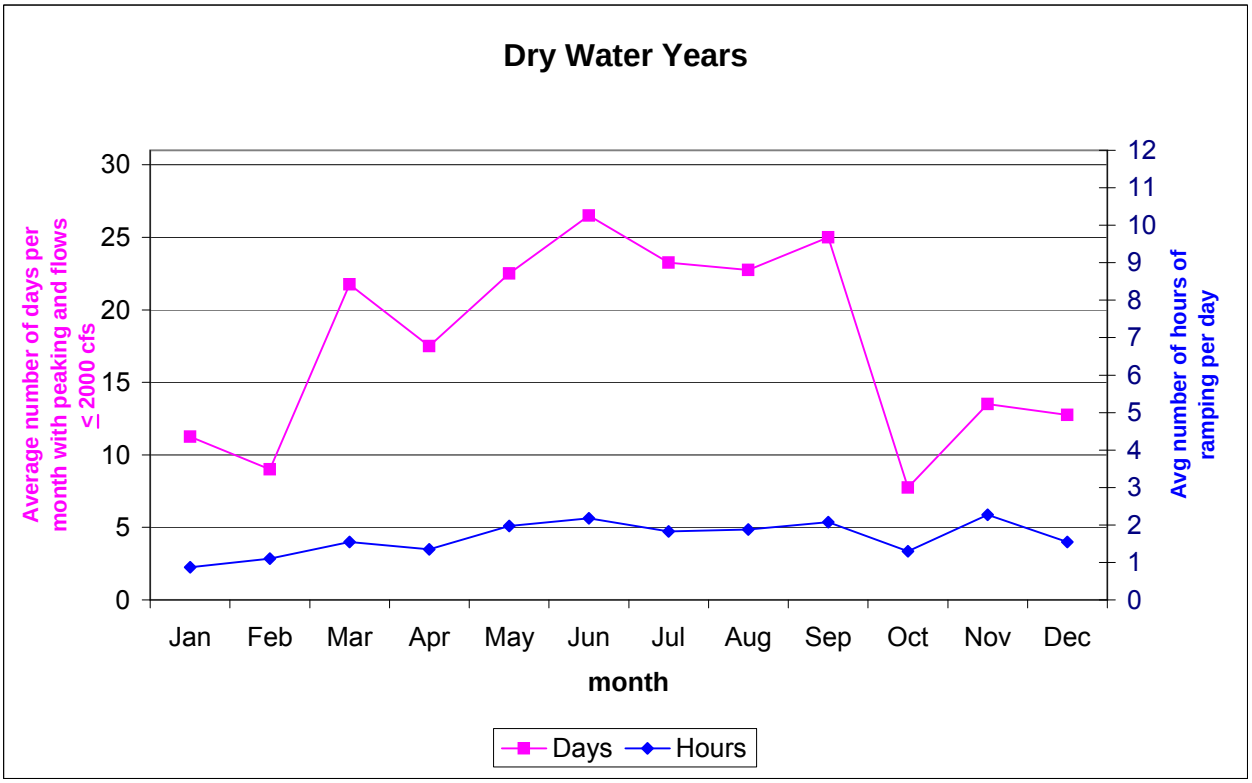
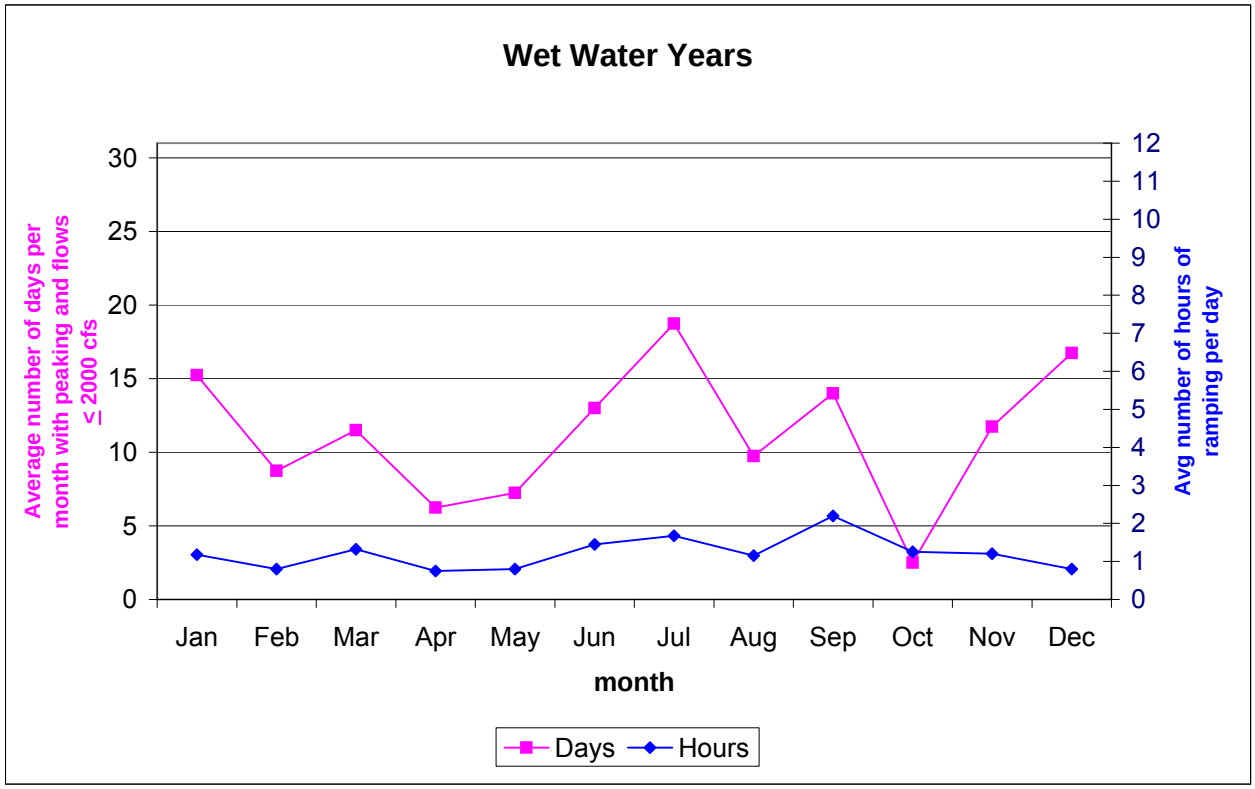


Figure REC 4-27. Average Number of Days and Hours that Ramping Occurred in the Peaking Reach (continued).



MAPS

APPENDIX A

Recreation Visitor Survey Instrument

Placer County Water Agency - Middle Fork American River Project
General Visitor Survey – Background Information

Survey No. _____ Survey Location: _____ Date: _____ Time: _____

SECTION A-1: BACKGROUND INFORMATION

1. Did you engage in any of the following activities during your visit?

   ☐ Camping at a developed site ☐ Day use at a developed site ☐ Day use or camping in undeveloped areas

   ☐ Day use along a stream/river ☐ Reservoir recreation ☐ Fishing

2. What type of vehicle did you drive to this area? ☐ Car/SUV/Truck ☐ Camper/RV ☐ Motorcycle ☐ Other_____

3. How many people were in your vehicle? _____

4. How many people in your group are in the following age categories?

   Under 18: _____ 18or over _____

5. How many and what types of vehicles and trailers did your **group** bring?

   Car/pickup/SUV: _____ Motor home/RV: _____ Motorcycle: _____ OHV: _____

   Towed/Trailered Vehicle: _____ Travel trailer: _____ Boat trailer: _____ Utility trailer: _____

   Horse trailer: _____ Other: _____

6. Your place of residence: Zip Code:_____ If your reside out of the country, what country: _____

7. What year were you born? _____

8. Which cultural or ethnic group do you most closely identify with?

   ☐ Hispanic or Latino ☐ White/Caucasian ☐ Asian

   ☐ Black/African American ☐ American Indian or Alaskan Native

   ☐ Native Hawaiian or Pacific Islander ☐ Other/Multi-racial:_____

9. What is your primary spoken language? _____

10. Identify the reasons why you chose this area to recreate?

Reason	Main Reason (Check one)	Secondary Reason (Check one or more)
Close to home	☐	☐
Scenic quality of the area	☐	☐
Recreational activities/opportunities in the area	☐	☐
Access to lake/reservoir	☐	☐
Access to river/stream	☐	☐
Cost of facility access fee	☐	☐
Presence of on-site manager/host	☐	☐
Lack of crowding	☐	☐
Other:_____	☐	☐

11. How important are each of the following facilities or amenities when choosing this area to recreate?

Facility/Amenity	Very Important	Important	Somewhat Important	Not Important
Developed campsites	☐	☐	☐	☐
Developed picnic sites	☐	☐	☐	☐
Flush restrooms	☐	☐	☐	☐
Drinking water	☐	☐	☐	☐
RV dump station	☐	☐	☐	☐
Boat launch ramps	☐	☐	☐	☐
River put-in/take-out	☐	☐	☐	☐
Hiking trails	☐	☐	☐	☐
OHV trails	☐	☐	☐	☐
Mountain bike trails	☐	☐	☐	☐
Fishing access trails	☐	☐	☐	☐
Equestrian trails	☐	☐	☐	☐
Interpretive/educational exhibits/information	☐	☐	☐	☐
Other:_____	☐	☐	☐	☐

Placer County Water Agency - Middle Fork American River Project
General Visitor Survey – Background Information

12. Identify the activities you engaged in, or expect to engage in, during your trip to this area.

Activities	Main Activity (Check one)	Secondary Activity (Check one or more)
Picnicking in developed sites	☐	☐
Picnicking in undeveloped sites	☐	☐
Camping in developed site	☐	☐
Camping in undeveloped site	☐	☐
Reservoir swimming/water-play/sun bathing	☐	☐
Reservoir fishing	☐	☐
Water skiing, wake boarding	☐	☐
Personal water craft (jet skiing)	☐	☐
Non-motorized reservoir boating (canoeing, kayaking, row boating)	☐	☐
Sailing	☐	☐
Stream swimming/water-play/sun bathing	☐	☐
Stream fishing	☐	☐
Whitewater boating (rafting, kayaking, canoeing)	☐	☐
Sports/games/field activities	☐	☐
Bicycling on paved surfaces	☐	☐
Hiking/walking	☐	☐
Horseback riding	☐	☐
Mountain biking	☐	☐
Visiting historic/cultural sites	☐	☐
Viewing wildlife, scenery photography, etc.	☐	☐
Driving for pleasure on roads	☐	☐
OHV travel/use	☐	☐
Plant gathering (berries, mushrooms, grasses, etc.)	☐	☐
Wood cutting	☐	☐
Hunting	☐	☐
Rock hounding	☐	☐
Gold panning/dredging	☐	☐
Relaxing	☐	☐
Other:_____	☐	☐

13. Please rate the availability and adequacy of the following information resources.

Information Resources	Acceptable	Somewhat Acceptable	Not Acceptable	Not Applicable
Interpretive/educational information	☐	☐	☐	☐
Recreation visitor information	☐	☐	☐	☐
Safety/warning information	☐	☐	☐	☐
Reservoir water surface elevation information	☐	☐	☐	☐
River/stream flow information	☐	☐	☐	☐
Other:_____	☐	☐	☐	☐

14. How would you rate your overall recreation experience?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

If unsatisfied please explain:

_____
_____
_____
_____

15. Are there additional recreation facilities, amenities, or opportunities that would improve your recreation experience?

☐ Yes ☐ No

Please explain:

_____
_____
_____
_____

SECTION A-2

Camping at Developed Sites

1. Survey No. _____
2. Name of primary campground used: _____
3. How many nights will you camp during this visit? _____(nights)
4. Were you able to camp at your first choice campground? ☐ Yes ☐ No
   If no, what was your first choice campground? _____
5. What was your method of camping?

	☐ Tent	☐ Tent trailer		
Recreational vehicle	☐ less than 25 feet	☐ 25 – 35 feet	☐ longer than 35 feet	
Trailer:	☐ less than 25 feet	☐ 25 – 35 feet	☐ longer than 35 feet	
	☐ Other:_____			

6. Please rate the following factors at the campground identified above.

Factor	Acceptable	Somewhat Acceptable	Not Acceptable
Campsite availability	☐	☐	☐
Campsite condition	☐	☐	☐
Campsite cleanliness	☐	☐	☐
Adequacy of campsite screening	☐	☐	☐
Adequacy of campsite shading	☐	☐	☐
Restroom condition	☐	☐	☐
Restroom cleanliness	☐	☐	☐
Drinking water availability	☐	☐	☐
Trash disposal	☐	☐	☐
Parking availability	☐	☐	☐
Parking area condition	☐	☐	☐
Adequacy of food storage lockers	☐	☐	☐
Condition of food storage lockers	☐	☐	☐
Parking spur size	☐	☐	☐
Road condition in campground	☐	☐	☐
Adequacy of road size in campground	☐	☐	☐
Cost of campground fee	☐	☐	☐
Adequacy of law enforcement personnel	☐	☐	☐
Other:_____	☐	☐	☐

7. Were the services and/or facilities at the campground you identified above adequate for any physically impaired person in your party? ☐ Not Applicable ☐ Yes ☐ No
   If inadequate, please explain:
   _____
   _____
   _____
8. Was your recreation experience **negatively** affected by:
   a) Crowding? ☐ Yes ☐ No
   b) Other activities taking place? ☐ Yes ☐ No
   If yes, please explain: _____
9. How would you rate your overall experience at the campground identified above?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

If unsatisfied please explain:
_____
_____
_____
_____

SECTION A-3

Day Use at Developed Sites (Picnic Areas/Vistas)

1. Survey No. _____
2. Name of primary day use site: _____
3. How many hours did you, or will you, stay at your primary day use site? _____ (hours)
4. Were you able to use your first choice developed day use site? ☐ Yes ☐ No

   If no, what was your first choice day use site? _____
5. Please rate the following factors at the developed day use site identified above.

Factor	Acceptable	Somewhat Acceptable	Not Acceptable
Picnic site availability	☐	☐	☐
Picnic site condition	☐	☐	☐
Picnic site cleanliness	☐	☐	☐
Trash disposal	☐	☐	☐
Parking availability	☐	☐	☐
Parking area condition	☐	☐	☐
Restrooms condition	☐	☐	☐
Restrooms cleanliness	☐	☐	☐
Drinking water availability	☐	☐	☐
Adequacy of law enforcement personnel	☐	☐	☐
Other: _____	☐	☐	☐

6. Were the services and/or facilities at the area you identified above adequate for any physically impaired person in your party? ☐ Not Applicable ☐ Yes ☐ No

   If inadequate, please explain:

   _____
   _____
7. Was your recreation experience **negatively** affected by:

   a) Crowding? ☐ Yes ☐ No

   b) Other activities taking place? ☐ Yes ☐ No

   If yes, please explain:

   _____
   _____
   _____
8. How would you rate your overall experience at the day use site identified above?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

   If unsatisfied please explain:

   _____
   _____
   _____
   _____

SECTION A-4

Day Use or Camping in Undeveloped Areas

1. Surve y No. _____

2. Primary location: _____

3. How long did you, or will you, stay at the area identified above?

   If day use only, how many hours: ____ (hours)

   If camping, how many nights: _____ (nights)

4. If you camped**,** what was your method of camping?

   ☐ Tent ☐ Tent trailer

   Recreational vehicle: ☐ less than 25 feet ☐ longer than 25 feet

   Trailer: ☐ less than 25 feet ☐ longer than 25 feet

   ☐ Other: _____

5. Was your recreation experience **negatively** affected by:

   a) Crowding? ☐ Yes ☐ No

   b) Other activities taking place? ☐ Yes ☐ No

   If yes, explain:

   _____

   _____

   _____

6. How would you rate your overall experience at the undeveloped area identified above?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

   If unsatisfied, please explain:

   _____

   _____

   _____

SECTION A-5

Day Use along a Stream/River

1. Surve y No. _____

2. Primary stream/river reach used: _____

3. Other stream/river reach(s) used: _____

4. What was your main recreation activity at the primary stream/river reach identified above? _____

5. Approximately what time did you arrive at the primary stream/river reach identified above? _____

6. Approximately how many hours did you, or will you, stay at the primary reach identified above? _____

7. Please rate the following factors at the stream/river reach identified above.

Factor	Acceptable	Somewhat Acceptable	Not Acceptable
Availability of beach/useable areas	☐	☐	☐
Ability to safely enter and exit the water	☐	☐	☐
Ability to safely wade or stand in river/stream	☐	☐	☐
Ability to safely swim in river/stream	☐	☐	☐
Ability to safely cross the river/stream	☐	☐	☐
Adequacy of put-ins and take-outs	☐	☐	☐
Adequacy of road access to river or stream	☐	☐	☐
Adequacy of trail access to river or stream	☐	☐	☐
Adequacy of law enforcement personnel	☐	☐	☐
Other:_____	☐	☐	☐

8. Did you perceive a **change** in river/stream level during your visit? ☐ Yes ☐ No

   If yes, did the **change** in river/stream level **negatively** affect your recreation experience? ☐ Yes ☐ No

   If "yes", please explain:

   _____
   _____
   _____

9. Was your recreation experience **negatively** affected by:

   a) Crowding? ☐ Yes ☐ No

   b) Other activities taking place? ☐ Yes ☐ No

   c) River/stream flow? ☐ Yes ☐ No

   d) Other: _____

   If yes, please explain:

   _____
   _____
   _____

10. How would rate your overall experience at the river/stream reach identified above?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

    If unsatisfied, please explain:

    _____
    _____

SECTION A-6

Reservoir Recreation

1. Surve y No. _____
2. Name of primary reservoir used: _____
3. How many hours did you, or will you, spend at the reservoir? ____ (hours)
4. If you engaged in boating activities during your visit, what type of boat did you use?

   ☐ Ski boat ☐ Fishing boat ☐ Pontoon boat ☐ Sail boat ☐ Personal watercraft

   ☐ Non-power boats (i.e., canoe, kayak, row boat, raft, etc.)
5. If applicable, check the name of the launch facility(s) you used:

   ☐ French Meadows Boat Ramp ☐ McGuire Boat Ramp ☐ Hell Hole Boat Ramp ☐ Ralston Cartop Boat Ramp

   ☐ Other: _____
6. Please rate the following factors at the reservoir identified above.

Factor	Acceptable	Somewhat Acceptable	Not Acceptable
Access to shoreline	☐	☐	☐
Parking availability	☐	☐	☐
Parking area condition	☐	☐	☐
Condition of boat ramp	☐	☐	☐
Boat ramp access	☐	☐	☐
Restroom condition	☐	☐	☐
Restroom cleanliness	☐	☐	☐
Availability of trash disposal	☐	☐	☐
Drinking water availability	☐	☐	☐
Adequacy of reservoir water depths	☐	☐	☐
Presence of debris or obstacles	☐	☐	☐
Access to boat-in campgrounds	☐	☐	☐
Adequacy of law enforcement personnel	☐	☐	☐
Other:_____	☐	☐	☐

7. Was your recreation experience **negatively** affected by:

   a) Crowding? ☐ Yes ☐ No

   b) Other activities taking place? ☐ Yes ☐ No

   c) Reservoir water surface level? ☐ Yes ☐ No

   If yes, explain:

   _____

   _____

   _____
8. How would you rate your overall experience at the reservoir identified above?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

   If unsatisfied, please explain:

   _____

   _____

   _____

SECTION A-7

Fishing

1. Survey Number _____
2. Primar y fishing location: ☐ French Meadows Reservoir ☐ Hell Hole Reservoir ☐ River/Stream
3. If river/stream fishing, what reach of river stream was you primary fishing location? _____
4. How many total hours have you spent fishing during your visit at your primary fishing location? _____
5. From where did you fish? ☐ From a boat ☐ From the shoreline
6. What gear type(s) did you use today?

If fishing from a boat:	If fishing from the shore:
☐ Troll lures	☐ Cast lures
☐ Troll bait	☐ Cast bait
☐ Cast lures	☐ Fly fish
☐ Cast bait	
☐ Fly fish	

7. Please indicate the number and type of fish you caught and the number and type of fish released.

	Rainbow Trout	Lake Trout	Brown Trout	Kokanee	Other_____	Not Sure
Kept						
Released						

8. Please rate your satisfactio n with the fo llowing factors r egarding your fis hing e xperience at the pr imary fish ing loc ation identified above.

Factors	Acceptable	Somewhat Acceptable	Not Acceptable
Number of fish caught	☐	☐	☐
Variety of fishing locations	☐	☐	☐
Variety of fish species	☐	☐	☐
Size of fish	☐	☐	☐
Road access to fishing areas	☐	☐	☐
Trail access to fishing areas	☐	☐	☐
Other:_____	☐	☐	☐

9. How would you rate your overall fishing experience at the primary fishing location identified above?

Very Satisfied	Satisfied	Somewhat Satisfied	Unsatisfied	Very Unsatisfied
☐	☐	☐	☐	☐

If unsatisfied, please explain:

_____
_____
_____

APPENDIX B

Trail User/Stream Crossing Focus Group Materials

List of Potential Focus Group Participants

Placer County Water Agency
Middle Fork American River Project
FERC Project No. 2079

Potential Trail User Focus Group Participants					
First Name	**Last Name**	**Affiliation**	**Position**	**Suggested by**	**Notes**
Equestrians					
Ms Rho	Bailey			Pat Gibbs	31-Mar-08
Ms Linda	Costello			Pat Gibbs	31-Mar-08
Gene	Freeland	Western States Trails Foundation	Member, Board of Governors	G Freeland	31-Mar-08
Patricia	Gibbs	Loomis Basin Horsemen's Association		Pat Gibbs	31-Mar-08
Jim	Haagensmit			Pat Gibbs	31-Mar-08
Rod	Hall	American Red Cross	Canoe Instructor	Pat Gibbs	31-Mar-08
Bill	Johnson	Western States Trails Foundation	Trail Committee Chair	G Freeland	31-Mar-08
Jim	Larimer	Robie Foundation		Pat Gibbs	11-Apr-08
Joe	Larkin			Pat Gibbs	31-Mar-08
Cindy	Larkin			Pat Gibbs	31-Mar-08
Chuck	Mather	Western States Trails Foundation	Exec Committee	G Freeland	31-Mar-08
Ms Debbie	Murphy	Loomis Basin Horsemen's Association (meeting representative	equestrian	Pat Gibbs	31-Mar-08
Kathie	Perry	Western States Trails Foundation	Vice-President	G Freeland	31-Mar-08
Janet	Peterson	Member of the Public			8-Apr-08
Penny	Scribner	El Dorado Equestrian Trails Foundation	President	G Freeland	31-Mar-08
Lynn	Seeley			Pat Gibbs	31-Mar-08
Hikers/Runners					
Gordon	Ainsleigh			J Micheaels	100-mile endurance run
Bill	Deitchman*	California State Parks			
Sue	Geisler	Lincoln Hills Hiker Group		B Deitchman	
Eric	Peach	Protect American River Canyons (PARC)		B Deitchman	hiking and boating in canyons for over 30 yrs
Greg	Soderland			J Micheaels	100-mile endurance run
Tim	Tweitmeyer			J Micheaels	100-mile endurance run
Mountain Bikers					
Mary	Allen			J Micheaels	
Sean	Allen			J Micheaels	
Glen	Meeth			J Micheaels	

Notes:
*Also represents other types of users.
All personal information including contact information has been removed.

Invitation Letter and Material to Potential Focus Group Participants

"PCWA MFP Relicensing" <Relicensing@pcwa.net>
04/07/2008 03:15 PM

To "Bill Deitchman" <bdeit@parks.ca.gov>, "Bill Johnson" <greengate@foothill.net>, "Chuck Mather" <wampus@cebridge.net>, "Debbie Murphy"
cc
bcc
Subject PCWA/MFP FERC Relicensing - Trail User/Stream Crossing Focused Discussion Group Invitation

Dear Stakeholder -

The Placer County Water Agency (PCWA) invites you to participate in a focus group to develop information regarding the stream crossings that intersect the river and stream reaches associated with the Middle Fork American River Project (MFP). The Trail User/Stream Crossing Focus Group session will be held from 6:00 - 9:00 PM on May 12, 2008, in PCWA's American River Room located at 144 Ferguson Road, Auburn, California. Directions and a map are attached for your use. An invitation, which includes additional information about the purpose of the group and details about the meeting, is attached. Please note that the invitation includes three maps, which we have not included in this e-mail due to their size. The maps are available on PCWA's web site and can be accessed by clicking on the following link: http://relicensing.pcwa.net/meetings.htm. If you would like copies of the maps prior to the meeting, please let us know and we'll be glad to mail them to you.

We look forward to your participation in the Trail User/Stream Crossing Focus Group. Please reply to this message and let us know if you are planning to participate so that we can plan accordingly. As always, feel free to call Mal Toy, MFP Relicensing Manager, at (530) 823-4889 if you have any questions or need additional information.

Sincerely,
Beverly Bell
Administrative Aide

PCWA Trail User - Stream Crossing Focus Discussion Group Invitation.pdf Map to PCWA.doc

PCWA
FIFTY YEARS

PLACER COUNTY WATER AGENCY

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4
Otis Wollan, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

April 7, 2008
File No. 01030A

Re: Invitation to Participate in a Trail User/Stream Crossing Focused Discussion Group for the Middle Fork American River Project (FERC Project No. 2079)

Dear Stakeholder:

The Placer County Water Agency (PCWA) invites you to participate in a focus group to develop information regarding the stream crossings associated with the trails that intersect the river and stream reaches associated with the Middle Fork American River Project (MFP or Project), including those used by equestrians, hikers, mountain bikers, and those used for the Western States and Tevis Cup endurance races. The river and stream reaches associated with the MFP are shown on Figure 1 and the trails that cross these river and stream reaches are shown on Figures 2 and 3 (Attachment A).

The Focus Group session will be held from 6:00 – 9:00 PM on May 12, 2008 in PCWA's American River Room located at 144 Ferguson Road, Auburn, California. Resource maps and other materials will be provided during the meeting to aide the discussion. A brief overview of the MFP and the relicensing process is provided in Attachment B.

Your participation is being requested due to your specific knowledge about the trails and stream crossings in the Middle Fork American River Watershed (Watershed). The Trail User/Stream Crossing Focus Group participants are identified on the attached invitation list (Attachment C). The participants on this list were selected to represent a broad range of experience, skill levels, and interests. The focus of this group will be to develop or expand upon information about preferred stream crossing conditions, coordination efforts with PCWA, and safety concerns. The specific topics to be covered are summarized in Attachment D.

PCWA appreciates your participation in the Trail User/Stream Crossing Focus Group. If you have any questions regarding this focus group or need any additional information, please contact Mal Toy, MFP Relicensing Manager, at (530) 823-4889.

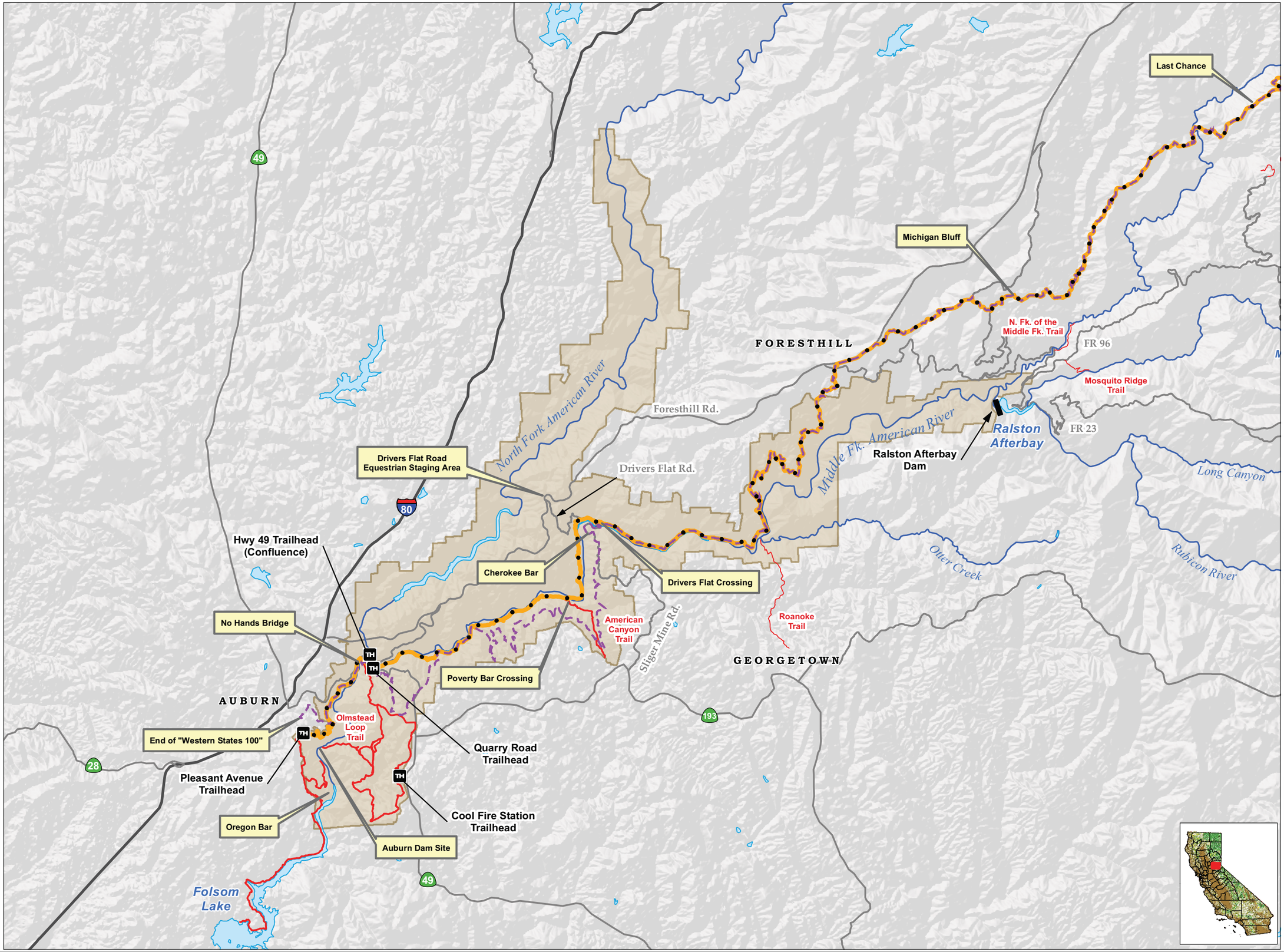
Sincerely,
PLACER COUNTY WATER AGENCY

Mal Toy

Mal Toy
Director of Resource Development

Attachments:
A- Figures 1, 2 and 3 (Maps)
B- Overview of the MFP and the Relicensing Process
C- Trail User/Stream Crossing Focus Group Invitation List
D- Trail User/Stream Crossing Focus Group Topics

Attachments



Transportation

Roads

Hydrography

Watercourse

Water Body

Designated Boundary

Wilderness Area

Auburn State Recreation Area*

* State Park boundaries are approximate and should not be considered legal descriptions. Maps are intended for study purposes only.

Non-Project Recreation Trails

Pacific Crest Trail*

Western States Trail** (Including Alternate Routes)

"Tevis Cup Ride" Course***

"Western States 100" Course***

OHV Trails*

Other Trails*

TH Major Trailheads*

Selected Reference Points

SOURCES:
* U.S.F. S. / U.S.G.S. / Auburn State Recreation Area

** U.S.F.S. / Hall, Hal. 2006. "The Western States Trail Guide"

*** Western States Trail Foundation / Hall, Hal. 2006. "The Western States Trail Guide"

PCWA

Placer County Water Agency
Middle Fork American River Project

Figure 2

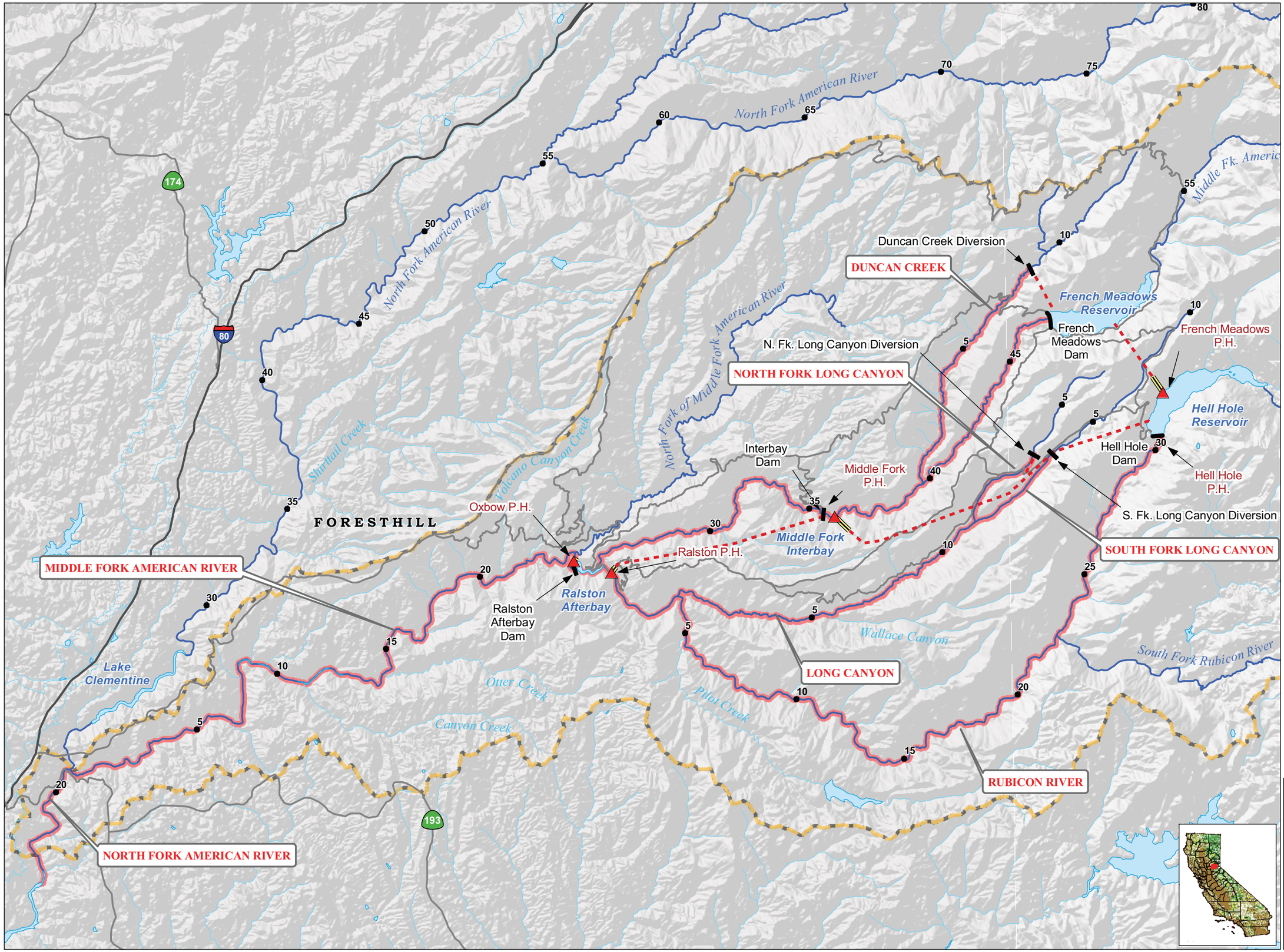
Popular Trails in the Middle Fork American River Watershed Western Area

Miles: 0, 1, 2

Date: 4/23/08

Projection: CA State Plane, Zone 2
Datum: NAD 83

C:\GIS\ENTRIX\3116501\map\RecreationMaps\PCWA_MajorTrails_17i11i_01.mxd



Project Facilities

- Powerhouse
- Dam
- Tunnel
- Penstock

Transportation

- Major Highway
- Minor Highway

Hydrography

- Watercourse with river miles (5 mi. increments)
- Water Body
- Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

- Watercourse Affected by PCWA Operations

PCWA

Placer County Water Agency
Middle Fork American River Project

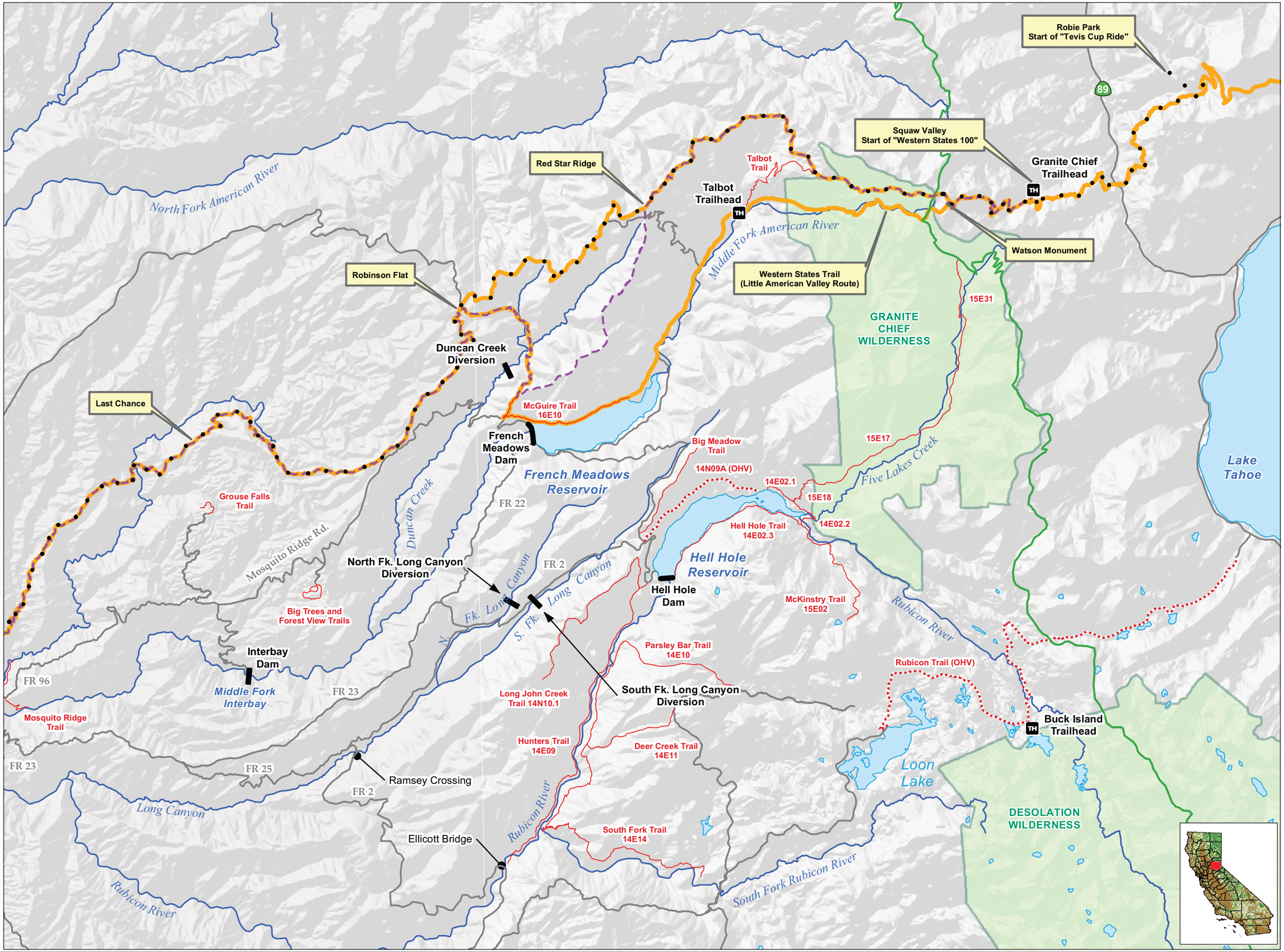
River and Stream Reaches Associated with the MFP

Miles

Date: 3/3/08

Projection: CA State Plane, Zone 2
Datum: NAD 83

Z:\Entrix\3116501\map\RecreationMaps\PCWA_ProjectWatercourse_FlowAffected_17i11i_01.mxd



Transportation

Roads

Hydrography

Watercourse

Water Body

Designated Boundary

Wilderness Area

Auburn State Recreation Area*

* State Park boundaries are approximate and should not be considered legal descriptions. Maps are intended for study purposes only.

Non-Project Recreation Trails

Pacific Crest Trail*

Western States Trail** (Including Alternate Routes)

"Tevis Cup Ride" Course***

"Western States 100" Course***

OHV Trails*

Other Trails*

TH Major Trailheads*

Selected Reference Points

SOURCES:

* U.S.F. S. / U.S.G.S. / Auburn State Recreation Area

** U.S.F.S. / Hall, Hal. 2006. "The Western States Trail Guide"

*** Western States Trail Foundation / Hall, Hal. 2006. "The Western States Trail Guide"

PCWA

Placer County Water Agency
Middle Fork American River Project

Figure 3

Popular Trails in the Middle Fork American River Watershed Eastern Area

Miles: 0, 1, 2

Date: 4/23/08

Projection: CA State Plane, Zone 2
Datum: NAD 83

C:\GIS\ENTRIX\3116501\map\RecreationMaps\PCWA_MajorTrails_17i11i_01.mxd

Attachment B

Overview of the MFP and the Relicensing Process

PCWA owns and operates the MFP, a multi-purpose water supply and hydro-generation project. The MFP facilities are situated in the foothills and mountainous uplands of the western slope of the central Sierra Nevada, within the Tahoe and Eldorado National Forests. The MFP facilities are located on the Middle Fork American River, the Rubicon River, Duncan Creek, and the North and South Forks of Long Canyon Creek. The MFP began operating in 1967 and supplies water for homes, industry, and agriculture within western Placer County and clean renewable energy to the California electric grid.

The MFP operates under a 50-year license, which was issued by the Federal Energy Regulatory Commission (FERC) in 1963. The current license will expire on March 1, 2013. Accordingly, PCWA has initiated a process to the relicense the Project. PCWA formally began the relicensing process when it filed a Notice of Intent (NOI) and Pre-Application Document (PAD) with the FERC on December 13, 2007. The NOI and PAD are available in their entirety on PCWA's relicensing website at http://relicensing.pcwa.net/pad.htm.

In April and May of 2006, PCWA conducted several Introductory Stakeholder Meetings, organized a Plenary Group to facilitate communication and decision making activities, and formed Technical Working Groups (TWGs). A major accomplishment of the Plenary and TWGs was the collaborative development and approval of 28 separate Technical Study Plans (TSPs), of which five are recreation-related. These five TSPs were included in the PAD and are identified as follows:

REC 1 – Recreation Use and Facilities Assessment TSP
REC 2 – Recreation Visitor Surveys TSP
REC 3 – Reservoir Recreation Opportunities TSP
REC 4 – Stream-based Recreation Opportunities TSP
REC 5 – Visual Quality Assessment Technical Study Plan

All of the TSPs are available on PCWA's website at http://relicensing.pcwa.net/pad_SDH.htm. The five recreation-related TSPs can be accessed by clicking on the Appendix A - Recreation Technical Study Plans link.

PCWA began implementing select elements of the Plenary-approved TSPs in May 2007. These included: selection of instream flow modeling transects; fish, amphibian, and macroinvertebrate surveys; water quality sampling; recreation user counts; cultural resources inventories; vegetation community and wildlife habitat mapping; and bat surveys. The remainder of the technical studies presented in the PAD will be completed in 2008 and 2009. The focus groups are an element of the REC 4 – Stream Based Opportunities TSP and will be conducted in 2008.

Attachment C

Trail User/Stream Crossing Focus Group Invitation List

Equestrians	
Ms. Rho Bailey	Member of the Public
Ms. Linda Costello	Member of the Public
Gene Freeland	Western States Trails Foundation
Patricia Gibbs	Loomis Basin Horsemens Association
Jim Haagensmit	Member of the Public
Rod Hall	American Red Cross
Bill Johnson	Western States Trails Foundation
Joe Larkin	Member of the Public
Cindy Larkin	Member of the Public
Chuck Mather	Western States Trails Foundation
Ms. Debbie Murphy	Loomis Basin Horsemens Association
Kathie Perry	Western States Trails Foundation
Penny Scribner	El Dorado Equestrian Trails Foundation
Lynn Seeley	Member of the Public
Hikers/Runners	
Gordon Ainsleigh	Member of the Public
Bill Deitchman*	California State Parks
Sue Geisler	Lincoln Hills Hiker Group
Eric Peach	Protect American River Canyons (PARC)
Greg Soderland	Member of the Public
Tim Tweitmeyer	Member of the Public
Mountain Bikers	
Mary Allen	Member of the Public
Sean Allen	Member of the Public
Glen Meeth	Member of the Public

* Also represents other types of users.

Attachment D

Trail User/Stream Crossing Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Primary trail activity
    - Affiliation(s)
    - Commercial or private
    - Specific experience with river trail crossings in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Trail Stream Crossing Locations for Each Activity Type

3. Characterize Each Stream Crossing Identified Above, based on Background and Experience of Participants and Project Nexus

    - Identify trail stream crossing locations, including access points
    - Typical season of use and time of day
    - Characterize adequacy, functionality, and safety of trail crossings at different water depths
    - Activity-specific factors that influence trail crossing
    - Site-specific factors that influence trail crossing
    - Safety concerns
    - Identify sources for other pertinent information (e.g. guide books, people, web sites)
    - Adequacy of support facilities
    - Adequacy of publicly available flow information
    - Conflicts with other users

Focus Group Materials and Sign-in Sheet

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Recreation Resources
Trail User/Stream Crossing Focus Group Discussion Meeting

May 12, 2008
6:00 PM - 9:00 PM

American River Room
Placer County Water Agency
144 Ferguson Road
Auburn, CA 95603

AGENDA

TIME	TOPIC
6:00 PM - 6:30 PM	**Overview by PCWA** • Welcome and Introductions • Review of Meeting Objectives • Overview of Middle Fork American River Project (MFP) and Relicensing Process • Summary of Recreation Technical Studies
6:30 PM - 9:00 PM	**Group Discussion** • Discuss Background and Experience of Participants • Identify Trail Stream Crossing Locations for Each Activity Type to be Discussed Further, based on Background and Experience of Participants and Project Nexus • Characterize Each Stream Crossing Identified Above
9:00 PM	**Adjourn**

MEETING OBJECTIVE

Develop information regarding the stream crossings associated with the trails that intersect the river and stream reaches associated with the MFP

MIDDLE FORK AMERICAN RIVER PROJECT RELICENSING
TRAIL USER/STREAM CROSSING FOCUS DISCUSSION GROUP MEETING
MAY 12, 2008
6PM – 9PM
SIGN-IN SHEET

NAME	AFFILIATION	INITIALS
Equestrians		
Rho Bailey	Member of the Public	
Linda Costello	Member of the Public	
Gene Freeland	Western States Trails Foundation	
Patricia Gibbs	~~Loomis Basin Horsemens Association~~	PG member of Public
~~Jim Haagen-smit~~ Biker	~~Member of the Public~~	
~~Rod Hall~~	~~American Red Cross~~	
Bill Johnson	Western States Trails Foundation	
Jim Larimer	Robie Foundation	
Joe Larkin	Member of the Public	
Cindy Larkin	Member of the Public	
Chuck Mather	Western States Trails Foundation	
Debbie Murphy	Loomis Basin Horsemens Association	
Kathie Perry	Western States Trails Foundation	
~~Penny Scribner~~	El Dorado Equestrian Trails Foundation	Scribner
Lynn Seeley	Member of the Public	
Jim Larimer	Robie Foundation	
Janet Peterson	Member of the Public	
Hikers/Runners		
Gordon Ainsleigh	Member of the Public	
Bill Deitchman	California State Parks	
Sue Geisler	Lincoln Hills Hiker Group	
Eric Peach	Protect American River Canyons (PARC)	
Larry Roedenbeck	Western States Endurance Run	LR
Greg Soderland	Western States Endurance Run	
Tim Tweitmeyer	Member of the Public	

MIDDLE FORK AMERICAN RIVER PROJECT RELICENSING
TRAIL USER/STREAM CROSSING FOCUS DISCUSSION GROUP MEETING
MAY 12, 2008
6PM – 9PM
SIGN-IN SHEET

NAME	AFFILIATION	INITIALS
Mountain Bikers		
Mary Allen	Member of the Public	Mary Allen
Sean Allen	Member of the Public	SA
Glen Meeth	Member of the Public	
Tanya Meeth	Member of the Public	
Jim Haagen-Smit	IMBA	JHS

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Primary trail activity
    - Affiliation(s)
    - Commercial or private
    - Specific experience with river trail crossings in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Trail Stream Crossing Locations for Each Activity Type

3. Characterize Each Stream Crossing Identified Above, based on Background and Experience of Participants and Project Nexus

    - Identify trail stream crossing locations, including access points
    - Typical season of use and time of day
    - Characterize adequacy, functionality, and safety of trail crossings at different water depths
    - Activity-specific factors that influence trail crossing
    - Site-specific factors that influence trail crossing
    - Safety concerns
    - Identify sources for other pertinent information (e.g. guide books, people, web sites)
    - Adequacy of support facilities
    - Adequacy of publicly available flow information
    - Conflicts with other users

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: _____

Please provide the following information:

1. Your primary trail activity:

_____

2. Other trail activities you have experience with:

_____

3. Number of years experience participating in your primary trail activity: _____

4. Number of years experience participating in other trail activities: _____

5. Affiliation(s), if any: _____

6. Do you participate in any endurance races in the MFAR Watershed? ☐ Yes ☐ No
   If Yes, which race(s)?

_____
_____
_____
_____

7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience
   and locations: _____
   _____
   _____
   _____
   _____
   _____

8. Do you typically cross the river when participating in your primary trail activity? ☐ Yes ☐ No
   If yes, where?

_____
_____
_____
_____

9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☐ Yes ☐ No

Focus Group Participant Profiles

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Sean Allan

Please provide the following information:

1. Your primary trail activity:
   Endurance Mountain biking
2. Other trail activities you have experience with:
   hiking
3. Number of years experience participating in your primary trail activity: 15
4. Number of years experience participating other trail activities: 25
5. Affiliation(s), if any: IMBA Folsom Auburn Trail Rivers Action Coalition
6. Do you participate in any endurance races in the MFAR Watershed? ☒ Yes ☐ No
   If Yes, which race(s)?
   24 Hours of Cool / Race Director of Cool Mountain Bike Race.
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: 10 / Auburn to Granite Chief Wilderness
8. Do you typically cross the river when participating in your primary trail activity? ☐ Yes ☒ No
   If yes, where?
   Tried @ Drivers flat to no Avail
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: EUGENE FREELAND

Please provide the following information:

1. Your primary trail activity:
   HORSE BACK RIDING
2. Other trail activities you have experience with:
   HIKING
3. Number of years experience participating in your primary trail activity: 35
4. Number of years experience participating in other trail activities: 10
5. Affiliation(s), if any: WESTERN STATES TRAIL FOUNDATION
6. Do you participate in any endurance races in the MFAR Watershed? ☒ Yes ☐ No
   If Yes, which race(s)?
   TEVIS
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: WESTERN STATES TRAIL 25 YEARS
8. Do you typically cross the river when participating in your primary trail activity? ☒ Yes ☐ No
   If yes, where?
   SOMETIMES DUNCAN CREEK, VOLCANO CREEK MIDDLE FORK (POVERTY BAR)
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Sue Geisler

Please provide the following information:

1. Your primary trail activity:
   Hiking
2. Other trail activities you have experience with:
   Backpacking
3. Number of years experience participating in your primary trail activity: Over 30 yrs, (since 2002 in this area)
4. Number of years experience participating in other trail activities: (backpacking) 9 yrs.
5. Affiliation(s), if any: Lincoln Hills Hiking Group
6. Do you participate in any endurance races in the MFAR Watershed? ☐ Yes ☒ No
   If Yes, which race(s)?

7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: 6 years - Auburn State Rec Area (primarily Confluence - No Hands bridge, Auburn Dam Site, Quarry Rd. Th, Olmstead loop, Drivers Flat area + PCT, Michigan Bluff, Robinson Flat, Poverty Bar (Amer. Canyon Trail), Foresthill loop & Peninsula Campground)
8. Do you typically cross the river when participating in your primary trail activity? ☐ Yes ☒ No
   If yes, where?
   No - We don't risk any river crossings of Middle Fork with senior hikers & as a leader, I wouldn't with any age hiker. Personally I would if no higher than ankle high.
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☐ Yes ☒ No
   Sorry - I won't be available for a good part of summer.

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Patricia Gibbs

Please provide the following information:

1. Your primary trail activity:
   Horse & mountain bike riding
2. Other trail activities you have experience with:
3. Number of years experience participating in your primary trail activity: 40 yrs
4. Number of years experience participating in other trail activities: 40 yrs
5. Affiliation(s), if any:
6. Do you participate in any endurance races in the MFAR Watershed? ☐ Yes ☐ No
   If Yes, which race(s)?
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   - Volcanoe Creek
   - middle fork
8. Do you typically cross the river when participating in your primary trail activity? ☒ Yes ☐ No
   If yes, where?
   attempt Oregon Bar, Poverty Bar
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Jim Haagen-Smit

Please provide the following information:

1. Your primary trail activity:
   Mountain Bicyclist
2. Other trail activities you have experience with:
   Hiking
3. Number of years experience participating in your primary trail activity: 24
4. Number of years experience participating in other trail activities: 30
5. Affiliation(s), if any: IMBA
6. Do you participate in any endurance races in the MFAR Watershed? ☐ Yes ☒ No
   If Yes, which race(s)?
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: 20+ years WST Above Foresthill up To Soda Springs
   Rubicon River Trails - Hunters Trail To Hell Hole
8. Do you typically cross the river when participating in your primary trail activity? ☒ Yes ☐ No
   If yes, where?
   on just about all of the bridges.
   Would like to cross at Coffer dam site, Drivers Flat, Poverty Bar, and Somewhere on Rubicon To access Parsley Bar Trail
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☐ Yes ☒ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Bill Johnson

Please provide the following information:

1. Your primary trail activity:
   Trail Maintenance Run + Ride
2. Other trail activities you have experience with:
   Boating, Cycling, Fishing, Water sports
3. Number of years experience participating in your primary trail activity: 30 years
4. Number of years experience participating in other trail activities: 30 years
5. Affiliation(s), if any: Western State Trail Foundation
6. Do you participate in any endurance races in the MFAR Watershed? ☑ Yes ☐ No
   If Yes, which race(s)?
   Run, Ride, Tevis
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: Western State Trail, Tevis
   Bolero Trail
8. Do you typically cross the river when participating in your primary trail activity? ☑ Yes ☐ No
   If yes, where?
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☑ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Debbie Murphy 916 719 6265

Please provide the following information:

1. Your primary trail activity: Horseback Riding
2. Other trail activities you have experience with: Hosting events (horses) Poverty Ridge Fair Rides
3. Number of years experience participating in your primary trail activity: 40 yrs
4. Number of years experience participating in other trail activities: 15 yrs
5. Affiliation(s), if any: Loomis Basin Horseman's Assoc, NATRC, AERC
6. Do you participate in any endurance races in the MFAR Watershed? ☑ Yes ☐ No
   If Yes, which race(s)?
   American River Classic
   TEVIS
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: Volcano Canyon - El Dorado Creek
   Rucky - Chuck
   Poverty Bar
8. Do you typically cross the river when participating in your primary trail activity? ☐ Yes ☑ No
   If yes, where? It is not safe (now) / Poverty Bar - Tevis / El Dorado Creek / Cooper Bar (when passable)
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☑ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: LARRY ROEDENBECK

Please provide the following information:

1. Your primary trail activity: WS 100 RIVER CROSSING AID STATION CAPTAIN
2. Other trail activities you have experience with: KAYAKING
3. Number of years experience participating in your primary trail activity: 13
4. Number of years experience participating in other trail activities: 45
5. Affiliation(s), if any: _____
6. Do you participate in any endurance races in the MFAR Watershed? ☑ Yes ☐ No
   If Yes, which race(s)?
   WS100
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: 13
8. Do you typically cross the river when participating in your primary trail activity? ☑ Yes ☐ No
   If yes, where?
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☑ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: Penny Scribner

Please provide the following information: pennys@foothill.net

1. Your primary trail activity:
   equestrian use -
2. Other trail activities you have experience with:
   hiking
3. Number of years experience participating in your primary trail activity: 40+ years -
4. Number of years experience participating in other trail activities: _____
5. Affiliation(s), if any: EDETF - Eldorado Equestrian Trails Foundation and 100-mile Tevis Ride
6. Do you participate in any endurance races in the MFAR Watershed? ☒ Yes ☐ No
   If Yes, which race(s)? Rides/Training - Daily - Riding is also (more) important than the "Races" Regular Riding & training - -
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: Since 1959 - Tevis - 100 mile Training - weekly - daily - We moved to Greenwood to have trail access & only as safe & when I have access
8. Do you typically cross the river when participating in your primary trail activity? ☒ Yes ☐ No
   If yes, where? crossing at "Coffer Dam" Replacement of crossing - and "Bridge" upcountry" which EDETF would like to help work on (*)
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No (530) 333-1652

Other issues: Safety w/ multi use —

This was a good meeting -

Thank you for listening -

Hope the process continues -

P. Denbrver

pennys@foothillo.net

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: LYNN SEELEY
916-663-1714

Please provide the following information:

1. Your primary trail activity: HORSE, HIKING
   PERSONAL, ORGANIZED ACTIVITY (TEVIS)

2. Other trail activities you have experience with:
   TEVIS (BOG), TRAIL MARKING

3. Number of years experience participating in your primary trail activity: 30

4. Number of years experience participating in other trail activities: 20 +

5. Affiliation(s), if any: TEVIS, SOS, MBNA

6. Do you participate in any endurance races in the MFAR Watershed? ☒ Yes ☐ No
   If Yes, which race(s)?
   TEVIS

7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: 20
   ROBIE PARK → AUBURN
   AUBURN → GRANITE BAY

8. Do you typically cross the river when participating in your primary trail activity? ☒ Yes ☐ No
   If yes, where?
   POVERTY BAR, VOLCANO LYN, ELDORADO LYN., SWINGING BR.

9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Trail User/Stream Crossing Focus Group - Participant Profile Form

Name: GREG SOPERLUND

Please provide the following information:

1. Your primary trail activity:
   TRAIL RUNNING
2. Other trail activities you have experience with:
   HIKING & MOUNTAIN BIKING
3. Number of years experience participating in your primary trail activity: 30 YEARS
4. Number of years experience participating in other trail activities: 30 YEARS
5. Affiliation(s), if any: WESTERN STATE ENDURANCE RUN
6. Do you participate in any endurance races in the MFAR Watershed? ☒ Yes ☐ No
   If Yes, which race(s)?
   WESTERN STATES ENDURANCE RUN
7. Your trail experience in the Middle Fork American River Watershed:
   Years of experience and locations: 30 YEARS
   DUNCAN CREEK, N. FORK OF MIDDLE FORK, DEADWOOD CREEK, EL DORADO CREEK, RUCKY CHUCKY RIVER CROSSING ON MIDDLE FORK
8. Do you typically cross the river when participating in your primary trail activity? ☒ Yes ☐ No
   If yes, where?
   SEE #7
9. Are you willing and able to participate in trail crossing flow studies on the Middle Fork American River during the summer 2008? IF THE MEETINGS FIT INTO MY PERSONAL CALENDAR ☒ Yes ☐ No

Focus Group Meeting Notes

"PCWA MFP Relicensing"
<Relicensing@pcwa.net>
08/11/2008 04:31 PM

To "Bill Deitchman" <bdeit@parks.ca.gov>, "Bill Johnson" <greengate1@att.net>, "Chuck Mather" <wampus@cebridge.net>, "Debbie Murphy"
cc
bcc
Subject PCWA/MFP - Trail User/Stream Crossing Focus Group Meeting Notes

Dear Trail User/Stream Crossing Focus Group Members –

Attached are the spreadsheets containing the notes that were captured during the trail user focus group session, which was held at PCWA's headquarters on May 12, 2008. The information contained in the spreadsheets is essentially as it was recorded during the meeting, with two exceptions. First, additional language was added to clarify access points and roads, where necessary. Second, clarification regarding specific crossings was added based on comments provided by ASRA during later meetings and on in-the-field observations made after the focus group meeting. Please note that the information contained in the focus group spreadsheets is an attempt to capture comments made during a dynamic discussion. This is a starting point and we are continuing to build upon this information as our stream crossing studies proceed.

If you have any questions, please don't hesitate to call.

Sincerely,
Beverly Bell
Administrative Aide

(530) 823-4973

group feedback - Long Canyon Creek.xls

group feedback - Duncan Creek.xls

group feedback - MFAR_Oxbow to Confluence.xls

group feedback - NFAR_Confluence - Oregon Bar.xls

group feedback - Rubicon.xls

Rubicon River

Nevada Point Trail Crossing

No other trail crossings were discussed on the Rubicon River

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	Located on the Rubicon River about 5 miles upstream of the Long Canyon/Rubicon Confluence.		
Road or trail used to access stream crossing	Nevada Point Trail, which connects Nevada Point Road on the northeast side of the river and 13N66 on the southwest side of the Rubicon.		
Support facilities available at this stream crossing location	None		
Adequacy of support facilities	Location of former footbridge. No other support facilities are present at this crossing location.		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	Not accessible during the winter when snow is present.		
Time of day crossing is used	did not discuss		
Used during organized event(s)			

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	did not discuss		
Instream snags and obstacles			
Bank slope/conditions			
Ability to enter water at this location			
Ability to exit water at this location			
Other site specific factors	Bridge was washed out in the 70's by flood flows. Project operations reduce flows in the Rubicon thereby making it easier to cross. Consider reconstructing the footbridge at this location.		

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	did not discuss		
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns			
Conflicts with other users			

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	did not discuss		
Adequacy of publicly available flow information:			
Information that would assist in making a decision to cross at this location			

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):	did not discuss		

Long Canyon Creek

No specific trail crossings were discussed by the group

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location			
Road or trail used to access stream crossing			
Support facilities available at this stream crossing location			
Adequacy of support facilities			

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use			
Time of day crossing is used			
Used during organized event(s)			

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions			
Instream snags and obstacles			
Bank slope/conditions			
Ability to enter water at this location			
Ability to exit water at this location			
Other site specific factors			

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)			
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns			
Conflicts with other users			

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:			
Adequacy of publicly available flow information:			
Information that would assist in making a decision to cross at this location			

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):			

Duncan Creek

No specific crossings were discussed by the group. The Western States Trail crosses Duncan Creek upstream of the Duncan Creek Diversion Dam. However, this area is not influenced by Project operations. As such, it was not discussed.

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location			
Road or trail used to access stream crossing			
Support facilities available at this stream crossing location			
Adequacy of support facilities			

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use			
Time of day crossing is used			
Used during organized event(s)			

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions			
Instream snags and obstacles			
Bank slope/conditions			
Ability to enter water at this location			
Ability to exit water at this location			
Other site specific factors			

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)			
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns			
Conflicts with other users			

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Participants are interested in being able to access flow information for Duncan Creek.		
Adequacy of publicly available flow information:			
Information that would assist in making a decision to cross at this location			

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):			

Middle Fork American River - Oxbow to Confluence
Fords Bar

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	Located on the MFAR at the mouth of Otter Creek at RM 14.		
Road or trail used to access stream crossing	Connects the Roanoke Trail on the south side of the river to a private gated road, and the Western States Trail, on the north side of the river. From the south (e.g., from Georgetown), Fords Bar can be accessed by taking Wentworth Springs Road to the Roanoke Trail. The Roanoke trail terminates at the confluence of the MFAR and Otter Creek. From the north, (e.g., from Foresthill area) Fords Bar can be accessed by taking Foresthill Road to Todd Valley Road. Access is prohibited by a locked gate located outside the ASRA boundary. Beyond the gate, the road crosses private property and can be used for emergency access purposes only. This road was referred to by the group as "Nugget Road". The Western States Trail parallels the north side of the river and provides access to this crossing point.		
Support facilities available at this stream crossing location	None		
Adequacy of support facilities	NA		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	According to the focus group this crossing is no longer used. However, State Parks later indicated that this trail crossing is still used.		
Time of day crossing is used			
Used during organized event(s)			

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	According the focus group, Fords Bar was formerly used as a stream crossing but is no longer a valid crossing due to changes in the stream bed topography. However, State Parks later indicated that this trail crossing is still used.		
Instream snags and obstacles			
Bank slope/conditions			
Ability to enter water at this location			
Ability to exit water at this location			
Other site specific factors			

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	Not discussed by the focus group because this crossing is not used by the focus group participants.		
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns			
Conflicts with other users			
Other considerations			

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Real time data is available on the internet for the following two gages: - Middle Fork American River below Oxbow PH (OXB) - North Fork American River below North Fork Dam (NFD)		
Adequacy of publicly available flow information:	The focus group participants did not discuss because they do not use this crossing.		
Information that would assist in making a decision to cross at this location	The focus group participants did not discuss because they do not use this crossing.		

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):	Did not discuss.		

Middle Fork American River - Oxbow to Confluence

Old Greenwood Bridge (also referred to as Ruck-a-Chuck and Drivers Flat)

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	**Hikers/Runners**	**Mountain Biking**
Stream crossing location	Located on the MFAR at about RM 9.		
Road or trail used to access stream crossing	From the south (e.g., from Georgetown). This crossing can be accessed from Sliger Mine Road. Sliger Mine Road also provides access to an undeveloped dispersed recreation area referred to as Cherokee Bar, which is located downstream of the crossing. From the north, (e.g., from Foresthill area). This crossing can be accessed by taking Foresthill Road to Driver's Flat Road, which is the primary access road to the Ruck-a-Chucky Day use area and campground. Drivers Flat road continues on to an area referred to as Canyon Creek but the road is gated. Can also be accessed from the McKeon Ponderosa Road Trail.		
Support facilities available at this stream crossing location	Ruck-a-Chucky area - Unpaved parking areas, picnic tables, primitive camping, water, toilets, graded boat ramp. Canyon Creek - New toilets were recently installed Cherokee Bar area - Undeveloped dispersed use area. No facilities are present at this location.		
Adequacy of support facilities	good		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	year round, depending upon flows	spring, winter, fall (summer is too hot)	year round
Time of day crossing is used	24 hours		
Used during organized event(s)	no	Western States 100	

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	This site is not usable as an equestrian crossing under current conditions due to boulders, rocky substrate, and deep center channel. This crossing would be used by horseback riders if crossing was improved.	rocky, boulders, deep channel	poor substrate
Instream snags and obstacles		fishing line	fishing line
Bank slope/conditions		good	good
Abiliy to enter water at this location		good, stairs and ramp	good, stairs and ramp
Ability to exit water at this location		good	good
Other site specific factors		WS 100. This is an imporant crossing for the WS 100 endurance race. A natural river crossing enhances the race. A cable is needed to cross the river during the race.	Bikers would use this location if substrate were better and flows were lower.

Middle Fork American River - Oxbow to Confluence

Old Greenwood Bridge (also referred to as Ruck-a-Chuck and Drivers Flat)

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	NA	did not discuss	
Maximum stream flow at which you would cross the stream at this location (in cfs)	NA	WS 100. A flow of 125 to 350 cfs is crossable with just a cable, although it is possible to cross without a cable at flows below 200 cfs. Target flow is 125 (knee high). Crossing is not possible between flows of 350 - 800 cfs because it is too high to wade and too low to use boats. Boat crossings can be done at flows ranging from 800-3500.	Like hikers, bikers can cross the stream at 125 cfs . A flow of 200 cfs would probably be crossable for bikers. In general, bikers need slightly lower flows because they have to carry their bike across.
Safety concerns	Stream bed conditions make this an unsafe crossing for horses	WS 100. PG&E changes flows during the race, which is safety concern. A cable is necessary to cross. General Crossing. River flows change, stranding people who have crossed the river. Flows may be too high to cross stranding users on the other side.	General Crossing. River flows change, stranding people who have crossed the river. Flows may be too high to cross stranding users on the other side.
Conflicts with other users	did not discuss	did not discuss	did not discuss
Other considerations	Ramping. It takes 4 hours for water to travel to travel from Oxbow to Ruck-a-Chuck when ramping up. It takes 6 hours for the water to recede.		

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Real time data is available on the internet for the following two gages: - Middle Fork American River below Oxbow PH (OXB) - North Fork American River below North Fork Dam (NFD)		
Adequacy of publicly available flow information:	Data available on the web is inadequate to make a judgement about flow conditions because it doesn't provide information about		
Information that would assist in making a decision to cross at this location	Need a number that a layperson can understand. Need on-site information instead of a web site.		

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):			

Middle Fork American River - Oxbow to Confluence

Poverty Bar

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	Located on the MFAR at RM 6.5		
Road or trail used to access stream crossing	From the south (e.g. from Georgetown). This crossing can be accessed from the American River Trail. From the west. (e.g. from Highway 49). This crossing can be accessed from the Quarry Trail, which parallels the MFAR from Highway 49 and intersects with the American River Trail at this location. From the north, (e.g. from Foresthill area). This crossing can be accessed from the Butcher Ranch Road trail. In addition, it can be accessed by taking Drivers Flat road to the Western States Trail, which parallels the MFAR on the north side of the river, crosses the river at Poverty Bar and then merges with the Quarry Trail. This is the route used by the WS 100 endurance race.		
Support facilities available at this stream crossing location	none		
Adequacy of support facilities	NA		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	year round		mountain bikers can not use this crossing because mountain biking is prohibited on the trails in this area
Time of day crossing is used	24 hours a day, 7 days a week		NA
Used during organized event(s)	Tevis Cup	not used for WS 100	NA

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	Rocky, depending on water year. Sand bars also present. Deep channel on north side of river.		NA
Instream snags and obstacles			NA
Bank slope/conditions	Round river rock on north side.		NA
Ability to enter water at this location	Easy		NA
Ability to exit water at this location	Easy		NA
Other site specific factors			

Middle Fork American River - Oxbow to Confluence

Poverty Bar

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	3 feet maximum, ideal would be 18 inches	18 inches max	NA
Maximum stream flow at which you would cross the stream at this location (in cfs)	400 cfs is impassable (horses swim). 250 cfs is maximum for the average rider (on horses chest). Less experienced riders need lower flows.	250 is too high for a hiker or runner.	NA
Safety concerns	Stranding. There is a rapid downstream of the crossing area. If a horse swims at the crossing there is no time to recover before the rapid.	Stranding	Stranding
Conflicts with other users			
Other considerations	Ramping. It takes 4 hours for water to travel to travel from Oxbow to Ruck-a-Chuck when ramping up. It takes 6 hours for the water to recede. It takes an additional 2 hours (ascending and descending) for water to travel between Ruck-a-Chucky and Poverty Bar.		

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Real time data is available on the internet for the following two gages: - Middle Fork American River below Oxbow PH (OXB) - North Fork American River below North Fork Dam (NFD)		
Adequacy of publicly available flow information:	Inadequate		
Information that would assist in making a decision to cross at this location	This would be a good place to have a staff gage. Flow information (magnitude and timing) should be provided in layman's terms, preferably on-site.		

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):	Equestrian use information developed by ASRA for the general plan update is not defensible.		

Middle Fork American River - Oxbow to Confluence

Mammoth Bar

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	Located on the MFAR at RM 3		
Road or trail used to access stream crossing	From the south. Access is from the Western States trail/quarry road trail. From the north. Access is from the Mammoth Bar OHV area trails.		
Support facilities available at this stream crossing location	None present other than the Mammoth Bar OHV park on north side of river. Toilets and picnic table with a shade structure is available at the OHV area, near the river. Quarry Trail/Western States Trail on south side of the river.		
Adequacy of support facilities	NA		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	Horseback riders do not currently use this crossing because of the presence of the OHV area. This area was used by horseback riders prior to construction of the OHV area and removal of the trail.		Bikes can use it at any time but does not receive heavy use. Bikers can cross the river at Mammoth Bar. However, according to the focus group participants, hikers that cross the river would probably not want to be on the Quarry Road Trail. State Parks later indicated that this crossing and the Quarry Trail are used by mountain bikers and hikers.
Time of day crossing is used	Previously used when flow was decreased for endurance race events.		
Used during organized event(s)	Previously used for Tevis Cup ride but is no longer used.		

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	rocky		
Instream snags and obstacles			
Bank slope/conditions	easy on both sides		
Ability to enter water at this location	easy on both sides		
Ability to exit water at this location	easy on both sides		
Other site specific factors	adjacent to Quarry Road Trail		

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	18 inches - 30 inches		difficult to carry a bike when water depth is over 2 feet.
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns	rocky streambed Murderer's Bar rapid located downstream	Murderer's Bar rapid located downstream	Murderer's Bar rapid located downstream
Conflicts with other users	rafters, tubers, fishing, gold panning		
Other considerations	Not a desirable crossing when in use by OHV. OHV use is limited to specific days. Other users or more likely to use this area when OHV area is closed.		

Middle Fork American River - Oxbow to Confluence

Mammoth Bar

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Real time data is available on the internet for the following two gages: - Middle Fork American River below Oxbow PH (OXB) - North Fork American River below North Fork Dam (NFD)		
Adequacy of publicly available flow information:	Data available on the web is inadequate to make a judgment about flow conditions because it doesn't provide information about travel time and is in terms (cfs) that a layperson can't understand.		
Information that would assist in making a decision to cross at this location	Need a number that a layperson can understand. Need on-site information instead of a web site.		

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g., guide books, people, web sites):			

North Fork American River - Confluence to Oregon Bar

No Hand Bridge

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	This is an historic bridge that crosses the NFAR, just downstream of the NFAR/MFAR Confluence.		
Road or trail used to access stream crossing	Western States Trail		
Support facilities available at this stream crossing location	Bridge, signage		
Adequacy of support facilities	adequate		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	year round	year round	Mt. bikers are not allowed to use the bridge
Time of day crossing is used	24 hours a day, 7 days a week		
Used during organized event(s)	Tevis Cup, American River Classic, Mt. Quarry NATRC ride	WS 100	

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	This crossing is an existing bridge. As such, these factors do not apply.		
Instream snags and obstacles			
Bank slope/conditions			
Ability to enter water at this location			
Ability to exit water at this location			
Other site specific factors			

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	Not applicable. This crossing is an existing bridge.		
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns	Proximity to Highway 49 on north side of bridge is unsafe for all users.		
Conflicts with other users	Unauthorized use by bikers		
Other considerations			

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Not applicable. This crossing is an existing bridge.		
Adequacy of publicly available flow information:			
Information that would assist in making a decision to cross at this location			

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):	Designated National Historic Monument		

North Fork American River - Confluence to Oregon Bar

Coffer Dam

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	This crossing is located at the old Auburn Coffer Dam site located on the NFAR at RM 17.5		
Road or trail used to access stream crossing	This former trail crossing is on the Auburn to Cool Trail, a multi-use trail extending from the Auburn to Cool. On the west side of the river the "Haul Road" extends from the crossing to Maidu Road in Auburn. On the east side the trail connects to the Olmstead Loop Trail.		
Support facilities available at this stream crossing location	None		
Adequacy of support facilities	NA		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	year round	year round	
Time of day crossing is used	24 hours/day, 7 days a week (equestrians ride at night and would cross at night)	daylight (park is closed at night)	
Used during organized event(s)	American River Classic, Mt. Quarry NATRC Ride	American River Run, DAM 50 K	

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	Was a DG road /not available now since river was rerouted and banks were stabilized. According to the focus group, equestrians can not get across at any flow because banks are too steep. However, observations made after the focus group indicate that horses can cross at this location and that they can enter and exit on both sides of the river.		
Instream snags and obstacles	Unknown		
Bank slope/conditions	Egress/Ingress too steep		
Ability to enter water at this location	Unsafe		
Ability to exit water at this location	Unsafe		
Other site specific factors	This site was previously used as a crossing when the river was routed through the coffer dam tunnel. According to the focus group, this crossing can no longer be used now that the river has been restored and the water has been rerouted back into the river this crossing. (Observations made after the focus group session indicate that crossing in this area is possible by both hikers and horses.) All users would like to have their crossing at this location.		

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)			
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns	According to focus group, totally unsafe under current conditions.		
Conflicts with other users		Hikers have to watch out for vehicles, especially vans with rafts.	
Other considerations	Road improvements in the area have cut off cardiac bypass trail.		

North Fork American River - Confluence to Oregon Bar

Coffer Dam

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Real time data is available on the internet for the following two gages: - Middle Fork American River below Oxbow PH (OXB) - North Fork American River below North Fork Dam (NFD)		
Adequacy of publicly available flow information:			
Information that would assist in making a decision to cross at this location			

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):			

North Fork American River - Confluence to Oregon Bar

Oregon Bar

Stream Crossing Location and Access Points	Activity Specific Factors		
	Horseback Riding	Hikers/Runners	Mountain Biking
Stream crossing location	Located on the NFAR, just downstream of the Oregon Bar Take-out in the China Bar Recreation Area		
Road or trail used to access stream crossing	Pioneer Express Trail		
Support facilities available at this stream crossing location	None		
Adequacy of support facilities	NA		

Stream Crossing Use	Horseback Riding	Hikers/Runners	Mountain Biking
Typical season of use	trails used all year round when flow is low enough		Single track trail. Mt. bikers prohibited.
Time of day crossing is used	24 hours/day, seven days a week		
Used during organized event(s)	was used for American River Classic endurance equestrian ride		

Site Specific Factors that Influence Stream Crossing	Horseback Riding	Hikers/Runners	Mountain Biking
Streambed topography/conditions	sandy at low flows, becoming rocky and rough at higher flows		
Instream snags and obstacles	boulders at higher flows		
Bank slope/conditions	flat on both sides		
Ability to enter water at this location	safe, adequate		
Ability to exit water at this location	safe, adequate		
Other site specific factors	old canal that runs along the west side of Folsom Lake is a potential hazard because you can't see it		

Adequacy, Functionality, and Safety of Crossings at Different Water Depths	Horseback Riding	Hikers/Runners	Mountain Biking
Maximum depth at which you would cross the stream at this location (in feet)	18 inches (safe depth for horses) Can be deeper if velocity is lower.	Hikers and runners don't use this crossing	Hikers and runners don't use this crossing
Maximum stream flow at which you would cross the stream at this location (in cfs)			
Safety concerns	high flow velocity		
Conflicts with other users	possibly fisherman, rafters taking out or putting in at river, potential conflicts with other users along trail or road access at take-out for boaters		
Other considerations			

Flow Information	Horseback Riding	Hikers/Runners	Mountain Biking
Availability of flow information:	Real time data is available on the internet for the following two gages: - Middle Fork American River below Oxbow PH (OXB) - North Fork American River below North Fork Dam (NFD)		
Adequacy of publicly available flow information:	Inadequate to make a judgment about flow conditions. Need a number that a layperson can understand with out having to add two numbers together. Need on-site information instead of a web site.		
Information that would assist in making a decision to cross at this location			

Other Pertinent Information	Horseback Riding	Hikers/Runners	Mountain Biking
Sources of other pertinent information (e.g. guide books, people, web sites):	Obtain equestrian use numbers from Janet Peterson. According to focus group, ASRA data on equestrian use is inaccurate.		

Post Focus Group Correspondence

From: PCWA MFP Relicensing [Relicensing@pcwa.net]
Sent: Wednesday, May 26, 2010 10:30 AM
To: Mary Preuss
Subject: FW: PCWA/MFP - Request to Clarify Exact Location of Oregon Bar River Crossing
Attachments: PCWA_Oregon Bar_17i11i_01_F (2).pdf

From: PCWA MFP Relicensing
Sent: Tuesday, August 12, 2008 1:36 PM
To: Bill Deitchman; Bill Johnson; Chuck Mather; Debbie Murphy; Eric Peach; Gene Freeland; Glen Meeth; Gordon Ainsleigh; Greg Soderland; Janet Peterson; Jim Haagensmit; Jim Larimer; Joe and Cindy Larkin; Kathie Perry; Linda Costello; Lynn Seeley; Pat Gibbs; Penny Scribner; Rho Bailey; Rod Hall; Sean and Mary Allen; Sue Geisler; Tim Tweitmeyer; Andy Fecko; Antonio Rossmann; Ben Ransom; Beth A Paulson; Beth Lawson; Bill Spain; Bill Templiin; Bob Hughes; Bonnie Petitt; Brett Storey; Bryan Tibbs; Damian Forsythe; Dan Teater; Dave Martinez; Dave Steindorf; Dick Maclay; Donna Day; Donna Williams; Ed Bianchi; Ed Moore; Eileen Dessaso; Gary Flanagan; Harry Shuger; Heath Wakelee; Hilde Schweitzer; Jim Micheaels; Julie Leimbach; Lester Lubetkin; Lori Powers; Mal Toy; Marie Davis; Marie Rainwater; Marilyn Jasper ; Mary Preuss; MaryLisa Lynch; Mo Tebbe; Nate Rangel; Rich Johnson ; Roger Lee; Russ Kanz; Sandy Perry; Stafford Lehr; Stephen Bowes; Thomas Bartos; Thomas Wegge; Tom Johnson; Vicki Jowise
Cc: Ben Rualo; Bill Carnazzo; Brad Cavallo; Eldon Cotton; John Greene; Lori Powers
Subject: PCWA/MFP - Request to Clarify Exact Location of Oregon Bar River Crossing

Dear Trail User/Stream Crossing Focus Group Participant,

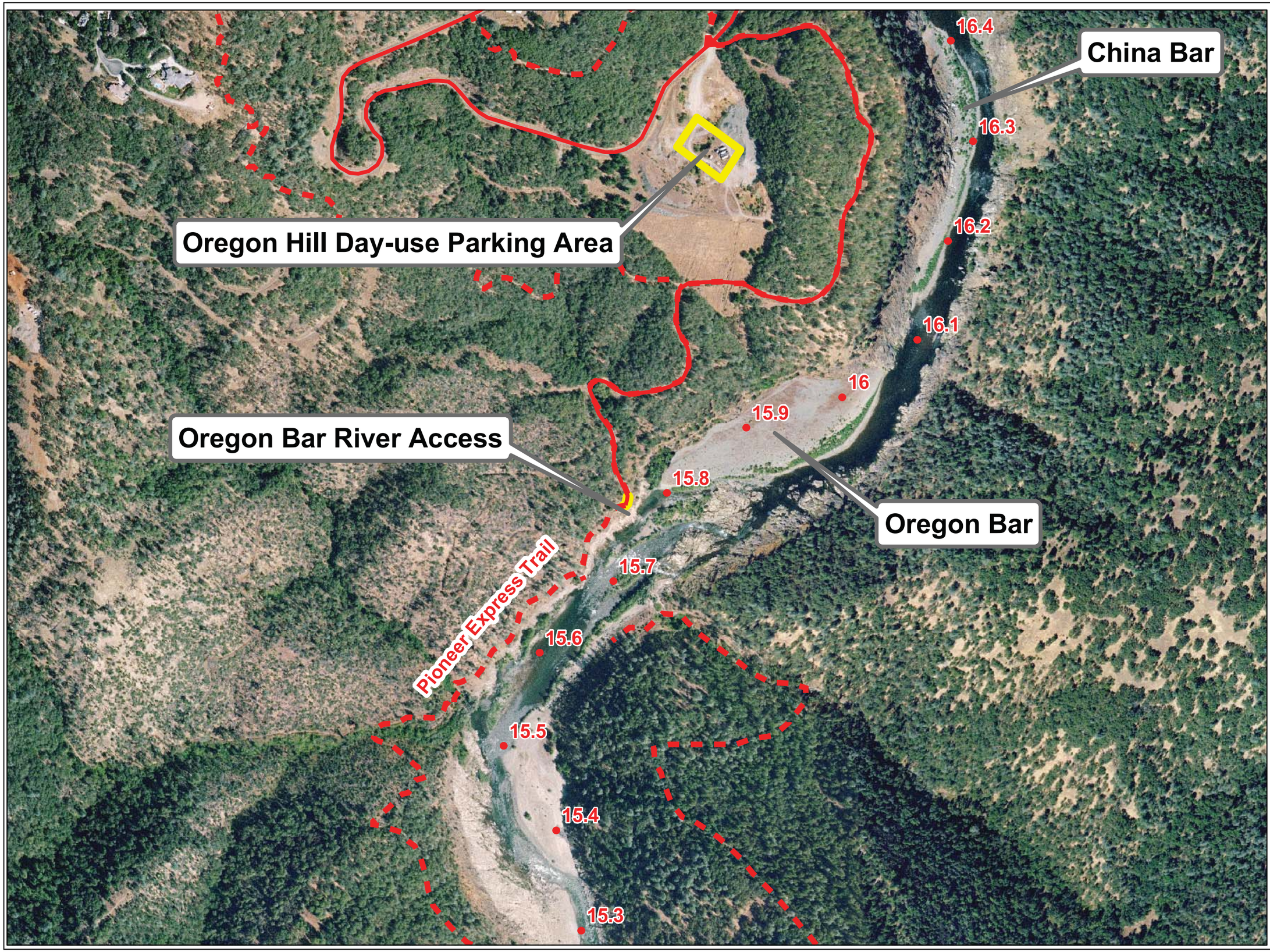
On May 12, 2008, PCWA held a Trail User/Stream Crossing Focus Group session. During this meeting, several equestrian users indicated that it is possible to cross the North Fork of the American River at Oregon Bar with horses. We would like to identify the exact location of this crossing.

To this end, we have attached a pdf of a map showing the Oregon Bar area. For orientation purposes, the map shows the location of the recently constructed Oregon Hill Day-use Parking Area, the road leading to the Oregon Bar River Access point, the Pioneer Express Trail, and Oregon Bar. It also shows river mile markers in 0.1 increments.

Please review the map and let us know where you typically cross the river in this area using the mile markers provided on the map. Also, please let us know if there is a common name for the trail located on the southeast side of the river.

We would appreciate your feedback by Tuesday, August 26.

Thank you,
Beverly Bell
Administrative Aide
(530) 823-4973



PCWA Facilities

- Dam
- Powerhouse
- Penstock
- Gate

Transportation

- River Access Road
- Access Trail
- Locked Gate

PCWA

Placer County Water Agency
Middle Fork American River Project

Oregon Bar Area
Auburn State Recreation Area

Date: 8/12/08

0 250 500 Feet

Projection: Ca. Stateplane, Zone 2
Datum: NAD 83

Z:\Entrix\3116501\map\RecreationMaps\PCWA_China Bar_17i11i_01.mxd

From: "Dr Gordon" <drgordon@auburninternet.com>
To: "PCWA MFP Relicensing" <Relicensing@pcwa.net>; "Bill Deitchman" <bdeit@parks.ca.gov>; "Bill Johnson" <greengate1@att.net>; "Chuck Mather" <wampus@cebridge.net>; "Debbie Murphy" <equuspassage@aol.com>; "Eric Peach" <parc@jps.net>; "Gene Freeland" <genefrlnd@netscape.net>; "Glen Meeth" <gmeeth@sbcglobal.net>; "Greg Soderland" <wser100@comcast.net>; "Janet Peterson" <janetpeterson@dishmail.net>; "Jim Haagensmit" <tandemjim@sbcglobal.net>; "Jim Larimer" <robiepk@foothill.net>; "Joe and Cindy Larkin" <larkin-ranch@att.net>; "Kathie Perry" <kdpbioscan@aol.com>; "Linda Costello" <ldc50@comcast.net>; "Lynn Seeley" <lfseeley@aol.com>; "Pat Gibbs" <fizzz@vfr.net>; "Penny Scribner" <pennys@foothill.net>; "Rho Bailey" <rhobailey@comcast.net>; "Rod Hall" <rodmhall@comcast.net>; "Sean and Mary Allen" <allansx2@usamedia.tv>; "Sue Geisler" <suehiker@sbcglobal.net>; "Tim Tweitmeyer" <tim.twietmeyer@hp.com>; "Andy Fecko" <afecko@pcwa.net>; "Antonio Rossmann" <ar@landwater.com>; "Ben Ransom" <bransom@pcwa.net>; "Beth A Paulson" <bapaulson@fs.fed.us>; "Beth Lawson" <blawson@dfg.ca.gov>; "Bill Spain" <wspain@entrix.com>; "Bill Templiin" <wetemplin@att.net>; "Bob Hughes" <rwhughes@dfg.ca.gov>; "Bonnie Petitt" <bpetitt@fs.fed.us>; "Brett Storey" <bstorey@placer.ca.gov>; "Bryan Tibbs" <bvtibbs@aes4u.com>; "Damian Forsythe" <damian@hookedupanglers.com>; "Dan Teater" <dteater@fs.fed.us>; "Dave Martinez" <MTZ@directcon.net>; "Dave Steindorf" <dave@amwhitewater.org>; "Dick Maclay" <dmaclay@aes4u.com>; "Donna Day" <dday@fs.fed.us>; "Donna Williams" <dwynot@hughes.net>; "Ed Bianchi" <ebianchi@entrix.com>; "Ed Moore" <emoore@fs.fed.us>; "Eileen Dessaso" <EDessaso@entrix.com>; "Gary Flanagan" <flanagan@surewest.net>; "Harry Shuger" <2mtnlvrs@foothill.net>; "Heath Wakelee" <rheathwakelee@cs.com>; "Hilde Schweitzer" <hilde@amriver.us>; "Jim Micheaels" <jmiche@parks.ca.gov>; "Julie Leimbach" <julie@foothillswaternetwork.org>; "Lester Lubetkin" <llubetkin@fs.fed.us>; "Lori Powers" <lpowers@cdf.ca.gov>; "Mal Toy" <MToy@pcwa.net>; "Marie Davis" <mdavis@pcwa.net>; "Marie Rainwater" <marie@rainwater-associates.com>; "Marilyn Jasper " <mjasper@accessbee.com>; "Mary Preuss" <MPreuss@entrix.com>; "MaryLisa Lynch" <mlynch@dfg.ca.gov>; "Mo Tebbe" <mtebbe@fs.fed.us>; "Nate Rangel" <nate@raftcalifornia.com>; "Rich Johnson " <ranger_r@pacbell.net>; "Roger Lee" <Rlee@stroerandgraff.com>; "Russ Kanz" <rkanz@waterboards.ca.gov>; "Sandy Perry" <sperry@entrix.com>; "Stafford Lehr" <slehr@dfg.ca.gov>; "Stephen Bowes" <stephen_bowes@nps.gov>; "Thomas Bartos" <GBFS@surewest.net>; "Thomas Wegge" <twegge@tcwecon.com>; "Tom Johnson" <tjohnson@pcwa.net>; "Vicki Jowise " <vjowise@fs.fed.us>
Cc: "Ben Rualo" <ben_ffnc@yahoo.com>; "Bill Carnazzo" <bcarnazzo@ftcnet.net>; "Brad Cavallo" <bcavallo@fishsciences.net>; "Eldon Cotton" <ECotton99@aol.com>; "John Greene" <websavvy@mac.com>; "Lori Powers" <lpowers@dfg.ca.gov>
Sent: Tuesday, August 12, 2008 7:58 PM
Subject: Re: PCWA/MFP - Request to Clarify Exact Location of Oregon Bar River Crossing

There are two problems with river fords:

1. They are only useful during low summer flows. Usually, the river flow drop to summer flows by about the first week in July. In drought years it can be the first week in June. Those low summer flows only last until the first heavy rain, which usually occurs sometime in October. So the fords are only usable for about four months out of the year..
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Gordon Ainsleigh

----- Original Message -----
From: PCWA MFP Relicensing
To: Bill Deitchman ; Bill Johnson ; Chuck Mather ; Debbie Murphy ; Eric Peach ; Gene Freeland ; Glen Meeth ; Gordon Ainsleigh ; Greg Soderland ; Janet Peterson ; Jim Haagensmit ; Jim Larimer ; Joe and Cindy Larkin ; Kathie Perry ; Linda Costello ; Lynn Seeley ; Pat Gibbs ; Penny Scribner ; Rho Bailey ; Rod Hall ; Sean and Mary Allen ; Sue Geisler ; Tim Tweitmeyer ; Andy Fecko ; Antonio Rossmann ; Ben Ransom ; Beth A Paulson ; Beth Lawson ; Bill Spain ; Bill Templiin ; Bob Hughes ; Bonnie Petitt ; Brett Storey ; Bryan Tibbs ; Damian Forsythe ; Dan Teater ; Dave Martinez ; Dave Steindorf ; Dick Maclay ; Donna Day ; Donna Williams ; Ed Bianchi ; Ed Moore ; Eileen Dessaso ; Gary Flanagan ; Harry Shuger ; Heath Wakelee ; Hilde Schweitzer ; Jim Micheaels ; Julie Leimbach ; Lester Lubetkin ; Lori Powers ; Mal Toy ; Marie Davis ; Marie Rainwater ; Marilyn Jasper ; Mary Preuss ; MaryLisa Lynch ; Mo Tebbe ; Nate Rangel ; Rich Johnson ; Roger Lee ; Russ Kanz ; Sandy Perry ; Stafford Lehr ; Stephen Bowes ; Thomas Bartos ; Thomas Wegge ; Tom Johnson ; Vicki Jowise
Cc: Ben Rualo ; Bill Carnazzo ; Brad Cavallo ; Eldon Cotton ; John Greene ; Lori Powers
Sent: Tuesday, August 12, 2008 1:35 PM
Subject: PCWA/MFP - Request to Clarify Exact Location of Oregon Bar River Crossing

Dear Trail User/Stream Crossing Focus Group Participant,

On May 12, 2008, PCWA held a Trail User/Stream Crossing Focus Group session. During this meeting, several equestrian users indicated that it is possible to cross the North Fork of the American River at Oregon Bar with horses. We would like to identify the exact location of this crossing.

To this end, we have attached a pdf of a map showing the Oregon Bar area. For orientation purposes, the map shows the location of the recently constructed Oregon Hill Day-use Parking Area, the road leading to the Oregon Bar River Access point, the Pioneer Express Trail, and Oregon Bar. It also shows river mile markers in 0.1 increments.

Please review the map and let us know where you typically cross the river in this area using the mile markers provided on the map. Also, please let us know if there is a common name for the trail located on the southeast side of the river.

We would appreciate your feedback by Tuesday, August 26.

Thank you,
Beverly Bell
Administrative Aide
(530) 823-4973

No virus found in this incoming message.
Checked by AVG.
Version: 7.5.524 / Virus Database: 270.6.1/1607 - Release Date: 8/12/2008 7:19 AM

Letters and Email Correspondence from Trail Users Regarding Focus Group Notes

From: "Dr Gordon" <drgordon@auburninternet.com>
To: "PCWA MFP Relicensing" <Relicensing@pcwa.net>; "Bill Deitchman" <bdeit@parks.ca.gov>; "Bill Johnson" <greengate1@att.net>; "Chuck Mather" <wampus@cebridge.net>; "Debbie Murphy" <equuspassage@aol.com>; "Eric Peach" <parc@jps.net>; "Gene Freeland" <genefrlnd@netscape.net>; "Glen Meeth" <gmeeth@sbcglobal.net>; "Greg Soderland" <wser100@comcast.net>; "Janet Peterson" <janetpeterson@dishmail.net>; "Jim Haagensmit" <tandemjim@sbcglobal.net>; "Jim Larimer" <robiepk@foothill.net>; "Joe and Cindy Larkin" <larkin-ranch@att.net>; "Kathie Perry" <kdpbioscan@aol.com>; "Linda Costello" <ldc50@comcast.net>; "Lynn Seeley" <lfseeley@aol.com>; "Pat Gibbs" <fizzz@vfr.net>; "Penny Scribner" <pennys@foothill.net>; "Rho Bailey" <rhobailey@comcast.net>; "Rod Hall" <rodmhall@comcast.net>; "Sean and Mary Allen" <allansx2@usamedia.tv>; "Sue Geisler" <suehiker@sbcglobal.net>; "Tim Tweitmeyer" <tim.twietmeyer@hp.com>; "Andy Fecko" <afecko@pcwa.net>; "Antonio Rossmann" <ar@landwater.com>; "Ben Ransom" <bransom@pcwa.net>; "Beth A Paulson" <bapaulson@fs.fed.us>; "Beth Lawson" <blawson@dfg.ca.gov>; "Bill Spain" <wspain@entrix.com>; "Bill Templiin" <wetemplin@att.net>; "Bob Hughes" <rwhughes@dfg.ca.gov>; "Bonnie Petitt" <bpetitt@fs.fed.us>; "Brett Storey" <bstorey@placer.ca.gov>; "Bryan Tibbs" <bvtibbs@aes4u.com>; "Damian Forsythe" <damian@hookedupanglers.com>; "Dan Teater" <dteater@fs.fed.us>; "Dave Martinez" <MTZ@directcon.net>; "Dave Steindorf" <dave@amwhitewater.org>; "Dick Maclay" <dmaclay@aes4u.com>; "Donna Day" <dday@fs.fed.us>; "Donna Williams" <dwynot@hughes.net>; "Ed Bianchi" <ebianchi@entrix.com>; "Ed Moore" <emoore@fs.fed.us>; "Eileen Dessaso" <EDessaso@entrix.com>; "Gary Flanagan" <flanagan@surewest.net>; "Harry Shuger" <2mtnlvrs@foothill.net>; "Heath Wakelee" <rheathwakelee@cs.com>; "Hilde Schweitzer" <hilde@amriver.us>; "Jim Micheaels" <jmiche@parks.ca.gov>; "Julie Leimbach" <julie@foothillswaternetwork.org>; "Lester Lubetkin" <llubetkin@fs.fed.us>; "Lori Powers" <lpowers@cdf.ca.gov>; "Mal Toy" <MToy@pcwa.net>; "Marie Davis" <mdavis@pcwa.net>; "Marie Rainwater" <marie@rainwater-associates.com>; "Marilyn Jasper " <mjasper@accessbee.com>; "Mary Preuss" <MPreuss@entrix.com>; "MaryLisa Lynch" <mlynch@dfg.ca.gov>; "Mo Tebbe" <mtebbe@fs.fed.us>; "Nate Rangel" <nate@raftcalifornia.com>; "Rich Johnson " <ranger_r@pacbell.net>; "Roger Lee" <Rlee@stroerandgraff.com>; "Russ Kanz" <rkanz@waterboards.ca.gov>; "Sandy Perry" <sperry@entrix.com>; "Stafford Lehr" <slehr@dfg.ca.gov>; "Stephen Bowes" <stephen_bowes@nps.gov>; "Thomas Bartos" <GBFS@surewest.net>; "Thomas Wegge" <twegge@tcwecon.com>; "Tom Johnson" <tjohnson@pcwa.net>; "Vicki Jowise " <vjowise@fs.fed.us>
Cc: "Ben Rualo" <ben_ffnc@yahoo.com>; "Bill Carnazzo" <bcarnazzo@ftcnet.net>; "Brad Cavallo" <bcavallo@fishsciences.net>; "Eldon Cotton" <ECotton99@aol.com>; "John Greene" <websavvy@mac.com>; "Lori Powers" <lpowers@dfg.ca.gov>
Sent: Tuesday, August 12, 2008 7:58 PM
Subject: Re: PCWA/MFP - Request to Clarify Exact Location of Oregon Bar River Crossing

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Gordon Ainsleigh

----- Original Message -----
From: PCWA MFP Relicensing
To: Bill Deitchman ; Bill Johnson ; Chuck Mather ; Debbie Murphy ; Eric Peach ; Gene Freeland ; Glen Meeth ; Gordon Ainsleigh ; Greg Soderland ; Janet Peterson ; Jim Haagensmit ; Jim Larimer ; Joe and Cindy Larkin ; Kathie Perry ; Linda Costello ; Lynn Seeley ; Pat Gibbs ; Penny Scribner ; Rho Bailey ; Rod Hall ; Sean and Mary Allen ; Sue Geisler ; Tim Tweitmeyer ; Andy Fecko ; Antonio Rossmann ; Ben Ransom ; Beth A Paulson ; Beth Lawson ; Bill Spain ; Bill Templiin ; Bob Hughes ; Bonnie Petitt ; Brett Storey ; Bryan Tibbs ; Damian Forsythe ; Dan Teater ; Dave Martinez ; Dave Steindorf ; Dick Maclay ; Donna Day ; Donna Williams ; Ed Bianchi ; Ed Moore ; Eileen Dessaso ; Gary Flanagan ; Harry Shuger ; Heath Wakelee ; Hilde Schweitzer ; Jim Micheaels ; Julie Leimbach ; Lester Lubetkin ; Lori Powers ; Mal Toy ; Marie Davis ; Marie Rainwater ; Marilyn Jasper ; Mary Preuss ; MaryLisa Lynch ; Mo Tebbe ; Nate Rangel ; Rich Johnson ; Roger Lee ; Russ Kanz ; Sandy Perry ; Stafford Lehr ; Stephen Bowes ; Thomas Bartos ; Thomas Wegge ; Tom Johnson ; Vicki Jowise
Cc: Ben Rualo ; Bill Carnazzo ; Brad Cavallo ; Eldon Cotton ; John Greene ; Lori Powers
Sent: Tuesday, August 12, 2008 1:35 PM
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We would appreciate your feedback by Tuesday, August 26.

Thank you,
Beverly Bell
Administrative Aide
(530) 823-4973

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Checked by AVG.
Version: 7.5.524 / Virus Database: 270.6.1/1607 - Release Date: 8/12/2008 7:19 AM

From: <Equuspassage@aol.com>
To: <fizzz@vfr.net>
Sent: Sunday, August 31, 2008 9:14 PM
Subject: Re: Summary Focus group notes

Patricia,

You have summarized exactly my feelings from the focus group- You may add my name to this, if you wish. I couldn't think of one thing to add!

Debbie Murphy

It's only a deal if it's where *you* want to go. Find your travel deal **here**.

September 19, 2008
Mal Toy and Trail User Focus Group participants
Middle Fork Relicensing Project #2079
P.O.Box 6570
Auburn, CA. 95604

Dear Mr. Toy,
Thank-you for sending, via email August 11, 2008, the finalized Trail User stream crossing spreadsheet notes generated during the Trail User Focus Group meeting held on May 12, 2008. It is difficult, indeed, to capture such a dynamic discussion with so many people in real time.

As you know the Focus Group was intended to capture not only stream crossing locations and conditions but also to capture and study other potential opportunities such as a bridge crossing. (March 4, 2008 Scoping Meeting transcript page 83 & 84) Thus, I would like to add, as a Focus Group participant, my summary of the comments that did not neatly fit any particular stream crossing parameter. In addition, as a REC TWG participant, I have included some comments regarding the REC TWG meeting materials.

My summary is not exhaustive nor do I represent this as a consensus of the group. However, I feel it is important, for the relicensing record, to recount the additional comments as I heard them, in an effort to provide some background and context to the trail/stream crossing spreadsheet summary.

As I recall, and per my rough notes, the additional comments discussed but generally not made part of the stream crossing spreadsheet are as follows:

1. Desire to maintain trail connectivity for all user groups.
2. Clear frustration with the loss of the unofficial, 'temporary' 30+ year old multiuse dry land river crossing created by the Auburn Dam river diversion tunnel and a corresponding lack of any obligation by any party to mitigate the loss of this crossing which had been characterized as a significant impact of the American River Pump Station / River Restoration Project.
3. Clarification that PCWA set aside of a maximum of $500,000 towards future construction of a river crossing or similar mitigation which would only be used if and when the Bureau of Reclamation and State Parks chooses to proceed with a crossing or other mitigation.
4. Clarification that any crossing construction that might occur as a result of the American River Pump Station Project would not be a PCWA project thus PCWA would not be the lead agency under those circumstances.
5. Brief discussion regarding the partition of the licensing process wherein the Federal Regulatory Energy Commission has jurisdiction on Project lands, reservoirs, tunnels etc controlled by the NEPA process and downstream lands, necessary for Project operations is controlled via the CEQA process. PCWA is the lead agency, the State Water Board is the responsible agency in the downstream area.

6. There was no discussion regarding an assessment of downstream impacts or mitigation measures that are a result of this relicensing Project.
7. There was frustration that roadways created for the Pump Station/River Restoration Project at the new China Bar access area displaced trail users in the area.
8. There was discussion that a multiuse bridge at the Coffer Dam/ China Bar/Birdsall area would be a solution to river crossing issues that affect trail users throughout the area.

PCWA presented its' summary of potential protection, mitigation and enhancement (PM&E) measures derived from the focus group meeting at the Recreation Technical Working Group (REC TWG) on May 29, 2008. The potential PM&E list included the following:

- Reconstruction Nevada Point Crossing foot bridge
- Reconstruct the Greenwood Bridge at Ruck-a-Chucky
- Create a crossing at the Coffer Dam site
- Install staff gauges near crossings at Ruck-a-Chucky, Poverty Bar and Oregon Bar
- Provide user-friendly flow information

With respect to the Coffer Dam site, it is not clear what 'creating a crossing' means. My recollection is that there was a stated desire for a year round, safe, multiuse bridge to serve access and trail connectivity.

I hope that the above information assists in capturing some of the additional focus group discussion. I welcome any corrections or additional comments by the Focus Group.

I offer my comments so that the upcoming negotiations regarding Project impacts, enhancements and mitigations will be more broad based.

Sincerely,

Patricia Gibbs

Cc:
Via email, REC TWG, Trail User Focus Group
Written correspondence: Federal Energy Regulatory Commission

ROSSMANN AND MOORE, LLP

Attorneys at Law

380 HAYES STREET, SUITE ONE
SAN FRANCISCO, CALIFORNIA 94102 USA
TEL (01)(415) 861-1401 FAX (01)(415) 861-1822
www.landwater.com

ANTONIO ROSSMANN
ADMITTED IN CALIFORNIA
NEW YORK AND
THE DISTRICT OF COLUMBIA
ar@landwater.com

19 June 2007

Mal Toy, Director of Resource Development
Middle Fork American River Hydroelectric Project
Placer County Water Authority
P.O. Box 6570
Auburn, CA 95604

Re; FERC 2079: Recreation Resources

Dear Mr. Toy:

This letter is written in behalf of the Western States Trail Foundation, sponsor of the Western States Trail Ride (Tevis Cup), and Western States Endurance Run Foundation, sponsor of the Western States Endurance Run. Both of these 100-mile events are the premiere endurance events in the world, and are conducted along the Western States Trail between Squaw Valley and Auburn.

Our Foundations value the support and cooperation that we have enjoyed over the years from the Placer County Water Authority. As representatives of PCWA and our foundations recognized in celebrating the U.S. Forest Service centennial at Robinson Flat in August 2005, our common future is bound by working together to preserve the American River as a valuable resource. Toward that end, we are grateful to read in the recreational resource narrative for the FERC 2079 project relicensing of your recognition of the Western States Trail and our two events.

As pointed out in the comment letter from Patricia Gibbs dated May 23, 2007, we believe that your description and assessment of the Western States trail and events can be enhanced in your final submissions to FERC. We offer the following suggestions:

The Western States Trail between Emigrant Monument and the Duncan Canyon checkpoint at Mosquito Ridge Road follows two routes: the historic route on Red Star Ridge, known as the

Tevis Cup Loop, and depicted on your figure 6.9-3; and the Picayune Valley route that borders French Meadows Reservoir, labeled on figure 6.9-3 as Talbot and McGuire Trails. (Please refer to the USFS official map of the Tahoe National Forest.) It is important to protect both routes for possible use in the event of natural phenomena such as unusual snow or forest fire.

In materials that you reference and employ, please add Hall Hall's Western States Trail Guide (1998). This publication amply documents the history of the 100-mile length of the Western States Trail from Squaw Valley to Auburn, which portion of the trail lies almost entirely in the Middle Fork drainage.

By the respective administrative designations of the Secretaries of Agriculture and Interior, the entire trail within the Middle Fork drainage has already been designated as a National Recreational Trail.

Furthermore, as reflected in the attached resolution adopted by the Placer County Board of Supervisors on June 12, 2007, the entire 100-mile length of Western States Trail is now being considered by Congress for proposed designation as a National Historic and Scenic Trail. (Indeed, we ask that PCWA use the recitals in this resolution to describe the importance of the Western States Trail as a national resource.)

We also ask you to note that in addition to Granite Chief, the watershed includes three proposed wilderness areas now under Congressional consideration in Senate Bill 493: an expansion of Granite Chief, and an addition of Duncan Canyon and Black Oak. Relevant portions of S. 493 are attached. (We note that these proposed areas do not appear to be affected by the relicensing of FERC 2079, but that their proposed watershed protection could contribute positively to the welfare of the project.) We also note that the Middle Fork tributaries that are embraced within Black Oak have been previously studied by the U.S. Forest Service and found eligible for designation as Wild and Scenic Rivers; inclusion in the wild and scenic river system should not detract from, but contribute to, the welfare of FERC 2079.

Finally, in respect of recreational impacts of FERC 2079, we record the recreational benefit that our foundations and events have enjoyed over the years by the cooperation of PCWA to moderate flows out of French Meadows and Oxbow Reservoirs to accommodate the Middle Fork crossing of our race-day participants at Rucky Chucky and Poverty Bar. We ask that the relicensing terms continue to authorize this discretion by PCWA in operation of the project to support our events. We also ask that PCWA continue to work with the U.S. Bureau of Reclamation and California State Parks to improve these crossings to enable their use in times other than actual competition, and to restore the crossing that has been enjoyed by trail riders and runners at the former Auburn cofferdam site.

Respectfully,

ANTONIO ROSSMANN

cc: Tom Christofk, President, Western States Trail Foundation
Tim Twietmeyer, President, Western States Endurance Run Foundation

From: "Janet Peterson" <janetpeterson@dishmail.net>
To: "PCWA MFP Relicensing" <Relicensing@pcwa.net>; "Bill Deitchman" <bdeit@parks.ca.gov>; "Bill Johnson" <greengate1@att.net>; "Chuck Mather" <wampus@cebridge.net>; "Debbie Murphy" <equuspassage@aol.com>; "Eric Peach" <parc@jps.net>; "Gene Freeland" <genefrlnd@netscape.net>; "Glen Meeth" <gmeeth@sbcglobal.net>; "Gordon Ainsleigh" <drgordon@auburninternet.com>; "Greg Soderland" <wser100@comcast.net>; "Jim Haagensmit" <tandemjim@sbcglobal.net>; "Jim Larimer" <robiepk@foothill.net>; "Joe and Cindy Larkin" <larkin-ranch@att.net>; "Kathie Perry" <kdpbioscan@aol.com>; "Linda Costello" <ldc50@comcast.net>; "Lynn Seeley" <lfseeley@aol.com>; "Penny Scribner" <pennys@foothill.net>; "Rho Bailey" <rhobailey@comcast.net>; "Rod Hall" <rodmhall@comcast.net>; "Sean and Mary Allen" <allansx2@usamedia.tv>; "Sue Geisler" <suehiker@sbcglobal.net>; "Tim Tweitmeyer" <tim.twietmeyer@hp.com>; "PG" <fizzz@vfr.net>
Sent: Sunday, September 21, 2008 11:23 PM
Subject: Re: P. Gibbs Focus Group notes

PCWA MFP Relicensing,
The notes and comments collected and documented by Pat Gibbs mirror my own notes and recollection of the Focus Group discussion on May 12, 2008.

It is, I believe, worth reiterating that trail users have repeatedly requested that the loss of the year-round, multiuse trail that crossed the dry river bed at Coffer Dam be mitigated byway of a comparable replacement crossing at the same location. The disappointment and frustration of trail users stemming from the lack of agency action, including the accountability of any lead agency, to address this as a priority issue is again accurately captured in several of Pat Gibbs' notes.

The Focus Group was directed away from specific discussions of a replacement crossing in the vicinity of what had been the Coffer Dam but the group found it difficult to intelligently discuss the needs related to river crossings related to the FERC project without including the single most important river crossing issue of the region. The closing of the Auburn to Cool crossing was determined to be a significant impact and yet its mitigation has been repeatedly brushed off. This does seem like a miscarriage of a key element of CEQA requirements and certainly constitutes a disservice to the hundreds of trail users that have participated in this process.

In light of the continued interest in this aspect of the American River Pump Station/River Restoration project, I would like to request that as the findings of the Focus Group are reviewed that PCWA and Bureau of Reclamation come to terms with their responsibility to the public and incorporate timely plans for a year-round, multiuse river crossing in the vicinity of the demolished Coffer Dam.

Janet Peterson
President, Action Coalition of Equestrians
Vice Chairman, Northern California, California Equestrain Trails and Land Coaltion
On Fri, Sep 19, 2008 at 10:57 AM, PG <fizzz@vfr.net> wrote:

> Trail User Focus Group members,
>
> Attached find my write up of the Focus Group meeting.
>
> I welcome comments, corrections, disagreements, additions and/or concurrence.
> Patricia Gibbs
>
> ----- Original Message -----
> **From:** PCWA MFP Relicensing
> **To:** Bill Deitchman ; Bill Johnson ; Chuck Mather ; Debbie Murphy ; Eric Peach ; Gene Freeland ; Glen Meeth ; Gordon Ainsleigh ; Greg Soderland ; Janet Peterson ; Jim Haagensmit ; Jim Larimer ; Joe and Cindy Larkin ; Kathie Perry ; Linda Costello ; Lynn Seeley ; Pat Gibbs ; Penny Scribner ; Rho Bailey ; Rod Hall ; Sean and Mary Allen ; Sue Geisler ; Tim Tweitmeyer
> **Sent:** Monday, August 11, 2008 4:31 PM

Subject: PCWA/MFP - Trail User/Stream Crossing Focus Group Meeting Notes

Dear Trail User/Stream Crossing Focus Group Members –

Attached are the spreadsheets containing the notes that were captured during the trail user focus group session, which was held at PCWA's headquarters on May 12, 2008. The information contained in the spreadsheets is essentially as it was recorded during the meeting, with two exceptions. First, additional language was added to clarify access points and roads, where necessary. Second, clarification regarding specific crossings was added based on comments provided by ASRA during later meetings and on in-the-field observations made after the focus group meeting. Please note that the information contained in the focus group spreadsheets is an attempt to capture comments made during a dynamic discussion. This is a starting point and we are continuing to build upon this information as our stream crossing studies proceed.

If you have any questions, please don't hesitate to call.

Sincerely,

Beverly Bell

Administrative Aide

(530) 823-4973

From: <genefrlnd@netscape.net>
To: <ar@landwater.com>; <fizzz@vfr.net>; <Relicensing@pcwa.net>; <afecko@pcwa.net>; <bransom@pcwa.net>; <bapaulson@fs.fed.us>; <blawson@dfg.ca.gov>; <bdeit@parks.ca.gov>; <wspain@entrix.com>; <wetemplin@att.net>; <rwhughes@dfg.ca.gov>; <bpetitt@fs.fed.us>; <bstorey@placer.ca.gov>; <bvtibbs@aes4u.com>; <damian@hookedupanglers.com>; <dteater@fs.fed.us>; <MTZ@directcon.net>; <dave@amwhitewater.org>; <dmaclay@aes4u.com>; <dday@fs.fed.us>; <dwynot@hughes.net>; <ebianchi@entrix.com>; <emoore@fs.fed.us>; <EDessaso@entrix.com>; <flanagan@surewest.net>; <2mtnlvrs@foothill.net>; <rheathwakelee@cs.com>; <hilde@amriver.us>; <janetpeterson@dishmail.net>; <JMICHE@parks.ca.gov>; <julie@foothillswaternetwork.org>; <llubetkin@fs.fed.us>; <lpowers@dfg.ca.gov>; <MToy@pcwa.net>; <mdavis@pcwa.net>; <marie@rainwater-associates.com>; <mjasper@accessbee.com>; <MPreuss@entrix.com>; <mlynch@dfg.ca.gov>; <mtebbe@fs.fed.us>; <nate@raftcalifornia.com>; <ranger_r@pacbell.net>; <Rlee@stroerandgraff.com>; <rkanz@waterboards.ca.gov>; <sperry@entrix.com>; <slehr@dfg.ca.gov>; <stephen_bowes@nps.gov>; <GBFS@surewest.net>; <twegge@tcwecon.com>; <tjohnson@pcwa.net>; <vjowise@fs.fed.us>
Cc: <ben_ffnc@yahoo.com>; <bcarnazzo@ftcnet.net>; <bcavallo@fishsciences.net>; <ECotton99@aol.com>; <websavvy@mac.com>; <tim.twietmeyer@hp.com>; <sweil@foothill.net>; <wser100@comcast.net>
Sent: Monday, September 22, 2008 2:14 PM
Subject: Re: P Gibbs Trail Focus Group Comments

All Interested Parties,

Patricia Gibbs notes/comments certainly speak to concerns for necessary river crossings within the ASRA.
Crossings for the Greenwood and Coffer dam areas are sorely missed by former users and limit use within the area for individuals that wish to expand trail choices.
Tony Rossman is also correct with respect that State Parks needs to step up and take the lead on issues within the ASRA. To date State Parks lack of a pro-active solution is dis-heartening and does not meet the public needs.
The Western State Trail Foundation strongly supports efforts that will mitigate crossing issues within the MFP Relciensing scope; and, in addition feel PCWA should participate in restoration efforts as a primary participant for corrective action in support of State Parks within the ASRA as it relates to stream use and stream trail crossings.

Gene Freeland, Member
Board of Governors, WSTF

-----Original Message-----
From: Antonio Rossmann <ar@landwater.com>
To: PG <fizzz@vfr.net>; PCWA MFP Relicensing <Relicensing@pcwa.net>; Andy Fecko <afecko@pcwa.net>; Ben Ransom <bransom@pcwa.net>; Beth A Paulson <bapaulson@fs.fed.us>; Beth Lawson <blawson@dfg.ca.gov>; Bill Deitchman <bdeit@parks.ca.gov>; Bill Spain <wspain@entrix.com>; Bill Templiin <wetemplin@att.net>; Bob Hughes <rwhughes@dfg.ca.gov>; Bonnie Petitt <bpetitt@fs.fed.us>; Brett Storey <bstorey@placer.ca.gov>; Bryan Tibbs <bvtibbs@aes4u.com>; Damian Forsythe <damian@hookedupanglers.com>; Dan Teater <dteater@fs.fed.us>; Dave Martinez <MTZ@directcon.net>; Dave Steindorf <dave@amwhitewater.org>; Dick Maclay <dmaclay@aes4u.com>; Donna Day <dday@fs.fed.us>; Donna Williams <dwynot@hughes.net>; Ed Bianchi <ebianchi@entrix.com>; Ed Moore <emoore@fs.fed.us>; Eileen Dessaso <EDessaso@entrix.com>; Gary Flanagan <flanagan@surewest.net>; Gene Freeland <genefrlnd@netscape.net>; Harry Shuger <2mtnlvrs@foothill.net>; Heath Wakelee <rheathwakelee@cs.com>; Hilde Schweitzer <hilde@amriver.us>; Janet Peterson <janetpeterson@dishmail.net>; Jim Micheaels <JMICHE@parks.ca.gov>; Julie Leimbach <julie@foothillswaternetwork.org>; Lester Lubetkin <llubetkin@fs.fed.us>; Lori Powers <lpowers@dfg.ca.gov>; Mal Toy <MToy@pcwa.net>; Marie Davis <mdavis@pcwa.net>; Marie Rainwater <marie@rainwater-associates.com>; Marilyn Jasper <mjasper@accessbee.com>; Mary Preuss <MPreuss@entrix.com>; MaryLisa Lynch <mlynch@dfg.ca.gov>; Mo Tebbe <mtebbe@fs.fed.us>; Nate Rangel <nate@raftcalifornia.com>; Richard Johnson

<ranger_r@pacbell.net>; Roger Lee <Rlee@stroerandgraff.com>; Russ Kanz <rkanz@waterboards.ca.gov>; Sandy Perry <sperry@entrix.com>; Stafford Lehr <slehr@dfg.ca.gov>; Stephen Bowes <stephen_bowes@nps.gov>; Thomas Bartos <GBFS@surewest.net>; Thomas Wegge <twegge@t cwecon.com>; Tom Johnson <tjohnson@pcwa.net>; Vicki Jowise <vjowise@fs.fed.us>
Cc: Ben Rualo <ben_ffnc@yahoo.com>; Bill Carnazzo <bcarnazzo@ftcnet.net>; Brad Cavallo <bcavallo@fishsciences.net>; Eldon Cotton <ECotton99@aol.com>; John Greene <websavvy@mac.com>; TWIETMEYER,TIM (HP-Roseville,ex1) <tim.twietmeyer@hp.com>; Shannon Weil <sweil@foothill.net>; WSER 100 <wser100@comcast.net>
Sent: Fri, 19 Sep 2008 12:17 pm
Subject: Re: P Gibbs Trail Focus Group Comments

Patricia, thank you for including me in your notes and for recording them. In the interests of efficiency, let me record that the Western States Endurance Run shares and supports the concerns and proposals raised here. We understand that with respect to the two bridge crossings to be restored for trail use (Greenwood and former cofferdam), PCWA would not be the appropriate lead agency; State Parks should be. But both the terms of the relicense, and PCWA policy, should in our view commit the agency to be more than a passive participant; PCWA should actively be seeking these restorations, and their completion could be written into the FERC license as a condition to be fulfilled.

Respectfully,

Tony Rossmann
Counsellor, WSER

--
Antonio Rossmann -- ar@landwater.com
Rossmann and Moore, LLP
Right at the base of Hayes Street Hill
380 Hayes Street
San Francisco 94102
Tel 415.861.1401
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BART Civic Center
MUNI Van Ness Metro and 21 Bus

http://www.landwater.com/

On 9/19/08 11:04 AM, "PG" <fizzz@vfr.net> wrote:

> Recreation Technical Working Group,
> FYI
>
> Patricia Gibbs

APPENDIX C

Photographs of Trail Crossing Locations at Different Flows

Fords Bar

Middle Fork American River
Fords Bar River Crossing Location

Fords Bar - 130 cfs

Fords Bar - 290 cfs

Middle Fork American River
Fords Bar River Crossing Location

Fords Bar - 660 cfs

Fords Bar - 1000 cfs

Ruck-a-Chucky

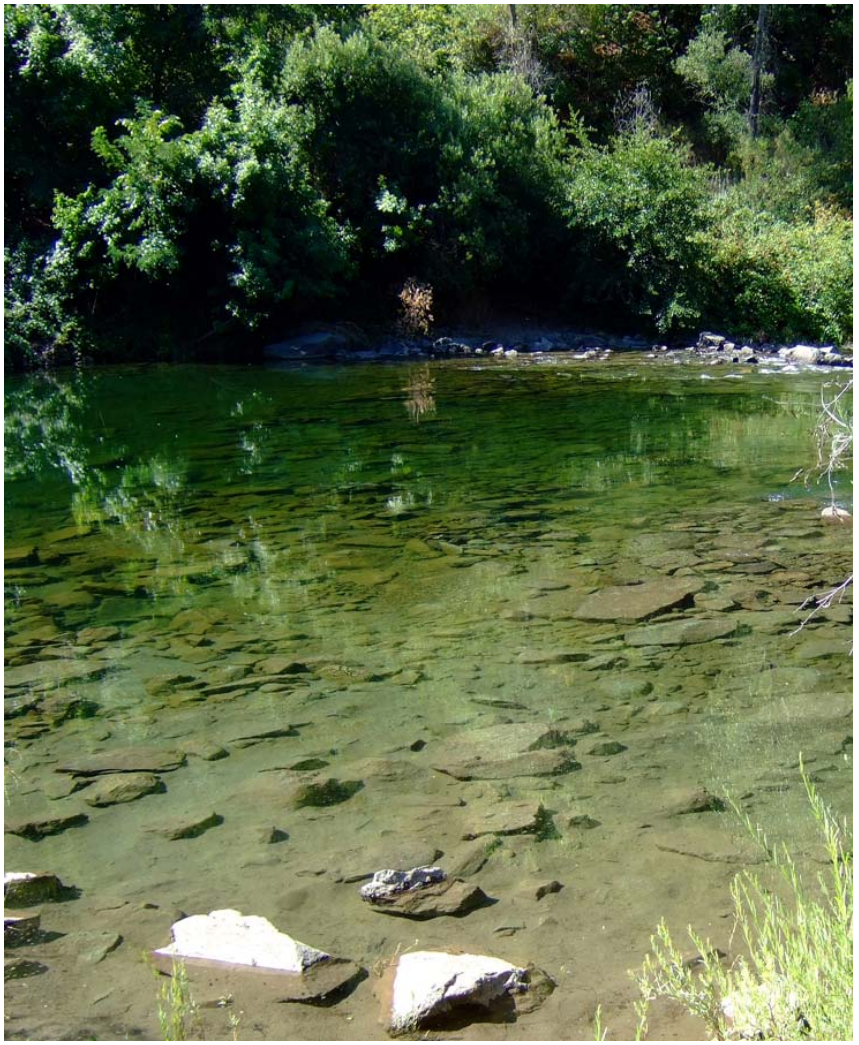
Middle Fork American River
Ruck-a-Chucky River Crossing Location

Ruck-a-Chucky - 150 cfs

Ruck-a-Chucky - 300 cfs

Middle Fork American River
Ruck-a-Chucky River Crossing Location

Ruck-a-Chucky - 660 cfs



Ruck-a-Chucky - 880 cfs

Poverty Bar

Middle Fork American River
Poverty Bar River Crossing Location

Poverty Bar - 150 cfs

Poverty Bar - 300 cfs

Middle Fork American River
Poverty Bar River Crossing Location

Poverty Bar - 670 cfs

Poverty Bar - 880 cfs

Mammoth Bar

Middle Fork American River
Mammoth Bar River Crossing Location

Mammoth Bar - 180 cfs

Mammoth Bar - 250 cfs

Middle Fork American River
Mammoth Bar River Crossing Location

Mammoth Bar - 360 cfs

Mammoth Bar - 660 cfs

Middle Fork American River
Mammoth Bar River Crossing Location

Mammoth Bar - 880 cfs

Coffer Dam

North Fork American River
Coffer Dam River Crossing Location

Coffer Dam - 200 cfs

Coffer Dam - 400 cfs

North Fork American River
Coffer Dam River Crossing Location

Coffer Dam - 630 cfs

Coffer Dam - 845 cfs

APPENDIX D

Modeled Stage/Discharge Relationships at Select Stream Crossing Locations

Figure D-1.
Fords Bar: Modeled Water Surface Elevations

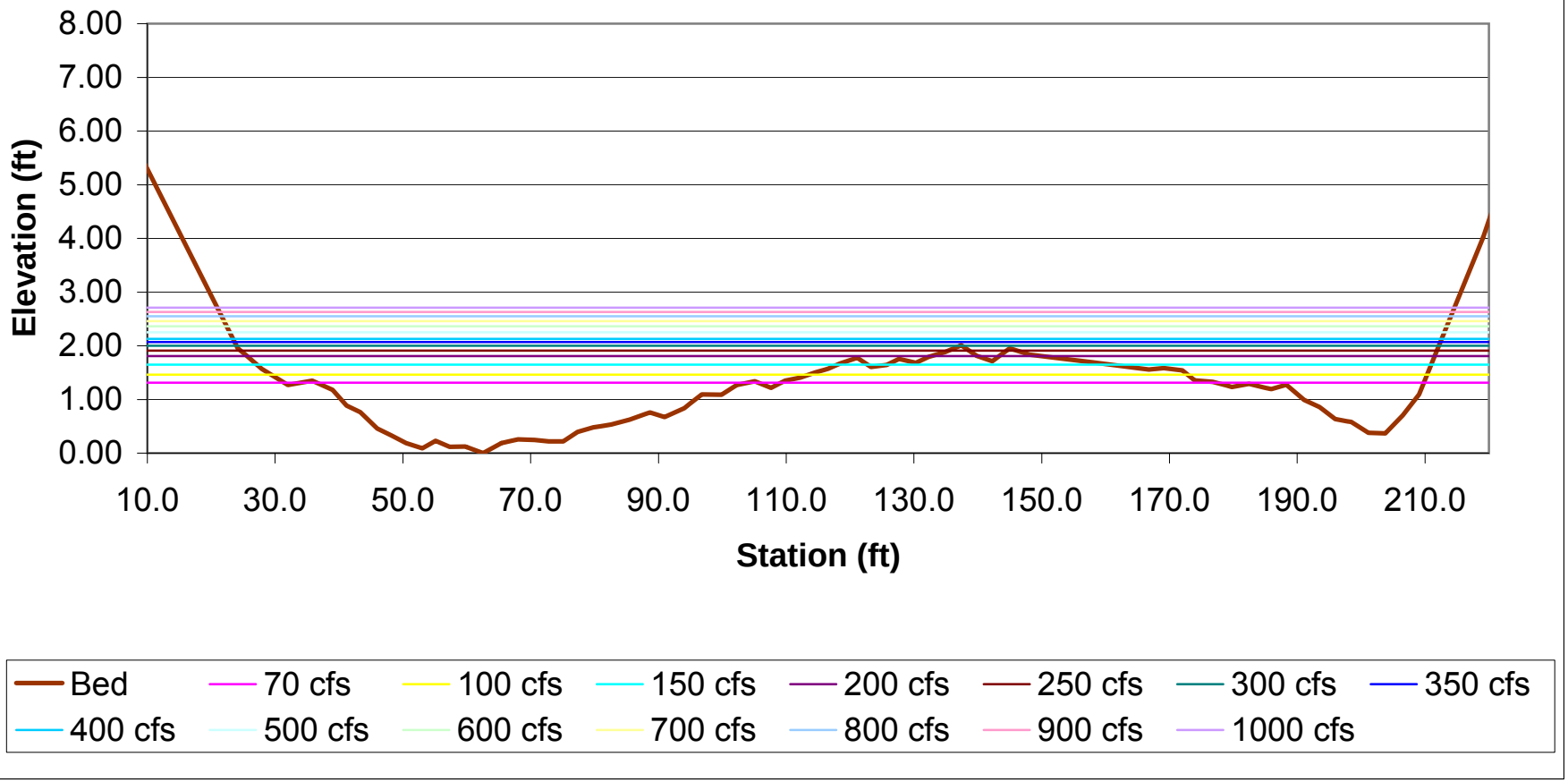


Figure D-2.
Fords Bar: Modeled Current Velocities

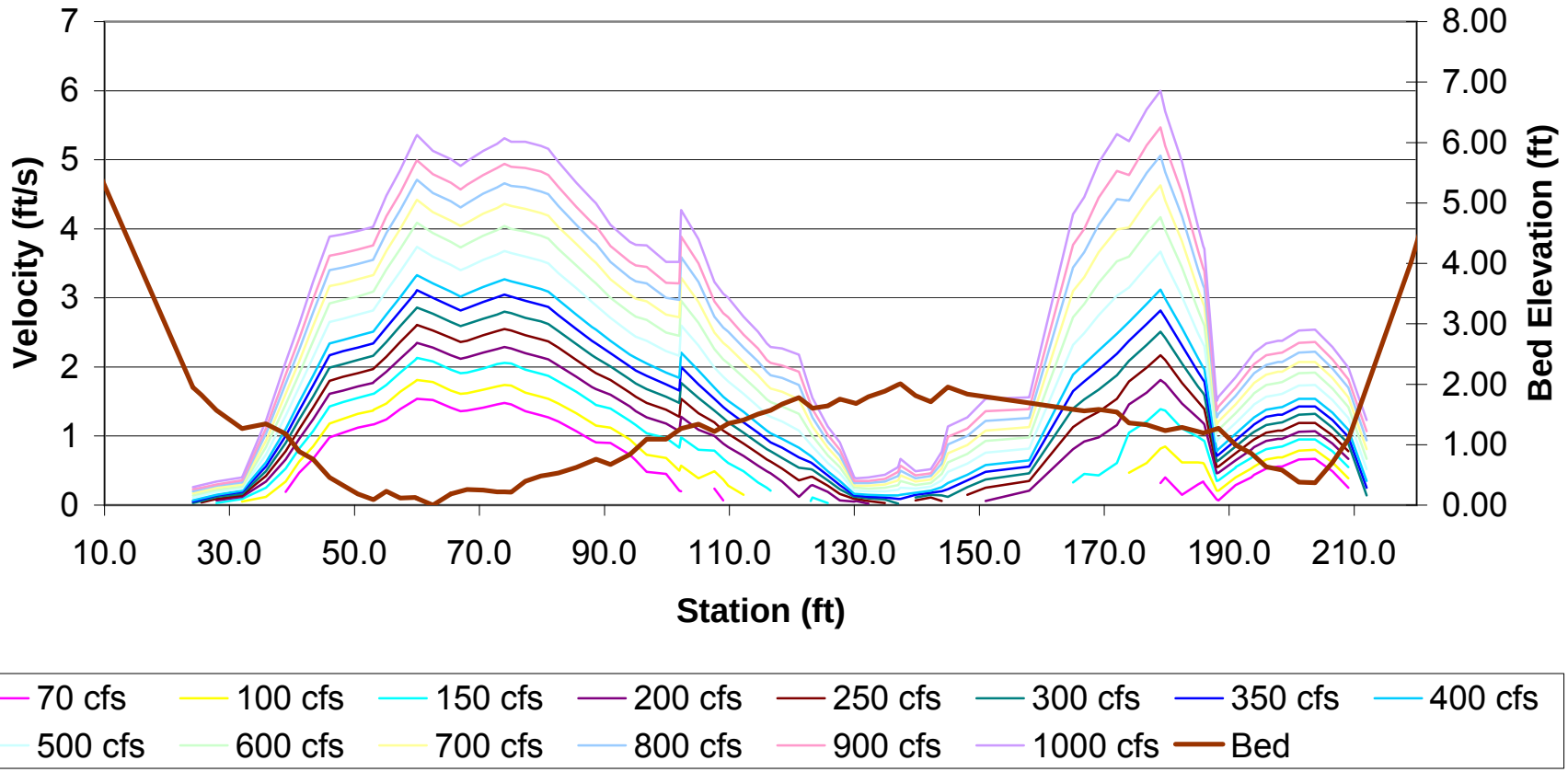


Figure D-3.
Ruck-A-Chucky: Modeled Water Surface Elevations

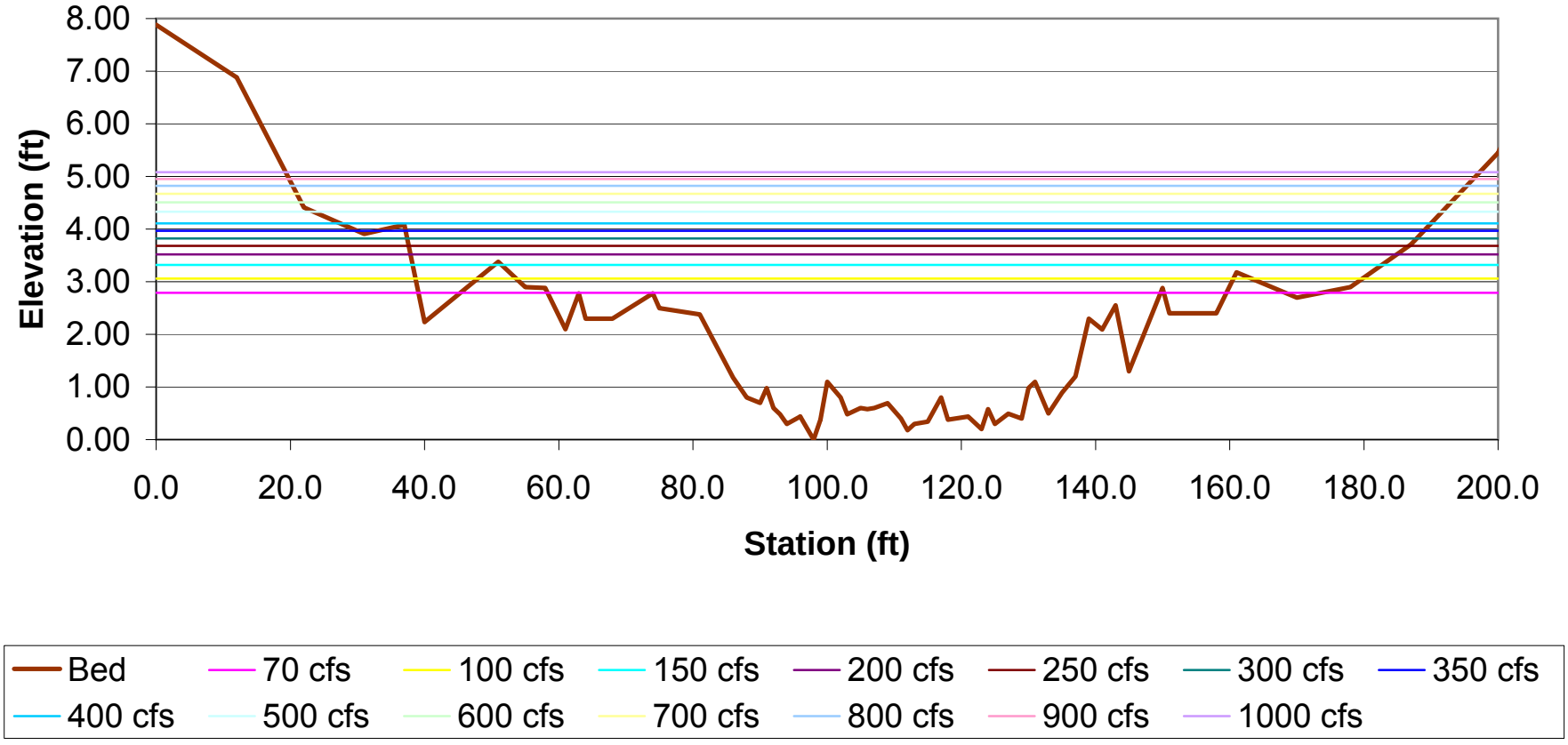


Figure D-4.
Ruck-A-Chucky: Modeled Current Velocities

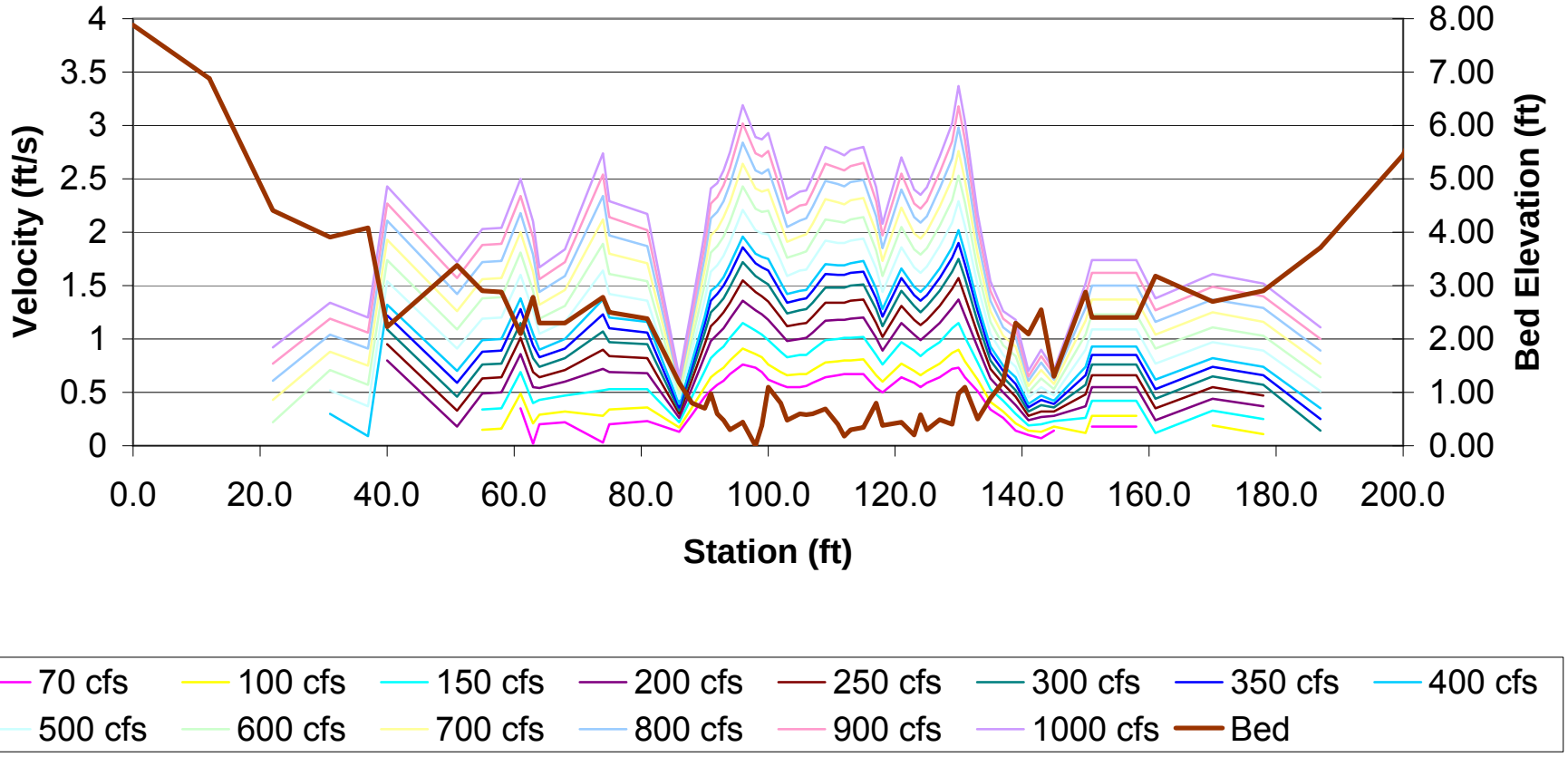


Figure D-5.
Poverty Bar: Modeled Water Surface Elevations

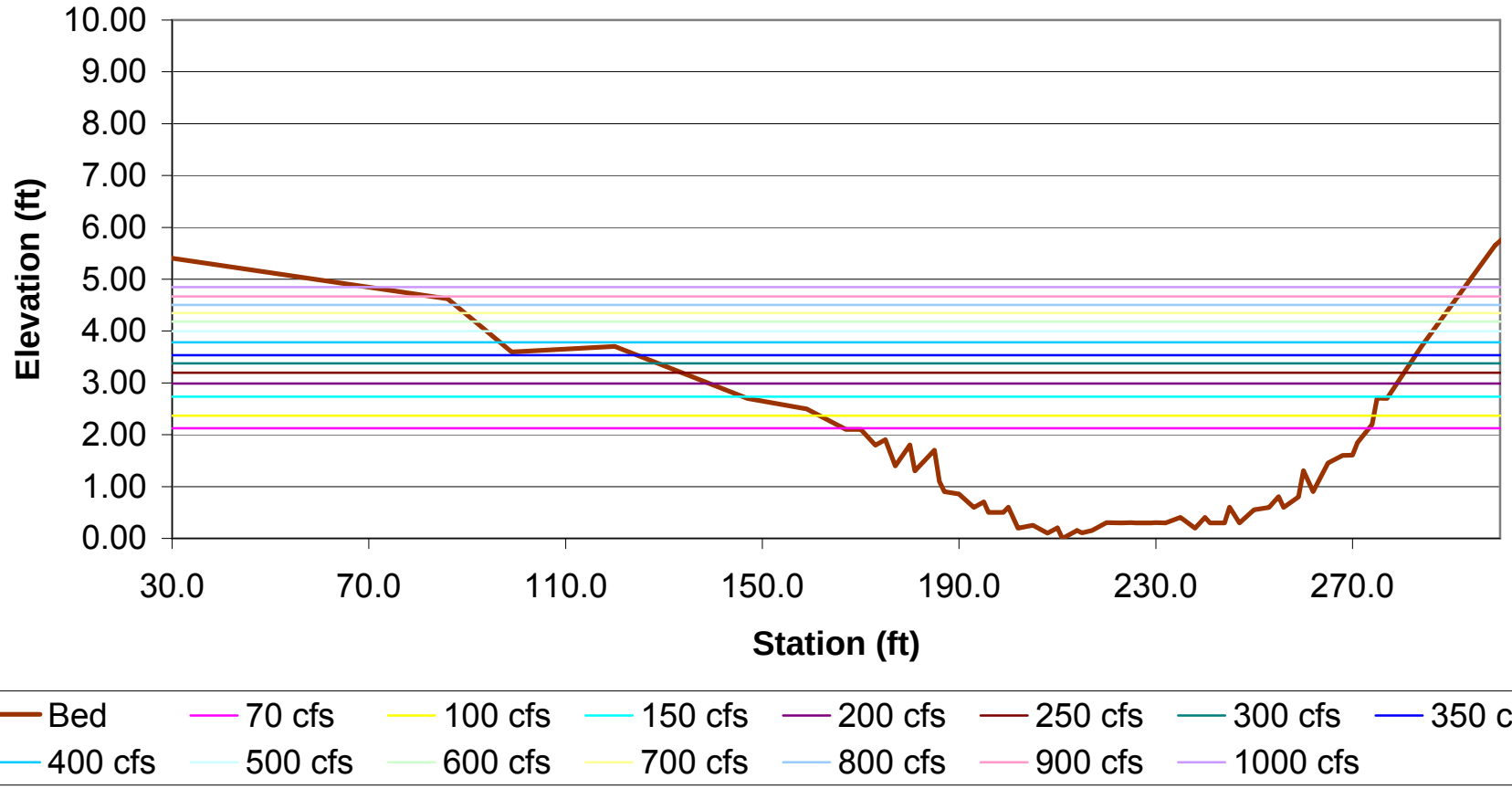


Figure D-6.
Poverty Bar: Modeled Current Velocities

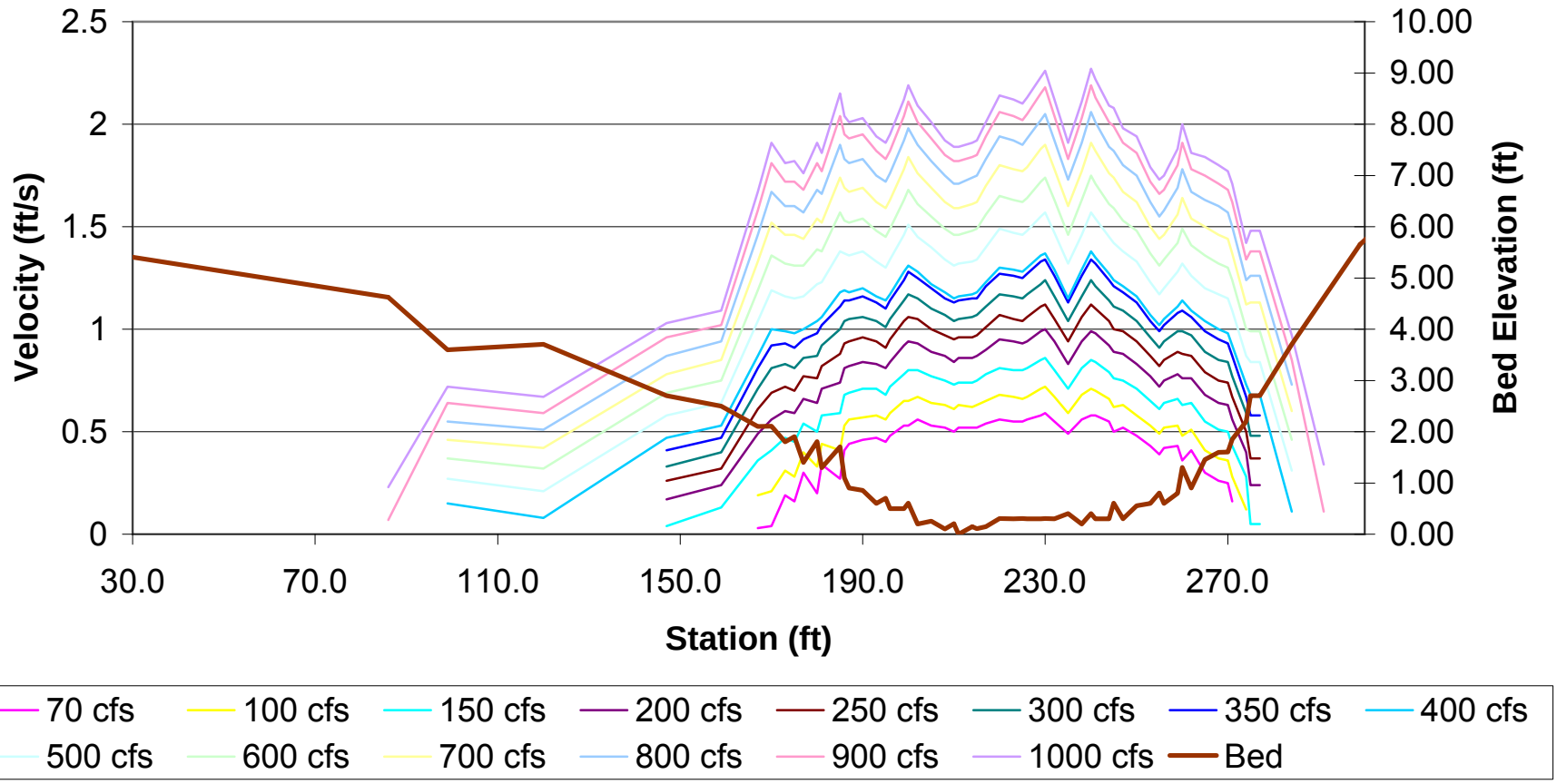


Figure D-7.
Mammoth Bar: Modeled Water Surface Elevations

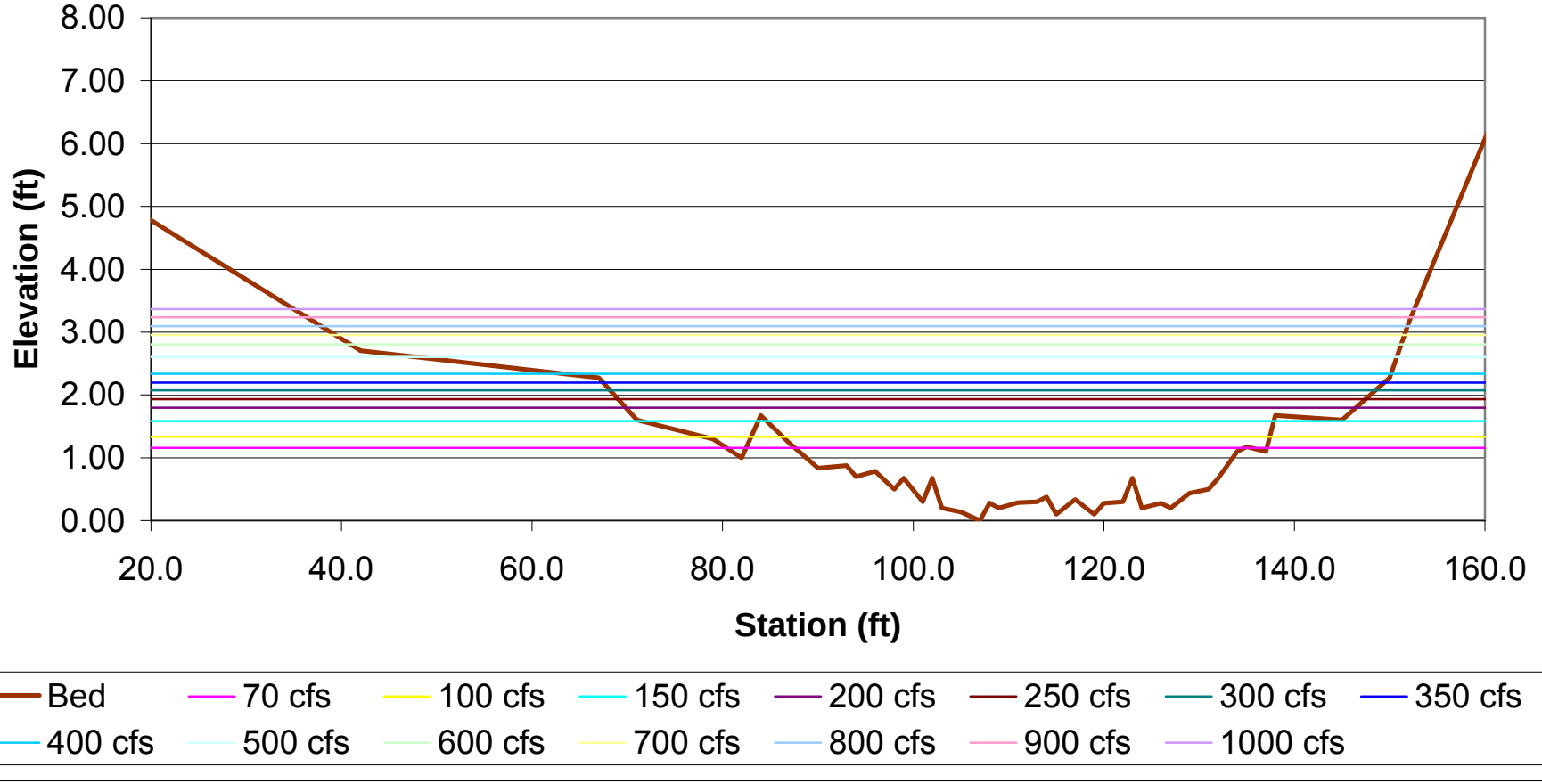


Figure D-8.
Mammoth Bar: Modeled Current Velocities

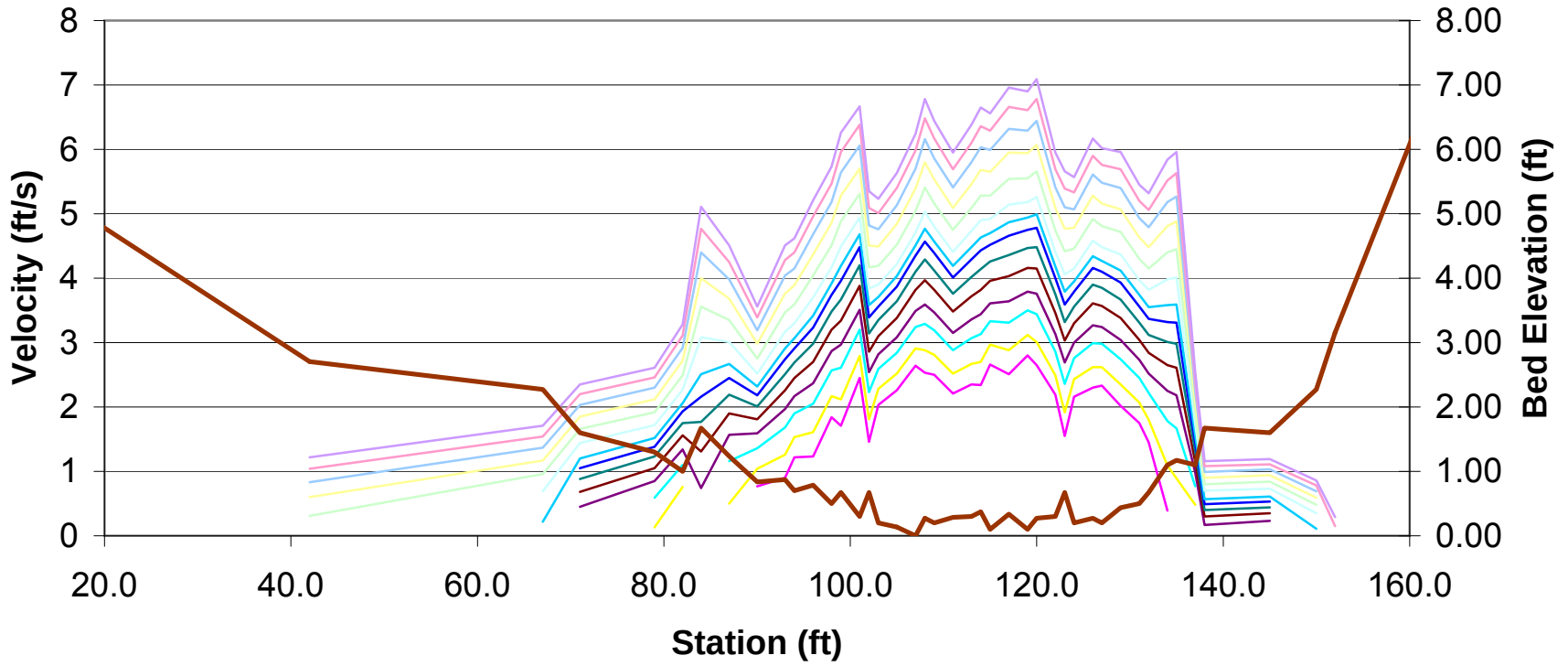


Figure D-9.
Coffer Dam: Modeled Water Surface Elevations

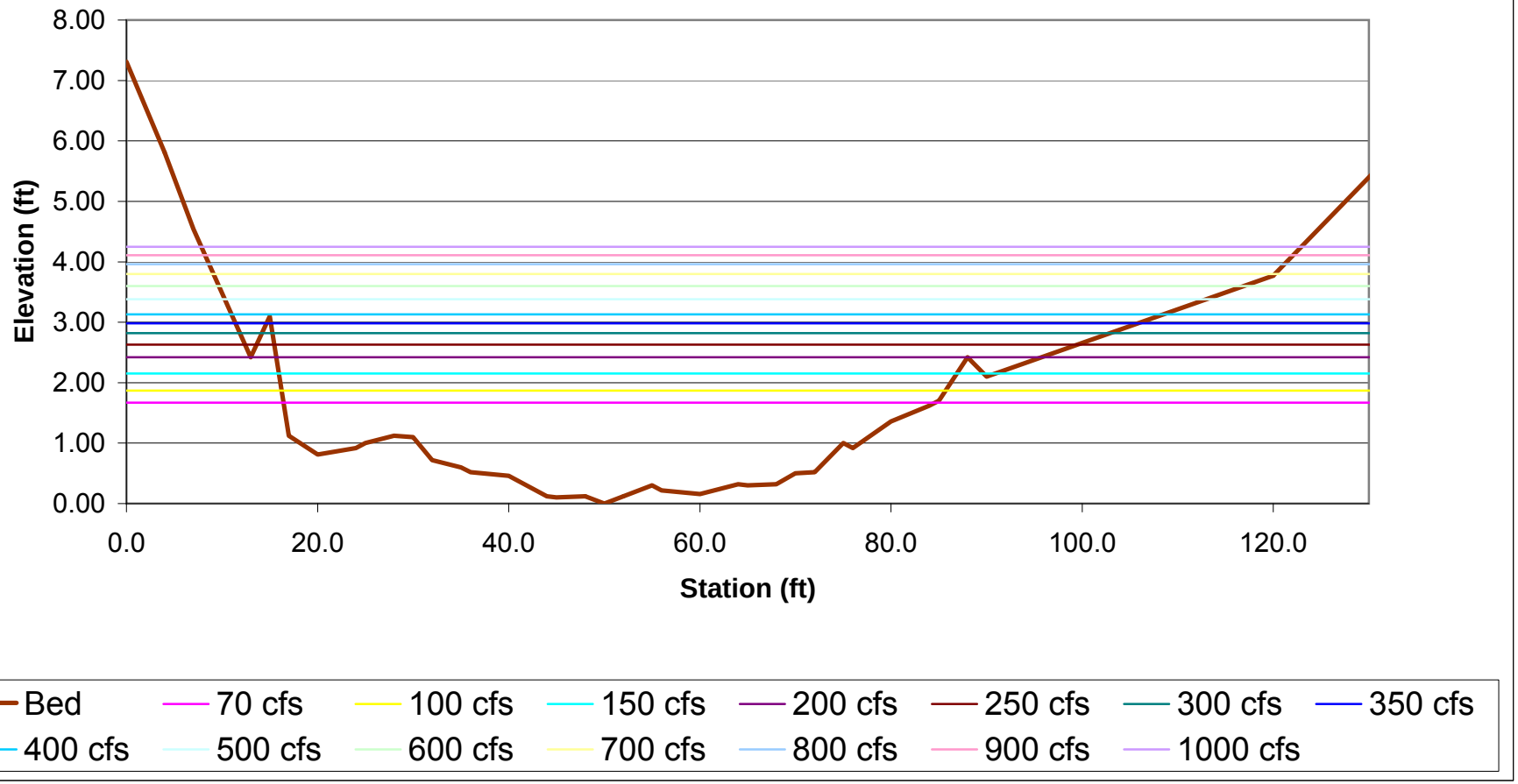
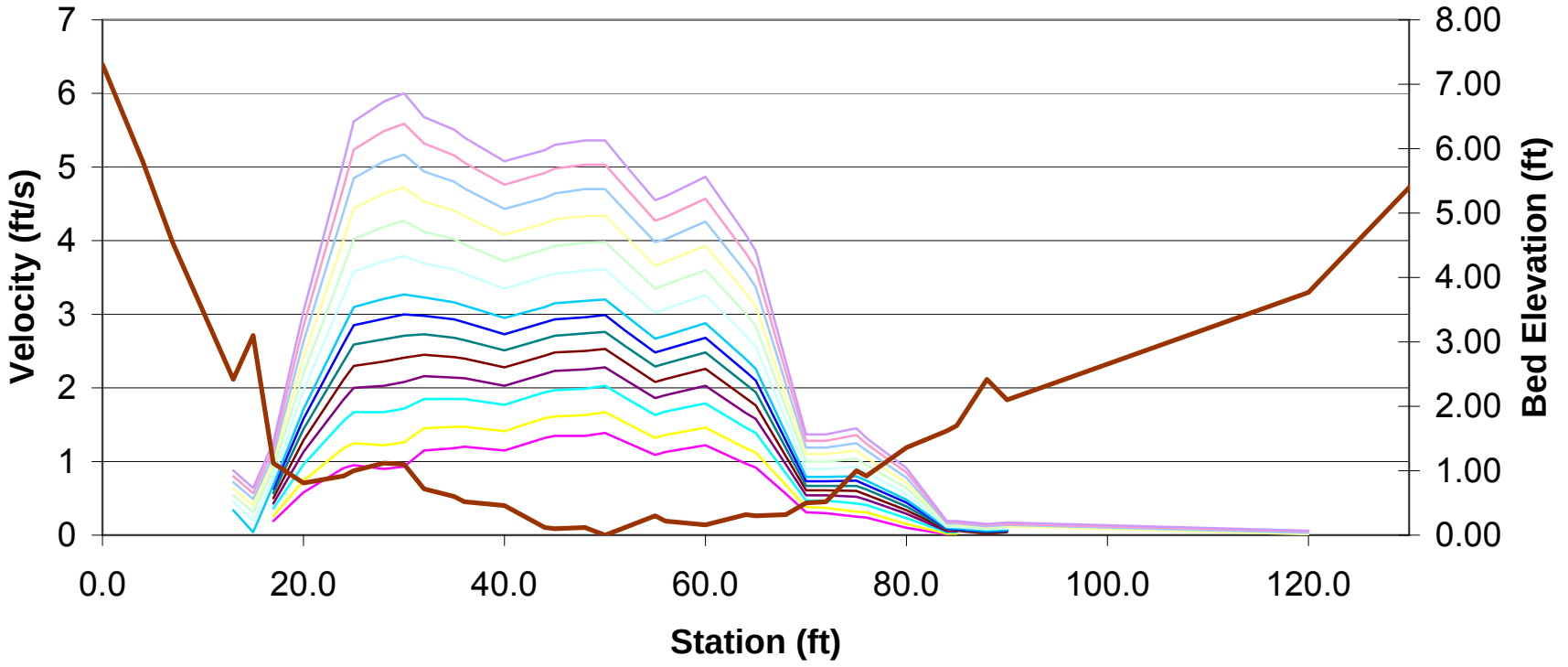


Figure D-10.
Coffer Dam: Modeled Current Velocities



APPENDIX E

2007 Private Whitewater Boating Use – PCWA Counts

PCWA Private Boating Use Counts
All Observations

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Raw Data

Date	WE/ WD/ HOL	Time of Day	Watercraft Type						# of people per group	Activity			Comments
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
5/26/2007	WE	2:30			5				5		x		
5/26/2007	WE	4:15			1				1		x		
5/26/2007	WE	4:15			1				1		x		
5/28/2007	HOL	11:00	2						10	x			
5/28/2007	HOL	1:00	2						13		x		
5/28/2007	HOL	2:04			2				3		x		F.O.T.R.
5/28/2007	HOL	5:48			1				2	x			
5/30/2007	WD	3:12	1						4	x			
6/3/2007	WE	3:00	1						3	x			
6/3/2007	WE	3:07	1						7	x			
6/3/2007	WE	4:00				1			1	x			
6/5/2007	WD								0				
6/10/2007	WE	1:42				1			1	x			
6/10/2007	WE	1:50				1			1	x			
6/10/2007	WE	3:46	1						4	x			
6/13/2007	WD	2:00						1	1			x	inner-tube
6/13/2007	WD	2:00						1	1			x	inner-tube
6/17/2007	WE	1:30			5				5		x		
6/17/2007	WE	1:51			1				2		x		
6/17/2007	WE	1:51			1				1		x		
6/17/2007	WE	1:56			1				2		x		
6/17/2007	WE	2:16			2				2		x		
6/21/2007	WD	3:15		1					2	x			
6/24/2007	WE	2:05				2			2		x		
6/24/2007	WE	3:11				1			1	x			
6/24/2007	WE	3:13				1			1	x			
6/24/2007	WE	3:33	1						3	x			
6/26/2007	WD								0				

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Raw Data

Date	WE/ WD/ HOL	Time of Day	Watercraft Type						# of people per group	Activity			Comments
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
6/30/2007	WE	1:30			1				1		x		
6/30/2007	WE	1:30			1				2		x		
6/30/2007	WE	1:30			1				1		x		
6/30/2007	WE	1:30			1				1		x		
6/30/2007	WE	1:30			1				1		x		
6/30/2007	WE	1:30			1				2		x		
6/30/2007	WE	1:30			1				1		x		
6/30/2007	WE	2:04						1	1			x	inner tubes
6/30/2007	WE	2:04						1	1			x	inner tubes
6/30/2007	WE	2:04						1	1			x	inner tubes
6/30/2007	WE	2:04						1	1			x	inner tubes
6/30/2007	WE	3:11	1						5	x			
7/4/2007	HOL	10:45	1						4		x		
7/4/2007	HOL	10:55			1				2		x		
7/4/2007	HOL	11:00			1				2		x		
7/4/2007	HOL	11:00			1				2		x		
7/4/2007	HOL	11:05	1						2		x		
7/4/2007	HOL	12:45	1						5		x		
7/4/2007	HOL	2:05			1				2			x	
7/4/2007	HOL	2:10	1						4			x	
7/4/2007	HOL	3:05			1				7	x			
7/4/2007	HOL	4:27	1						6	x			
7/4/2007	HOL	4:27		1					1	x			
7/5/2007	WD	1:12		1					2		x		
7/5/2007	WD	1:12			1				2		x		
7/5/2007	WD	1:12			1				2		x		
7/8/2007	WE	2:12			3				3		x		
7/8/2007	WE	2:12							2		x		

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Raw Data

Date	WE/ WD/ HOL	Time of Day	Watercraft Type						# of people per group	Activity			Comments
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
7/8/2007	WE	2:15				2			2		x		
7/11/2007	WD								0				
7/15/2007	WE	1:36	1						5			x	rented raft
7/15/2007	WE	1:43			2				2		x		same group
7/15/2007	WE	1:43	1						2		x		same group
7/18/2007	WD								0				
7/21/2007	WE	2:30	1						6		x		
7/21/2007	WE	4:27	1						2		x		
7/21/2007	WE	4:31	1						6		x		
7/25/2007	WD	3:09	1						3	x			
7/29/2007	WE	11:21					1		2		x		
7/29/2007	WE	12:40	1		2				8		x		
7/29/2007	WE	2:55	1						5	x			
7/29/2007	WE	4:15	1						6	x			
7/29/2007	WE	4:53	1						4	x			
8/2/2007	WD	4:15	1						5	x			
8/5/2007	WE	1:05	2		3				18		x		
8/5/2007	WE	3:34				1			1	x			
8/5/2007	WE	3:34				1			2	x			
8/9/2007	WD	2:17	1						2	x			
8/9/2007	WD	2:59				1			1	x			
8/9/2007	WD	2:59				1			1	x			
8/12/2007	WE								0				
8/15/2007	WD								0				
8/18/2007	WE	3:15				1			1	x			
8/18/2007	WE	4:20	1						3	x			TWT
8/21/2007	WD								0				
8/25/2007	WE	1:15			5	1			6		x		big group

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Raw Data

Date	WE/ WD/ HOL	Time of Day	Watercraft Type						# of people per group	Activity			Comments
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
8/25/2007	WE	2:30	1						5	x			
8/25/2007	WE	4:00	1						2	x			
8/31/2007	WD								0				
9/2/2007	WE	1:55			2				2		x		
9/2/2007	WE	4:50	1						6	x			dog present
9/3/2007	HOL	1:40				1			1		x		
9/3/2007	HOL	1:40				1			1		x		
9/3/2007	HOL	1:40				1			1		x		
9/3/2007	HOL	1:40				1			1		x		
9/3/2007	HOL	2:55			1				1	x			
9/3/2007	HOL	2:55			1				1	x			
9/3/2007	HOL	2:58	1						2	x			
9/3/2007	HOL	4:53	1						2		x		
9/3/2007	HOL	4:53	1						1		x		
9/3/2007	HOL	4:55			1				1	x			
9/3/2007	HOL	4:55			1				1	x			
9/3/2007	HOL	4:55			1				1	x			
9/3/2007	HOL	4:55			1				1	x			
9/7/2007	WD								0				
9/8/2007	WE	1:30	1						5		x		
9/8/2007	WE	1:45			1				2		x		
9/8/2007	WE	1:45			1				2		x		
9/8/2007	WE	2:20	1						3		x		
9/14/2007	WD	3:00				1			1			x	
9/14/2007	WD	3:20	1						3			x	
9/15/2007	WE	4:08	1						3	x			
9/15/2007	WE	4:08	1						5	x			
9/15/2007	WE	5:47				1			1	x			

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Raw Data

Date	WE/ WD/ HOL	Time of Day	Watercraft Type						# of people per group	Activity			Comments
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
9/15/2007	WE	5:47				1			1	x			
9/15/2007	WE	5:47				1			1	x			
9/15/2007	WE	5:47				1			1	x			
9/17/2007	WD								0				
9/22/2007	WE								0				
9/25/2007	WD								0				
Totals			**41**	**3**	**59**	**24**	**1**	**6**	**296**				

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Weekdays

Date	Day of the Week	Watercraft Type						# of people	Activity			Comments
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting in	Continue	
5/30/2007	WED	1						4	x			
6/5/2007	TUES							0				
6/13/2007	WED						2	2			x	inner-tube
6/21/2007	THURS		1					2	x			
6/26/2007	TUES							0				
7/5/2007	THURS		1	2				6		x		
7/11/2007	WED							0				
7/18/2007	WED							0				
7/25/2007	WED	1						3	x			
8/2/2007	THURS	1						5	x			
8/9/2007	THURS	1			2			4	x			
8/15/2007	WED							0				
8/21/2007	TUES							0				

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Weekdays

Date	Day of the Week	Watercraft Type						# of people	Activity			Comments
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting in	Continue	
8/31/2007	FRI							0				
9/7/2007	FRI							0				
9/14/2007	FRI	1			1			4			x	
9/17/2007	MON							0				
9/25/2007	TUES							0				
Totals		**5**	**2**	**2**	**3**	**0**	**2**	**30**				
AVERAGE								**1.7**				

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Weekends

Date	Day of the Week	Watercraft Type						# of people	Activity			Comments
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
5/26/2007	SAT			7				7		x		
6/3/2007	SUN	2			1			11	x			
6/10/2007	SUN	1			2			6	x			
6/17/2007	SUN			10				12		x		
6/24/2007	SUN	1			4			7	x	x		
6/30/2007	SAT	1		7			4	18	x	x	x	inner tubes
7/8/2007	SUN			3	2			7		x		
7/15/2007	SUN	2		2				9		X	x	rented raft
7/21/2007	SAT	3						14		x		
7/29/2007	SUN	4		2		1		25	X	x		
8/5/2007	SUN	2		3	2			21	x	x		
8/12/2007	SUN							0				
8/18/2007	SAT	1			1			4	x			TWT
8/25/2007	SAT	2		5	1			13	x	x		big group
9/2/2007	SUN	1		2				8	x	x		dog present
9/8/2007	SAT	2		2				12		x		
9/15/2007	SAT	2			4			12	x			
9/22/2007	SAT							0				
Totals		**24**	**0**	**43**	**17**	**1**	**4**	**186**				
AVERAGE								**10.3**				

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Holidays

Date	Time of Day	Watercraft Type						# of people	Activity			Comments
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
MEMORIAL DAY												
5/28/2007	11:00	2						10	x			
5/28/2007	1:00	2						13		x		
5/28/2007	2:04			2				3		x		F.O.T.R.
5/28/2007	5:48			1				2	x			
Total		**4**	**0**	**3**	**0**	**0**	**0**	**28**				
4TH OF JULY												
7/4/2007	10:45	1						4		x		
7/4/2007	10:55			1				2		x		
7/4/2007	11:00			1				2		x		
7/4/2007	11:00			1				2		x		
7/4/2007	11:05	1						2		x		
7/4/2007	12:45	1						5		x		
7/4/2007	2:05			1				2			x	
7/4/2007	2:10	1						4			x	
7/4/2007	3:05			1				7	x			
7/4/2007	4:27	1						6	x			
7/4/2007	4:27		1					1	x			
Total		**5**	**1**	**5**	**0**	**0**	**0**	**37**				

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

All Observations - Holidays

Date	Time of Day	Watercraft Type						# of people	Activity			Comments
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other		Taking out	Putting In	Continue	
LABOR DAY												
9/3/2007	1:40				1			1		x		
9/3/2007	1:40				1			1		x		
9/3/2007	1:40				1			1		x		
9/3/2007	1:40				1			1		x		
9/3/2007	2:55			1				1	x			
9/3/2007	2:55			1				1	x			
9/3/2007	2:58	1						2	x			
9/3/2007	4:53	1						2		x		
9/3/2007	4:53	1						1		x		
9/3/2007	4:55			1				1	x			
9/3/2007	4:55			1				1	x			
9/3/2007	4:55			1				1	x			
9/3/2007	4:55			1				1	x			
Totals		**3**	**0**	**6**	**4**	**0**	**0**	**15**				
AVERAGE								**26.7**				

PCWA Private Boating Use Counts
Tunnel Chute Run

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (tubes)	
5/26/2007	WE								0
5/28/2007	HOL	11:00	2						10
5/28/2007	HOL	5:48			1				2
5/30/2007	WD	3:12	1						4
6/3/2007	WE	3:00	1						3
6/3/2007	WE	3:07	1						7
6/3/2007	WE	4:00				1			1
6/5/2007	WD								0
6/10/2007	WE	1:42				1			1
6/10/2007	WE	1:50				1			1
6/10/2007	WE	3:46	1						4
6/13/2007	WD								0
6/17/2007	WE								0
6/21/2007	WD	3:15		1					2
6/24/2007	WE	3:11				1			1
6/24/2007	WE	3:13				1			1
6/24/2007	WE	3:33	1						3
6/26/2007	WD								0
6/30/2007	WE	3:11	1						5
7/4/2007	HOL	3:05			1				7
7/4/2007	HOL	4:27	1						6
7/4/2007	HOL	4:27		1					1
7/5/2007	WD								0
7/8/2007	WE								0
7/11/2008	WD								0
7/15/2007	WE		0						0
7/18/2007	WD								0

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (tubes)	
7/21/2007	WE								0
7/25/2007	WD	3:09	1						3
7/29/2007	WE	2:55	1						5
7/29/2007	WE	4:15	1						6
7/29/2007	WE	4:53	1						4
8/2/2007	WD	4:15	1						5
8/5/2007	WE	3:34				1			1
8/5/2007	WE	3:34				1			2
8/9/2007	WD	2:17	1						2
8/9/2007	WD	2:59				1			1
8/9/2007	WD	2:59				1			1
8/12/2007	WE								0
8/15/2007	WD								0
8/18/2007	WE	3:15				1			1
8/18/2007	WE	4:20	1						3
8/21/2007	WD								0
8/25/2007	WE	2:30	1						5
8/25/2007	WE	4:00	1						2
8/31/2007	WD								0
9/2/2007	WE	4:50	1						6
9/3/2007	HOL	2:55			1				1
9/3/2007	HOL	2:55			1				1
9/3/2007	HOL	2:58	1						2
9/3/2007	HOL	4:55			1				1
9/3/2007	HOL	4:55			1				1
9/3/2007	HOL	4:55			1				1
9/3/2007	HOL	4:55			1				1

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (tubes)	
9/7/2007	WD								0
9/8/2007	WE								0
9/14/2007	WD								0
9/15/2007	WE	4:08	1						3
9/15/2007	WE	4:08	1						5
9/15/2007	WE	5:47				1			1
9/15/2007	WE	5:47				1			1
9/15/2007	WE	5:47				1			1
9/15/2007	WE	5:47				1			1
9/17/2007	WD								0
9/22/2007	WE								0
9/25/2007	WD								0
Total			**22**	**2**	**8**	**14**	**0**	**0**	**126**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Weekdays

Date	Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (tubes)	
5/30/2007	WED	1						4
6/5/2007	TUES							0
6/13/2007	WED							0
6/21/2007	THURS		1					2
6/26/2007	TUES							0
7/5/2007	THURS							0
7/11/2007	WED							0
7/18/2007	WED							0
7/25/2007	WED	1						3
8/2/2007	THURS	1						5
8/9/2007	THURS	1			2			4
8/15/2007	WED							0
8/21/2007	TUES							0
8/31/2007	FRI							0
9/7/2007	FRI							0
9/14/2007	FRI							0
9/17/2007	MON							0
9/25/2007	TUES							0
Total		**4**	**1**	**0**	**2**	**0**	**0**	**18**
AVERAGE								**1.0**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Weekends

Date	Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (tubes)	
5/26/2007	SAT							0
6/3/2007	SUN	2			1			11
6/10/2007	SUN	1			2			6
6/17/2007	SUN							0
6/24/2007	SUN	1			2			5
6/30/2007	SAT	1						5
7/8/2007	SUN							0
7/15/2007	SUN							0
7/21/2007	SAT							0
7/29/2007	SUN	3						15
8/5/2007	SUN				2			3
8/12/2007	SUN							0
8/18/2007	SAT	1			1			4
8/25/2007	SAT	2						7
9/2/2007	SUN	1						6
9/8/2007	SAT							0
9/15/2007	SAT	2			4			12
9/22/2007	SAT							0
Total		**14**	**0**	**0**	**12**	**0**	**0**	**74**
AVERAGE								**4.1**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Holidays									
			Watercraft Type						#
Date	Day	Time of Day	Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (tubes)	of people
MEMORIAL DAY									
5/28/2007	HOL	11:00	2						10
5/28/2007	HOL	5:48			1				2
Total			**2**	**0**	**1**	**0**	**0**	**0**	**12**
4TH OF JULY									
7/4/2007	HOL	3:05			1				7
7/4/2007	HOL	4:27	1						6
7/4/2007	HOL	4:27		1					1
Total			**1**	**1**	**1**	**0**	**0**	**0**	**14**
LABOR DAY									
9/3/2007	HOL	2:55			1				1
9/3/2007	HOL	2:55			1				1
9/3/2007	HOL	2:58	1						2
9/3/2007	HOL	4:55			1				1
9/3/2007	HOL	4:55			1				1
9/3/2007	HOL	4:55			1				1
9/3/2007	HOL	4:55			1				1
Total			**1**	**0**	**6**	**0**	**0**	**0**	**8**
AVERAGE									**11.3**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute Run - Season Totals			
Day	**Average # of people per day**	**# of Days in Season**	**Total # of People**
Weekday	1	86	86
Weekend	4.1	36	147.6
Holiday	11.3	3	33.9
Total		**125**	**267.5**

PCWA Private Boating Use Counts
Mammoth Bar Run

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
5/26/2007	WE	2:30			5				5
5/26/2007	WE	4:15			1				1
5/26/2007	WE	4:15			1				1
5/28/2007	HOL	1:00	2						13
5/28/2007	HOL	2:04			2				3
5/30/2007	WD								0
6/3/2007	WE								0
6/5/2007	WD								0
6/10/2007	WE								0
6/13/2007	WD								0
6/17/2007	WE	1:30			5				5
6/17/2007	WE	1:51			1				2
6/17/2007	WE	1:51			1				1
6/17/2007	WE	1:56			1				2
6/17/2007	WE	2:16			2				2
6/21/2007	WD								0
6/24/2007	WE	2:05				2			2
6/26/2007	WD								0
6/30/2007	WE	1:30			1				1
6/30/2007	WE	1:30			1				2
6/30/2007	WE	1:30			1				1
6/30/2007	WE	1:30			1				1
6/30/2007	WE	1:30			1				1
6/30/2007	WE	1:30			1				2
6/30/2007	WE	1:30			1				1
7/4/2007	HOL	10:45	1						4
7/4/2007	HOL	10:55			1				2

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
7/4/2007	HOL	11:00			1				2
7/4/2007	HOL	11:00			1				2
7/4/2007	HOL	11:05	1						2
7/4/2007	HOL	12:45	1						5
7/5/2007	WD	1:12		1					2
7/5/2007	WD	1:12			1				2
7/5/2007	WD	1:12			1				2
7/8/2007	WE	2:12			3				3
7/8/2007	WE	2:12							2
7/8/2007	WE	2:15				2			2
7/11/2008	WD								0
7/15/2007	WE	1:43	1		2				4
7/18/2007	WD								0
7/21/2007	WE	2:30	1						6
7/21/2007	WE	4:27	1						2
7/21/2007	WE	4:31	1						6
7/25/2007	WD								0
7/29/2007	WE	11:21					1		2
7/29/2007	WE	12:40	1		2				8
8/2/2007	WD								0
8/5/2007	WE	1:05	2		3				18
8/9/2007	WD								0
8/12/2007	WE								0
8/15/2007	WD								0
8/18/2007	WE								0
8/21/2007	WD								0
8/25/2007	WE	1:15			5	1			6

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
8/31/2007	WD								0
9/2/2007	WE	1:55			2				2
9/3/2007	HOL	1:40				1			1
9/3/2007	HOL	1:40				1			1
9/3/2007	HOL	1:40				1			1
9/3/2007	HOL	1:40				1			1
9/3/2007	HOL	4:53	1						2
9/3/2007	HOL	4:53	1						1
9/7/2007	WD								0
9/8/2007	WE	1:30	1						5
9/8/2007	WE	1:45			1				2
9/8/2007	WE	1:45			1				2
9/8/2007	WE	2:20	1						3
9/14/2007	WD								0
9/15/2007	WE								0
9/17/2007	WD								0
9/22/2007	WE								0
9/25/2007	WD								0
Total			**16**	**1**	**50**	**9**	**1**	**0**	**149**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Weekdays

Date	Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
5/30/2007	WED							0
6/5/2007	TUES							0
6/13/2007	WED							0
6/21/2007	THURS							0
6/26/2007	TUES							0
7/5/2007	THURS		1					2
7/5/2007	THURS			1				2
7/5/2007	THURS			1				2
7/11/2007	WED							0
7/18/2007	WED							0
7/25/2007	WED							0
8/2/2007	THURS							0
8/9/2007	THURS							0
8/15/2007	WED							0
8/21/2007	TUES							0
8/31/2007	FRI							0
9/7/2007	FRI							0
9/14/2007	FRI							0
9/17/2007	MON							0
9/25/2007	TUES							0
Total		**0**	**1**	**2**	**0**	**0**	**0**	**6**
AVERAGE								**0.3**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Weekends

Date	Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
5/26/2007	SAT			7				7
6/3/2007	SUN							0
6/10/2007	SUN							0
6/17/2007	SUN			10				12
6/24/2007	SUN				2			2
6/30/2007	SAT			7				9
7/8/2007	SUN			3	2			7
7/15/2007	SUN	1		2				4
7/21/2007	SAT	3						14
7/29/2007	SUN	1		2		1		10
8/5/2007	SUN	2		3				18
8/12/2007	SUN							0
8/18/2007	SAT							0
8/25/2007	SAT			5	1			6
9/2/2007	SUN			2				2
9/8/2007	SAT	2		2				12
9/15/2007	SAT							0
9/22/2007	SAT							0
Total		**9**	**0**	**43**	**5**	**1**	**0**	**103**
AVERAGE								**5.7**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Holidays

Date	Time of Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
MEMORIAL DAY								
5/28/2007	1:00	2						13
5/28/2007	2:04			2				3
Total								**16**
4TH OF JULY								
7/4/2007	10:45	1						4
7/4/2007	10:55			1				2
7/4/2007	11:00			1				2
7/4/2007	11:00			1				2
7/4/2007	11:05	1						2
7/4/2007	12:45	1						5
Total								**17**
LABOR DAY								
9/3/2007	1:40				1			1
9/3/2007	1:40				1			1
9/3/2007	1:40				1			1
9/3/2007	1:40				1			1
9/3/2007	4:53	1						2
9/3/2007	4:53	1						1
Total		**7**	**0**	**5**	**4**	**0**	**0**	**7**
AVERAGE								**13.3**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Mammoth Bar Run - Season Totals			
Day	**Average # of people per day**	**# of Days in Season**	**Total # of People**
Weekday	0.3	86	25.8
Weekend	5.7	36	205.2
Holiday	13.3	3	39.9
Total		125	**270.9**

PCWA Private Boating Use Counts
Tunnel Chute and Mammoth Bar Combination Runs

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute and Mammoth Bar Combination Runs - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
5/26/2007	WE								0
5/28/2007	HOL								0
5/30/2007	WD								0
6/3/2007	WE								0
6/5/2007	WD								0
6/10/2007	WE								0
6/13/2007	WD	2:00						1	1
6/13/2007	WD	2:00						1	1
6/17/2007	WE								0
6/21/2007	WD								0
6/24/2007	WE								0
6/26/2007	WD								0
6/30/2007	WE	2:04						1	1
6/30/2007	WE	2:04						1	1
6/30/2007	WE	2:04						1	1
6/30/2007	WE	2:04						1	1
7/4/2007	HOL	2:05			1				2
7/4/2007	HOL	2:10	1						4
7/5/2007	WD								0
7/8/2007	WE								0
7/11/2008	WD								0
7/15/2007	WE	1:36	1						5
7/18/2007	WD								0
7/21/2007	WE								0

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute and Mammoth Bar Combination Runs - Raw Data

Date	Day	Time of Day	Watercraft Type						# of people per group
			Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
7/25/2007	WD								0
7/29/2007	WE								0
8/2/2007	WD								0
8/5/2007	WE								0
8/9/2007	WD								0
8/12/2007	WE								0
8/15/2007	WD								0
8/18/2007	WE								0
8/21/2007	WD								0
8/25/2007	WE								0
8/31/2007	WD								0
9/2/2007	WE								0
9/3/2007	HOL								0
9/7/2007	WD								0
9/8/2007	WE								0
9/14/2007	WD	3:00				1			1
9/14/2007	WD	3:20	1						3
9/15/2007	WE								0
9/17/2007	WD								0
9/22/2007	WE								0
9/25/2007	WD								0
Total			**3**	**0**	**1**	**1**	**0**	**6**	**21**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute and Mammoth Bar Combination Runs - Weekdays

Date	Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
5/30/2007	WED							0
6/5/2007	TUES							0
6/13/2007	WED						2	2
6/21/2007	THURS							0
6/26/2007	TUES							0
7/5/2007	THURS							0
7/11/2007	WED							0
7/18/2007	WED							0
7/25/2007	WED							0
8/2/2007	THURS							0
8/9/2007	THURS							0
8/15/2007	WED							0
8/21/2007	TUES							0
8/31/2007	FRI							0
9/7/2007	FRI							0
9/14/2007	FRI	1			1			4
9/17/2007	MON							0
9/25/2007	TUES							0
Total		**1**	**0**	**0**	**1**	**0**	**2**	**6**
Average with Tubers								**0.3**
Average without Tubers								**0.2**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute and Mammoth Bar Combination Runs - Weekends

Date	Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
5/26/2007	SAT							0
6/3/2007	SUN							0
6/10/2007	SUN							0
6/17/2007	SUN							0
6/24/2007	SUN							0
6/30/2007	SAT						4	4
7/8/2007	SUN							0
7/15/2007	SUN	1						5
7/21/2007	SAT							0
7/29/2007	SUN							0
8/5/2007	SUN							0
8/12/2007	SUN							0
8/18/2007	SAT							0
8/25/2007	SAT							0
9/2/2007	SUN							0
9/8/2007	SAT							0
9/15/2007	SAT							0
9/22/2007	SAT							0
Total		**1**	**0**	**0**	**0**	**0**	**4**	**9**
Average with Tubers								**0.5**
Average without Tubers								**0.3**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute and Mammoth Bar Combination Runs - Holidays

Date	Time of Day	Watercraft Type						# of people
		Raft	Cataraft	Kayak (inflatable)	Kayak (hard)	Canoe	Other (Tubes)	
MEMORIAL DAY								
5/28/2007								**0**
4TH OF JULY								
7/4/2007	2:05			1				2
7/4/2007	2:10	1						4
Total		**1**	**0**	**1**	**0**	**0**	**0**	**6**
LABOR DAY								
9/3/2007								**0**
AVERAGE								**2**

2007 Private Whitewater Boating Use
PCWA Counts Conducted at Ruck-a-Chucky
May 26 - September 25, 2007
10:00 AM - 6:00 PM

Tunnel Chute and Mammoth Bar Combination Runs - Season Totals with Tubers			
Day	**Average # of people per day**	**# of Days in Season**	**Total # of People**
Weekday	0.3	86	25.8
Weekend	0.5	36	18
Holiday	2	3	6
Total		125	**49.8**

Tunnel Chute and Mammoth Bar Combination Runs - Season Totals without Tubers			
Day	**Average # of people per day**	**# of Days in Season**	**Total # of People**
Weekday	0.2	86	17.2
Weekend	0.3	36	10.8
Holiday	2	3	6
Total		125	**34**

APPENDIX F

Whitewater Boating Focus Group Material

List of Potential Focus Group Participants

Placer County Water Agency
Middle Fork American River Project
FERC Project No. 2079

Potential Boating Focus Group Participants					
First Name	**Last Name**	**Affiliation**	**Position**	**Suggested by**	**Notes**
Scott	Armstrong	All Outdoors		J Leimbach	
Mike	Bean	Private Boater		J Leimbach	
Dan	Buckley	Tributary Whitewater Tours		R Lee	
Bryant	Burkhardt	California Canoe & Kayak		J Leimbach	
Bill	Center	American River Recreation Association		J Leimbach	
Charlie	Center	Private Boater		Nate Rangel	
Dan	Crandall	Current Adventures	Owner	J Leimbach	
Bill	Deitchman	Auburn State Recreation Area		B Deitchman	
Rod	Hall	American Red Cross	Canoe Instructor	J Micheaels	has led canoe expeditions for the Sierra Club
Roger	Lee	Wilderness Adventures		J Leimbach	he has knowledge of runs other than the Oxbow reach
Steve	Liles	WET River trips		J Leimbach	
Eric	Peach	PARC		B Deitchman	hiking and boating in canyons for over 30 yrs
Nate	Rangel	Adventure Connection	President	J Leimbach	
Hilde	Schweitzer	Private Boater		J Leimbach	
Theresa	Simsiman	Private Boater		J Leimbach	
Todd	Stanley	Private Boater		J Leimbach	
Dave	Steindorf	American Whitewater	CA Field Staff	J Leimbach	
Scott	Underwood	Mother Lode River Center		J Leimbach	
Chris	Shackleton			B Deitchman	runs Dreamflow webpage 040208-referred by Bill Deitchman
Gary	Flanagan	Horseshoe Bar Guide Service Federation of Flyfishers NCCFFF		J Leimbach	Apr 10 2008

Notes:

All personal information including contact information has been removed.

Invitation Letter and Material to Potential Focus Group Participants

"PCWA MFP Relicensing" <Relicensing@pcwa.net>
04/03/2008 11:46 AM

To "Bill Deitchman" <bdeit@parks.ca.gov>, "Bill Johnson" <greengate@foothill.net>, "Chuck Mather" <wampus@cebridge.net>, "Debbie Murphy"
cc
bcc
Subject PCWA/MFP FERC Relicensing - Whitewater Boating Focus Group Invitation

Dear Stakeholder –

The Placer County Water Agency (PCWA) invites you to participate in a focus group to identify and characterize potential whitewater boating runs on the river and stream reaches associated with the Middle Fork American River Project. The Whitewater Focus Group session will be held from 6:00 - 9:00 PM on April 23, 2008 in PCWA's American River Room located at 144 Ferguson Road, Auburn, California. Directions and a map to PCWA are attached for your use. An invitation, which includes additional information about the purpose of the group and details about the meeting, is attached. This invitation and associated map are also available on PCWA's web site and can be accessed by clicking on the following link: http://relicensing.pcwa.net/meetings.htm.

We look forward to your participation in the Whitewater Focus Group. Please reply to this message and let us know if you are planning to participate so that we can plan accordingly. As always, feel free to call Mal Toy, MFP Relicensing Manager, at (530) 823-4889 if you have any questions or need additional information.

Sincerely,
Beverly Bell
Administrative Aide
(530) 823-4973

PCWA WW focus group invitation 04.01.08.pdf Fig 1_ Rivers and Streams.pdf Map to PCWA.doc

PCWA
FIFTY YEARS

PLACER COUNTY WATER AGENCY

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4
Otis Wollan, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

April 2, 2008
File No. 01030A

Re: Invitation to Participate in a Whitewater Boating Focused Discussion Group
Middle Fork American River Project (FERC Project No. 2079)

Dear Stakeholder:

The Placer County Water Agency (PCWA) invites you to participate in a focus group to identify and characterize potential whitewater boating runs on the river and stream reaches associated with the Middle Fork American River Project (MFP or Project). These river and stream reaches are shown on Figure 1 (Attachment A).

The Whitewater Focus Group session will be held from 6:00 – 9:00 PM on April 23, 2008 in PCWA's American River Room located at 144 Ferguson Road, Auburn, California. Resource maps and other materials will be provided during the meeting to aide the discussion. A brief overview of the MFP and the relicensing process is provided in Attachment B.

Your participation is being requested due to your specific knowledge about the whitewater resources in the Middle Fork American River Watershed (Watershed). The Whitewater Boating Focus Group participants are identified on the attached invitation list (Attachment C). The Whitewater Boating Focus Group participants were selected to represent a broad range of experience, skill levels, and interests. The specific topics to be covered are summarized in Attachment D. We encourage you to bring any additional information you think may help us characterize individual boating runs, for example, your old boating logs noting the dates and locations of your previous runs, flow conditions, and experience in the Watershed.

PCWA appreciates your participation in the Whitewater Boating Focus Group. If you have any questions regarding this focus group or need any additional information, please contact Mal Toy, MFP Relicensing Manager, at (530) 823-4889.

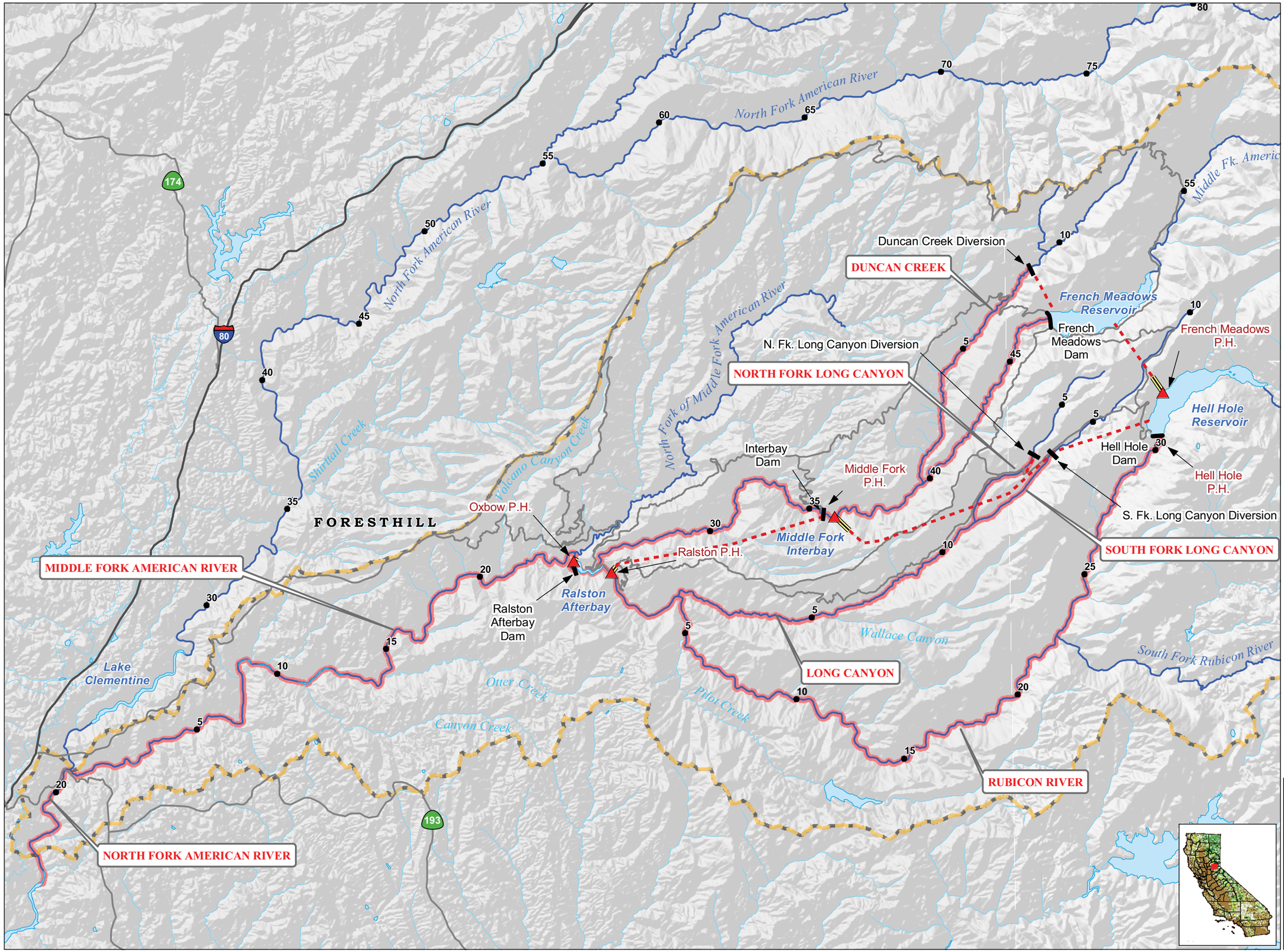
Sincerely,
PLACER COUNTY WATER AGENCY

Mal Toy
Director of Resource Development

Attachments:
A- Figure 1 (Map)
B- Overview of the MFP and the Relicensing Process
C- Whitewater Boating Focus Group Invitation List
D- Whitewater Boating Focus Group Topics

Whitewater Focus Group Invitation..doc

Attachments



Project Facilities

- Powerhouse
- Dam
- Tunnel
- Penstock

Transportation

- Major Highway
- Minor Highway

Hydrography

- Watercourse with river miles (5 mi. increments)
- Water Body
- Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

- Watercourse Affected by PCWA Operations

PCWA

Placer County Water Agency
Middle Fork American River Project

Figure 1

River and Stream Reaches Associated with the MFP

Miles

Date: 3/3/08

Projection: CA State Plane, Zone 2
Datum: NAD 83

Z:\Entrix\3116501\map\RecreationMaps\PCWA_ProjectWatercourse_FlowAffected_17i11i_01.mxd

Attachment B

Overview of the MFP and the Relicensing Process

PCWA owns and operates the MFP, a multi-purpose water supply and hydro-generation project. The MFP facilities are situated in the foothills and mountainous uplands of the western slope of the central Sierra Nevada, within the Tahoe and Eldorado National Forests. The MFP facilities are located on the Middle Fork American River, the Rubicon River, Duncan Creek, and the North and South Forks of Long Canyon Creek. The MFP began operating in 1967 and supplies water for homes, industry, and agriculture within western Placer County and clean renewable energy to the California electric grid.

The MFP operates under a 50-year license, which was issued by the Federal Energy Regulatory Commission (FERC) in 1963. The current license will expire on March 1, 2013. Accordingly, PCWA has initiated a process to the relicense the Project. PCWA formally began the relicensing process when it filed a Notice of Intent (NOI) and Pre-Application Document (PAD) with the FERC on December 13, 2007. The NOI and PAD are available in their entirety on PCWA's relicensing website at http://relicensing.pcwa.net/pad.htm.

In May and April of 2006, PCWA conducted several Introductory Stakeholder Meetings, organized a Plenary Group to facilitate communication and decision making activities, and formed Technical Working Groups (TWGs). A major accomplishment of the Plenary and TWGs was the collaborative development and approval of 28 separate Technical Study Plans (TSPs), of which five are recreation-related. These five TSPs were included in the PAD and are identified as follows:

REC 1 – Recreation Use and Facilities Assessment TSP
REC 2 – Recreation Visitor Surveys TSP
REC 3 – Reservoir Recreation Opportunities TSP
REC 4 – Stream-based Recreation Opportunities TSP
REC 5 – Visual Quality Assessment Technical Study Plan

All of the TSPs are available on PCWA's website at http://relicensing.pcwa.net/pad_SDH.htm. The five recreation-related TSPs can be accessed by clicking on the Appendix A - Recreation Technical Study Plans link.

PCWA began implementing select elements of the Plenary-approved TSPs in May 2007. These included: selection of instream flow modeling transects; fish, amphibian, and macroinvertebrate surveys; water quality sampling; recreation user counts; cultural resources inventories; vegetation community and wildlife habitat mapping; and bat surveys. The remainder of the technical studies presented in the PAD will be completed in 2008 and 2009. The focus groups are an element of the REC 4 – Stream Based Opportunities TSP and will be conducted in 2008.

Attachment C

Whitewater Boating Focus Group Invitation List

Scott Armstrong	All Outdoors
Mike Bean	Private Boater
Dan Buckley	Tributary Whitewater Tours
Bryant Burkhardt	California Canoe & Kayak
Bill Center	American River Recreation Association
Charlie Center	Private Boater
Dan Crandall	Current Adventures
Bill Deitchman	Auburn State Recreation Area
Rod Hall	American Red Cross
Roger Lee	Wilderness Adventures
Steve Liles	WET River Trips
Eric Peach	Protect American River Canyons (PARC)
Nate Rangel	Adventure Connection
Hilde Schweitzer	Private Boater
Theresa Simsiman	Private Boater
Todd Stanley	Private Boater
Dave Steindorf	American Whitewater
Scott Underwood	Mother Lode River Center

Attachment D

Whitewater Boating Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Skill level
    - Primary watercraft
    - Affiliation(s)
    - Commercial or private
    - Specific experience boating the river reaches in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Specific Runs to be Discussed Further, based on Background and Experience of Participants and Project Nexus

3. Characterize Each Run Identified Above

    - Identify access points (put-ins and take-outs) and adequacy
    - Adequacy of support facilities
    - Typical boating season
    - Length of run (time)
    - Suitable watercraft
    - Difficulty of run
    - Portages
    - Boatable flow ranges
    - Flow information sources (adequacy of information sources, needs)
    - Safety concerns
    - Identify sources of other pertinent information for each run (e.g. guide books, boaters, web sites)
    - Conflicts with other users

Focus Group Material and Sign-in Sheet

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Recreation Resources
Whitewater Boating Focus Group Discussion Meeting

April 23, 2008
6:00 PM - 9:00 PM

American River Room
Placer County Water Agency
144 Ferguson Road
Auburn, CA 95603

AGENDA

TIME	TOPIC
6:00 PM – 6:30 PM	**Overview by PCWA** • Welcome and Introductions • Review of Meeting Objectives • Overview of Middle Fork American River Project (MFP) and Relicensing Process • Summary of Recreation Technical Studies
6:30 PM – 9:00 PM	**Group Discussion** • Discuss Background and Experience of Participants • Identify Specific Runs to be Discussed Further, based on Background and Experience of Participants and Project Nexus • Characterize Each Run Identified Above
9:00 PM	**Adjourn**

MEETING OBJECTIVE

Identify and Characterize Potential Boating Runs on the River and Stream Reaches associated with the MFP.

MFP RELICENSING
WHITEWATER BOATING FOCUSED DISCUSSION GROUP MEETING
APRIL 23, 2008
6PM – 9PM
SIGN-IN SHEET

NAME	AFFILIATION	INITIALS
Scott Armstrong	All Outdoors	
Mike Bean	Private Boater	
Dan Buckley	Tributary Whitewater Tours	
Bryant Burkhardt	California Canoe & Kayak	
Bill Center	American River Recreation Association	
Charlie Center	Private Boater	
Dan Crandall	Current Adventures	DRC.
Bill Deitchman	Auburn State Recreation Area	BD.
Gary Flanagan	NCCFFF	GF
Damian Forsythe	Hooked up Anglers	
Rod Hall	Central California Canoe Club + Amer Red Cross	RH
Roger Lee	Wilderness Adventures	
Steve Liles	WET River Trips	
Eric Peach	Protect American River Canyons (PARC)	
Nate Rangel	Adventure Connection	
Hilde Schweitzer	Private Boater	
Chris Shackleton	Private Boater	
Theresa Simsiman	Private Boater	
Todd Stanley	Private Boater	
Dave Steindorf	American Whitewater	
Scott Underwood	Mother Lode River Center	
THOMAS BARTOS	HORSESHOE BAR F+G	

MFP RELICENSING
WHITEWATER BOATING FOCUSED DISCUSSION GROUP MEETING
APRIL 23, 2008
6PM – 9PM
SIGN-IN SHEET

NAME	AFFILIATION	INITIALS
Dave Martinez	Entrix	
Sandy Perry	Entrix	
Ed Bianchi	Entrix	
Mal Toy	PCWA	
Andy FECKO	PCWA	
Marie Rainwater	Rainwater + Assoc	

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Skill level
    - Primary watercraft
    - Affiliation(s)
    - Commercial or private
    - Specific experience boating the river reaches in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Specific Runs to be Discussed Further, based on Background and Experience of Participants and Project Nexus

3. Characterize Each Run Identified Above

    - Identify access points (put-ins and take-outs) and adequacy
    - Adequacy of support facilities
    - Typical boating season
    - Length of run (time)
    - Suitable watercraft
    - Difficulty of run
    - Portages
    - Boatable flow ranges
    - Flow information sources (adequacy of information sources, needs)
    - Safety concerns
    - Identify sources of other pertinent information for each run (e.g. guide books, boaters, web sites)
    - Conflicts with other users

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: _____

Please provide the following information

1. Your primary watercraft used for river boating activities:

_____

2. Other watercraft you have river boating experience with:

_____

3. Your skill level in your primary watercraft: _____ Your skill level in other watercraft: _____

4. Affiliation(s):

_____

5. Number of years commercial boating experience (if none leave blank): _____

Company Owner: _____ Guide: _____

Instructor: _____ Other: _____

6. Your boating experience in the Middle Fork American River Watershed

Years of experience and locations: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☐ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☐ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☐ Yes	☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Run Characterization Form

River: _____ Run: _____

Access points (put-ins and take-outs) _____

Adequacy of access _____

Adequacy/need of support facilities _____

Typical boating season _____

Length of run (time) _____

Suitable watercraft _____

Difficulty of run _____

Portages _____

Boatable flow ranges _____

Flow information sources _____

Adequacy of flow information sources _____

Safety concerns _____

Sources of other information _____

Conflicts with other users _____

Focus Group Participant Profiles

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: THOMAS GM. BARTOS

Please provide the following information

1. Your primary watercraft used for river boating activities:
   BOSTON WHALER
2. Other watercraft you have river boating experience with:
   RAFTS, ~~[illegible]~~ DRIFT BOAT
3. Your skill level in your primary watercraft: 3 Your skill level in other watercraft: 5
4. Affiliation(s):
   HORSESHOE BAR F+G PRESERVE
5. Number of years commercial boating experience (if none leave blank): _____

   Company Owner: _____ Guide: _____

   Instructor: _____ Other: _____
6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: _____
7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☒ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☐ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☒ Yes	☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: Dan Crandall

Please provide the following information

1. Your primary watercraft used for river boating activities: Kayak
2. Other watercraft you have river boating experience with: Raft, IK
3. Your skill level in your primary watercraft: 5 Your skill level in other watercraft: 3-4
4. Affiliation(s): Private boater
5. Number of years commercial boating experience (if none leave blank): 19

   Company Owner: ✓ Guide: ✓

   Instructor: ✓ Other: _____
6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: 19 years - Oxbow to Folsom Lake, lots of use on Greenwood to Mammoth Bar as private and (D) instructional groups
7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

   Oxbow Powerhouse to Ruck-a-Chucky Day Use Area Absolutely! ☑ Yes ☐ No

   Mammoth Bar to confluence of North Fork American River ☑ Yes ☐ No

   Confluence of North and Middle Forks American River to Oregon/China Bar ☑ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: Bill Deitchman

Please provide the following information

1. Your primary watercraft used for river boating activities:
   Raft
2. Other watercraft you have river boating experience with:
   Inflatable Kayak, ~~Power Boats, Sail~~ Canoe, Catamaran
3. Your skill level in your primary watercraft: 4-5 Your skill level in other watercraft: 2
4. Affiliation(s):
   CA STATE PARKS
5. Number of years commercial boating experience (if none leave blank): 4

   Company Owner: ~~AETA~~ / CA River TRIPS Guide: _____

   Instructor: Micky Smith. Adventures west wild Other: _____
6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: Almost yearly since 1984. - Oxbow → China Bar

7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☒ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☒ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☒ Yes	☐ No

Stream segments upriver of Oxbow.

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: DAMIAN FORSYTHE

Please provide the following information

1. Your primary watercraft used for river boating activities:
   RAFT
2. Other watercraft you have river boating experience with:
   PACK BOAT DRIFT BOAT PONTOON BOAT
3. Your skill level in your primary watercraft: IV Your skill level in other watercraft: IV
4. Affiliation(s):
   FLY FISHING GUIDE HOOKED UP ANGLERS FISHING GUIDE SERVICE
5. Number of years commercial boating experience (if none leave blank): 5

   Company Owner: ME Guide: _____

   Instructor: _____ Other: _____

6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: 5 years floating 20+ fishing

7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☒ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☐ Yes	☒ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☐ Yes	☒ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: Rod Hall

Please provide the following information

1. Your primary watercraft used for river boating activities:
   Solo Whitewater Open Canoe
2. Other watercraft you have river boating experience with:
   Tandem Whitewater Open Canoe
3. Your skill level in your primary watercraft: 3 Your skill level in other watercraft: 3
4. Affiliation(s):
   Central California Canoe Club (CA), American Red Cross
5. Number of years commercial boating experience (if none leave blank): —

   Company Owner: _____ Guide: _____

   Instructor: _____ Other: _____
6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: 5 years Greenwood to Mammoth Bar
7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☐ Yes	☑ No
Mammoth Bar to confluence of North Fork American River	☑ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☑ Yes	☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: HILOE SCHWEITZER

Please provide the following information

1. Your primary watercraft used for river boating activities:
   KAYAK
2. Other watercraft you have river boating experience with:
   RAFT
3. Your skill level in your primary watercraft: 4+/5 Your skill level in other watercraft: 5
4. Affiliation(s):
5. Number of years commercial boating experience (if none leave blank): 33

   Company Owner: _____ Guide: GRAND CANYON OUTDOORS UNLIMITED

   Instructor: ACA WHITEWATER Other: WEMT
6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: normal MF commercial run - Oxbow
7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☒ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☒ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☒ Yes	☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: Roger Lee / Wilderness Adventures, Inc.

Please provide the following information

1. Your primary watercraft used for river boating activities:
   Whitewater Boats Inflatable
2. Other watercraft you have river boating experience with:
   Kayaks (Hardshell, Inflatable), Drift Boats
3. Your skill level in your primary watercraft: High Your skill level in other watercraft: High
4. Affiliation(s):
   State Parks, BLM, US Forest Service, Various County Agencies
5. Number of years commercial boating experience (if none leave blank): 27

   Company Owner: 20 Guide: 27

   Instructor: 24 Other:
6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: 1983 to Present - Commercial River Trips on Middle Fork American Ralston Powerhouse to Confluence w/ NF American

   Two rafting expeditions from Hell Hole Reservoir to Oxbow. 1995 & 1992

   One rafting expedition from Interbay Powerhouse to Oxbow. - 1996
7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☒ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☒ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☒ Yes	☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: NATE RANGER

Please provide the following information

1. Your primary watercraft used for river boating activities:
   RAFTING
2. Other watercraft you have river boating experience with:
   I.K., CANOE
3. Your skill level in your primary watercraft: IV Your skill level in other watercraft: II
4. Affiliation(s): C.H.R.C.
   CAL OUTDOORS, AMER. OUTDOORS, AM. WHITEWATER
5. Number of years commercial boating experience (if none leave blank): 25

   Company Owner: ME Guide: _____

   Instructor: _____ Other: _____

6. Your boating experience in the Middle Fork American River Watershed

   Years of experience and locations: 1) OXBOW RUN SINCE 1982
   2) ALSO RM MAMMOTH BAR REACH FOR 4 YEARS IN I.K.'S & FISH MAINTENANCE FLOW LEVELS,

7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☒ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☒ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☒ Yes	☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Whitewater Boating Focus Group - Participant Profile Form

Name: Theresa Simsiman

Please provide the following information

1. Your primary watercraft used for river boating activities:
Whitewater Kayak
2. Other watercraft you have river boating experience with:

3. Your skill level in your primary watercraft: IV Your skill level in other watercraft: _____
4. Affiliation(s):

5. Number of years commercial boating experience (if none leave blank): _____

Company Owner: _____ Guide: _____

Instructor: _____ Other: _____

6. Your boating experience in the Middle Fork American River Watershed

Years of experience and locations: 9 yrs
Tunnel Chute Run,
Greenwood Rock, Mammoth Bar Down
Mammoth Bar Down

7. Willing to participate in whitewater flow studies on Middle Fork American River (summer 2008):

Oxbow Powerhouse to Ruck-a-Chucky Day Use Area	☑ Yes	☐ No
Mammoth Bar to confluence of North Fork American River	☑ Yes	☐ No
Confluence of North and Middle Forks American River to Oregon/China Bar	☑ Yes	☐ No

Focus Group Meeting Notes

"PCWA MFP Relicensing"
<Relicensing@pcwa.net>
07/31/2008 02:21 PM

To "Bill Center" <bclotus@innercite.com>, "Bill Deitchman" <bdeit@parks.ca.gov>, "Bryant Burkhardt" <Bryant@calkayak.com>, "Charlie Center"
cc "Ben Rualo" <ben_ffnc@yahoo.com>, "Bill Carnazzo" <bcarnazzo@ftcnet.net>, "Brad Cavallo" <bcavallo@fishsciences.net>, "Eldon Cotton"
bcc

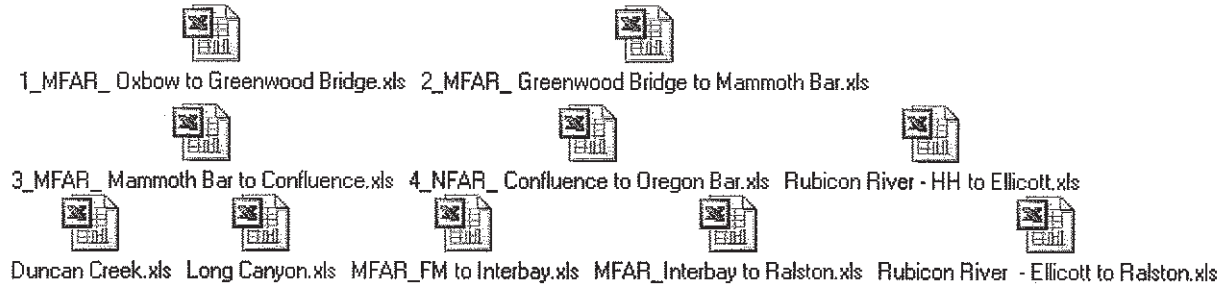
Subject PCWA/MFP - Whitewater Focus Group Meeting Notes

Dear Recreation Resources and Whitewater Focus Group Members –

Attached for your information are the discussion spreadsheets containing the notes that were captured during the whitewater boating focus group session, which was held at PCWA's Business Center on April 23, 2008. The information contained in the spreadsheets is essentially as it was recorded during the meeting, with two exceptions. First, additional language was added to clarify access points and roads, where necessary. Second, more information regarding boating flows on the Rubicon River and the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay was added, based on a follow up conversation with Charlie Center on May 27, 2008.

If you have any questions, please don't hesitate to call me.

Thanks,
Beverly Bell
Administrative Aide
(530) 823-4973



Bypass Reaches

Duncan Creek

Access

No runs were discussed during the focus group session.

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in					
Alternate Put-in					
Take-out					
Alternate Take-out					

Duncan Creek

Description

No runs were discussed during the focus group session.

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Comparable Regional Runs	Notes

Duncan Creek

Major Rapids and Portages

No runs were discussed during the focus group session.

Name of Rapid	Difficulty	Location	Portage	Notes

Duncan Creek

Other Information Sources, Flow Information, Safety, and Conflicts

No runs were discussed during the focus group session.

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	
Sources of Flow Information	USGS 11427750 DUNCAN CYN C BL DIV DAM NR FRENCH MEADOWS CA USGS 11427700 DUNCAN CYN C NR FRENCH MEADOWS CA
Adequacy of Flow Information	Daily and Monthly Data maintained by USGS. 6 month lag time in reporting.
Safety Concerns	
Conflicts with Other Users	

Rubicon River - Ellicott Bridge to Ralston Afterbay

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Ellicott Bridge	Paved, but sometimes snowed in during boating season.	Small parking area/primitive camping area at bridge. Very little improvement would accommodate boaters. Good access to Georgetown.	FR 2 (Eleven Pines Road)	Paved, not plowed in winter
Alternate Put-in	There is a hike in put in approximately 10 miles upstream of Ralston, on river left. (Roger came in from Georgetown.)	Not a viable put-in. Major hike in. There are a couple of obscure unnamed trails in this vicinity that come off of Peavine Point Road. It is not clear which one was used for this put-in as none appear to go down to the river.	NA. No support facilities.	From Georgetown take Wentworth Springs Road to Peavine Point Road.	Wentworth Springs Road is paved. Peavine Point Road is unpaved.
Take-out	Ralston PH. River right just downstream of the powerhouse (less than 50 feet)	Excellent	There are no support facilities in this location. The PH is surrounded by a perimeter fence. There is ample, unpaved parking around the PH, outside of the fence.	FR 23	Paved and in good condition
Alternate Take out	Long Canyon/Rubicon Confluence	footbridge over river at this location -	NA. No support facilities.	13N66 and 14N25G	13N66 is an unpaved and requires a 4WD high clearance vehicle. 14N25G is unpaved
Alternate Take out	Ralston Picnic Area Car Top Boat Ramp	Unpaved but graded boat ramp to water. Unpaved parking available. Boaters would have to paddle to get to this take-out.	This boat ramp is located in the Ralston Picnic Area where there is parking, picnic tables and toilets.	FR 23	Paved and in good condition
Alternate Take out	Ralston Sediment Removal Access Point "Boat Ramp"	Unpaved but graded boat ramp to water. Unpaved parking available.	No support facilities other than the unpaved boat ramp and unpaved parking. Boat ramp is in better condition (smaller cobbles) than the Ralston Picnic Area Car Top Boat Ramp	FR 23	Paved and in good condition

Rubicon River - Ellicott Bridge to Ralston Afterbay

Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
Holbeck and Stanley - Lower Run							
20.3 miles	V-	500-1000		1200	Only runnable when HH spills.		Excellent 2-day Wilderness trip
	V	1000-2000		1200			Many sections of III and IV rapids
							2-5 portages
California Creeks							
23 miles	IV+ w/ 12 Class V						Relies on Holbeck and Stanley for description
	V	above 500			Can be run on mid-season snowmelt, but the remote access to Ellicott might be impassible		Can also run when HH spills
	V-	under 1000	kayaks				
	V	1000-2000	kayaks				
		500-2000	kayaks				
		200 - 500	Iks				
Focus Group							
	V	400-1200 cfs	rafts	500-700 cfs		catarafts, rafts, kayaks, Iks	flow doubles or triples between Ellicott Bridge and Ralston
	V	400-1200 cfs	kayaks	500-700 cfs			2000 cfs would probably be too high. It would be more than Class V

Comparable Regional Runs

River	Run
North Fork American	Tadpole Creek to Colfax-Iowa Hill Road (Generation/Giant Gap)
North Fork Trinity	
North Fork Yuba	
South Fork Yuba	

Rubicon River - Ellicott Bridge to Ralston Afterbay

Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
Ripple Rock Falls				from CalCreeks
One in a Million				from CalCreeks and Holbeck and Stanley
Holbeck / Stanley's Falls				from Cal Creeks
Orangebed Falls				from Cal Creeks
Kayak Motel				from Cal Creeks
Nine Foot Falls				from Cal Creeks

No mandatory portages.
Roger identified 40 plus rapids (Class IV and above)

Rubicon River - Ellicott Bridge to Ralston Afterbay

Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	Charlie Center, post on BOOF.com
Sources of Flow Information	USGS 11428800 RUBICON R BL HELL HOLE DAM Word of mouth. Boaters estimate flow based on downstream gage information - e.g. flow out of Ralston
Adequacy of Flow Information	Daily and Monthly Data. Record for this site is maintained by the USGS California Water Science Center. Lag time of 6 months in reporting. Inference combined with experience seems to work. Hard to judge tributary contributions. Sometimes flow is higher than anticipated. Flow can triple between put-in and take out.
Safety Concerns	Remote, wilderness
Conflicts with Other Users	Remoteness and boating season reduces potential for conflicts.

Rubicon River - Hell Hole Reservoir to Ellicott Bridge

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Hike in put-in using and unnamed trail that terminates at RM 25. Put in on river right.		NA. No support facilities.	Trail is accessible from 14N11	This run is primarily only runnable when HH spills. There is typically snow on the roads when HH spills.
Alternate Put-in	None				
Take-out	Ellicott Bridge	Paved, Excellent			Snow is sometimes present during boating season
Alternate Take out	Ralston PH	Good.	NA. No support facilities.	FR 23	Paved and in good condition.

3 day trip from HH to Ralston PH. Two day trip from Ellicott to Ralston PH.

Rubicon River - Hell Hole Reservoir to Ellicott Bridge

Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
Focus Group							
4 miles from RM 25 Put in to Ellicott Bridge	V	400-1200 cfs	rafting, kayaking	500-800 cfs	Feb-May		above 1200 gets dicey

Comparable Regional Runs

River	Run
North Fork American	Tadpole Creek to Colfax-Iowa Hill Road (Generation/Giant Gap)
Middle Fork Feather	Nelson Point to Misap Bridge (Devils Canyon)
Fordyce Creek	Fordyce Lake to Lake Spaulding
Kings	South Fork Confluence to Garnet Dike Campground (Kings Canyon)
South Fork Merced	Wawona to Main Merced

Rubicon River - Hell Hole Reservoir to Ellicott Bridge

Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
			No mandatory portages	This run has good potential as a wilderness ww run. It's long and challenging but there are no mandatory portages.

Rubicon River - Hell Hole Reservoir to Ellicott Bridge

Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	Charlie Center, post on BOOF.com
Sources of Flow Information	USGS 11428800 RUBICON R BL HELL HOLE DAM Word of mouth. Boaters estimate flow based on downstream gage information - e.g., flow out of Ralston
Adequacy of Flow Information	Daily and Monthly Data. Record for this site is maintained by the USGS California Water Science Center. Lag time of 6 months in reporting. Inference combined with experience seems to work. Hard to judge tributary contributions. Sometimes flow is higher than anticipated.
Safety Concerns	Remote, wilderness
Conflicts with Other Users	Remoteness and boating season reduces potential for conflicts.

Long Canyon

Access

No runs on Long Canyon were identified or discussed. Roger Lee has looked at Long Canyon but doesn't think that it is desirable for rafting or kayaking because it is too steep and narrow. Good fishing possibilities.

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in					
Alternate Put-in					
Take-out					
Alternate Take-out					

Long Canyon

Description

No runs on Long Canyon were identified or discussed. Roger Lee has looked at Long Canyon but doesn't think that it is desirable for rafting or kayaking because it is too steep and narrow. Good fishing possibilities.

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Comparable Regional Runs	Notes

Long Canyon

Major Rapids and Portages

No runs on Long Canyon were identified or discussed. Roger Lee has looked at Long Canyon but doesn't think that it is desireble for rafting or kayaking because it is too steep and narrow. Good fishing possibilities.

Name of Rapid	Difficulty	Location	Portage	Notes

Long Canyon

Other Information Sources, Flow Information, Safety, and Conflicts

No runs on Long Canyon were discussed. Roger Lee has looked at Long Canyon but doesn't think that it is desirable for rafting or kayaking because it is too steep and narrow. Good fishing possibilities.

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	
Sources of Flow Information	
Adequacy of Flow Information	
Safety Concerns	
Conflicts with Other Users	

Middle Fork American River - French Meadows Dam to Middle Fork Interbay

Access

None of the focus group participants have boated along this stretch. However, this reach has been kayaked by others. Follow up with Scott Lingren and Charlie Center.

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in					
Alternate Put-in					
Take-out					
Alternate Take-out					

Middle Fork American River - French Meadows Dam to Middle Fork Interbay

Description

None of the focus group participants have boated along this stretch. However, this reach has been kayaked by others. Follow up with Scott Lingren and Charlie Center.

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Comparable Regional Runs	Notes

Middle Fork American River - French Meadows Dam to Middle Fork Interbay

Major Rapids and Portages

None of the focus group participants have boated along this stretch. However, this reach has been kayaked by others. Follow up with Scott Lingren and Charlie Center.

Name of Rapid	Difficulty	Location	Portage	Notes

Middle Fork American River - French Meadows Dam to Middle Fork Interbay

Other Information Sources, Flow Information, Safety, and Conflicts

None of the focus group participants have boated along this stretch. However, this reach has been kayaked by others. Follow up with Scott Lingren and Charlie Center.

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	Scott Lingren, Charlie Center
Sources of Flow Information	
Adequacy of Flow Information	
Safety Concerns	
Conflicts with Other Users	

Middle Fork American River - Middle Fork Interbay to Ralston Afterbay

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Put in at the end of Middle Fork Interbay Road	Access from the road is steep but you can walk down to river (about 60-70 feet off of the road)	NA. No support facilities at this location	Middle Fork Interbay Road	Paved and in good condition. Passable in the winter with snow cats and when road is plowed.
Alternate Put-in					
Take-out	Ralston Picnic Area Car Top Boat Ramp	Unpaved but graded boat ramp to water. Unpaved parking available.	This boat ramp is located in the Ralston Picnic Area where there is parking, picnic tables and toilets.	FR 23	Paved and in good condition
Alternate Take-out					

Middle Fork American River - Middle Fork Interbay to Ralston Afterbay

Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
Focus Group							
9 miles	V+	300/400 - 800 max	rafts/kayaks			rafts (13-14 foot max), kayaks	steep run (about 300 feet/mile) 2 day run lots of rock piles and portages

Comparable Runs

Looks like Shirtail Run on the North Fork American River

Middle Fork American River - Middle Fork Interbay to Ralston Afterbay

Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
			Lots of portages (at least 8-10 portages)	Lots of rockpiles. Some technical portages

Middle Fork American River - Middle Fork Interbay to Ralston Afterbay

Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	Rogers topos maps, Charlie, Lingreen, BOOF.com
Sources of Flow Information	Estimate based on observation.
Adequacy of Flow Information	
Safety Concerns	Remoteness
Conflicts with Other Users	

Peaking Reaches

Middle Fork American River - Oxbow to Greenwood Bridge

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Indian Bar Rafter Put-in (Oxbow PH)	Graded parking lot, vault toilets, ramp	Facilities are adequate for private and commercial boater access	Mosquito Ridge Road to Blacksmith Flat Road to forest road 23.2	Paved and in good condition
Alternate Put-in	Horseshoe Bar property (private)		private		
Alternate Put-in	3 Queens mine road (private)		private		
Alternate Put-in	Cache Rock			Volcanoville Road to 14N35 to 14N35A	Unpaved, high clearance 4WD recommended
Take-out	Greenwood Bridge (Ruck-a-Chucky CG)	Graded ramp, parking	Need better ADA boater access, which was identified as part of ASRA general plan	Drivers Flat Road	Unpaved, high clearance recommended, potentially dangerous (some think this road should be improved but others think it should not be improved)
Alternate Take-out	Cherokee Bar			Sliger Mine Road	Unpaved
Alternate Take-out	Canyon Creek			Ruck-a-Chucky Road	Unpaved and gated

Middle Fork American River - Oxbow to Greenwood Bridge
Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
Holbeck and Stanley (Tunnel Run)							
17 miles	IV	800-1500		1200	Spring, Summer		Long sections of flat water
							Long shuttle
California Creeks (American River Middle Fork thru Tunnel Chute)							
16.5 miles	IV with 1 V, 1 portage	800-2000	rafts		summer from dam release		harder at higher flows
		600-2000	kayaks				
American Rivers.com							
14.9 Miles to Greenwood Bridge	II-IV with 1 V and 1 VI mandatory portage						
15.1 Miles to Take-out							

Focus Group							
		600-3000	kayaks and rafts, canoes		Summer and early fall		Could boat at much higher flows without Tunnel Chute (high end 6000-7000 cfs). Would have to portage Ruck-a-Chucky
				minimum flows		anglers	Damien is on the river before the flows come up in a 14 foot raft for fishing
							Drift boating not an option.

Comparable Regional Runs

River	Run
North Fork American	Yankee Jims Road Bridge to Ponderosa Way Bridge (Shirtail Run)
South Fork American	Riverton (Route 50 Bridge) to Peavine Ridge Road
Cache Creek	Bear Creek Confluence to Rumsey
North Fork Feather	Poe Powerhouse to Lake Oroville
Sacramento	Box Canyon to Dunsmuir
Sacramento	Dunsmuir to Castle Cragg
Middle Fork Stanislaus	Sand Bar Flat Dam to Camp 9 Powerhouse
South Fork Trinity	EF/SF Confluence to Scott Flat Campground
North Fork Yuba	Goodyears Bar Bridge to Hwy 49 Bridge
South Fork Yuba	Washington to Edwards Crossing
South Fork Yuba	Edwards Crossing to Purdon Crossing

Middle Fork American River - Oxbow to Greenwood Bridge

Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
Panic Alley (Alarm Clock)	III	Mile 0.1		
Little Fin Back	II	Mile 0.3		
Carls Crash (Guide Slammer)	III	Mile 0.5		
Organized Chaos	III	Mile 0.7		
Jake the Ripper (Coffee pot)	II	Mile 1.1		
Last Chance	IV	Mile 1.4		
Tunnel Chute	V	Mile 1.5	X	Can be portaged
Soul Train	II	Mile 2.0		
Cathedral	III	Mile 2.3		
Lettuce Hole (First Flip)	IV	Mile 3.0		
Thread the Needle	III	Mile 3.5		
Three Queens	III	Mile 3.8		
Kanaka Falls	IV	Mile 4.1		
Chunder	IV	Mile 13.2		
Ruck-a-Chucky	VI	Mile 13.3	X	Good portage on right, commercial patrons always portage. Guides sometimes boat.
Cleavage	IV	Mile 13.7		
Parallel Parking	IV	Mile 13.8		
Catapult (Final Exam)	IV	Mile 14.4		
Shireen's Dream (Pop Quiz)	III	Mile 14.6		

Source: American Rivers.Com

Middle Fork American River - Oxbow to Greenwood Bridge
Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	
Sources of Flow Information	Middle Fork American River Gage below Oxbow (OXB)
Adequacy of Flow Information	Real time data. Available on the internet at: http://cdec.water.ca.gov/river/americanStages.html http://waterdata.usgs.gov/ca/nwis
Safety Concerns	Tunnel Chute, Ruck-a-Chucky, especially for private boaters who are unfamiliar with run. Somewhat remote.
Conflicts with Other Users	State Parks regulations on this river differ from regulations on other rivers in the State. This leads to conflicts between State Parks and outfitters.
	Conflicts between outfitters at Ruck-a-Chucky rapid. Different portaging techniques take different amounts of time, which causes conflicts (bottleneck).
	Conflicts with private landowners at Tunnel Chute. Boaters walk on private property when portaging. Some defecate or urinate on private property.
	Portaging creeps into "sightseeing"
	Historically, boaters had conflicts with dredgers.
	Conflicts between anglers and boaters.
	Conflicts between boaters and other users at Driver's Flat. (Drinking, dogs off leash, shooting)
	Vandalism at Drivers Flat

Middle Fork American River - Greenwood Bridge to Mammoth Bar

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Greenwood Bridge (Ruck-a-Chucky CG)	Graded ramp, parking	Needs ADA upgrades to support disabled boating.	Drivers Flat Road. Can also be accessed from McKeon Road	Unpaved, high clearance recommended, Road washes out during some years and may not be prepared until May or June.
Alternate Put-in					
Alternate Put-in	Cherokee Bar			Sliger Mine Road	
Take-out	Mammoth Bar	Multi-use OHV area	Take-out can be improved, especially for disabled. Cobble bar impedes access to the water's edge.		
Alternate Take-out	Confluence				
Emergency Access					

Middle Fork American River - Greenwood Bridge to Mammoth Bar

Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
California Creeks (American River Middle Fork near Auburn)							
7.1 miles	I with Class II rapids	800-2000	rafts		summer, from dam release		This run is not for the beginning ww canoeist. Some ww skills are required.
		400	IK				
Cassidy and Calhoun (modified by Foothill Water Network)							
7 miles	II-III	600-3000	kayakers, Iks, canoes			family rafting, instructional boating, group outings	

Focus Group							
	II+	800-1200		1000		Class II boaters.	Timing an issue. Flows are too late. Need 8 hour fishing day. 6 hour instructional boating day.
		any flow for more skilled boaters					High potential to draw use from other congested areas (e.g.. South Fork), especially Class II boaters.
							Potential hazard area just below Cherokee Bar, when flow is low. Channel is constricted and boaters end up in trees on river right.
							Highest potential for increased use by Class II boaters. Good access.

Comparable Regional Runs

River	Run
American	Sunrise Avenue to Watt Avenue
South Fork American	Coloma to Greenwood Creek
Mokelumne	Electra to Middle Bar
Stanislaus	Knight's Ferry to Orange Blossom Bridge
Yuba	Englebright Dam to Parks Bar (Hwy 20)

Middle Fork American River - Greenwood Bridge to Mammoth Bar

Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
The group did not want to identify all of the individual rapids as all of this information is in guide books.				

Middle Fork American River - Greenwood Bridge to Mammoth Bar
Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	
Sources of Flow Information	Middle Fork American River Gage below Oxbow (OXB)
Adequacy of Flow Information	Real time data. Available on the internet at: http://cdec.water.ca.gov/river/americanStages.html http://waterdata.usgs.gov/ca/nwis
Safety Concerns	Potential hazard area just below Cherokee Bar, when flow is low. Channel is constricted and boaters end up in trees on river right. Rebar and other debris (old bridges, mining debris) Overrunning the take out and ending up in Murderer's Bar rapid
Conflicts with Other Users	Conflicts with other types of users at take out and put in.
	Conflicts with private property owners along river.
	Conflicts at Mammoth Bar during OHV special events.

Middle Fork American River - Mammoth Bar to Confluence

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Mammoth Bar	Multi-use OHV area			Unpaved to river
Alternate Put-in					
Take-out	Confluence	Right bank upstream from the bridge. Good take-out just above confluence			
Alternate Take out	Highway 49 Bridge	Turn out near bridge.	Long distance from river take out to road. Lack of parking facilities.		
Alternative Take-out	River right just above last rapid.				

Middle Fork American River - Mammoth Bar to Confluence

Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
Cassidy and Calhoun							
2.3 miles	II w/ 1 VI	800-2000 cfs			May - September		
Cassidy and Calhoun (modified by Foothill Water Network)							
7 miles	II with 1 class VI and 1	400-3000				easy access run for those with limited time, instructional boating, novice to intermediate boaters, innertubers	
Fous Group							
	III with portage around murderer's bar	400-15,000+	all	800-1200 cfs	year round because access is year round	easy access run for those with limited time, instruction boating, novice to intermediate boaters, innertubers	timing of flow an issue. Gets worse as you go downstream.
							Portage trail/put in around Murderer's Bar would extend this run for Class II/III boaters.

Comparable Regional Runs

River	Run
American	Sunrise Avenue to Watt Avenue
South Fork American	Coloma to Greenwood Creek
Mokelumne	Electra to Middle Bar
Stanislaus	Knight's Ferry to Orange Blossom Bridge
Yuba	Englebright Dam to Parks Bar (Hwy 20)

Middle Fork American River - Mammoth Bar to Confluence

Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
Murderer's Bar	V-VI	0.1 miles, just downstream of Mammoth Bar	X	Portage is possible on either side of rapid, portage is long and difficult. A good portage around this rapid would extend run for Class II/III boaters
Breakdown	II	2 miles of Class II rapids below Mammoth Bar		

Middle Fork American River - Mammoth Bar to Confluence
Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	
Sources of Flow Information	Middle Fork American River Gage below Oxbow (OXB)
Adequacy of Flow Information	Real time data. Available on the internet at: http://cdec.water.ca.gov/river/americanStages.html http://waterdata.usgs.gov/ca/nwis
Safety Concerns	Missing portage and ending up in Murderer's Bar rapid
Conflicts with Other Users	Conflicts with other types of users at take out and put in.
	Conflicts with private property owners along river.
	Conflicts at Mammoth Bar during OHV special events.

North Fork American River - Confluence to Oregon Bar

Access

	Name	Condition of Access Point	Adequacy of Support Facilities	Name of Access Road	Condition of Access Road
Put-in	Confluence	Turn-outs near Highway 49 Bridge	Accessible portable toilets available at confluence. Limited parking along turn outs.	Highway 49	Paved, good
Alternate Put-in	NFAR immediately below Clementine				
Alternate Put-in	Immediately below Murderer's Bar				
Alternate Put-in	Quarry Trailhead				
Alternate Put-in	No hands bridge				
Take-out	Birdsall Take-out in China Bar Recreation Area	Ramp near shoreline with parking uphill	Closed to public during weekdays. No parking available at take-out. Must walk from take out to parking area. Problematic for people who are not in good physical condition (e.g., disabled).		Paved road in good condition from China Bar entrance kiosk to large paved parking lot. Graded dirt road from parking to take-out. 15 minute loading zone at birdsall take out.
Alternate Take-out	Oregon Bar take-out in China Bar Recreation Area	Trail at lower end of Oregon Bar	No support facilities at take out. Toilets and parking available above.		Paved road in good condition from China Bar entrance kiosk to large paved parking lot. Graded dirt road from parking to take-out. Gate on road prohibits vehicular access to take out. Boaters must hike their boats and gear up a short, but moderately steep trail to the road and then walk up to the road to the gate. Can leave boats at the gate and then hike up the dirt road to the parking lot to get a vehicle.
Alternate Take-out	Rattlesnake Bar	Dirt ramp at shoreline with paved parking and vault toilets uphill	Long paddle on upper end of Folsom Lake to get to take-out		

North Fork American River - Confluence to Oregon Bar

Description

Length of Run (miles)	Difficulty of Run	Boatable Flow Range	Suitable Water Craft	Optimum Flow	Typical Boating Season	Potential Uses	Notes
Focus Group							
	II+, III-	300 -15,000 +	all	600-3000 cfs for ww craft	year round		
	I	100 min	innertubes, kayaks			Could be similar to Truckee River Park and Play in Reno, including non WW uses such as tubing, boogie boarding, etc.	

Comparable Regional Runs

River	Run
South Fork American	Coloma to Greenwood Creek
Mokelumne	Electra to Middle Bar
Stanislaus	Knight's Ferry to Orange Blossom Bridge
Yuba	Hwy 20 down Deguerres Dam
Cache Creek	Boy scout camp down

North Fork American River - Confluence to Oregon Bar
Major Rapids and Portages

Name of Rapid	Difficulty	Location	Portage	Notes
whitewater channel	II+	adjacent to pump station facility		Timing of flows limits use of whitewater feature. Flow arrives too late to use it.

North Fork American River - Confluence to Oregon Bar
Other Information Sources, Flow Information, Safety, and Conflicts

Topic	Comments
Sources of Other Pertinent Information for Run (e.g., guide books, boaters, web sites)	
Sources of Flow Information	Middle Fork American River Gage below Oxbow (OXB) USGS 11427000 NF AMERICAN R A NORTH FORK DAM CA
Adequacy of Flow Information	Real time data. Available on the internet at: http://cdec.water.ca.gov/river/americanStages.html http://waterdata.usgs.gov/ca/nwis
Safety Concerns	Traffic and congestion at put-in. Potentially flow station at higher flows. Debris at old highway 49 bridge. Takeout at Oregon Bar. If you boat through Oregon Bar rapid you miss the takeout and have to paddle back upstream or take out at Rattlesnake.
Conflicts with Other Users	potential conflicts with other river users (e.g.. boogie borders, inner tubers, etc.)

Post Focus Group Correspondence

FOOTHILLS WATER NETWORK

julie@foothillswaternetwork.org
P.O. Box 713
Lotus, CA 95651
T: 530-622-8497

February 9, 2009

Dear Mal Toy and PCWA,

Thank you for accepting our enclosed comments on the PCWA Implementation Progress Report. We have appreciated PCWA's collaborative approach to the Middle Fork American Relicensing. We feel that we have made great strides to making this relicensing as collaborative as possible and hope we can continue along this path as we enter 2009.

Upon review of 2008 Study Implementation Progress Report for the Middle Fork American River Project, Foothills Water Network offers the following comments and suggested changes. Our comments focus on how the information is presented in the Update on REC 4 - Stream Based Opportunities Technical Study Plan Focus Group Sessions and Refined Flow Study Approaches as appears in PCWA's February 2009 Progress Report (Update on REC-4), which captures information from the boating focus groups. We provided verbal comments in the REC TWG filing the release of this Update on REC-4 but our discussion at that meeting and the subsequent investigations are not captured in the PCWA Progress Report nor the Update on REC-4 but should be.

As we have discussed with the Licensee, we think that our comments and references to specific sections of the Update on REC-4 can be satisfactorily addressed by their inclusion in the Meeting Summary of the FERC Plenary on February 2, 2009. In this way, the Meeting Summary will contextualize, elaborate on, and in some instances, provide more appropriate substitute language to statements made in the Update on REC-4.

Below are our comments and suggested language for the Meeting Summary followed by Attachment A: a letter from the Foothills Water Network dated August 23, 2006 with regards to information-collection on the Rubicon River and boating test flows and Attachment B: PCWA's response letter.

Area of Disagreement

We do not agree with a few statements made in the REC 4 – Stream Based Opportunities Technical Study Plan Focus Group Sessions and Refined Flow Study Approaches. In some cases, the statements do not reflect the intent of the phased approach and final collaborative decision-making outlined in REC-4. In other cases, we do not agree with the information collected from the boating focus group or how it is presented.

I. Presentation of Information Gathered and Decision-Making Process for Contingency Boating Test Flows

In keeping with the REC-4 Study's phased approach, no decisions on contingency boating studies have been taken as of this comment letter and therefore the Update on REC-4 nor the February 2009 Progress Report should reflect this status.

Specifically, the Middle Fork American, Duncan Creek and Long Canyon on page 6 of the Update on REC-4 reads, "Otherwise, PCWA does not propose to conduct boating flow studies on these reaches" (Update on REC-4 p.6-7). This should not be interpreted that a decision has been taken regarding boating test flows by PCWA. On the contrary, the REC-4 Study says that all Relicensing Participants will take a decision on boating test flows on the bypass reaches after all information is gathered. Nor should it be interpreted that it is solely PCWA's decision. Based on the REC-4 Study, the Relicensing Participants will come to a collaborative agreement on whether to conduct test flows on the bypass reaches.

II. Presentation of Information and Decision-making Regarding Boating Test Flows on the Rubicon

The Update on REC-4's presentation of the feasibility of test flows on the Rubicon needs more elaboration and context. In general, it is important that information be presented in a manner consistent with the REC-4 Study, which states that in the first phase, we will collect information, and then assess the need and feasibility for other boating flow tests.

The Update on REC-4 states: "At this time, controlled flow studies on the Rubicon River do not appear feasible" (p.6). It is incorrect to interpret this to mean that all information on the subject has been gathered and that PCWA has decided not to conduct the test flows on the Rubicon River. In making this statement, PCWA is not taking a decision on boating test flows but merely providing a preliminary opinion based on the limited information at the time of the Update on REC-4. PCWA more aptly frames the status of the decision-making on this issue in the beginning of its' February 2009 Progress Report as follows:

> The results of this assessment will be discussed with the Recreation TWG in April 2009 to determine if whitewater boating studies on any of the bypass reaches are necessary. (Page 5 Implementation Progress Report, PCWA)

Therefore, the statement in the Update on REC-4 would more appropriately read:

> As of the time of this reporting, PCWA has discovered some challenges to making controlled releases for test flows on the Rubicon River below Hell Hole Dam.

In addition, since the time of the release of Update on REC-4 in July 2008, PCWA has agreed to collect more information on boating the run and investigate the feasibility of controlled or uncontrolled releases in order to do boating flows.

First, PCWA and Relicensing Participants are exploring the possibility of an uncontrolled test flow during a spill period. Second, PCWA and relicensing participants agreed that PCWA would investigate the level of effort, cost, and steps necessary to re-engineer the release valve, relocate, or reorient the powerhouse, or otherwise redirect the release so it does not threaten the powerhouse or the opposite bank of the river. This report is due to be released in 2009 as part of the information gathering phase of REC 4 Study. Third, PCWA is interviewing more boaters about their boating experiences in the bypass reaches to ascertain if boatable flows and optimal conditions are already known.

Furthermore, though the boaters present at the Boating Focus Group may have said that it requires 2-3 days to boat from Mile 25 or Ellicott Bridge to Ralston Afterbay, other boaters have subsequently said that this reach has been boated in one day, depending on flows. This is an important to modification because the time necessary to run the reach is not as much of as a challenge as first presented in the Update on REC-4. We suggest that the following language too narrowly interprets the boatability of this reach:

> It requires 2-3 days to boat to Ralston Afterbay from Mile 25 or Ellicott Bridge, respectively, thereby creating a significant logistical constraint for PCWA to provide such releases.

A more appropriate statement would read:

> At certain flows, this run can require 2-3 days to boat from Mile 25 or Ellicott Bridge to Ralston Afterbay. However at some flows, the run has been boated in one day, which could limit the logistical issues with conducting boating test flows on this reach.

In conclusion, it is important to add that even if test flows are not conducted due to challenges with existing conditions, this decision will not preclude exploring a boatable flow releases as protection and mitigation measures for license conditions.

III. Presentation of Information Gathered from Boating Focus Group on Ruck-A-Chucky to Mammoth Bar Reach

The following focus group comment on the Ruck-A-Chucky to Mammoth Bar Reach is much too expansive: “Any flow is okay for more skilled boaters” (p.3 Update on REC-4). We find this statement to be misleading and confusing. Upon further discussion with the consultants, they said a very skilled boater made the statement that he thought the reach could be boated up to very high flows. Accordingly, we think the following statement would better capture the boater’s sentiment and his perspective as a skilled boater: “Skilled boaters are able to boat a wide range of high flows on this reach.”

That said, it is important to note that “more skilled boaters” are not the ones who are very interested in boating this reach; rather it is beginner boaters and those providing kayak instruction, who are interested in boating this reach.

Sincerely,

Foothills Water Network
Julie Leimbach, Coordinator

Middle Fork Working Group Members
Nate Rangel, California Outdoors
Hilde Schweitzer, Boater

June 10, 2008

Dear Mal Toy and Andy Fecko,

The Foothills Water Network Middle Fork Working Group would like to reiterate our high level of interest in the ecological and boating flows for the Rubicon below Hell Hole and associated studies with this river reach. As stated previously, the section of river below Hell Hole is considered a classic Class V Sierra whitewater run. Private boaters and commercial operators are very interested in PCWA providing predictable boating flows for this reach that include ecologically appropriate ramping rates and instream flow variations.

First, it seems that given the concern around the ability to provide boating flows on the Rubicon reach below Hell Hole, we would like to propose having a REC TWG meeting sooner than August to discuss these issues further.

In the meantime, the following questions can inform our discussion and help bring us to a mutually satisfying outcome. Thank you to Mal for answering Hilde's questions regarding the Rubicon in a recent email. We have some further related questions below.

- Please describe the decision-making process that resulted in the revised instream flow tests for the Rubicon and the alternatives considered. Many of the REC TWG members do not participate in the AQ TWG and did not participate in meetings where that decision was made. We believe that the instream flow tests and ability to conduct ramping flows at Hell Hole are directly related with recreation interests for boating on the Rubicon below Hell Hole. It is my recollection that this decision involved a discussion of releasing water via the spillway or siphoning water over Hell Hole Dam. If this decision is documented somewhere, please provide that documentation so that the group can understand its impacts on the recreation test flows and information produced as part of the instream flow studies.
- What level does the reservoir have to be in order to release water via the spillway into the Rubicon reach below Hell Hole?
  Given the ability to move water from French Meadows to Hell Hole, is it possible to bring Hell Hole to a level high enough to create a spillway release?
- Would a release out of the spillway negatively impact the powerhouse?
- Can PCWA drain the Hell Hole reservoir in case of emergency?
- What are the regulations of The Division of Dam Safety on the release into the Rubicon?
- How does PCWA test the valve at the top of the Rubicon stretch to the satisfaction of The Division of Dam Safety?

- Does PCWA have the ability to control ramping rates, particularly off of spill events on the Rubicon at Hell Hole Reservoir?
- With current project operations and facilities, what are the limits of instream flows that can be produced out of Hell Hole Reservoir? Can PCWA produce flows that could be required in a new flow schedule for boating and ecological enhancement?
- What are the options PCWA is exploring for changing the infrastructure at Hell Hole to be able to meet a new flow schedule with increased instream flow variability and appropriate ramping rates on the Rubicon?

The issue of new flow schedules carries quite a history from other relicensings and Foothills Water Network members are sensitive to exploring these issues in full at the beginning of this relicense process. In previous relicensings, participants have encountered a division between a licensee's ability to provide test boating flows and subsequent long-term solutions for ramping rates and scheduled boating flows. Accordingly, we appreciate PCWA's responsiveness to our heightened concern around these issues and look forward to working with PCWA towards a full understanding and comfort level for all participants.

Sincerely,

Foothills Water Network Middle Fork Working Group
Julie Leimbach, Foothills Water Network
Hilde Schweitzer, Private Boater
Dave Steindorf, American Whitewater
Nate Rangel, California Outdoors and California Hydropower Reform Coalition
Dan Crandall, Current Adventures
Gary Estes, Protect American River Canyons
Gary Flanagan, Federation of Flyfishers
Bill Center, American River Recreation Association

PCWA
FIFTY YEARS

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Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

June 30, 2008
File No. 01030A

Julie Leimbach
Foothills Water Network
PO Box 713
Lotus, CA 95651

SUBJECT: PCWA's Response to Foothill Water Network's June 10, 2008 Letter

Dear Ms. Leimbach,

Below, please find responses to the questions you posed to Placer County Water Agency in your June 10, 2008 letter:

Please describe the decision-making process that resulted in the revised instream flow tests for the Rubicon and the alternatives considered. Many of the REC TWG members do not participate in the AQ TWG and did not participate in meetings where that decision was made. We believe that the instream flow tests and ability to conduct ramping flows at Hell Hole are directly related with recreation interests for boating on the Rubicon below Hell Hole. It is my recollection that this decision involved a discussion of releasing water via the spillway or siphoning water over Hell Hole Dam. If this decision is documented somewhere, please provide that documentation so that the group can understand its impacts on the recreation test flows and information produced as part of the instream flow studies.

Response

As it relates to the instream flow releases for the instream flow study, the discussion was that given the current circumstances (reservoir elevation, flow release limitations) it was not physically practical to release a high flow. Given this limitation, the agreement amongst participating TWG members was that:

1. PCWA would collect the instream flow data at medium (highest flow we could release – 65- 70 cfs) and low flow in a manner that allows a backwater step model to be used so that if we could not get a high flow we could still model to higher flows (this essentially meant that in addition to getting water surface elevations at our stream transects, we would also collect water surface elevations at the downstream dams).

2. That we would attempt to collect a high flow water surface elevation based on natural flow events. That is during spring 2008 or 2009 we would measure the highest flow available during the snowmelt period and if that was not successful we would watch for another high flow event.

What level does the reservoir have to be in order to release water via the spillway into the Rubicon reach below Hell Hole? Given the ability to move water from French Meadows to Hell Hole, is it possible to bring Hell Hole to a level high enough to create a spillway release?

Response

Yes, it is physically possible to move water from French Meadows Reservoir to Hell Hole Reservoir, but at an unacceptable impact to MFP operations. The spillway elevation at Hell Hole Reservoir is 4630 feet, which correlates to a storage of 207,549. As of June 15, 2008, Hell Hole Reservoir storage is 182,409, or an elevation of 4609.2 feet. At a maximum transfer rate of 400 cfs from French Meadows to Hell Hole reservoir, and a cessation of hydroelectric generation at Middle Fork Powerhouse and Ralston Powerhouse (representing about 90% of the entire MFP generating capacity), it would take approximately 31 days to fill Hell Hole Reservoir from French Meadows. The maximum spill created would, of course, be limited to 400 cfs.

In addition, PCWA believes that a forced spill at this time would have several adverse environmental impact downstream in the Rubicon River, particularly to Foothill Yellow-legged frogs. In order to avoid these impacts, any test releases should be timed to occur prior to FYLF breeding.

Would a release out of the spillway negatively impact the powerhouse?

Response

No. the spillway channel enters the Rubicon River downstream of the Hell Hole Powerhouse

Can PCWA drain the Hell Hole reservoir in case of emergency?

Response

Yes. PCWA would open the Hell Hole Reservoir lower level release valve (the 48" Howell-Bunger Valve located immediately adjacent to the Hell Hole Powerhouse) to make any emergency release. Hell Hole Powerhouse and vicinity then would likely need to be repaired or replaced at a later date following an emergency flow release.

What are the regulations of The Division of Dam Safety on the release into the Rubicon?

Response

That the Hell Hole Reservoir lower level release valve is in good working condition and tested annually.

How does PCWA test the valve at the top of the Rubicon stretch to the satisfaction of The Division of Dam Safety?

Response

The Hell Hole Reservoir lower level release valve (48" Howell Bunger valve) is tested annually by closing a butterfly valve located on the upstream face of the dam, and cycling the Howell Bunger valve in a close-open-close sequence. These tests are reviewed and approved by DDS.

Does PCWA have the ability to control ramping rates, particularly off of spill events on the Rubicon at Hell Hole Reservoir?

Response

The spillway at Hell Hole is uncontrolled (i.e., there are no spillway gates). Spring flows in the Rubicon River that enter Hell Hole Reservoir and fill the reservoir beyond elevation 4630 feet will create an uncontrolled spillway release. PCWA cannot control the rate that this spillway flow increases or decreases.

With current project operations and facilities, what are the limits of instream flows that can be produced out of Hell Hole Reservoir?

Response

Approximately 70 cfs.

Can PCWA produce flows that could be required in a new flow schedule for boating and ecological enhancement?

Response

As stated above, PCWA can discharge approximately 70 cfs into the lower Rubicon River. Any new flow schedule will be a subject of discussion in the PM&E phase in the relicensing process.

What are the options PCWA is exploring for changing the infrastructure at Hell Hole to be able to meet a new flow schedule with increased instream flow variability and appropriate ramping rates on the Rubicon?

Response

PCWA will be looking at a number of possible upgrade options to the existing facilities that will hopefully envelope the facility release requirements that will become evident in the PM&E phase. These include shrouding the existing valve location to prevent a release from impacting the existing powerhouse; relocating the existing valve downstream, or relocating the existing powerhouse.

If you have any additional questions or would like to discuss the responses, please don't hesitate to call me at (530) 823-4889.

Sincerely,
PLACER COUNTY WATER AGENCY

Mal Toy
Director of Resource Development

MT:bb
G:\GM\BBell\My Documents\Correspondence\2008 Correspondence\June 2008.doc

APPENDIX G

Whitewater Boating Flow Study Materials Invitation to Participate in Boating Studies, Related Correspondence, and Blank Forms

Invitation to Participate in Boating Flow Studies

"PCWA MFP Relicensing" <Relicensing@pcwa.net>
07/16/2008 03:16 PM

To "Bill Center" <bclotus@innercite.com>, "Bryant Burkhardt" <bryant@calkayak.com>, "Charlier Center" <Charliecenter@hotmail.com>,
cc "Mal Toy" <mtoy@pcwa.net>, "Andy Fecko" <afecko@pcwa.net>, "Ben Ransom" <bransom@pcwa.net>, "Dave Martinez" <MTZ@directcon.net>, "Sandy Perry"
bcc

Subject PCWA/MFP - Invitation to Participate in Boating Flow Studies

Dear Stakeholder –

Attached is an invitation to participate in a series of boating flow studies associated with the MFP Relicensing. Attachment C indentifies the days and boating runs. For logistical purposes, please RSVP at least two days prior to the date(s) you'd like to attend. An itinerary will be forwarded to you prior to the date(s) you've selected. Please provide me a signed Liability Waiver Form, Attachment E, prior to your departure.

Please don't hesitate to call me at (530) 823-4973 if you have any questions or need additional information.

Sincerely,
Beverly Bell
Administrative Aide
PCWA

PCWA
FIFTY YEARS

PLACER COUNTY WATER AGENCY

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Otis Wollan, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

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800.464.0030
WWW.PCWA.NET

July 16, 2008
File No. 01030A

Re: Invitation to Participate in a Boating Flow Studies
Middle Fork American River Project (FERC Project No. 2079)

Dear Stakeholder -

The Placer County Water Agency (PCWA) invites you to participate in a series of boating flow studies on runs associated with the Middle Fork American River Project (MFP or Project) below Oxbow Powerhouse. These runs are shown on Attachment A. Your participation is being requested due to your specific knowledge about the whitewater resources on the Middle Fork American River. The people contacted to participate in the studies are identified on the attached list (Attachment B). The participants were selected to represent a broad range of experience, skill levels, and interests. The boating flow studies will be conducted in July and September. The schedule and target study flows are presented in Attachment C.

The purpose of the flow studies is to refine boating flow information previously developed though literature reviews and a whitewater boating focus group process. Study team members will boat the target run at the target flow, and upon completion of the run, will complete a survey form and participate in a group discussion. It is anticipated that each flow study will require a full day to complete.

Boating team members will provide their own boating gear, safety equipment, and transportation to the put-in or take-out for the run. PCWA will provide the shuttle logistics, food, and beverages.

It will be the responsibility of the boating team member to make a determination of their ability to boat the target run. On water safety, and if needed, rescue, will be the responsibility of the boating study team. Prior to the flow study, each study team member will be asked to complete and return a Boater Profile Form and Release of Liability Form (Attachments D and E).

If you are interested in participating in the boating studies, or know of someone qualified and interested, please respond back to Beverly Bell at PCWA at (530) 823-4973 or bbell@pcwa.net. PCWA appreciates your participation in the Boating Flow Study.

If you have any questions regarding this focus group or need any additional information, please contact Mal Toy, MFP Relicensing Manager, at (530) 823-4889.

Sincerely,
PLACER COUNTY WATER AGENCY

Mal Toy
Director of Resource Development

MT:bb

Attachments

A. Flow Study Boating Runs
B. Contacts for Recruitment for Boating Flow Study Team Members
C. Boating Flow Study Schedule
D. Boater Profile Form
E. Release of Liability Form

Attachments

FORESTHILL

North Fork of Middle Fo

North Fork American River

Middle Fork American River

Indian Bar Rafting Access

Ralston Afterbay

Drivers Flat Rd.

Ruck-A-Chucky

Cherokee Bar

Sliger Mine Rd.

Confluence

Mammoth Bar

Tunnel Chute Run (Class IV)

Mammoth Bar Run (Class II)

AUBURN

GEORGETOWN

Birdsall Access

Murderer's Bar Run (Class V)

Confluence Run (Class II/III)

Oregon Bar

80

193

49

Transportation

- Major Road
- Minor Road

Hydrography

- Watercourse
- Water Body

Designated Boundary

- Auburn State Recreation Area*

* State Park boundaries are approximate and should not be considered legal descriptions. Maps are intended for study purposes only.

Whitewater Recreation Resources

- Put-In/Take-Out
- Put-In (Only)
- Take-Out (Only)
- Put-In/Take-Out with Developed Campground

PCWA

Placer County Water Agency
Middle Fork American River Project

Attachment A

Flow Study: Boating Runs

Date: 7/14/08

0 1 2 Miles

Projection: CA State Plane, Zone 2
Datum: NAD 83

Z:\Entrix\3116501\map\RecreationMaps\PCWA_Whitewater_Flow Study_17i11i_01.mxd

Attachment B. Contacts for Recruitment for Boating Flow Study Team Members.

Name		Affiliation
Damian	Forsythe	Hooked Up Anglers
Scott	Armstrong	All Outdoors
Mike	Bean	Private Boater
Dan	Buckley	Tributary Whitewater Tours
Bryant	Burkhardt	California Canoe & Kayak
Bill	Center	American River Recreation Association
Charlie	Center	Private Boater
Dan	Crandall	Current Adventures
Rod	Hall	American Red Cross
Roger	Lee	Wilderness Adventures
Julie	Leimbach	Foothills Water Network
Steve	Liles	WET River trips
Eric	Peach	PARC
Nate	Rangel	Adventure Connection
Hilde	Schweitzer	Private Boater
Theresa	Simsiman	Private Boater
Dave	Steindorf	American Whitewater
Scott	Underwood	Mother Lode River Center
Gary	Flanagan	Horseshoe Bar Guide Service Federation of Flyfishers NCCFFF

ATTACHMENT C

Placer County Water Agency - Middle Fork American River Project
REC 4 – Stream-based Recreation Opportunities Technical Study Plan
AQ 1 – Instream Flow Technical Study Plan
Peaking Reach Flow Study Schedule

Target Flow	Date	AQ1 Location		Boating Run		
100 cfs	Saturday, July 19, 2008	Otter Creek	Mammoth Bar			
368 cfs	Sunday, July 20, 2008	Otter Creek	Mammoth Bar			
368 cfs	Saturday, July 26, 2008	Otter Creek	Mammoth Bar			Confluence to Oregon Bar
368 cfs	Sunday, July 27, 2008	Otter Creek	Mammoth Bar			
1000 cfs	Monday, July 28, 2008	Otter Creek	Mammoth Bar			
1000 cfs	Tuesday, July 29, 2008	Otter Creek	Mammoth Bar			
1000 cfs	Wednesday, July 30, 2008	Otter Creek	Mammoth Bar	Oxbow Powerhouse to Ruck-a-Chucky		
1000 cfs	Thursday, July 31, 2008	Otter Creek	Mammoth Bar		Ruck-a-Chucky to Mammoth Bar	Confluence to Oregon Bar
800 cfs	Tuesday, September 09, 2008	Otter Creek	Mammoth Bar	Oxbow Powerhouse to Ruck-a-Chucky		
800 cfs	Wednesday, September 10, 2008	Otter Creek	Mammoth Bar		Ruck-a-Chucky to Mammoth Bar	Confluence to Oregon Bar **
600 cfs	Tuesday, September 16, 2008	Otter Creek	Mammoth Bar	Oxbow Powerhouse to Ruck-a-Chucky *		
600 cfs	Wednesday, September 17, 2008	Otter Creek	Mammoth Bar		Ruck-a-Chucky to Mammoth Bar	Confluence to Oregon Bar
200 cfs +/-	Saturday, September 27, 2008					Confluence to Oregon Bar **

* Flow study contingent on 800 cfs flow study findings. If the 800 cfs flow study on the Oxbow Powerhouse to Ruck-a-Chucky reach determines that 600 cfs is below an acceptable flow, the 600 cfs flow study for this reach will not be conducted.

** Findings of 366 cfs flow study will be reported to the TWG and either **Option A** or **Option B** will be implemented

Option A Counduct Flow Studies at:
600 cfs
800 cfs
1000 cfs

Option B Counduct Flow Studies at:
200 cfs +/-
600 cfs
1000 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: _____

Name: _____

*Address: _____

City: _____

State: _____ Zip Code: _____

*Phone Number: _____

*Email Address: _____

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☐	_____
Closed deck canoe	☐	☐	☐	☐	☐	☐	_____
Raft	☐	☐	☐	☐	☐	☐	_____
Open canoe	☐	☐	☐	☐	☐	☐	_____
Cataraft	☐	☐	☐	☐	☐	☐	_____
Inflatable kayak	☐	☐	☐	☐	☐	☐	_____
Other (specify):	☐	☐	☐	☐	☐	☐	_____
Other (specify):	☐	☐	☐	☐	☐	☐	_____

3. About how many days do you participate in whitewater boating activities annually? _____

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☐ No

If yes, please explain list certification: _____

_____

_____

_____

PLACER COUNTY WATER AGENCY

MIDDLE FORK AMERICAN RIVER PROJECT RELICENSING
WHITEWATER EVALUATION STUDY

ASSUMPTION OF RISK AND GENERAL RELEASE OF LIABILITY

1. I, _____, recognize that the whitewater evaluation study conducted by Placer County Water Agency, in which I am about to participate, is a rigorous activity that may be physically and mentally stressful and may aggravate existing physical or mental conditions or cause new ones. I recognize that whitewater activities, such as boating, rafting, kayaking, and swimming, in which I am going to participate, are dangerous and may include damage to personal property, serious physical injury, or death arising from a variety of hazards and unavoidable risks, including, but not limited to, rocks, trees, powerful waves, waterfalls, hydraulics, ejection from a water craft, and other hazards, and difficulty or improbability of rescue. I acknowledge that the hazards associated with whitewater activities may be compounded. I also understand that significant variations in river flow may alter the natural character of the river, and that access to the study sections of this river will include transportation along narrow roadways which may involve other potential hazards.

2. As a participant in this whitewater evaluation study, I recognize:

    a. that my participation is voluntary and I may discontinue participation at any time of my choosing;

    b. that I am a joint venturer with the other trip participants;

    c. that I am personally responsible for determining whether I have the skill and expertise to safely navigate the river segments in this study, which may include class IV, V and V+ rapids;

    d. that I am solely responsible for selecting equipment suitable for use during the whitewater evaluation study;

    e. that no other person or entity associated with this whitewater evaluation study has any obligation to attempt to rescue or assist me and that any attempted rescue or assistance may exacerbate my condition and cause injury or death; and

    f. that I have no obligation to attempt to rescue or assist any other person, and that any such attempt on my part may result in injury or death to myself or the other person.

3. I understand and expressly assume all the dangers and risks incident to the whitewater evaluation study and release all claims including, but not limited to, property damage, personal injury or death, whether caused by negligence, breach of contract or otherwise, which I may have against Placer County Water Agency and its affiliates, officers, directors, employees, agents, assigns or successors or any other company, organization, person or entity that may be involved in facilitating this whitewater evaluation study.

4. I represent that:

    a. I am 18 years of age or older;

    b. I am signing this release and waiver voluntarily;

    c. I have no physical or emotional problems, nor any history thereof, which will impair my ability to participate in the activities of the proposed whitewater evaluation study.

5. I recognize that neither Placer County Water Agency nor anyone else involved with this study is providing liability, health, or other insurance in connection with this whitewater evaluation study. I agree to assume all financial responsibility for any medical, rescue or other expenses that I may incur.

6. I assume full responsibility for, and agree to defend, hold harmless and indemnify Placer County Water Agency, its affiliates, its officers, directors, employees, agents, successors and assigns against, any claims, losses or judgments that may arise from any damage or injury either to me or my personal property or that I may cause to others or their personal property while participating in this whitewater evaluation study.

7. This waiver shall be binding upon me, my heirs, executors and administrators.

Dated: _____ _____

(Print) (Print name)

_____

Signature

Address:

_____

_____

Whitewater Boating Flow Studies Reminder

"PCWA MFP Relicensing" <Relicensing@pcwa.net>
09/03/2008 08:49 AM

To "Andy Fecko" <afecko@pcwa.net>, "Antonio Rossmann" <ar@landwater.com>, "Ben Ransom" <bransom@pcwa.net>, "Beth A Paulson" <bapaulson@fs.fed.us>, "Beth Lawson"
cc "Ben Rualo" <ben_ffnc@yahoo.com>, "Bill Carnazzo" <bcarnazzo@ftcnet.net>, "Bill Deitchman" <bdeit@parks.ca.gov>, "Brad Cavallo"
bcc

Subject PCWA/MFP - Whitewater Boating Flow Studies Reminder

Dear Stakeholder –

Attached is a reminder notice regarding the upcoming whitewater boating flow studies. Please RSVP no later than September 5 for logistical purposes.

PLEASE NOTE: Study participants are reminded they are responsible for providing their own watercraft and safety gear.

If you have any questions or need additional information, please don't hesitate to call me at (530) 823-4973.

Thank you,
Beverly Bell
Administrative Aide

PCWA 090208 Flow Notice.doc

Placer County Water Agency
Middle Fork American River Project
Whitewater Boating Flow Studies
September 3, 2008

This is a reminder notice for the scheduled white water boating flow studies. Flow studies are schedule for September 9, 10, 16, and 17. The study reaches and flows are as follows:

September 9: Oxbow Powerhouse to Ruck-a-Chucky Day Use Area - **800 cfs**

September 10: Ruck-a-Chucky Day Use Area to Mammoth Bar Day Use Area - **800 cfs**

Confluence of North and Middle Fork American River to China Bar/Oregon Bar Day Use Area - **800 cfs**

September 16: Oxbow Powerhouse to Ruck-a-Chucky Day Use Area - **600 cfs**

September 17: Ruck-a-Chucky Day Use Area to Mammoth Bar Day Use Area - **600 cfs**

Confluence of North and Middle forks American River to China Bar/Oregon Bar Day Use Area - **600 cfs**

Note: If the study team determines that 800 cfs is the minimum acceptable flow for a specific reach, the 600 cfs flow studies may not be conducted in that reach.

For all flow studies, the study team will meet at 8:00 am at the turn-out on the north side of Foresthill Road just east of Drivers Flat Road. A shuttle vehicle will be provided for gear and study team members. Transportation will be provided to and from the put-in and take-out. Lunch will also be provided to all study team members.

If you intend to participate in any of the flow studies please confirm your participation with Beverly Bell via email at bbell@pcwa.net or by phone 530-823-4973 by Friday, September 5, 2008. Your confirmation of participation is needed to ensure adequate transportation capacity and food.

"PCWA MFP Relicensing"
<Relicensing@pcwa.net>
09/24/2008 03:51 PM

To "Bill Center" <bclotus@innercite.com>, "Bill Deitchman" <bdeit@parks.ca.gov>, "Bryant Burkhardt" <Bryant@calkayak.com>, "Charlie Center"
cc "Bill Center" <bclotus@innercite.com>, "Brian Obrien" <brian.obrien@sbcglobal.net>, "Bryant Burkhardt" <bryant@calkayak.com>, "Charlier Center"
bcc

Subject PCWA/MFP - CANCELLED September 27 Flow Study

Dear Whitewater Boating Study Participant:

PCWA had originally planned on conducting a boating study on the North Fork of the American River from the Confluence to Oregon Bar at a flow of 200 cfs on September 27, 2008. During a meeting held on September 22, 2008, the Recreation Technical Working Group participants agreed that a study at this flow is not necessary, based on the results of the earlier flow studies. As such, the 200 cfs flow study will not be conducted.

We are currently compiling and analyzing the data and information that was collected during the flow studies, and will prepare a report documenting the study methods and results. The draft report is due to be distributed to the stakeholders for review by the end of February 2009.

Thank you again for your participation in the boating flow studies.

Sincerely,
Beverly Bell
Administrative Aide
(530) 823-4973

Whitewater Boating Flow Studies Blank Forms

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: _____

Name: _____

*Address: _____

City: _____

State: _____ Zip Code: _____

*Phone Number: _____

*Email Address: _____

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☐	_____
Closed deck canoe	☐	☐	☐	☐	☐	☐	_____
Raft	☐	☐	☐	☐	☐	☐	_____
Open canoe	☐	☐	☐	☐	☐	☐	_____
Cataraft	☐	☐	☐	☐	☐	☐	_____
Inflatable kayak	☐	☐	☐	☐	☐	☐	_____
Other (specify):	☐	☐	☐	☐	☐	☐	_____
Other (specify):	☐	☐	☐	☐	☐	☐	_____

3. About how many days do you participate in whitewater boating activities annually? _____

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☐ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name:_____ **Date:**_____

River:_____ **Reach:**_____

Put in:_____ **Take out:**_____

Put in time:_____ **Take out time:**_____

Study Flow:_____

1. What type of craft did you use for this run?

☐ Hard shell kayak	☐ Cataraft: please indicate length: _____
☐ Inflatable kayak	☐ Self-bailing raft: please indicate length: _____
☐ Closed deck canoe	☐ Wrap-floor raft: please indicate length: _____
☐ Open canoe with floatation	☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	-2
Availability of powerful hydraulics	2	1	0	-1	-2
Availability of whitewater “play areas”	2	1	0	-1	-2
Overall whitewater challenge	2	1	0	-1	-2
Safety	2	1	0	-1	-2
Length of run	2	1	0	-1	-2
Rate of travel	2	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

   a. Kayak
   b. Closed deck canoe
   c. Raft
   e. Open canoe
   f. Cataraft
   g. Inflatable kayak
   h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:

_____

_____

_____

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) _____

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

    a. Much lower flow
    b. Slightly lower flow
    c. About the same; this was close to an optimum flow
    d. Slightly higher flow
    e. Much higher flow

Please explain:

_____

_____

_____

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☐
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Study Event Log

Event Date: _____ Begin Time: _____ End Time: _____

Location

River: _____ Put in:_____

Reach: _____ Take out: _____

Weather: _____ Air Temp.: _____

Water Temp: _____

Flow (cfs): _____ Flow Determination Method:_____

Log recorded by: _____ Stream Gage #: _____

Notes: _____

Study Participants:

Name	Craft Type

Whitewater Boating Study
Post-Run Group Discussion Questions

- What are the advantages of this flow?
- What are the disadvantages of this flow?
- What would you rate the class of whitewater at this flow?
- What are the safety concerns at this flow?
- What are the special attributes of this flow?
- What are your thoughts on a lower flow?
- What are your thoughts on a higher flow?
- Do you think there is commercial potential for this run?
- What is your perception of use patterns with seasonal preference?

Whitewater Boating Flow Studies Post-Run Group Discussion Questions

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Recreation Resources
Technical Working Group Meeting

July 21, 2008
9:00 AM – 12:00 PM

American River Room
Placer County Water Agency
144 Ferguson Road
Auburn, CA 95603

AGENDA

TIME	TOPIC
9:00 AM - 9:15 AM	**Introductions**
9:15 AM – 10:30 AM	**Summary of Recreation Surveys Completed in 2008** • Overview of Number of Surveys Completed • Participant Feedback
10:30 AM – 12:00 PM	**Summary of Planned Flow Studies – Discussion of Refined Study Approaches for REC-4 Technical Study Plan** • Angling • Trail Use • Whitewater Boating
12:00 PM	**Next Steps and Adjourn**

MEETING OBJECTIVES

Discuss Ongoing Recreation Survey Efforts
Summarize Flow Study Refinements

From: "PCWA MFP Relicensing" [Relicensing@pcwa.net]
Sent: Monday, July 14, 2008 4:47 PM
To: "Andy Fecko"; "Antonio Rossmann"; "Ben Ransom"; "Beth A Paulson"; "Beth Lawson"; "Bill Deitchman"; William Spain; "Bill Templiin"; "Bonnie Petitt"; "Brett Storey"; "Bryan Tibbs"; "Damian Forsythe"; "Dan Teater"; "Dave Martinez"; "Dave Steindorf"; "Dick Maclay"; "Donna Day"; "Donna Williams"; Ed Bianchi; "Ed Moore"; Eileen Dessaso; "Gary Flanagan"; "Gene Freeland "; "Harry Shuger"; "Heath Wakelee"; "Hilde Schweitzer"; "Janet Peterson"; "Jim Micheaels"; "Julie Leimbach"; "Lester Lubetkin"; "Mal Toy"; "Marie Davis"; "Marie Rainwater"; "Marilyn Jasper "; Mary Preuss; "MaryLisa Lynch"; "Mo Tebbe"; "Nate Rangel"; "Patricia Gibbs"; "Rich Johnson "; "Roger Lee"; "Russ Kanz"; Sandra Walter-Perry; "Stafford Lehr"; "Stephen Bowes"; "Thomas Bartos"; "Thomas Wegge"; "Tom Johnson"; "Vicki Jowise "
Cc: "Ben Rualo"; "Bill Carnazzo"; "Brad Cavallo"; "Eldon Cotton"; "John Greene"
Subject: PCWA/MFP - Confirmed July 21, 2008 REC TWG Meeting

Attachments: July 21, 2008 REC TWG Agenda.doc; REC 4 Study Plan Refinements.pdf; Proposed Flow Study Schedule.pdf

Dear Recreation Resources Technical Working Group Member -

Thank you for your responses to PCWA's Recreation Resources Technical Working Group (REC TWG) meeting scheduling query. It appears that July 21, 2008 will accommodate the schedules of the widest diversity of participants. The meeting will be held in PCWA's American River Room from 9am -12pm. The agenda, along with the materials PCWA previously sent as background for the discussion, are attached:

1) Agenda
2) Update on Refinements of REC 4 TSP "Stream Based Recreational Opportunities" (See attached summary document and table)
3) Flow schedule for implementation of flow studies (See attached schedule)

If you have any questions, please don't hesitate to call me at (530) 823-4973.

Thanks,
Beverly Bell
Administrative Aide

DRAFT

Placer County Water Agency - Middle Fork American River Project
REC 4 – Stream-based Recreation Opportunities Technical Study Plan
AQ 1 - Instream Flow Technical Study Plan
Peaking Reach Flow Study Schedule

Target Flow	Date	AQ1 Location		Boating Run		
100 cfs	Saturday, July 12, 2008	Otter Creek	Mammoth Bar			
368 cfs	Sunday, July 13, 2008	Otter Creek	Mammoth Bar			
368 cfs	Saturday, July 26, 2008	Otter Creek	Mammoth Bar			Confluence to Oregon Bar
368 cfs	Sunday, July 27, 2008	Otter Creek	Mammoth Bar			
1000 cfs	Monday, July 28, 2008	Otter Creek	Mammoth Bar			
1000 cfs	Tuesday, July 29, 2008	Otter Creek	Mammoth Bar			
1000 cfs	Wednesday, July 30, 2008	Otter Creek	Mammoth Bar	Oxbow Powerhouse to Ruck-a-Chucky		
1000 cfs	Thursday, July 31, 2008	Otter Creek	Mammoth Bar		Ruck-a-Chucky to Mammoth Bar	Confluence to Oregon Bar
800 cfs	Tuesday, September 09, 2008	Otter Creek	Mammoth Bar	Oxbow Powerhouse to Ruck-a-Chucky		
800 cfs	Wednesday, September 10, 2008	Otter Creek	Mammoth Bar		Ruck-a-Chucky to Mammoth Bar	Confluence to Oregon Bar **
600 cfs	Tuesday, September 16, 2008	Otter Creek	Mammoth Bar	Oxbow Powerhouse to Ruck-a-Chucky *		
600 cfs	Wednesday, September 17, 2008	Otter Creek	Mammoth Bar		Ruck-a-Chucky to Mammoth Bar	Confluence to Oregon Bar
200 cfs +/-	Saturday, September 27, 2008					Confluence to Oregon Bar **

* Flow study contingent on 800 cfs flow study findings. If the 800 cfs flow study on the Oxbow Powerhouse to Ruck-a-Chucky reach determines that 600 cfs is below an acceptable flow, the 600 cfs flow study for this reach will not be conducted.

** Findings of 366 cfs flow study will be reported to the TWG and either **Option A** or **Option B** will be implemented

Option A Counduct Flow Studies at:
600 cfs
800 cfs
1000 cfs

Option B Counduct Flow Studies at:
200 cfs +/-
600 cfs
1000 cfs

Placer County Water Agency
Middle Fork of American River Project

July 1, 2008 Update on the REC 4 – Stream Based Opportunities Technical Study Plan Focus Group Sessions and Refined Flow Study Approaches

This report summarizes the primary flow-related findings that evolved out of three focus group sessions that Placer County Water Agency (PCWA) conducted as part of the REC 4 Stream-based Recreation Opportunities Technical Study Plan (TSP). In addition, it describes how PCWA proposes to refine the flow study approaches that were originally outlined in the REC 4 TSP based on the information developed through the focus group sessions.

Background

The REC-4 TSP focuses on developing information to characterize stream-based recreational opportunities in the bypass and peaking reaches associated with the Middle Fork American River Project (MFP or Project). Among other things, the REC-4 TSP includes study components that center on developing activity specific information about: 1) trail use at stream crossings; 3) angling; and 3) whitewater boating. The TSP indicates that Information regarding these three activities would be developed by: 1) utilizing existing information to characterize opportunities and use; 2) implementing structured group interviews (focus group sessions); and 3) conducting flow studies. The TSP was designed so that information developed through the focus groups could be used to refine the flow study objectives and target flows originally proposed in the TSP.

Focus Group Sessions

PCWA conducted three focus group sessions, as follows:

- April 23, 2008 – Whitewater Boating Focus Group
- May 12, 2008 – Trail User/Stream Crossing Focus Group
- May 20, 2008 – Angler Focus Group

Each of the focus groups was well attended by users representing a range of interests and skill levels. The focus group participants were very knowledgeable and provided useful information about trail crossing, angling and whitewater boating in the Project bypass and peaking reaches. The specific reaches that were discussed during the focus group sessions are identified on Tables 1, 2 and 3, along with summary information that was developed through the focus groups.

The information that was developed during the three focus group sessions helped PCWA define the flow related issues that are unique to each user group. This information was then used to refine the study approaches outlined in the REC 4 TSP to

more directly address the flow-related issues associated with each user group. Information developed through each of the focus group sessions is summarized below along with the refined flow study approach.

Whitewater Boating

Focus Group Summary

The whitewater boating focus group session was attended by 10 people affiliated with the following activities: private boating (3), commercial boating (4) and angling (3). Together, the focus group identified and discussed seven runs:

- 2 runs on the Rubicon River;
- 1 run on the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay;
- 3 runs on the Middle Fork American River between Oxbow Powerhouse and the Confluence; and
- 1 run on the North Fork American River between the Confluence and Oregon Bar.

None of the focus group participants had any experience on the Middle Fork American River between French Meadows Reservoir and Middle Fork Interbay, Duncan Creek, or Long Canyon Creek.

Each of the runs discussed by the focus group is briefly described in the following. Additional information is provided in Table 1.

Peaking Reach

Four runs located in the peaking reach were discussed during the focus group session. All of the focus group participants were familiar with the runs in the peaking reach, associated boating flows, and potential uses. The following is an excerpt of that discussion:

<u>Oxbow PH to Ruck-a-Chucky Run</u>

- 15 mile run
- Class IV with one portage (Ruck-a-Chucky rapid)
- Used by intermediate to advance kayakers and rafters
- Primarily used for commercial rafting
- Estimated minimum boating flow is 600 cfs; maximum flow is 3,000 cfs for rafts and kayaks
- A flow study at 368 cfs is not necessary because it is well below the estimated minimum boatable flow.

Ruck-a-Chucky to Mammoth Bar Run

- 7 mile run
- Class II+
- Used by novice rafters and kayakers. Potentially could be used for instructional boating and family rafting.
- Estimated minimum boating flow is 800 cfs; maximum flow is 1,200 cfs for kayaks, inflatable kayaks (IKs) and canoes
- Any flow is okay for more skilled boaters
- A flow study at 368 cfs is not necessary because it is well below the estimated minimum boatable flow.

Mammoth Bar to Confluence Run

- 2.3 mile run
- Class II with one portage (Murderer's Bar)
- Used by novice rafters and kayakers. Potentially could be used for instructional boating and family rafting.
- Estimated minimum boating flow is 400 cfs; maximum flow is 15,000 cfs for all watercraft
- A flow study on this reach would involve a long, difficult portage around Murderer's Bar rapid
- The boating characteristics of this run would be very similar to those of the Ruck-a-Chucky to Mammoth Bar Run

Confluence to Oregon Bar Run

- 3.5 mile run (to Birdsall Take out)
- Class II+, III-
- Used by novice rafters and kayakers. Potentially could be used for instructional boating and family rafting.
- Estimated minimum boating flow is 300 cfs; maximum flow is 15,000 cfs
- 100 cfs minimum for inner tubes and inflatable kayaks
- Flow ranges are not well known because this run was just recently opened when water was reintroduced to the channel at the old Auburn Dam site.

Rubicon River

The Rubicon River was discussed as two runs, one extending from Hell Hole Dam to Ellicott Bridge and the other extending from Ellicott Bridge to Ralston Afterbay. A couple of the focus group participants had boated these runs. The focus group participants identified several other boaters to contact for additional information and to refine the flow ranges discussed during the focus group. PCWA is in the process of contacting these boaters.

Hell Hole Dam to Ellicott Bridge

- Hike-in put-in located at RM 25
- 4 mile run from RM 25 to Ellicott Bridge
- Class V
- Typically boated when Hell Hole Reservoir spills
- Estimated minimum boating flow is 400 to 500 cfs; maximum flow is 1,200 to 1,500 cfs
- Used by expert kayakers and rafters
- Remote wilderness area
- Access is usually restricted by snow when boating flows are available

Ellicott Bridge to Ralston Afterbay

- 24 mile run
- Class V
- Typically boated when Hell Hole Reservoir spills
- Estimated minimum boating flow is 400-600 cfs; maximum boating flow is 1,200-2,000 cfs.
- Used by expert kayakers and rafters
- Remote wilderness area
- 2 day run
- Access is usually restricted by snow when boating flows are available

Middle Fork American River between French Meadows Reservoir and Ralston Afterbay

The Middle Fork American River between French Meadows Reservoir and Ralston Afterbay was discussed as two runs, one extending from French Meadows Dam to Middle Fork Interbay and the other extending from Middle Fork Interbay to Ralston Afterbay. None of the focus group participants had experience boating on the Middle Fork American River between French Meadows Dam and Middle Fork Interbay. One focus group participant had boated the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay. The focus group identified other boaters who may have additional information and PCWA is in the process of contacting these boaters.

Middle Fork American River between Middle Fork Interbay and Ralston Afterbay

- 9 mile run
- Class IV-V for kayaks (5-6 class V drops)
- Class V for small rafts (13-14 foot max)
- 2 day run with rafts, 1 day run with kayaks
- Estimated minimum boating flow is 300-400 cfs; maximum boating flow is 800 cfs for both kayaks and rafts
- Remote
- Many technical portages

Duncan Creek and Long Canyon Creek

None of the focus group participants had experience boating on Duncan Creek. As such, it was not discussed during the focus group. In addition, none of the focus group participants had boated on Long Canyon Creek. One participant had looked at Long Canyon Creek but didn't think it was a desirable boating reach because it is too steep and narrow.

Refined Flow Study Approach

The REC – 4 TSP indicated that PCWA would conduct whitewater boating studies on four runs in the peaking reach, under a range of flow conditions, up to a maximum of 1,000 cfs, the flow capacity of the Oxbow Powerhouse. In addition, the REC 4 TSP indicates that PCWA would determine the need for flow studies in the bypass reaches based on information developed through the focus group and other sources.

PCWA proposes to conduct the flow studies in the peaking reach as outlined in the REC 4 TSP, with some minor refinements based on the focus group feedback. PCWA is continuing to develop information about the potential whitewater boating opportunities in the bypass reaches for future discussions with the Recreation Technical Working Group (TWG).

Peaking Reach

Based on the information developed through the focus group session, PCWA proposes to conduct boating flow studies on three of the four runs in the peaking reach at the following target flows:

Run	Target Flows (cfs)
Oxbow to Ruck-a-Chucky	1000, 800, and 600
Ruck-a-Chucky to Mammoth Bar	1000, 800, and 600
Confluence to Oregon Bar	368, 600 and 1000 plus either 200 or 800 depending upon the results of the 368 flow study

A flow study is not proposed on the Mammoth Bar to Confluence run because it is a short run and involves a difficult portage around Murderer's Bar Rapid. In addition, the flow characteristics in this reach would be similar to those on the Ruck-a-Chucky to Mammoth Bar Run.

Studies at a target flow of 368 cfs are not proposed on either the Oxbow to Ruck-a-Chucky or Ruck-a-Chucky to Mammoth Bar runs because this flow is well below the known boatable flow range for these runs.

Rubicon River

PCWA is continuing to interview boaters to refine the boatable flow ranges expressed by the focus group participants. The expressed flow ranges can then be used in conjunction with hydrologic data to determine how Project operations do or do not affect boating opportunities on the Rubicon River.

At this time, controlled flow studies on the Rubicon River do not appear feasible for the following reasons:

- Releasing flows in the boating range from the current outlet structure at the base of Hell Hole Dam would flood and damage the adjacent powerhouse and surrounding area.
- It requires 2-3 days to boat to Ralston Afterbay from Mile 25 or Ellicott Bridge, respectively, thereby creating a significant logistical constraint for PCWA to provide such releases.
- The Rubicon River is extremely remote and potentially dangerous, thereby creating a liability concern for PCWA.

Flow studies conducted on spill events do not appear to be feasible for the latter two reasons cited above and for the following reasons:

- Spill events typically occur when the road to the put-ins (RM 25 and Ellicott Bridge) are impassible due to snow.
- During wet water years, tributaries contribute significant volumes of water to the Rubicon River making it difficult to estimate flow in the Rubicon at any one point. The focus group indicated flow in the Rubicon can increase 3 times between Ellicott Bridge and Ralston Afterbay due to accretion from tributaries during wet years.

Middle Fork American River between French Meadows Reservoir and Ralston Afterbay

PCWA is continuing to interview boaters identified by the focus group to obtain additional information about these reaches, including boatable flow ranges, if available. The expressed flow ranges can then be used in conjunction with hydrologic data to determine how Project operations do or do not affect boating opportunities on either of these reaches. Otherwise, PCWA does not propose to conduct boating flow studies on these reaches.

Duncan Creek and Long Canyon Creek

PCWA is continuing to interview boaters identified by the focus group to determine whether either of these streams have been boated and associated boating flows. The expressed flow range, if available, can then be used in conjunction with hydrologic data to determine how Project operations do or do not affect boating opportunities on either of these streams. Otherwise, PCWA does not propose to conduct boating flow studies on these streams.

Flow Study Schedule

Flow studies are currently being planned based on the results of the focus group sessions, and will be conducted in late July, early August, and September of 2008. A final flow schedule will be provided to the TWG in early July.

Trail User /Stream Crossing

Focus Group Summary

The focus group was attended by 13 people affiliated with the following activities: horseback riding (7), mountain biking (3) and hiking/running (3). Together, the focus group identified and discussed eight potential stream crossings: one on the Rubicon River, four on the Middle Fork American River between Oxbow Powerhouse and the Confluence, and three on the North Fork American River between the Confluence and Oregon Bar. No stream crossings were discussed on the Middle Fork American River between French Meadows Reservoir and Ralston Afterbay, on Duncan Creek, or on Long Canyon Creek. Each of the crossing discussed by the focus group is briefly described in the following. Additional information is provided in Table 2.

Rubicon River

Nevada Point Trail Crossing

- Located on the Rubicon River, about 5 miles upstream of the confluence of the Rubicon River and Long Canyon Creek
- Formerly a foot bridge that was washed out by high flow
- Bridge was located along the Nevada Point trail, which connects Nevada Point Road on the northeast side of the river to Road 13N66 on the southwest side of the river.
- Project flows reduce flows making it easier to cross the river at this location.

Middle Fork American River – Oxbow Powerhouse to Confluence

Ford's Bar

- Located at RM 14 on the Middle Fork American River, at the mouth of Otter Creek
- Formerly used as an equestrian crossing
- No longer regularly used by equestrians due to changes in stream morphology
- Connects the Roanoke Trail on the south side of the river to a private, gated road on the north side of the river.

Ruck-a-Chucky

- Located at RM 9 on the Middle Fork American River
- Site of the old Greenwood Bridge
- Connects Drivers Flat Road (also the Western States Trail in this location) on the north side of the river to Sliger Mine Road on the south side of the river

- Crossing for Western States 100 Endurance Run (WS 100)
- Sometimes used by bikers
- Not currently used by equestrians due to boulders, rocky substrate, and deep center channel.
- PG&E and PCWA consult with the commercial boaters and WS 100 event coordinators every year regarding race logistics and flows.
- Target flow during the WS 100 is 125 cfs (knee high).
- Crossing during the WS 100 is not possible between flow of 350 cfs and 800 cfs because it is too high to wade and too low to boat.
- Boat crossing can be done at flows ranging from 800-3,500 cfs.

Poverty Bar

- Located at RM 6.5 on the Middle Fork American River
- Connects the American River Trail on the south side of the river and the Western States and Butcher Ranch Road Trails on the north side of the river
- Crossing for the Tevis Cup Endurance Ride
- Not used for the WS 100 Endurance Run
- Not used by bikers because mountain biking on the trails in this area is prohibited
- PG&E/PCWA reduces flows for the Tevis Cup every year. During 2007, flow from Oxbow PH was reduced to a maximum of 250 cfs for a 12 hour period.
- Maximum depth for horse safety is 3 feet.
- Maximum flow for the average rider is 250 cfs (on horses chest).
- Less experienced riders need lower flows to cross.
- Maximum depth for hikers/runners to cross at this location is 18 inches (knee high)

Mammoth Bar

- Located at RM3 on the Middle Fork American River
- Connects the Mammoth Bar OHV area trails on the north side of the river and the Quarry Road Trail on the south side of the river
- Formerly used by horseback riders as a crossing but no longer regularly used due to the presence of OHV area
- Bikers can use this crossing but it is not heavily used because bikers do not want to use the Quarry Trail
- Potential alternative crossing during the Tevis Cup endurance ride
- Maximum depth for horses to cross at this location is 18-30 inches.
- Difficult to carry a bike across when water depth is over 2 feet.

North Fork American River - Confluence to Oregon Bar

No Hands Bridge

- Located on the North Fork American River, just downstream of its confluence with the Middle Fork American River
- Existing Historic bridge, as such flow is not an issue

- Bridge is located on the Western States Trail

Coffer Dam

- Located on the North Fork American River, adjacent to the site of the old Auburn Coffer Dam
- Located along the Auburn to Cool Trail
- Previously used as a crossing when the river was routed through the Coffer Dam tunnel
- This crossing can no longer be used now that the tunnel has been closed and the water has been rerouted back into the river channel
- The river banks were graded and armored with rip rap so the banks are now too steep for horses
- A crossable channel may be present at very low flows.

Oregon Bar Trail Crossing

- Located at RM 15.5 on the North Fork of the American River
- Connects the Pioneer Trail on the north side of the river an unnamed trail on the south side of the river, which connects to the Olmstead Loop
- Used by horseback riders year-round when flow is low enough
- Hikers and runners don't use this crossing
- Mountain biking is prohibited in this area
- Maximum depth for horses to cross at this location is 18 inches. Can be deeper if velocity is lower.

Refined Flow Study Approach

The REC 4 TSP indicates that PCWA would assemble a group of stream crossing users to assess stream crossing conditions over a range of flows at specific locations in the peaking reach. The REC 4 TSP did not identify crossing studies on any of the bypass reaches.

Based on the information developed during the focus group session, PCWA proposes to develop stage/discharge relationships at each of the stream crossing locations *in lieu of* assembling a group of stream crossing users to assess crossing conditions. PCWA believes this approach would yield information that more directly addresses the issues associated with stream crossing.

In general, a stage/discharge relationship shows the depth of the water and velocity across a channel cross section over a range of flows. The relationship is developed by first surveying the topography of the stream channel, perpendicular to flow. Depth and velocity measurements are then taken across the channel at specific flows. This information can then be used to "model" what depths and flow velocities would be under a range of flows at that location. The information can be displayed either graphically or in tabular format.

Stage discharge relationships would to be developed at five specific locations in the peaking reach. These locations are:

- Ford's Bar (Otter Creek)
- Ruck-a-Chucky
- Poverty Bar
- Mammoth Bar
- Oregon Bar

A stage/discharge relationship may also be developed at the Coffer Dam crossing location, pending the results of a PCWA team site visit. The focus group participants expressed that crossing may be possible at this location during low flow conditions. During the site visit, the channel morphology will be examined to determine whether it would be possible to safely enter, cross, and exit the river under low flow conditions. If it is possible, than a stage/discharge relationship would be developed at this location. The results of the site visit will be provided to the Recreation TWG for discussion.

PCWA believes this approach would yield information that more directly addresses the issues associated with stream crossing for the following reasons.

- The REC – 4 TSP indicates that the trail crossing flow studies would occur in coordination with whitewater boating and aquatics flow studies. Most of the target flows for these studies are above 350 cfs. The focus group indicated that river crossing is not possible at flows above 350 cfs. Therefore, conducting flow studies at flows above 350 cfs would not yield meaningful information. More importantly, conducting studies at flows above 350 cfs would impose unacceptable risk to the study participants and horses.

- Stream crossing is primarily dependent upon channel morphology, water depth and velocity. The development of stage/discharge relationships would allow PCWA to depict the stream morphology, water depths, and velocities at specific locations over a wide range of flows.

Flow Study Schedule

The data for the stage/discharge relationships would be collected during the aquatic flow studies, which are scheduled to occur in late July, early August, and September, 2008. A final flow schedule will be sent to the TWG in early July.

The focus group participants expressed interest in documenting crossing conditions themselves during the aquatic and whitewater flow studies. Upon approval by PG&E, the boating and aquatic flow study schedules will be provided to the stream crossing focus group participants so that they may visit the crossing locations during the specified releases to observe and document crossing conditions. PCWA encourages the group to document their observations on the forms that were developed by the

Recreation TWG. Information developed by the trail users and provided to PCWA will be incorporated into the REC 4 Technical Study Report.

Angling

Focus Group Summary

The angler focus group session was attended by eight anglers. Together, the focus group characterized fishing opportunities in the peaking reach and on the Rubicon River, Long Canyon Creek, Duncan Creek, and the Middle Fork American River from French Meadows Reservoir to Middle Fork Interbay. The focus group did not have any experience fishing on the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay. As such, this reach was not discussed.

Peaking Reach

The peaking reach was divided into two sections for discussion purposes. All of the focus group participants were knowledgeable about the fishing opportunities in the peaking reach.

Oxbow Powerhouse to Ruck-a-Chucky

- Primary access is available at Indian Bar Rafter Put-in and at Ruck-a-Chucky Day Use Area (Driver's Flat Road)
- Additional access is available via various private and public access roads and trails
- Mixture of public and private land limits access to some areas
- Long distance between public access points also limits access to some areas
- Accessible year round
- Spin, bait, and fly fishing
- Wade, boat and bank fishing
- Predominantly brown and rainbow trout, with brown trout increasing downstream of Cache Rock
- Portage around Ruck-a-Chucky rapid limits use by boat fisherman
- Fishing quality is good at high and low flows
- Fishing success declines as flow changes during ramping, and for about an hour after ramping
- Potential to be stranded on opposite side of river due to increase in flow

Ruck-a-Chucky to Oregon Bar

- Primary access is available at Ruck-a-Chucky Day Use Area (Driver's Flat Road), Mammoth Bar, Confluence area, and China Bar Day Use Area
- Access to China Bar Day Use Area is limited to weekends
- Additional access is available via various public access roads and trails

- Spin, bait, and fly fishing
- Wade, boat and bank fishing
- Predominantly brown trout
- More variety of fish compared to upstream reach
- Fewer trout compared to upstream reach but good brown trout fishing in the fall
- “Not great fishing” but proximity to town provides nearby angling opportunities
- Fishing quality is good at high and low flows
- Can fish at fairly low flows in this reach
- Fishing success declines as flow changes during ramping, and for about an hour after ramping
- Potential to be stranded on opposite side of river due to increase in flow

Rubicon River

Hell Hole Dam to Ellicott Bridge

- Accessible via Hunters Trail, Parsley Bar Trail, Deer Creek Trail, South Fork Trail, and FR 2 at Ellicott Bridge
- Some trail segments are difficult to find or are not well maintained
- Access is limited by snow during winter and early spring
- Combination bank and wade fishing
- Generally more spinning and bait fishing near Ellicott bridge
- More fly fishing farther away from access point
- Predominantly rainbow trout
- Fish size has declined in the last 10-12 years
- Good opportunity for remote camping/fishing experience
- Typical summer time flow is easy to fish
- Flows usually decrease to fishable levels by the time the area is accessible
- Flow looks the same throughout the summer

Ellicott Bridge to Ralston Afterbay

- Accessible via FR 2 at Ellicott Bridge, Slide Point Trail, Lawyer Trail, Nevada Point Trail, 13N66 and 14N25G, and FR 23 upstream of Ralston Afterbay
- Middle part of reach is inaccessible
- Access to and near Ellicott Bridge is limited by snow during winter and early spring
- The lower portion of this reach can be accessed earlier in the season due to lower elevations
- Spin and fly fishing
- Combination bank and wade fishing
- Predominantly rainbow and brown trout
- Sometimes catch big Sacramento suckers
- Generally more spinning and bait fishing near Ellicott bridge
- More fly fishing farther away from Ellicott bridge
- Fish size has declined since 1997

- Good opportunity for remote camping/fishing experience
- Typical summer time flow is easy to fish
- Flows usually decrease to fishable levels by the time the area is accessible
- Flow looks the same throughout the summer
- High spring flows can preclude ability to walk the stream bank or cross the river

Duncan Creek

- Accessible via Robinson Flat Road to FR 96, which crosses Duncan Creek downstream of Duncan Creek diversion dam.
- Also accessible from unpaved roads 96.52 and 96.54.
- Access is limited by snow during the winter and early spring
- Used mainly by fly fishers
- Good fishing for brown trout in the fall
- Similar to Rubicon River but smaller fish
- Spring fishery - Fishing success declines as flows recede and water warms
- No problem fishing or wading under typical flow conditions

Long Canyon Creek

- FR 2 and FR 22 provide paved access to confluence of North and South Fork Long Canyon
- FR 23 and 13N65 provide access to Long Canyon at Ramsey Crossing
- Trail access to Long Canyon from 13N65
- 14N25G and 13N66 provide 4WD road access to confluence of Long Canyon and Rubicon River
- Access limited by snow during the winter and early spring
- Spinning and fly fishing
- Predominantly rainbow trout
- Flow is adequate and fairly stable
- Remains fishable as flows decrease through summer

Middle Fork American River

<u>French Meadows Dam to Middle Fork Interbay</u>

- Accessible via FR 96 and FR 22 at French Meadows Dam, Middle Fork Interbay Road
- Middle part of reach is inaccessible
- Access is limited by snow during winter and early spring
- Spin and fly fishing
- Have to wet wade to fish area below French Meadows Dam
- Predominantly brown trout
- High spring flows can preclude ability to wet wade the stream
- Must fish after high flows recede

Refined Flow Study Approach

The REC – 4 TSP indicates that PCWA would assemble a group of anglers to assess fishing conditions over a range of flows at specific locations in the peaking reach and on the Rubicon River, below Ellicott Bridge.

Based on the information developed during the focus group session, PCWA proposes to address flow-related fishing issues in the peaking reach by analyzing ramping conditions in the peaking reach *in lieu of* assembling a group of anglers to assess fishing conditions. PCWA believes this approach would yield more useful information than assembling a group of anglers to assess fishing conditions, for the following reasons:

- Flow ranges for angling in the bypass and peaking reaches are already understood. The focus group participants reported that fishing quality is generally good at all flow levels in the peaking reach. In addition, flows in the Rubicon River below Ellicott Bridge are at good fishing levels when the area is accessible.

- The primary flow-related effect on fishing in the peaking reach is associated with ramping. Specifically, fishing quality and success decline during the ramping period (about 2 hours) and for about one hour after ramping.

PCWA proposes to characterize the frequency, timing and duration of ramping in various locations in the peaking reach under current Project operations. PCWA would then utilize this information to determine how current ramping scenarios affect fishing opportunities in the peaking reach. PCWA believes that this approach would more directly address angler concerns regarding the effects of ramping on fishing opportunities.

This information would be utilized in the future during discussions regarding new license conditions and proposed future operational scenarios. Specifically, the frequency, timing, and duration of ramping at various locations in the peaking reach under proposed future operating scenarios would be assessed with respect to conditions that exist under current operations.

Placer County Water Agency
Middle Fork American River Project
Summary of Information Developed through Whitewater Boating Focus Group and Flow Studies Proposed by PCWA

River	Runs	Difficulty	Potential Use	Estimate of Boatable Flow Range	Recommendation	Rationale
Rubicon River	RM 25 to Ellicott Bridge	Class V	Expert kayakers and rafters	Minimum 400 - 500 cfs Maximum 1,200 - 1,500 cfs	Utilize the estimated boatable flow ranges provided by focus group participants and other boaters to analyze project impacts.	Access is via a hike in put-in. Area is not typically accessible when boating flows are available. Remote wilderness area.
Rubicon River	Ellicott Bridge to Ralston Afterbay	Class V	Expert kayakers and rafters	Minimum 400 - 600 cfs Maximum 1,200 - 2,000 cfs	Utilize the estimated boatable flow ranges provided by focus group participants and other boaters to analyze project impacts.	Remote, 2-day wilderness run. Put-in is not typically accessible when boating flows are available. Controlled flow releases for study purposes do not appear feasible based on infrastructure constraints.
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	Class V for rafts Class IV-V for kayaks	Expert kayakers and rafters	Minimum 300 - 400 cfs Maximum 800 cfs	Utilize the estimated boatable flow ranges provided by focus group participants and other boaters to analyze project impacts.	Further discussion required regarding need for refinement of flow estimates, logistics, environmental considerations, and liability. Remote wilderness area. Numerous portages. Biological considerations. No ability to release flows in the boating range.
Middle Fork American River	Oxbow PH to Ruck-a-Chucky	Class IV with one mandatory portage	Intermediate to advanced kayakers and rafters. Popular commercial run.	Minimum 600 cfs Maximum 3,000 cfs	Controlled Flow Studies to be conducted in 2008 Target flows: 600 cfs, 800 cfs, 1000 cfs	A flow study at 368 cfs in not necessary because it is below the known minimum boatable flow.
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	Class II+	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 800 cfs Maximum 1,200 cfs	Controlled Flow Studies to be conducted in 2008 Target flows: 600 cfs, 800 cfs, 1000 cfs	A flow study at 368 cfs in not necessary because it is below the known minimum boatable flow.
Middle Fork American River	Mammoth Bar to Confluence	Class II with one mandatory portage	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 400 cfs Maximum 15,000cfs	No Flow Study	Short run. Difficult portage is required to complete run. Flow related characteristics would be similar to those on the Ruck-a-Chucky to Mammoth Bar run.
North Fork American River	Confluence to Oregon Bar	Class II+ to III-	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 300 cfs Maximum 15,000cfs	Controlled Flow Studies to be conducted in 2008 Target flows: 368, 600 and 1000 plus either 200 or 800 depending upon the results of the 368 flow study	

Placer County Water Agency
Middle Fork American River Project
Summary of Information Developed through Trail User/Stream Crossing Focus Group and Flow Studies Proposed by PCWA

River	Reach	Stream Crossing Location	User Group	Flow/Depth Information Obtained through Focus Group	Recommendation	Rationale
Rubicon River	Ellicott Bridge to Ralston Afterbay	Nevada Point Trail Crossing	Primarily used by hikers.	Formerly a bridge that was washed out by high flow.	No Flow Study	Project operations reduce flows at this location making it easier to cross
Middle Fork American River	Oxbow PH to Confluence	Ford's Bar	Formerly used as an equestrian crossing.	No longer used as a primary stream crossing due to changes in stream morphology.	No Flow Study Develop Stage/Discharge Relationship	This area is no longer a primary crossing location. However, it is still used as a crossing by some users. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Ruck-a-Chucky	Hikers/Runners. Important crossing for Western States 100 Endurance Run. Equestrians. Not currently used by equestrians due to boulders, rocky substrate, and deep center channel. Bikers. Sometimes used by bikers. Bikers would use this location more if substrate was better and flows were lower.	Hikers/Runners. PG&E and PCWA consult with the commercial boaters and race event coordinators every year regarding race logistics and flows. Target flow during WS 100 is 125 cfs (knee high). A flow of 125-350 cfs is crossable with just a cable, although it is possible to cross without a cable at flows below 200 cfs. Crossing during the WS 100 is not possible between flows of 350 - 800 cfs because it is too high to wade and too low to boat. Boat crossings can be done at flows ranging from 800-3500 cfs.	Develop Stage/Discharge Relationship	Crossing depths and flows for runners and hikers are already understood based annual coordination activities for the WS 100 Endurance Run. Consultation occurs annually because stream morphology sometimes changes resulting in different flow needs. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Poverty Bar	Equestrians. Important crossing for the Tevis Cup Endurance Ride. Hikers/Runners. Not used for the WS 100. Bikers. Not used by bikers because biking on the trails in this area is prohibited.	Equestrians. PG&E reduces flows for the Tevis Cup every year. During 2007, flows from Oxbow PH were reduced to a maximum of 250 cfs for a 12 hours period. Maximum depth for horses is 3 feet. Maximum flow for the average rider is 250 cfs (on horses chest) Ideal crossing depth for horses is 18 inches. Less experienced riders need lower flows. Hikers/runners. Maximum depth for hikers/runners is 18 inches (knee high) 250 cfs is too high a flow for hikers/runners to cross	Develop Stage/Discharge Relationship	Crossing depths are already understood based on consultation activities between PG&E and Tevis Cup organizers. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Mammoth Bar	Equestrians. Formerly used as an equestrian crossing. Bikers. Bikers can use this crossing but it is not heavily used because bikers do not want to use the Quarry Trail.	Maximum depth for horses to cross at this location is 18-30 inches. Difficult to carry a bike across the river when flow is over 2 feet.	No Flow Study Develop Stage/Discharge Relationship	This is not a desirable crossing location due to presence of OHV area. However, it is still used as a crossing by some users. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
North Fork American River	Confluence to Oregon Bar	No Hands Bridge	Equestrians. Important crossing for equestrian users. Hikers/Runners. Important crossing for hikers/runners. Bikers. Not used by bikers because biking on the trails in this area is prohibited.	Flow is not an issue at this location due to presence of bridge.	No Flow Study	Not needed due to presence of existing bridge.
North Fork American River	Confluence to Oregon Bar	Coffer Dam	Equestrians. Formerly used as crossing by equestrians when the river was routed through the coffer dam tunnel. This crossing can no longer be used by equestrians now that the tunnel has been closed and the water has been rerouted back into the river channel. The river banks were graded and armored with rip rap so the banks are now too steep for horses. Hikers/Runners. Would use a crossing at this location. Bikers. Would use a crossing at this location.	Cannot be used as a crossing due to the presence of steep, armored banks.	No Flow Study Under Condsideration pending results of field visit to assess whether a channel is present at low flows	Not a feasible crossing location at high flows. Crossing may be possible at low flows if deep channel is not present.
North Fork American River	Confluence to Oregon Bar	Oregon Bar	Equestrians. Used by equestrians year round when flow is low enough. Hikers/Runners. Don't tend to use this crossing location. Bikers. Not used by bikers because biking on the trails in this area is prohibited.	Maximum depth for horses to cross at this location is 18 inches. Can be deeper if velocity is lower. Hikers and runners don't use this location. Bikers can't use this location because they are prohibited on the trails in this area.	Develop Stage/Discharge Relationship	Crossing depth for primary user group (equestrians) is already known. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.

Placer County Water Agency
Middle Fork American River Project
Summary of Information Developed through Angler Focus Group and Proposed Flow Studies

River	Reach	Characterization (type, method, species)	Flow-Related Information	Recommendation	Rationale
Duncan Creek	Duncan Creek Diversion Dam to Middle Fork American River Confluence	Mostly fly fishing Bank fishing - float tube near inlet at French Meadow Reservoir Brown and rainbow trout - varies by year	Fishing and wading not affected by typical flows. Fishing success declines as flow decrease and water warms	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Long Canyon	North and South Fork Long Canyons and Long Canyon to Confluence with Rubicon River	Spinning and fly fishing Bank fishing and wading Predominately rainbow trout	Flows are adequate and fairly stable. Reach is fishable as flows decrease during the summer	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Rubicon River	Hell Hole Reservoir to Ellicott Bridge	Spinning, bait and fly fishing Bank fishing and wading Predominantly rainbow trout	Typical summer flows are easy to fish Flows usually decrease to fishable levels by the time the area is accessible Flow looks the same throughout the summer	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Rubicon River	Ellicott Bridge to Ralston Afterbay	Spinning and fly fishing Bank fishing and wading Predominately rainbow trout	Typical summer flows are easy to fish Flows usually decrease to fishable levels by the time the area is accessible Flow looks the same throughout the summer High stream flows can preclude the ability to walk the stream bank or cross the river	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Middle Fork American River	French Meadows Dam to Middle Fork Interbay	Spinning and fly fishing Wet wading below French Meadows Dam Predominately brown trout	High spring flows can preclude the ability to wet wade. Must fish after high flows recede.	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	No reported use by focus group.	Not "great fishing" due to lack of water. Other opportunities nearby.	No Flow Study	See flow-related information, adequate information provided by focus group participants to assess project impacts.
Middle Fork American River	Oxbow PH to Ruck-a-Chucky	Spin, bait and fly fishing Wade, boat and bank fishing Predominantly brown and rainbow trout with brown trout increasing downstream.	Fishing quality is good at high and low flows Fishing success declines as flow changes during ramping, and for about an hour after ramping. Potential for stranding due to increases in flow.	Assess Ramping Conditions	Flow related effects are primarily related to ramping. Effects of ramping will be analyzed.
Middle Fork American River/North Fork American River	Ruck-a-Chucky to Oregon Bar	Spin, bait and fly fishing Wade, boat and bank fishing Predominantly brown trout.	Fishing quality is good at high and low flows Can fish at fairly flow low flows on this reach Fishing success declines as flow changes during ramping, and for about an hour after ramping. Potential for stranding due to increases in flow.	Assess Ramping Conditions	Flow related effects are primarily related to ramping. Effects of ramping will be analyzed.

APPENDIX H

Whitewater Boating Flow Study
Completed Boater Profiles

Blank Boater Evaluation Form

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: _____

Name: _____

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☐	_____
Closed deck canoe	☐	☐	☐	☐	☐	☐	_____
Raft	☐	☐	☐	☐	☐	☐	_____
Open canoe	☐	☐	☐	☐	☐	☐	_____
Cataraft	☐	☐	☐	☐	☐	☐	_____
Inflatable kayak	☐	☐	☐	☐	☐	☐	_____
Other (specify):	☐	☐	☐	☐	☐	☐	_____
Other (specify):	☐	☐	☐	☐	☐	☐	_____

3. About how many days do you participate in whitewater boating activities annually? _____

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☐ No

If yes, please explain list certification: _____

_____

_____

_____

Completed Boater Evaluation Forms

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/31/08

Name: Jillian Auden

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

—

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☒	☐	☐	☐	1
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☒	☐	5
Open canoe	☐	☐	☒	☐	☐	☐	10
Cataraft	☐	☐	☐	☐	☒	☐	5
Inflatable kayak	☐	☐	☐	☒	☐	☐	3
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 3-4

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	1
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 5/05/08

Name: Scott Armstrong

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

- All-outdoors whitewater Rafting
- Friends of the River
- California outdoors
- American outdoors

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	25
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	30
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 40

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Middle Fork American River Project (FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	300
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	20
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☒ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: 2003 River: South Fal Amr Reach: Slab Creek

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

white water Guide and owner of All-outdoors whitewater Rafting and have worked internationally in Chile and Peru

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: CPR & 1ST AID

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9-15-08

Name: THOMAS BARTUS

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?
GRANITE BAY FLY CASTERS
TROUT UNLIMITED
HORSESHOE BAR ASH + GAME PRESERVE

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☐	☐	5
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	20+
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	5
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 2

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	5
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/16/08

Name: Brandon Bloodsaw

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	8
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☒	☐	8
Open canoe	☒	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☒	☐	8
Inflatable kayak	☐	☐	☐	☒	☐	☐	6
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 100

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	300
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	10-15
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): All-outdoors, Middle Fork Crew member 4 years, Mother Lode Guide 4 years

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: Swiftwater rescue

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/10/08

Name: Steven Boutté

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

W.E.T. River Trips

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

Craft Type	Skill Level N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	2
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	2
Open canoe	☐	☐	☒	☐	☐	☐	7
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	2
Other (specify):	☒	☐	☐	☐	☐	☐	
Other (specify):	☒	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 150

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	60
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	2
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	1
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	1

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): N. Fork M. Fork + S. Fork American River, Raft guide for WET River Trips 2007 + 2008

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: CPR + First Aid

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 8/9/08

Name: Scott Buckley

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   Tributary Whitewater Tours

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	■	☐	3
Closed deck canoe	☐	☐	■	☐	☐	☐	1
Raft	☐	☐	☐	☐	☐	■	19
Open canoe	☐	☐	■	☐	☐	☐	1
Cataraft	☐	☐	☐	☐	■	☐	3
Inflatable kayak	☐	☐	☐	☐	■	☐	9
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 140

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ■ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	20
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	20
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	50
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ■ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ■ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): Dan Buckley's son, owner of Tributary, 19 years experience

7. Do you have any certifications for whitewater boating? ☐ Yes ■ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/26/08

Name: Guy Cabler

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?
   America Outdoors, PARK, FOR.

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	20
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	30
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☑	28
Inflatable kayak	☐	☐	☐	☐	☐	☒	30
Other (specify): River Boarel	☐	☐	☐	☐	☐	☒	25
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 50

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	100+
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	50+
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	10
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	20

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): 25 ~~30~~ years experience as Mgr./owner of whitewater tour operator, Kayak instructor. Traveled Butte Co. & Nevada Co. Swiftwater teams to raft. worked as consultant for river safety on numerous ~~Rivers~~ TV and movies related to whitewater.

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: Swift Rescue/CPR, S.W.R. Tech.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/31/08

Name: Jesse Carlson

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

UNR Kayak
Reno whitewater

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	
Closed deck canoe	☐	☐	☒	☐	☐	☐	
Raft	☐	☐	☐	☒	☐	☐	
Open canoe	☐	☐	☒	☐	☐	☐	
Cataraft	☐	☒	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 50

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

chili bar!

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/9/08

Name: Jeremiah Cormier

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   Adventure Connection

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	6
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	7
Open canoe	☒	☐	☐	☐	☐	☐	
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☐	☒	☐	6
Other (specify):	☒	☐	☐	☐	☐	☐	
Other (specify):	☒	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 200

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	200
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	5
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	2
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☒ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

West Virginia 00-02 guide

California 03-08 Guide

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: _____

Wilderness first aid

Swift Water Rescue

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/26/08

Name: DAN CRANDALL

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?
   ACA, ACP, LPP

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☑	19
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☑	☐	15
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☐	☑	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 50+

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☑ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	2
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	25+
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	2
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	2

5. Have you participated in a Flow Study in the past?

☑ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: 01? River: Mokelumne Reach: Tiger & below

Study 2 Year: _____ River: S. Fork Reach: C. Bar & below

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☑ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): ACA Instructor Trainer, Instructor, Own & operate kayak school (19 years) - leading, guiding International & domestic trips - Costa Rica, N. Zealand, Brazil, Scotland, Chile, Panama, Rogue River, Grand Canyon, etc.

7. Do you have any certifications for whitewater boating? ☑ Yes ☐ No

If yes, please explain list certification: ACA Instructor Trainer (whitewater)

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9-9-08

Name: Nicole L. Doyle

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

MARIAH WILDERNESS EXPEDITIONS

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	24
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☒	☐	24
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 120

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	500
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	11
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

- MANAGER MARIAM W.E.
- GUIDED 19 SEASONS FOR THEM
- FOUR RIVER SEASONS IN AUSTRALIA PRIOR

30
49
270
300

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: _____

- SWIFTWATER RESCUE TECH I & II
- CANOE/KAYAK INSTRUCTOR AUSTRALIAN CANOE FEDERATION (ACF

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: July 26, 2008

Name: David Garcia

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong? I work for the whitewater recreation office of the California State Park

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☒	☐	☐	☐	4
Closed deck canoe	☐	☐	☒	☐	☐	☐	2
Raft	☐	☐	☐	☒	☒	☐	3
Open canoe	☐	☐	☒	☐	☐	☐	5
Cataraft	☐	☐	☐	☒	☐	☐	3
Inflatable kayak	☐	☐	☐	☒	☐	☐	3
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 50

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	100
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	7
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	50
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	6

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): I have been working w/ Bill Dietchman and the Whitewater Rec. office for 4 years

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7.25.08

Name: PATRICIA GIBBS

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

None

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☒	☐	☐	☐	☐	☐	
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☒	☐	☐	☐	☐	☐	
Open canoe	☒	☐	☐	☐	☐	☐	
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☒	☐	☐	☐	☐	½ day training run on South Fork American R
Other (specify): InnerTube	☐	☒	☐	☐	☐	☐	≈1.5 hr on North Fork American R.
Other (specify):	☒	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 1 ?

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/9/09

Name: Ruby

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   AWE

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☑	☐	13
Closed deck canoe	☒	☐	☐	☐	☐	☐	–
Raft	☐	☐	☐	☐	☐	☑	9
Open canoe	☒	☐	☐	☐	☐	☐	–
Cataraft	☐	☐	☐	☐	☑	☐	3
Inflatable kayak	☐	☐	☐	☑	☐	☐	16
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 300

   3a. Are these typically single or multi-day trips?

   ☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	500
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	—
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	—
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	—

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☑ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

company/ Manager, Senior guide, instructor
Guide Grade 4-5 Chile, NZ, Canad, USa

7. Do you have any certifications for whitewater boating? ☑ Yes ☐ No

If yes, please explain list certification: NZ Senior grade 4-5
PHEC, St Johns First Aid, Dip. applied Rec,
Swiftwater Rescue, SFrito, NZioa, NZRA,

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/10/08

Name: Jeffrey Hartley

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☒	4
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	4
Open canoe	☐	☐	☐	☒	☐	☐	3
Cataraft	☐	☐	☐	☐	☒	☐	2
Inflatable kayak	☐	☐	☐	☐	☐	☒	6
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 200

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	~~100~~ 75
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	2
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

Commercial Raft Guide Wet River Trips 2006 to present

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/12/08

Name: JOHN HAUSCHILD

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   GFS

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☐	☐	15
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	15
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	15
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? ≤20

   3a. Are these typically single or multi-day trips?

   ☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	5
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	50
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	5
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	15

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☑ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☑ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/31/08

Name: Joshua Hill

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?
   - American Whitewater
   - Adventure Connection

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☑	20
Closed deck canoe	☐	☐	☐	☐	☐	☑	N/A
Raft	☐	☐	☐	☐	☐	☑	12
Open canoe	☐	☐	☐	☐	☑	☐	20
Cataraft	☐	☐	☐	☐	☐	☐	N/A
Inflatable kayak	☐	☐	☐	☐	☑	☐	20
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 180

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☑ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	200
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	1
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☑ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

1996 Nantahala N.C 1997 Ocoee TN 2000 - 2003 Upper Gauley W.V

2004 - 2008 American forks, Kaweah CA Guide / Trip leader

7. Do you have any certifications for whitewater boating? ☐ Yes ☑ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/9/08

Name: Chafic Khalil

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

American Whitewater Expeditions

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☒	☐	☐	☐	☐	☐	
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☐	
Open canoe	☒	☐	☐	☐	☐	☐	
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 90+

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	12
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	12

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): '08 Guide for AWE and SF and MF

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/10/03

Name: ERIC LEISHMAN

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   NONE

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☒	☐	☐	☐	☐	____
Closed deck canoe	☐	☐	☐	☐	☐	☐	____
Raft	☐	☐	☐	☐	☐	☐	____
Open canoe	☐	☐	☐	☐	☐	☐	____
Cataraft	☐	☐	☐	☐	☐	☐	____
Inflatable kayak	☐	☐	☐	☐	☐	☐	____
Other (specify):	☐	☐	☐	☐	☐	☐	____
Other (specify):	☐	☐	☐	☐	☐	☐	____

3. About how many days do you participate in whitewater boating activities annually? 2

   3a. Are these typically single or multi-day trips?

   ☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☑ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☑ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: Sept 9/09

Name: David Lewis

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

WWC

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☐	☐	6
Closed deck canoe	☐	☐	☐	☒	☐	☐	2
Raft	☐	☐	☐	☐	☐	☒	12
Open canoe	☐	☐	☒	☒	☐	☐	3
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 100

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	450
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	3
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): 25 seasons CANADA, COSTA RICA, NZ, CA, CO, WVa, Aus.

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: SRT IV NZRA Executive Committee SRT IV Assessor

Placer County Water Agency

Middle Fork American River Project (FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/9/8

Name: Stephen Liles

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

W.E.T. River trips
RMAC - EDC
OAC - MFA/NFA Adv.

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☒	☐	☐	☐	30
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	31
Open canoe	☐	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☒	20
Inflatable kayak	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 50+

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	30 ish
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	1
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	6

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): '03 - '08
~~AWE~~ AWE - Colorado, CA on A.R. (junior guide - 3yrs, Senior guide - 2yrs)
Family Adventures - Queenstown, New Zealand on Shotover (T.L./guide - 2yrs '06'07)

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: SRT, CPR, First Aide

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: July 23, 2008

Name: Lester Lubetkin

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

None

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☐	
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☐	
Open canoe	☐	☒	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☒	☐	☐	☐	28
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 1-2

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	3
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/26/08

Name: DAVID MARTINEZ

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☑	☐	30
Closed deck canoe	☐	☐	☑	☐	☐	☐	30
Raft	☐	☐	☐	☐	☑	☐	30
Open canoe	☐	☐	☑	☐	☐	☐	30
Cataraft	☐	☐	☐	☐	☑	☐	30
Inflatable kayak	☐	☐	☐	☐	☑	☐	10
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 20

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	5
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	1
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☒ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): Guide / CA Forty Kayaker / Flow Evaluation

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: Sw. Pt water Rescue

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: Sept 9/08

Name: Erin Moore-Dempsey

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Middle Fork American River Project (FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

AWE

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☒	☒	☐	☐	☐	☐	
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	6
Open canoe	☐	☒	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☒	6
Inflatable kayak	☐	☐	☐	☒	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 250

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Middle Fork American River Project (FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	100+
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	✓
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	✓

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: SRT, raft certs in Canada & NZ

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/16/08

Name: Glenn Munshower

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☑	☐	☐	☐	☐	☐	
Closed deck canoe	☑	☐	☐	☐	☐	☐	
Raft	☐	☑	☐	☐	☐	☐	3
Open canoe	☐	☑	☐	☐	☐	☐	3
Cataraft	☑	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☑	☐	☐	☐	☐	1
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 5

3a. Are these typically single or multi-day trips?

☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☑ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☑ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7-31-08

Name: Clint Norrell

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong? Ø

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☒	☐	☐	☐	____
Closed deck canoe	☐	☐	☐	☐	☐	☐	____
Raft	☐	☐	☐	☐	☐	☐	____
Open canoe	☐	☐	☐	☐	☐	☐	____
Cataraft	☐	☐	☐	☐	☐	☐	____
Inflatable kayak	☐	☐	☐	☒	☐	☐	____
Other (specify):	☐	☐	☐	☐	☐	☐	____
Other (specify):	☐	☐	☐	☐	☐	☐	____

3. About how many days do you participate in whitewater boating activities annually? 5-20

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	1 (RAFT)
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	50
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	∅
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	∅

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7-31-08

Name: Kathy Norrell

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   None

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☑	☐	☐	☐	3
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☐	
Open canoe	☐	☑	☐	☐	☐	☐	sporse
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☑	☐	☐	☐	3
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 6

   3a. Are these typically single or multi-day trips?

   ☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	10
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☑ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☑ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/9/8

Name: JUSTIN ORBAN

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

AWA,

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☐	☐	6
Closed deck canoe	☐	☐	☐	☒	☐	☐	5
Raft	☐	☐	☐	☐	☐	☒	100
Open canoe	☐	☐	☐	☒	☐	☐	5
Cataraft	☐	☐	☐	☐	☐	☒	8
Inflatable kayak	☐	☐	☐	☒	☐	☐	5
Other (specify):	☒	☐	☐	☐	☐	☐	
Other (specify):	☒	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 100

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	400
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	5
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	5
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	1

5. Have you participated in a Flow Study in the past?

☒ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): 8TH YEAR, WET RIVER TRIPS, SAC, CA, HEAD GUIDE

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: SWIFT WATER RESCUE

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7/31/08

Name: Howard Penn

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   American Whitewater

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☒	20
Closed deck canoe	☐	☐	☐	☐	☒	☐	10
Raft	☐	☐	☐	☐	☐	☒	20
Open canoe	☐	☐	☐	☒	☐	☐	8
Cataraft	☐	☐	☐	☐	☐	☒	20
Inflatable kayak	☐	☐	☐	☐	☒	☐	8
Other (specify): Paddle raft	☐	☐	☐	☐	☐	☒	15
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 25-35

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	40+
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	1
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	2
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☒ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: N. Fork Feather Reach: Tobin, Rock Creek, Cresta

Study 2 Year: _____ River: Upper Sac Reach: Box Canyon

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

Commercial Guide, 1985-1998, East Coast, West Coast (CA, OR, WA)
International - Africa, South America, Canada, Central America, Asia, etc.

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: SW Rescue Tech III

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7-26-08

Name: SANDRA PERRY

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

NONE

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☒	☒	☐	☐	10 off and on (more off than on)
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☒	☒	☐	☐	10 " "
Open canoe	☐	☐	☒	☐	☐	☐	8
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☒	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? ~~150~~ ~~same~~ 20 days

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	1
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	5
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	2

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☒ Yes ☐ No

If yes, please explain list certification: Swiftwater rescue

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/17/2008

Name: Dominic Pugliese

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

None

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☐	☐	2
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☒	☐	6
Open canoe	☒	☐	☐	☐	☐	☐	
Cataraft	☒	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☒	☐	☐	2
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 30

3a. Are these typically single or multi-day trips?

☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	0
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	0
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): 2004 Clark Fork - Alberton Gorge MT guide for 5 trips
Summer Youth Program - Spokane Tribe of Indians

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/9/08

Name: Frank Root

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	3
Closed deck canoe	☒	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☐	☐	☒	20
Open canoe	☒	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☐	☒	5
Inflatable kayak	☐	☐	☐	☐	☐	☒	20
Other (specify): Swim	☐	☐	☐	☐	☐	☐	34
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 120

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	8+ seasons
Middle Fork American River	Ruck-a-Chucky to ~~Mammoth Bar~~ Drivers Flat	8+ seasons
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

Kaweah Whitewater Adventures (Owner 15 yrs)
Tributary Whitewater Tours (8 yrs employee)

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

Helitack S&R, Recovery, 9-summer seasons w Sequoia Natl Park Service. Swift water Rescue

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/16/08

Name: David Stratton

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☒	☐	10
Closed deck canoe	☐	☐	☒	☐	☐	☐	2
Raft	☐	☐	☐	☐	☐	☒	6
Open canoe	☐	☐	☒	☐	☐	☐	2
Cataraft	☐	☐	☐	☐	☐	☒	5
Inflatable kayak	☐	☐	☒	☐	☐	☐	6
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 70-80

3a. Are these typically single or multi-day trips?

☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	300 +
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	12
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): _____

All Outdoors Whitewater Guide 7/03 - 9/08 (6 years)

MF Manager for summer 2007

Class V guide ~~on~~, all forks of American, Tuolomne, Kaweah, Merced, Stanislaus

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: JULY 26, 2008

Name: LAIRD B. THOMPSON

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   -none-

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☐	☐	10
Closed deck canoe	☐	☐	☐	☒	☐	☐	25
Raft	☐	☐	☐	☐	☐	☒	10
Open canoe	☐	☐	☒	☐	☐	☐	40
Cataraft	☐	☐	☒	☐	☐	☐	5
Inflatable kayak	☐	☐	☐	☐	☒	☐	10
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 20

   3a. Are these typically single or multi-day trips?

   ☒ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	10
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	100
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	5
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	5

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/16/08

Name: Robt. Townsend

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   Horseshoe Bar

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☒	☒	☐	5
Closed deck canoe	☐	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☒	☒	☐	10
Open canoe	☐	☐	☐	☒	☐	☐	10
Cataraft	☐	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☐	☐	☐	☒	☐	2
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 2-4

   3a. Are these typically single or multi-day trips?

   ☐ Single ☐ Multi-day ☒ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	9
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/4/09

Name: Sedale Turbovsky

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

   RRA

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☑	☐	☐	☐	☑	☐	
Closed deck canoe	☑	☐	☐	☐	☐	☐	
Raft	☐	☐	☐	☑	☐	☐	3
Open canoe	☑	☐	☐	☐	☐	☐	
Cataraft	☐	☐	☐	☐	☑	☐	2
Inflatable kayak	☐	☐	☐	☐	☑	☐	6
Other (specify):	☑	☐	☐	☐	☐	☐	
Other (specify):	☑	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? _____

   3a. Are these typically single or multi-day trips?

   ☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	6
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	10
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	0
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	0

5. Have you participated in a Flow Study in the past?

☐ Yes ☑ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☑ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): South Fork Manager

7. Do you have any certifications for whitewater boating? ☑ Yes ☐ No

If yes, please explain list certification: _____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 7-26-08

Name: Tom Van Noord

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?

NONE

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☑	☐	☐	☐	☐	2
Closed deck canoe	☑	☐	☐	☐	☐	☐	
Raft	☐	☑	☐	☐	☐	☐	
Open canoe	☐	☑	☐	☐	☐	☐	
Cataraft	☑	☐	☐	☐	☐	☐	
Inflatable kayak	☐	☑	☐	☐	☐	☐	
Other (specify):	☑	☐	☐	☐	☐	☐	
Other (specify):	☑	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 3

3a. Are these typically single or multi-day trips?

☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	1
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	

5. Have you participated in a Flow Study in the past?

☐ Yes ☒ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: _____ River: _____ Reach: _____

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☐ Yes ☒ No

If yes, please explain your experience (year, location, position held, etc.): _____

_____

_____

_____

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: _____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

Background Information (Confidential*)

Date: 9/10/08

Name: Alex Wolfgram

***Confidentiality Statement**

Background and contact information (name, address, e-mail, etc.) is considered confidential and will not be disclosed to any parties as a result of this study.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

1. To which whitewater organizations, groups, or clubs do you belong?
   American White water

2. Please identify your skill level for the following craft types by checking the appropriate box for the International Whitewater Scale difficulty level that you are qualified to boat in each craft type. Check the box under N/A if you are not experience with a craft type listed. Give your years of experience in the last column.

	Skill Level						
Craft Type	N/A	I	II	III	IV	V	Years of Experience
Kayak	☐	☐	☐	☐	☐	☑	7
Closed deck canoe	☐	☐	☐	☐	☐	☐	0
Raft	☐	☐	☐	☐	☐	☑	5
Open canoe	☐	☐	☐	☑	☐	☐	10
Cataraft	☐	☐	☐	☐	☐	☐	0
Inflatable kayak	☐	☐	☐	☐	☐	☑	4
Other (specify):	☐	☐	☐	☐	☐	☐	
Other (specify):	☐	☐	☐	☐	☐	☐	

3. About how many days do you participate in whitewater boating activities annually? 150

   3a. Are these typically single or multi-day trips?

   ☑ Single ☐ Multi-day ☐ Both

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study - Boater Profile Form

4. Indicate below the number of times that you have run each of the following rivers.

River	Reach	# of times
Middle Fork American River	Oxbow Powerhouse to Ruck-a-Chucky	130
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	1
Middle Fork American River	Mammoth Bar to Confluence with North Fork American River	1
North Fork American River	Confluence with Middle Fork American River to Oregon Bar	5

5. Have you participated in a Flow Study in the past?

☒ Yes ☐ No

If yes, please provide the year, river, and reach for each study. (Use back of page for additional space if required.)

Study 1 Year: 08 River: MFA Reach: Oxbow - Greenwood

Study 2 Year: _____ River: _____ Reach: _____

Study 3 Year: _____ River: _____ Reach: _____

6. Have you ever been employed for your whitewater boating skills? ☒ Yes ☐ No

If yes, please explain your experience (year, location, position held, etc.): 4 yrs in Coloma as river raft guide 1 yr @ Humboldt st Kayak instruction

7. Do you have any certifications for whitewater boating? ☐ Yes ☒ No

If yes, please explain list certification: CPR First Aid Wilderness 1st responder

APPENDIX I

Whitewater Boating Flow Study
Example Blank Boater Evaluation Form and Completed Boater Evaluation Forms

Blank Boater Evaluation Form

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name:_____ **Date:**_____

River:_____ **Reach:**_____

Put in:_____ **Take out:**_____

Put in time:_____ **Take out time:**_____

Study Flow:_____

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	-2
Availability of powerful hydraulics	2	1	0	-1	-2
Availability of whitewater "play areas"	2	1	0	-1	-2
Overall whitewater challenge	2	1	0	-1	-2
Safety	2	1	0	-1	-2
Length of run	2	1	0	-1	-2
Rate of travel	2	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

   a. Kayak
   b. Closed deck canoe
   c. Raft
   e. Open canoe
   f. Cataraft
   g. Inflatable kayak
   h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:

_____

_____

_____

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) _____

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

_____

_____

_____

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☐
b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

_____

_____

_____

_____

Completed Boater Evaluation Forms

Tunnel Chute Run
September 16, 2008
600 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: THOMAS BARTUS Date:

River: MIDDLE FORK Reach: TUNNEL CHUTE 600 CFS

Put in: OXBOW Take out: RUCKY CHUCKY

Put in time: 9:30 Take out time: 3:30

Study Flow: 600 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 FT
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
g. Inflatable kayak ?
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
PRESENTED CHALLENGE + EXCITEMENT, ~~SO~~ A FEW RAPIDS WERE QUITE DIFFICULT + REQUIRED VERY GOOD SKILLS.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) III 1/2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Rocky Chucky	1	2	3	(4)	X		20 min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30 MINUTES LUNCH
Number of stops for scouting	3	Total minutes out of boat	20 min
Number of stops for portaging	1	Total minutes out of boat	20 min.

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. ROCKY CHUTE	VERY HOLE ROCKS LOW WATER
2. PARALLEL PARK	ROCKS STICKING OUT
3. KANAKA FALL CHUTE	ROCK OUT CROPPING STEEP DROP ROCK OUT CROPPING

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:
TO ELIMINATE OUT CROPPING & SHALLOW WATER

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		600 CFS
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		800-1000 CFS
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			?

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

THE RUN WAS VERY GOOD WITH A FEW AREAS WHERE HIGHER FLOWS WOULD BE HIGHLY DESIRABLE & SAFER. I BELIEVE 800 CFS WOULD BE ELIMINATE SOME OF THE MORE DIFFICULT & DANGEROUS AREAS. ALSO THE NUMBER & SKILLS OF THE BOATERS IS VERY IMPORTANT IN MAKING THIS EVALUATION. WE HAD A LIGHT WITH SKILLED RAFTERS.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Lyndon Boadsaw Date: 9/16/08

River: Middle Fork Reach: Tunnel Chute

Put in: Oxbow Take out: Driver's Flat

Put in time: 9:30 Take out time: 3:30

Study Flow: 1020 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	(-1)	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	1	0	-1	(-2)
Length of run	2	1	0	-1	(-2)
Rate of travel	2	1	0	-1	(-2)
Number of portages	2	1	0	(-1)	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	(-1)	-2

Please explain your rating: makes rapids extremely difficult to maneuver

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
[illegible]	1	2	3	4			
Chandler	1	2	(3)	4		right	30 min
parallel parking	1	2	(3)	4			30 min
rock-a-chute	1	2	(3)	4			30 min
	1	2	(3)	4			
	1	2	3	4			

would be portaged

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	45 min
Number of stops for scouting	4	Total minutes out of boat	1 hour
Number of stops for portaging	3	Total minutes out of boat	1 1/2 hours

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Tunnel Chute	extremely narrow
2. Chamber	large rock at bottom left
3. Murrabell parking	extremely narrow chute w/ possibility of flipping on to rocks

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
(e.) Much higher flow

Please explain:
At a higher flow this trip would be a lot safer.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		1,100
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	X		1,500

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

_____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Jeremiah Copner Date: 9/16/08

River: Middle Fork River Reach: Tunnel Chute

Put in: ~~Chute~~ Oxbow Take out: Greenwood

Put in time: 9:30 Take out time: 3:30

Study Flow: 600 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	(-2)
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	1	0	-1	(-2)
Length of run	2	1	0	-1	(-2)
Rate of travel	2	1	0	-1	(-2)
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	(-2)

Please explain your rating: Safety, time, enjoyment all compromised

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

	Location Description	Portage Difficulty: Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult	Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
★	tunnel chute	1	2	3	(4)		L	15m
★	thunder	1	2	(3)	4		R	10m
★	Suck A Chunky	1	2	(3)	4		R	10m
		1	2	3	4			
		1	2	3	4			
		1	2	3	4			

★ assuming fully loaded commercial boats

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30 Lunch
Number of stops for scouting	3	Total minutes out of boat	45
Number of stops for portaging	3	Total minutes out of boat	1 Hour

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. tunnel chute	Hole at bottom
2. chundar	Vertical P.n
3. parallel parking	unsap rock

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. (Much higher flow)

Please explain: see all of above

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	Y		800 CFS
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000-1500
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1500 - 2000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

we ran two kayak boats with professional guides. Fully loaded commercial boats would have much more trouble

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Nikki Doyle Date: 9/16/08

River: MFA Reach: Tunnel Chute

Put in: Oxbow Take out: DF

Put in time: 9:30 Take out time: 3:30

Study Flow: 600 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 foot
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	(-2)
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	0	-1	(-2)
Safety	2	1	0	-1	(-2)
Length of run	2	1	0	-1	(-2)
Rate of travel	2	1	0	-1	(-2)
Number of portages	2	1	0	-1	(-2)

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: NONE

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: Too low — got stuck several places
Too Dangerous — scary swimming due to low flow

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Pistachucky	1	2	3	(4)	✓		
Thunder	1	2	3	(4)		RR	½ HR
Parallel Parking	1	2	3	(4)		RR	½ HR
Kanaka	1	2	3	(4)		RL	½ HR
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1 - lunch	Total minutes out of boat	1 Hour
Number of stops for scouting	2	Total minutes out of boat	10 + 20
Number of stops for portaging	1	Total minutes out of boat	30

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Strainer below Good Morning Rapid	— Tree Brush.
2. Kunaka Falls	Serve Rock way more exposed with more current going toward rock above it (wrap rock.)
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: We had a boat with three guides & 1 guest. Very light & very experienced. 1 guide & six guests would have been dangerous — Harder to successfully negotiate lower water levels in rapids.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		1000
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1600 - 1200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		2500

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

① Dangerous for commercial trips-
② One of the guides got injured today which would it have happened in high water

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Glen Mossbower Date: 9/16/08

River: American Reach: tunnel shoot

Put in: Oxbow Take out: Rucky Chucky

Put in time: 9:30 Take out time: 3:30

Study Flow: 600

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☑ Self-bailing raft: please indicate length: 14
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	(0)	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Many rocks were exposed due to low water flows

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Muckamucky	1	2	3	4			15 min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

- would have had to portage other sections w/ a full commercial raft.

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30
Number of stops for scouting	—	Total minutes out of boat	—
Number of stops for portaging	1	Total minutes out of boat	15 mins

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Multiple spots	exposed rocks w/ in rapids that normally are not exposed
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   (e.) Much higher flow

Please explain:
Some rapids were impassible due to low water, a higher flow rate is necessary in order to commercially guide this section

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☑ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☑ Higher ☐ Lower

Please explain:
easier/less dangerous to run @ higher flow

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Stratton **Date:**

River: MF **Reach:** Tunnel Chute

Put in: Oxbow Reservoir **Take out:** Greenwood Crossing

Put in time: **Take out time:**

Study Flow: 600 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 ft.
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	(-1)	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	1	0	-1	(-2)
Length of run	2	1	0	(-1)	-2
Rate of travel	2	1	0	(-1)	-2
Number of portages	2	1	0	-1	(-2)

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	(-1)	-2

Please explain your rating:
Boney, highly technical, dog, no waves, drops were slow, almost impossible with a 6-7 pax raft.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) III - IV (or poss

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Kanaka ?	1	2	(3)	4	no	left	30 min.
Chunder	1	(2)	3	4	no	right	15 min. w/ trail recut
Ruck-a-chucky	1	2	3	(4)	yes	right	45 min.
Parallel Parking	1	2	(3)	4	no	right	25 min.
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	~~2~~ 1	Total minutes out of boat	30 min.
Number of stops for scouting	3	Total minutes out of boat	15 min.
Number of stops for portaging	1	Total minutes out of boat	40 min.

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Kanakah	river right has a wrap rock w/ a siev next to it, asking for trouble!
2. Tunnel Chute	Bottom hole is ~~[illegible]~~ recirculating → high chance of a flip or worse a pile-up!
3. Muck-a-chucky portage.	No longer safe to R1 or Ghost Boat Boats will get stuck at top of ~~[illegible]~~ inaccessible to Et. Drop.

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
(e.) Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	~~300~~	X	800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	~~1000~~		1200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	~~2000~~	X	2000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

This run has always served as a great step up ~~to~~ from the popular south fork run. ~~with~~ The drops were more powerful, the waves, bigger, and the thrills that much more. At flows lower than 1000 cfs all of this is lost and the run becomes a let down from the typically easier South Fork.

i.e. Hospital Bar will be ~~harder~~ than more exilerating than anything on the Middle Fork.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Robert Townsend Date: 9/16/08

River: Middle Fork Reach: Tunnel Chute

Put in: ~~930~~ 0 x bow Take out: ~~930~~ Rockcrusher

Put in time: 930 Take out time: 330

Study Flow: 600

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☒ Self-bailing raft: please indicate length: 14
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	(1)	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
good crew / good water / good distance for day outing; good whitewater experience challenges.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 3/4

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Rock chucky	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30-45
Number of stops for scouting	2	Total minutes out of boat	~~20~~ 10 ea
Number of stops for portaging	1	Total minutes out of boat	15-20

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
(c) About the same; this was close to an optimum flow > either would work
(d) Slightly higher flow
e. Much higher flow

Please explain:
It was highly navigable today. However, an extra 100-200 cfs would likely be better for all involved.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		900 —

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

_____

_____

_____

_____

Tunnel Chute Run
September 9, 2008
800 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Scott Armstrong **Date:** 9/9/08

River: Middle Fork American **Reach:** Oxbow ⇒ Greenwood

Put in: Oxbow **Take out:** Greenwood

Put in time: 10 AM **Take out time:** 4 PM

Study Flow: ~~800~~ 2000 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 FT
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	-2
Availability of powerful hydraulics	2	1	0	-1	-2
Availability of whitewater "play areas"	2	1	0	-1	-2
Overall whitewater challenge	2	1	0	-1	-2
Safety	2	1	0	-1	-2
Length of run	2	1	0	-1	-2
Rate of travel	2	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
The flow created technical rapids but not many fun to make the run smooth if some one swim there is not many water spots are many if the rapid ability is increase to create fast & bouncy enjoyment and injury could by rock and boulders.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) Class III

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Avid 4 chicky	1	2	3	4		right	15 min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

The technical aspect is more difficult by a ½ to a full class level above the Salt Park American. But the participant enjoyment of every rapids is not as high as the Salt Park (above 1200 CFS (200 CFS more) there is many water to make it more many things the - In Sedlia to make it mile in a dry season. The rapids at a 1200 CFS combine for a class III+-IV difficulty with a level of excitement that equals the class level. 800 CFS is not a quality whitewater

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	2.5 minutes
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	800 cfs compared to 1000 increased danger level of foot entrapment to swimmers.
2.	200 cfs lower creates substantially higher number of exposed rocks with more partially pony over them. This flow increases the level of swimmer being knocked from raft due to raft hitting rocks and not sliding over rocks
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
(d.) Slightly higher flow 200 cfs more
e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			800 cfs
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000 - 1100 CFS
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			4000 CFS

Above 4000 there a very few rapids

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Scott Buckley Date: 8/9/08

River: Middle Fork American Reach:

Put in: Oxbow Res Take out: Drivers Flat

Put in time: 10:00 am Take out time: 4:00 pm

Study Flow: 800

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ■ Self-bailing raft: please indicate length: 14'
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	(0)	-1	-2
Availability of challenging technical boating	2	1	0	(-1)	-2
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	0	(-1)	-2
Safety	2	1	(0)	-1	-2
Length of run	2	1	(0)	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: 13' Raft

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	(-1)	-2

Please explain your rating:
The run is a lot more mellow. Realy takes the fun away. No harder than the South Fork American

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 3+

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging	1	Total minutes out of boat	15

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Kanaka	A lot smaller more rocks. Boats where bouncing over rocks not good place to swim.
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
(e) Much higher flow

Please explain:
From a rafting view Some rapids are much safer with more water. There might be more swimmers and injuries @ lower water.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ■ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		1200

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:
Flow should be higher.

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ■
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ■
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.
The flow made the trip less enjoyable. More rocks to maneuver around. People that fall out could really get hurt.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Stacey Chew Date: 9/9/08

River: Middle Fork A.R. Reach:

Put in: Oxbow Reservoir Take out: Drivers F/A

Put in time: 10:00 Take out time: 3:50

Study Flow: 300 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14ft.
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	1	(0)	-1	-2
Length of run	2	1	(0)	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating: If this was the only flow available for a very good reason, I'd raft it. But it would be riskier with commercial rafts, more difficult, & on a longer day than at regular flows. (and that would suck)

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30 min (lunch)
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging	1	Total minutes out of boat	20 min (Rock-a-chucky)

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. chunder	"dildo" rock out more + can toss people easier
2. Kunaka	2 small thumb rocks can catch boats more + can make lines harder.
3. Rock-a-chucky	boats get stuck more on River left + more people class jump will have to do the "death suck"

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
e. Much higher flow

Please explain: 1,200+ really good 1,800 cfs good. 800 cfs not so good - more shallow + trees + rocks in water exposed

Longer days people will want to paddle more

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			[redacted] cfs
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1200 cfs
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1500-1600 cfs

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

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Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Jeremiah Copper **Date:** 9/9/08

River: Middle Fork Amer **Reach:**

Put in: Oxbow **Take out:** Greenwood Creek

Put in time: 10:00 A.M **Take out time:** 4:20 P.M.

Study Flow: 800 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 Ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	0	(-1)	-2
Safety	2	1	0	(-1)	-2
Length of run	2	1	0	-1	(-2)
Rate of travel	2	1	0	-1	(-2)
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
slow moving water, shallow rapids, increased danger out of boat, more technical obstacles, quality of experience decreases drastically, length of run.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) - II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30 (lunch)
Number of stops for scouting	0	Total minutes out of boat	0
Number of stops for portaging	0	Total minutes out of boat	0

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. all over	increased foot intrapment!
2. all over	pin and wraps
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: 1000-1200 CFS increases the experience and makes a safer more fun trip

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			800-1000
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000-1500
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1500-2000

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

people will be unhappy with their trips thus hurting business and revenues

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Bill Deitchman Date: 9-9-08

River: Middle Fork Reach: Oxbow → Greenwood

Put in: Oxbow Take out: Greenwood

Put in time: 1000 Take out time: 1600

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14'
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak - Class IV level
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
Some areas marginal to negotiate (doable) but must be right on. Would be more difficult with commercial clients

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV- less + tunnel chute

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Buck a chucky	1	2	(3)	4			15 min ghost boat
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30
Number of stops for scouting	1	Total minutes out of boat	15
Number of stops for portaging	1	Total minutes out of boat	15

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Rock a chucky rapid Parallel Parking	- Portage trail needs repair - Shallow at right
2. Tunnel chute - Kanakia Falls	Big hole at bottom - Fairly rocky
3. Thunder -	Rock protruding at bottom

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
(d.) Slightly higher flow
e. Much higher flow

Please explain:
Flow of 1000 - 1200 cfs Best -

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1200-1300
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1500-1700

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Have mostly run this stretch at 1000 cfs for over 20 years. I feel that 800 cfs is less enjoyable and less safe at this flow as compared to 1000 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Erin Moore-Dempsey Date: Sept 9/08

River: MF Reach:

Put in: Oxbow Take out: Driver's Flat

Put in time: 10:00 Take out time: 4:00

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	N/A	(1)	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	1	(0)	-1	-2
Length of run	2	1	0	(-1)	-2
Rate of travel	2	1	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
A few really shallow spots that could potentially cause problems with normal customers paddling and/or less experienced guides.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) ~~III~~ III+ - IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging	1	Total minutes out of boat	20

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Chunder Rapid	The rock at bottom left can cause serious problems if raft is a little off line, especially at this flow & lower. Possible wraps, Vertical pins & serious injury. Also not a good place for a swim as Ruck-a-Chucky is not too far down stream.
2. Kanaka Rapid	Rock in center is exposed. Possible wraps & people falling out of rafts. Especially not good because of the sieve on river right
3. Ruck-A-Chucky	An straight forward move to R-1, but if slightly off line, could be serious consequences... more so @ lower water. Flat wrapping at top of falls a bigger possibility. Lower water also makes pushing boats get stuck more frequently, and jumping more dangerous because of shallower water.

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   (e.) Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		1400

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow,

Run-able-barely. With weaker paddlers/first year/inexperienced guides on the water there is a much higher chance of swimmers/wraps at this water level, which can lead to serious injury or even death. Lots of rocks exposed to throw you off line.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Garrick **Date:** 09.9.2008

River: Middle Fork American **Reach:** Oxbow → Rock-A-Chuck

Put in: Oxbow **Take out:** Drivers Flat

Put in time: 10:00 **Take out time:** 3:00

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 15'
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
b. Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating: I felt this flow was acceptable. There were a few more dangers, however

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Rock Garden	1	2	(3)	4	Yes	left	20 mins
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	2	Total minutes out of boat	60 mins
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Tunnel Chute	This rapid could be much more hazardous if you had to swim.
2. Rock A' Chute	Portaging this rapid could be more hazardous if you're doing "the jump" or leap of faith - more rocks are exposed.
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain: A slightly higher flow would eliminate many rocks - which would reduce the risk.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		1200

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

I felt that 800 cfs was the lowest flow acceptible for rafting.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Grubby Date: 9/9/08

River: Middle Fork American Reach:

Put in: Oxbow res Take out: Drivers Flat

Put in time: 9:45 10am Take out time: 3:50

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☑ Self-bailing raft: please indicate length: Hyside 14ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: Shredder

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	(-1)	-2

Please explain your rating:
O.k boating, as a commercial guest on a grade 4 trip I would expect more. Significantly less impact on most hydraulics

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 5

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Rucka chucky	1	(2)	3	4		River Right	
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

The Portage is not a very technical move but has very Severe Conciquences for a Mistake.

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	45
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging	1	Total minutes out of boat	20 min

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Konaka	Sives more exposed Safer left line tighter More potential to wrap bottom flows light.
2. over general river	More tree sives closer to surface
3. Portage	a lot more rocks exposed making the Running line tighter + jumping more dangerous

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   (e.) Much higher flow/300-1800 cfs

Please explain:
@ this flow (1300-1800) commercial guest experience harder hydrolics, creating a feeling of more difficult rapids due to getting water and more dynamic movements of the boat.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		1000
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1400
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		1800

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

the river is certainly runable at this flow or slightly lower however in the interest of a "Good" Commercial trip a higher flow would be far better.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Chafic Khalil Date: 9/9/08

River: MF Reach:

Put in: Oxbow Take out: Drivers Flat

Put in time: 10:00 Take out time: 3:50

Study Flow: 800 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating:
Not nearly as enjoyable, shallow water = higher risks for swimmers

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) III

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	1 hr
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain:
Just not as experienced as other boaters and can't say for sure what optimal flows or what the maximum. I think that 800 would be the lowest I'd go

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Lewis Date: Sept 09/08

River: MFA Reach: Tunnel chute

Put in: Oxbow Take out: Drivers Flat

Put in time: 10:06 Take out time: 4:00

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14 ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	(0)	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	1	0	(-1)	-2
Length of run	2	1	0	(-1)	-2
Rate of travel	2	1	0	(-1)	-2
Number of portages	2	1	0	(-1)	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Certainly not as good as 1000 - raftable but not particularly exciting - definitely a bit scarier than higher flows

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) IV

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Rock a Chucky	1	2	3	4		ghost boat	3 mins per boat
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	40 min
Number of stops for scouting	N/A	Total minutes out of boat	
Number of stops for portaging	1	Total minutes out of boat	15 mins

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Konoka	rock in Main flow - centre left
2. Chunda	rock at bottom left.
3. Every where	seives and strainers exposed.

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
(d.) Slightly higher flow
e. Much higher flow

Please explain: bury a few rocks - a bit more current through flat section

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			900
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	1		1100
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	?	?	1,500 ??

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Nikki Doyle Date: 9/9/08

River: MFA Reach: Tunnel to Chute

Put in: OXBOW Take out: DF / Greenwood

Put in time: 10.00 Take out time: 3.51

Study Flow: 800

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	1	(0)	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
(c.) Raft
e. Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating: Not ideal but runnable with experienced guides.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 4

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
N/A ✓	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30 Lunch
Number of stops for scouting	0	Total minutes out of boat	0
Number of stops for portaging	1	Total minutes out of boat	20

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Rock below Chunder very obvious hazard	Unless right angle found – vertical pin or flat wrap possible
2. Rock in left side of Kanaka Falls	If you hit it sideways you could empty boat easily or wrap
3. Ruck a chucky	More hazardous to run & the jump would be a little trickier

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
(d) Slightly higher flow
(e) Much higher flow

Please explain: – little more water would be better – 1,000 is much better.
– More strainers exposed below surface → entrapment possibilities

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		100
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		1800-2000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

More hazardous to swimmers for sure.
Lots more hazards that could put swimmers in river.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Frank Rost Date: 9/9/08

River: MFA Reach:

Put in: Oxbow Take out: Greenwood

Put in time: 10:AM Take out time: 3:40 PM

Study Flow: 800

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 14
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: slow & mild at low flow

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) _____

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Tunnel Chute	1	2	3	4			
Santas Mustache	1	2	3	4			
Bus Crash	1	2	3	4			
Kanaka	1	2	3	4			
Cheggar	1	2	3	4			
P-Parking	1	2	3	4			
Texas Ranson				4			
Thunder				4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	1/2 hr lunch
Number of stops for scouting	0	Total minutes out of boat	0
Number of stops for portaging	1	Total minutes out of boat	15 min

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Chandler	rock in bottom of drop is a problem (splats)
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
(d) Slightly higher flow 1,000
e. Much higher flow

Please explain:

1,000 CFS very manageable, still not a big ride

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1,200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1,500

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Sedale Tuchovsky Date: 9/9/08

River: MF Reach:

Put in: Ox bow Take out: Drivers Flat

Put in time: 10:00 Take out time: 3:50

Study Flow: 800 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☑ Self-bailing raft: please indicate length: 14ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	1	0	(-1)	-2
Length of run	2	1	0	-1	-2
Rate of travel	2	1	0	-1	-2
Number of portages	(2)	(1)	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
b. Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak
(h) Other: Zorb ball

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	(-1)	-2

Please explain your rating: Water is a bit shallow, swimming is more dangerous and rocky.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) I

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	60
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d) Slightly higher flow
   e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☑ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☑ Higher ☐ Lower

Please explain:
More water allows for safer swimming experience and safer gravel. To also presents less technical rapids.

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Mammoth Bar Run

September 17, 2008

600 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Patricia Gibbs Date: 9-17-08

River: Middle Fork Reach:

Put in: Drivers Flat Take out: Mammoth Bar

Put in time: 9 Am Take out time: NOON

Study Flow: 600 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☐ Self-bailing raft: please indicate length:
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	(-1)	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	0	(-1)	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	1	0	(-1)	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

   a. Kayak
   b. Closed deck canoe
   c. Raft
   e. Open canoe
   f. Cataraft
   g. Inflatable kayak
   h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Many rocks & boulders exposed
raft stopped several times

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	~~5~~ 5 minutes
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. No	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d) Slightly higher flow
   e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.		?	

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: LEE CRESHMAN Date: 9/17/09

River: MID. AMERICAN Reach: Mammoth Bar

Put in: Drivers Flat Take out: Mammoth

Put in time: 9:00 Take out time: 12:00

Study Flow: 600 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: GOOD RUN & MIX OF RAPIDS

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	2	Total minutes out of boat	
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. NONE

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: 800 cfs was slightly better

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			500
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Dominic Pugliese **Date:** 9/17/08

River: Middle Fork American **Reach:** Mammoth Bar

Put in: 9 **Take out:** Mammoth Bar

Put in time: 9Am **Take out time:** 12 pm

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☒ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	0	(-1)	-2
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	0	-1	(-2)
Safety	2	1	(0)	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	1	0	(-1)	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
c. Raft
(e.) Open canoe
f. Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	(-1)	-2

Please explain your rating: nice pretty stretch but lots of flat slow water short rapids w/ a ton of paddling

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NA

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	NA	Total minutes out of boat	NA
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   (e.) Much higher flow

Please explain:
more water = more cushion & hydraulic activity & less rocks

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain: See # 9

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Tom VanNoord **Date:** 6-17-08

River: Middle **Reach:** Mammoth Bar

Put in: Green Driver's Flat **Take out:** Mammoth Bar

Put in time: Yardeed 9AM **Take out time:** NOON

Study Flow: 600

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages N/A	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
(e) Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating: Very enjoyable - Lady & comfortable for my novice & skill level

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). N/A

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	0
Number of stops for scouting	0	Total minutes out of boat	0
Number of stops for portaging	0	Total minutes out of boat	0

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. No

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow — good for me
   d. Slightly higher flow
   e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Very pleasant.

Mammoth Bar Run

September 10, 2008

800 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Steven Boutte Date: 9/10/08

River: Middle Fork American Reach:

Put in: Drivers Flat Take out: Mammoth Bar (continued through Murd Bar)

Put in time: 9:30 Take out time: 1:15

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
You could easily run a commercial rafting trip at this flow, but it would be even more fun with more water.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2-3

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Murders Bar	1	(2)	3	4	Slightly	Right	~~10~~ 10 min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	3	Total minutes out of boat	30 min.
Number of stops for scouting	1	Total minutes out of boat	5 min.
Number of stops for portaging	1	Total minutes out of boat	10 min.

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. No.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. (Much higher flow)

Please explain:
Because It would make the flat water a lot faster and the play waves bigger, more powerful hydraulics.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	x		600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	x		1,000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			2,000 to 3,000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

In order to do a rafting trip on this section you would need at least 600 cfs. Any lower and the boat won't fit through.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: PATRICIA GIBBS **Date:** 9-10-08

River: Middle ~~Fork~~ Fork American **Reach:** Mammoth Bar

Put in: ~~9~~ Drivers Flat **Take out:** Mammoth Bar

Put in time: 9:30 AM **Take out time:** 11:30 AM

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
Good rock coverage so no stopping of boat

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	2 min to take picture
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. [illegible]	[illegible]
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1200

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Jeffrey Hartley Date: 9/10/2008

River: MFA Reach: Mammoth Bar

Put in: 9:30 Drivers Flat Take out: 11

Put in time: 9:30 Take out time: 11:15

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:

_____

_____

_____

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II - III

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Mucless Bar	1	2	3	4		Right	10 min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	
Number of stops for scouting	1	Total minutes out of boat	10 min
Number of stops for portaging	1	Total minutes out of boat	10 min

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
(e) Much higher flow

Please explain: No challenges @ this flow

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		2-3K
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			30,000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: LEE LEICHMAN Date: 9/10/08

River: MID FORK AM Reach: Mammoth

Put in: Drivers Flat Take out: Mammoth

Put in time: 9:30 AM Take out time: ~~9:45~~ 1130

Study Flow: 800 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	(0)	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Great Run - Good mix of Rapids & Quiet water - Esp for Novice

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. NO	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: GOOD FLOW for Beginner KAYAK

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑

b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑

b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

_____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Alex Wolfgram **Date:** 9/10/08

River: Mammoth Bar **Reach:** Greenwood to Mammoth bar

Put in: Drivers flat/Greenwood **Take out:** Rivd Sall

Put in time: 9:30 **Take out time:** ~~12~~ 11:15 continued thr Murderers Bar & NFA

Study Flow: 8,00 cfs

1. What type of craft did you use for this run?

☒ Hard shell kayak	☐ Cataraft: please indicate length: _____
☐ Inflatable kayak	☐ Self-bailing raft: please indicate length: _____
☐ Closed deck canoe	☐ Wrap-floor raft: please indicate length: _____
☐ Open canoe with floatation	☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
(c.) Raft
(e.) Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: Innertube

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating:
The water flow in Drivers - Mammoth was great but Lower water would be acceptable for class II float

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) Drivers - Mammoth II-III

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Murderers Bar	1	(2)	3	4	To Lower Boats Yes	Right	30min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	0
Number of stops for scouting	0	Total minutes out of boat	0
Number of stops for portaging	1	Total minutes out of boat	30 min @ Muckleshoot

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. No Hazards beyond trees on riverbank	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
(b.) Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
e. Much higher flow

Please explain:
lower water is acceptable for this stretch maybe 600 would be good for commercial gear boats & oar frames.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	X		25,000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☒

If No, please explain: I would much rather be able to drive in & park @ pump station in order to utilize the kayak play park.

14. Please provide any additional comments about the run at this flow.

The play park needs more water in order to be safe! You must be an experienced boater to use it safely. This flow is great for "Wilderness" rafting trips on Lower MF. You need adequate flows like this in order to safely use wilderness camps

Mammoth Bar Run

July 31, 2008

1,000 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: GILLIAN ALDRICH Date: 7/31/08

River: MFAR Reach:

Put in: Ruck-A-Chucky Take out: Hammonton

Put in time: 11:00 Take out time: 1:30

Study Flow: 1,000cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☒ Cataraft: please indicate length: 14'
- ☐ Self-bailing raft: please indicate length:
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
easy float w/ some small rapids

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) I

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	3	Total minutes out of boat	10
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. NO

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain:
there were a lot of slow spots through deep pools - slightly higher flows may help move the boat more along as but go faster

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain:
This was the first time I floated this area - there didn't seem to be too many difficult area for floating

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Jesse Carlson **Date:** 7/31/08

River: MFAR **Reach:**

Put in: Ruck a chucky **Take out:** Mammoth

Put in time: 11:00 **Take out time:** 1:30

Study Flow: 1000 cfs

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [x] Cataraft: please indicate length: 14'
- [ ] Self-bailing raft: please indicate length:
- [ ] Wrap-floor raft: please indicate length:
- [ ] Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	-2
Availability of powerful hydraulics	2	1	0	-1	-2
Availability of whitewater "play areas"	2	1	0	-1	-2
Overall whitewater challenge	2	1	0	-1	-2
Safety	2	1	0	-1	-2
Length of run	2	1	0	-1	-2
Rate of travel	2	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: it was slow, working

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	2	Total minutes out of boat	20
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. no

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   (c) About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: not a hard run anyways. if you want harder go up river

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain: Could always be higher!

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Garcia **Date:** July 31 2008

River: Middle fork **Reach:** Ruck-a-chucke → Mammoth Bar

Put in: Ruck-a-chucky **Take out:** Mammoth Bar

Put in time: 10:30 Am **Take out time:** 1:15

Study Flow: 900-1000

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☒ Self-bailing raft: please indicate length: 15'
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
I thought the flow was perfect for my craft.
-Not too low, Not too high

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   (c.) About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: I felt that todays flood was optimal for a raft, cataraft, kayak or tube.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			1000
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			2000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain: 1000 would be the lowest flow.

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

It was perfect.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

10:45
1:15
2.5 hr

Boating Flow Study Evaluation Form

Name: PATRICIA GIBBS Date: 7-31-08

River: Middle Fork American Reach:

Put in: Rock A Chucky Take out: Mammoth Bar

Put in time: 10:45 Take out time: 1:15 pm

Study Flow: 1000 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ ~~Inflatable~~ kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: Plenty of scenic quiet tourins rives enough white water

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. NO	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   (c) About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: never hit bottom with inflatable would not want to see more boulders at lower flow

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain: Could get vehicle close to boat put in + walk to parked vehicle not bad

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: Could be better parking for take out but good slow area to get off river here

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Joshua Hill Date: 7/31/08

River: Middle Fork American Reach: Ruck-a-chucky

Put in: _____ Take out: _____

Put in time: 10:30 Take out time: 12:30

Study Flow: 1000 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☑ Self-bailing raft: please indicate length: 14'
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Would be less exciting & would be a [redacted] family
tour flow. especially tour rating

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
NA	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	0
Number of stops for scouting	0	Total minutes out of boat	0
Number of stops for portaging	0	Total minutes out of boat	0

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. N/A	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
(c) About the same; this was close to an optimum flow
d. Slightly higher flow
Much higher flow

Please explain:
As it will increase the flow unless natural flow from tributaries are causing it.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			1000 cfs
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			2000 cfs
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			5000 cfs

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

N/A

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Manzer Date: 7/31/05

River: MFA Reach: R-A-C

Put in: R-A-C Take out: Mam. Bar

Put in time: 10:45 Take out time: 1:15

Study Flow: 1,000

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	(-2)
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	-1	(-2)
Overall whitewater challenge	2	1	0	-1	(-2)
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	(0)	-1	-2
Rate of travel	(2)	1	(0)	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Bessing Run - would only run to support Bessing Runners

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II+

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: more hydration

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☒ Lower

Please explain: Might Be Able To Get The Same Experience At Slightly Lower Flow

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: OHV Use – Dust – Noise

14. Please provide any additional comments about the run at this flow. Dropses

Saw Lots Of motorized 9 items

– Create Recreational conflict

Mammoth Bar Run
1,000

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Howard Penn **Date:** 7/31/07

River: Middle Fork American **Reach:** Mammoth Bar

Put in: River's Flat **Take out:** Mammoth Bar

Put in time: 10:45 am **Take out time:** 1:15pm

Study Flow: 1000 cfs

1. What type of craft did you use for this run?

- ☒ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	(-2)
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	0	-1	(-2)
Safety	(2)	1	0	-1	-2
Length of run	2	1	(0)	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
(c.) Raft
(e.) Open canoe
(f.) Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
For this section a higher flow wouldn't really add much. Lower flower would be rocky.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
None	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	none	Total minutes out of boat	none
Number of stops for scouting	none	Total minutes out of boat	none
Number of stops for portaging	none	Total minutes out of boat	none

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. none	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1000-1200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		3000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Moved along well enough. Much higher and there would be a lot of strainers.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: CLINT NORRELL **Date:** 7-31-08

River: M.FK. AMERICAN **Reach:**

Put in: DRIVEWAY FLAT **Take out:** MAMMOTH BAR

Put in time: 10:45 **Take out time:** 1:15

Study Flow: ± 1000 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☐ Self-bailing raft: please indicate length:
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	1	0	(-1)	-2
Availability of powerful hydraulics	2	1	0	(-1)	-2
Availability of whitewater "play areas"	2	1	0	-1	(-2)
Overall whitewater challenge	2	1	0	(-1)	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages N/A	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
MIN REC FLOW @ 1000 CFM — lower flows almost unrunnable — @ 1500 cfm the FEW RAPIDS BECOME SOMEWHAT MORE FUN — NOT AN ADRENALIN RUN — GREAT FOR RELAXED SIGHTSEEING — FAMILY-KIDS — LOW DIFFICULTY — LOTS OF FLATS —

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	5
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   (e.) Much higher flow

Please explain:
@ 1000 CFM THERE IS Ø RISK OF CAPSIZING/SWIMMING – IN MY HARDSHELL THERE IS NO NEED FOR ROLL – @ HIGHER LEVELS MORE BLACKBERRIES WOULD BE REACHABLE

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			1000
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1500
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			4000

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

_____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Kathy Norrell Date: 7-31-08

River: Middle Fork American River Reach: Mammoth Bar

Put in: ~~Eagle~~ Duck a Chucky Take out: Mammoth Bar

Put in time: ~~10:45~~ 10:45 am Take out time: 1:05 pm

Study Flow: est. 1000 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
Good flow - rocks covered

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). N/A

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. NO

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain:
More water would move us faster in slow areas and combat the wind which made us paddle ~~faster~~ harder.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.		✓	

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Noisy dusty take out due to OHV

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Sandra Perry Date: 7/31/08

River: MFAR Reach:

Put in: Rock-a-Chucky Take out: Mammoth Bar

Put in time: 10:45 Take out time: 1:15

Study Flow: 1600

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
(e) Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:

Nice flows for my skill level. Not too pushy, good areas for me to practice ferries, eddies, etc.
Nice scenery

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NA

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	0	Total minutes out of boat	
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. No	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   (c.) About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: see 4 above

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.		X	
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		100.0
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	X		1500

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain:
ATV use at take out is loud, dusty and generally annoying. I would not utilize the shade structure for lunch or lounging out with ATV use happening.

14. Please provide any additional comments about the run at this flow.

This is a nice run at this flow. Nice scenery. The only negative is the dredges. We saw 5 and they are loud and spew exhaust, both of which detracts from the river experience.

Confluence Run

July 26, 2008

368 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Gary Cables Date: 7/26/08

River: N Fork American Reach: Confluence to Oregon Bar

Put in: Confluence Take out: Oregon Bar

Put in time: 12:30 Take out time: 4:50

Study Flow: 370 CFS

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
(c.) Raft
(e.) Open canoe
(f.) Cataraft
(g.) Inflatable kayak
(h.) Other: inner tube to Birdsall

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
Great beginner run to Birdsall intermediate to Oregon Bar
Ever changes

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) class 2 & to Birdsall easy class III to Oregon Bar

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). no portages

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	2	Total minutes out of boat	30
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Diversion Canal for pump station	2 reversals that can flip boaters
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: Double to triple the flows would make a great run for rafts

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		350.00
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1200.00
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			?

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain:
I have run it @ 2000 cfs, I would like to run it at higher flows to see what would be best for intermediate to advanced

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain:
too long a walk to take it would be easy to develop a loading area closer to the river, terrible where Can a "main" parking Lot.

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Garcia **Date:** July 26, 2009

River: N. Fork **Reach:** Confluence to Oregon Bar

Put in: Confluence **Take out:** Birdsand Creek

Put in time: 12:30 PM **Take out time:** 4:30 pm

Study Flow: 400 ± 50

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☒ Self-bailing raft: please indicate length: 15 ft
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	1	(0)	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak
(h) Other: Tube

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating:
I was in a raft and felt that a higher flow would have been more suitable for my boat.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30 mins.
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d) Slightly higher flow
   e. Much higher flow

Please explain: The water was a little low in some places for my raft.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		350
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1,000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		2,500

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: If you were rafting the take out would be very difficult. - Long Gulch

14. Please provide any additional comments about the run at this flow.

Today's flow was optimal for a person in an inner tube. It was perfect for a novice boater, and a excellent flow for Sisiyouers.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: PATRICIA GIBBS **Date:** 7-26-08

River: ~~Middle Fork~~ North Fork **Reach:** _____

Put in: 12:30 CONFLUENCE **Take out:** Oregon Bar

Put in time: 12:30 **Take out time:** 4:48

Study Flow: 368

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	(1)	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

   a. Kayak
   b. Closed deck canoe
   c. Raft
   e. Open canoe
   f. Cataraft
   g. Inflatable kayak
   h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
enough water to move the inflatable kayak stuck on rocks periodically

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2-3

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
Pump Station	1	(2)	3	4		River left	25 min
Play area	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	5
Number of stops for scouting	1	Total minutes out of boat	5
Number of stops for portaging	1	Total minutes out of boat	5

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. just below no hands	large metal frame
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d) Slightly higher flow
   e. Much higher flow

Please explain: dragging inflatable Kayak over rocks

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			at 7.26.08
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.		N/A	
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.		N/A	

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain: No lower than today's flow

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: too far to portage boats no parking

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: too far + no trail to portage boats + no parking

14. Please provide any additional comments about the run at this flow.

Confluence run 368 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Lester Lubetkin Date: 7/26/08

River: NF FK Amer R Reach: Confl → Oregon Bar

Put in: Confluence Take out: Oregon Bar

Put in time: 12:30 Take out time: 4:45

Study Flow: 368 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. (Kayak)
b. Closed deck canoe
c. Raft
e. (Open canoe) except maybe 2 or 3 rapids
f. Cataraft
g. (Inflatable kayak)
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating: For my skill level, flow was adequately challenging, while not too difficult. Flat stretches were not too long, but often enough to relax

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II to III
only 2 or 3 rapids @ Class III

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). No portages

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks		Total minutes out of boat	
Number of stops for scouting	1	Total minutes out of boat	20 min
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. between 49 bridge & No Hands bridge	Steel beams in river, just below water - steel plate on No Hands bridge
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   (c.) About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: No experience at higher flow, but I was challenged at this flow as much as I wanted to be.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			350
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain: Marginal at 350. Suggest putting in below the confluence.

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow. I would take out at Birdsall on the bottom, probably although there were a few fun rapids below.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Dave Manner **Date:** 7/24/08

River: MF Amer **Reach:** Con Flw.

Put in: Con Flw. **Take out:** Oregon Bar

Put in time: 12:30 **Take out time:** 4:45

Study Flow: 356

1. What type of craft did you use for this run?

- ☑ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	(-2)
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	-1	(-2)
Overall whitewater challenge	(2)	1	0	-1	(-2)
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	(-1)	-2
Number of portages	(2)	1	0	(-1)	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
c. Raft
(e) Open canoe
f. Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating:
WOULD NOT RUN THIS REACH UNLESS I WAS SUPPORTING BEGINNING BOATERS

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: FASTER RUN OF TRIP - MORE FUN OVERALL.

* PUMP STATION MAIN CHANNEL ALMOST UN-NAVIGATABLE DUE TO LOW FLOW

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		365
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			U.L.

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain: THIS WAS THE MINIMUM

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: I WOULD NOT USE THE OREGON BAR ACCESS DUE TO THE RICE-OUT

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: SANDRA PERRY Date: 7-26-08

River: NFORK Reach: CONF - OREGON BAR

Put in: CONFLUENCE Take out: OREGON BAR

Put in time: 12:50 Take out time: @ 4:30

Study Flow: 368 + NF FLOW

1. What type of craft did you use for this run?

- [X] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	(2)	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
(c.) Raft
(e.) Open canoe
(f.) Cataraft
(g.) Inflatable kayak
(h.) Other: TUBES

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
Nice flow for novice boater (like me). Nice scenery, clear water, not pushy or scary.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) I-II w/ 2 II+

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NA

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	@ 25 minutes
Number of stops for scouting	1	Total minutes out of boat	@ 25 minutes
Number of stops for portaging	0	Total minutes out of boat	

> same @ pump station

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Old bridge debris just below put-in	Raft ripper Rebar and metal debris
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain: This flow was the minimum I would want to boat it, anything lower would be hard to get through

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			600-800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1700

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain:
Difficult walk from take out to road and long walk up road to gate and then to parking

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: LAIRD THOMPSON **Date:** 7/26/09

River: AMERICAN **Reach:** CONFLUENCE – ORegon BAR

Put in: _____ **Take out:** _____

Put in time: _____ **Take out time:** _____

Study Flow: 368

1. What type of craft did you use for this run?

☒ Hard shell kayak	☐ Cataraft: please indicate length: _____
☐ Inflatable kayak	☐ Self-bailing raft: please indicate length: _____
☐ Closed deck canoe	☐ Wrap-floor raft: please indicate length: _____
☐ Open canoe with floatation	☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	(1)	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: a good surprise - very boatable with a number of interesting spots for different levels of boaters

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II-

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
first rapid	1	2	3	4	No	RL	30 sec
part of Jensik	1	2	3	4	No	RL	1-2 min
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	2
Number of stops for scouting	2	Total minutes out of boat	5
Number of stops for portaging	2	Total minutes out of boat	5

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. NO (well, naked folks...)

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: this is a pleasant level for many novice to intermediate waters - a higher level should also be quite good

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			300
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000 ?
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			2000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain: TAKE OUT NEEDS PARKING/SHUTTLE

14. Please provide any additional comments about the run at this flow.

very nice, local Auburn run

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Tom Van Norsdall **Date:** 7-26-08

River: N. F. American **Reach:** Confluence to Oregon Bar

Put in: Confluence **Take out:** Oregon

Put in time: 12:30 **Take out time:** 4:50

Study Flow: 370 cfs

1. What type of craft did you use for this run?

- ☑ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	-2
Availability of powerful hydraulics	2	1	0	-1	-2
Availability of whitewater "play areas"	2	1	0	-1	-2
Overall whitewater challenge	2	1	0	-1	-2
Safety	2	1	0	-1	-2
Length of run	2	1	0	-1	-2
Rate of travel	2	1	0	-1	-2
Number of portages	2	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
b. Closed deck canoe
c. Raft
(e.) Open canoe
f. Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating: for my ability it was fine

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) not enough II experience to rate

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
N/A	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	30
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Some dangerous sharp rocks in middle of stream ← →	below old bridge
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain: rocky at spots

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☑ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		today's
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.		✓	
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.		✓	

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain: I do have experience to enable me to identify flow ranges

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☑

If No, please explain: long way to parking lot

14. Please provide any additional comments about the run at this flow.

long stretches of flat water

Confluence Run

September 17, 2008

600 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Patricia Gibbs **Date:** 9-17-08

River: North fork Amer **Reach:** Confluence Birdsall

Put in: Confluence **Take out:** Birdsall

Put in time: 1:30p **Take out time:** 3:15

Study Flow: 600 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	1	0	(-1)	-2
Rate of travel	2	1	0	(-1)	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
	1	0	-1	-2

Please explain your rating:

_____

_____

_____

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. metal frame from bridge debris at water level	near 49 bridge
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: most room for error over rocks

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location (☒ Yes) ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			?

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☐
(b.) No ☐

If No, please explain: boat put-in could be closer to water. not enough parking at confluence

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: too far to get vehicle

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: JOHN HAUSCHILD **Date:** 9/17/08

River: NF CONFLUENCE **Reach:**

Put in: ~~F330~~ **Take out:** 3:15 BIRDSKLL

Put in time: 1:30 **Take out time:** 3:15

Study Flow: 600-700

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☐ Self-bailing raft: please indicate length:
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availablility of powerful hydraulics	2	1	0	(-1)	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	1	(0)	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
just enough to cover rocks

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	5
Number of stops for scouting	1	Total minutes out of boat	3
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. BELOW 49	BRIDGE WRECKAGE
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d) Slightly higher flow
   e. Much higher flow

Please explain:
FOR BELOW BINSAW

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	✓		500
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	✓		15,000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Lee Leshman Date: 9-17-08

River: MID FK. Amer Reach: Confluence

Put in: Conf Take out: Birdsall

Put in time: 1:30 Take out time: 3:15

Study Flow: 600 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:

_____

_____

_____

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	1	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. TREES/SNAGS	EASILY AVOIDABLE
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

_____

_____

_____

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

GOOD RUN - LOTS of SLOW WATER between RAPIDS

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Dominic Pugliese Date: 9/17/08

River: North Fork American Reach: Confluence

Put in: Confluence Take out: Birds All

Put in time: 1:30 Take out time: 3:15

Study Flow: 600

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	0	(-1)	-2
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	1	0	(-1)	-2
Overall whitewater challenge	2	1	0	(-1)	-2
Safety	2	1	(0)	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a.) Kayak
(b.) Closed deck canoe
(c.) Raft
(e.) Open canoe
f. Cataraft
(g.) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating: slow, lots of flat slow water, few rapids, a couple of fun novice surf waves

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NA

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	NA	Total minutes out of boat	NA
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain: more water = safer playing & more hydraulic fun stuff

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☒ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☒ Higher ☐ Lower

Please explain: see #9

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Tom VAN Noord Date: 9-17-08

River: N.F. American Reach: Confluence

Put in: Confluence Take out: Birdcage

Put in time: 1300 Take out time: 315

Study Flow: 600

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	2	1	(0)	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages N/A	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
(e) Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating: It's great for my novice ability

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). N/A

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks		Total minutes out of boat	
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Below put in	Iron "I" beams just below surface
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

a. Much lower flow
b. Slightly lower flow
c. About the same; this was close to an optimum flow
d. Slightly higher flow
e. Much higher flow

Please explain: I did it at ~400 cfs & thought this was better.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☐ Yes ☑ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain: based on the 400 vs. 700 comparison the 700 was better but when I did it at 400 I thought that was great.

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Confluence Run

September 10, 2008

800 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Steven Boutte Date: 9/10/08

River: ~~The~~ North Fork American Reach:

Put in: Confluence Take out: Birdsaul

Put in time: 1:30 p.m. Take out time: 3:00 p.m.

Study Flow: 800 cfs.

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length:
- [ ] Self-bailing raft: please indicate length:
- [ ] Wrap-floor raft: please indicate length:
- [ ] Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	(1)	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
The Flow of water was good till we got to the play park, and there it was a bit shallow. More water would make me use the park more often.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) I-2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	5 min
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:
The Play Park would be much better for surfing waves.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		800
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		1,500
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			3,000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

More water for play park!

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Patricia Gibbs **Date:** 9.10.08

River: North Fork American **Reach:** Confluence to China Bar

Put in: ± Confluence **Take out:** Birdsall

Put in time: 1:30 **Take out time:** 3pm

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	2	1	0	(-1)	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

   a. Kayak
   b. Closed deck canoe
   c. Raft
   e. Open canoe
   f. Cataraft
   (g.) Inflatable kayak
   h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating: for 1st rapid
~~Except~~
Except
easy rivers for slow touring

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
~~Powerstation~~	(1)	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks		Total minutes out of boat	
Number of stops for scouting	1	Total minutes out of boat	10 min
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. bridge debris	near no hands bridge
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

More water in pump station area would be good

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			~~[illegible]~~ 1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: Need easier boat access

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Jeffrey Hartley Date: 9/10/2008

River: MFA Reach:

Put in: Confluence Take out: Old Bird

Put in time: 12:00 Take out time: 3:00

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length:
- [ ] Self-bailing raft: please indicate length:
- [ ] Wrap-floor raft: please indicate length:
- [ ] Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating: River was totally navigable

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) I

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
NA	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	20 min
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: Play park was scrappy, scrappy

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		600
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			2-3K
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			5K

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

_____

_____

_____

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

_____

_____

_____

14. Please provide any additional comments about the run at this flow.

_____

_____

_____

_____

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: LEE LEISHMAN Date: 9/10/08

River: MID FORK AMER. Reach: CONFLUENCE

Put in: CONFLUENCE Take out: BIRDSALL

Put in time: 1:30 Take out time: 3100

Study Flow: 800 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☑ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☐ Self-bailing raft: please indicate length: _____
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	(2)	1	0	-1	-2
Availability of whitewater "play areas"	(2)	1	0	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:

_____

_____

_____

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NONE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	10
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below. NO

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	✓		800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☑
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

Great for Novice who wants a shorter run

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Alex Wolfgram Date: 9/10/08

River: ~~M~~NFA Reach: Confluence to Birdsall

Put in: Confluence Take out: Birdsall

Put in time: 12:30 Take out time: 3:45

Study Flow: 500

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	2	(1)	0	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	(1)	0	-1	-2
Safety	2	(1)	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
(e) Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: tube

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	(0)	-1	-2

Please explain your rating: Play park needs more water in order to avoid grinding sharp rocks.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II-III

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	1	Total minutes out of boat	35
Number of stops for scouting	0	Total minutes out of boat	
Number of stops for portaging	0	Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. white water "Play" park is shallow	shallow water sharp rocks
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   (e.) Much higher flow

Please explain: High water would be easily contained by river banks, more water

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		3000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	X		8000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: No restrooms or adaquate parking

14. Please provide any additional comments about the run at this flow.
It needs more water earlier in order to make play park work,

Confluence Run

July 31, 2008

1,000 cfs

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: David Garcia Date: July 31 2008

River: North fork Reach: Confluence + Birdsall Creek

Put in: Confluence Take out: Birdsall

Put in time: 2:50 Take out time: 4:50

Study Flow: 1050

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☐ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length: _____
- ☒ Self-bailing raft: please indicate length: 15'
- ☐ Wrap-floor raft: please indicate length: _____
- ☐ Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
e. Open canoe
(f) Cataraft
(g) Inflatable kayak
(h) Other: tube

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	(1)	0	-1	-2

Please explain your rating:
I didn't feel that today's flow was much different than it was last Sat. I felt that 350 cfs was more fun because there were more obstacles

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   (b) Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: I felt that this flow was too high for this stretch,
- It was a faster float however.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			350
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			800
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			2000

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

This was an awesome flow for beginner boaters and families looking for an easy whitewater boating experience.

Confluence

1,000 CFS

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Patricia Gibbs **Date:** 7.31.08

River: North Fork **Reach:**

Put in: Confluence **Take out:** Birdwall

Put in time: 2:50 **Take out time:** 4:50

Study Flow: 1000 cfs

1. What type of craft did you use for this run?

- ☐ Hard shell kayak
- ☒ Inflatable kayak
- ☐ Closed deck canoe
- ☐ Open canoe with floatation
- ☐ Cataraft: please indicate length:
- ☐ Self-bailing raft: please indicate length:
- ☐ Wrap-floor raft: please indicate length:
- ☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	(2)	1	0	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	(2)	1	0	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	2	1	0	(-1)	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: Overall didn't hit rocks easier run at play area whitewater channel

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) 2

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NO PORTAGE

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	3	Total minutes out of boat	6 minutes
Number of stops for scouting		Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   (c) About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain:

_____

_____

_____

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☑ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			1400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			1121 cfs

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: Hard to get boat to water

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: too far to parking lot

14. Please provide any additional comments about the run at this flow.

• fun & scenic

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: DWD Wimmer **Date:** 7-31-08

River: MFA **Reach:** Confl.

Put in: Confl **Take out:** ~~Confl~~ Big Slide

Put in time: 2:50 **Take out time:** 4:30

Study Flow: 1,000 CFS

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length: _____
- [ ] Self-bailing raft: please indicate length: _____
- [ ] Wrap-floor raft: please indicate length: _____
- [ ] Other: please explain _____

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	0	-1	(-2)
Availability of powerful hydraulics	2	1	0	-1	(-2)
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	1	0	-1	(-2)
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating: Passing flow - would do "in-support"; Play opportunity at Pump Station

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) _____

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	_____	Total minutes out of boat	_____
Number of stops for scouting	_____	Total minutes out of boat	_____
Number of stops for portaging	_____	Total minutes out of boat	_____

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1.	
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. Much higher flow

Please explain: more by onalices

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		350 - 400
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1500 — 3,000
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			3,000 +

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☐
b. No ☒

If No, please explain: Hike to Parking Lot

14. Please provide any additional comments about the run at this flow.

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: Howard Penn **Date:** 7/31/08

River: Confluence to Bird Spit **Reach:**

Put in: Confluence **Take out:** Bird Spit

Put in time: 9:50 **Take out time:** 4:50.

Study Flow: 1000

1. What type of craft did you use for this run?

- [x] Hard shell kayak
- [ ] Inflatable kayak
- [ ] Closed deck canoe
- [ ] Open canoe with floatation
- [ ] Cataraft: please indicate length:
- [ ] Self-bailing raft: please indicate length:
- [ ] Wrap-floor raft: please indicate length:
- [ ] Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	2	(1)	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	(1)	0	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	2	1	(0)	-1	-2
Length of run	2	(1)	0	-1	-2
Rate of travel	2	1	(0)	-1	-2
Number of portages	(2)	1	0	-1	-2

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

a. Kayak
b. Closed deck canoe
c. Raft
e. Open canoe
f. Cataraft
g. Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
2	1	0	-1	-2

Please explain your rating:
more would be better

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level).

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
N/A	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks	✓	Total minutes out of boat	
Number of stops for scouting	✓	Total minutes out of boat	
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. ✓	
2. ✓	
3. ✓	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   d. Slightly higher flow
   e. (e.) Much higher flow

Please explain: better features at higher flows

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.			1000
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.			1580
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.			3500

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain:

14. Please provide any additional comments about the run at this flow.

higher would be better

Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)

Boating Flow Study Evaluation Form

Name: SANDRA PERRY **Date:** 7-31-08

River: MFAR **Reach:**

Put in: CONFLUENCE **Take out:** BIRDSALL

Put in time: 2:50 **Take out time:** 4:50

Study Flow: 1000

1. What type of craft did you use for this run?

☒ Hard shell kayak	☐ Cataraft: please indicate length:
☐ Inflatable kayak	☐ Self-bailing raft: please indicate length:
☐ Closed deck canoe	☐ Wrap-floor raft: please indicate length:
☐ Open canoe with floatation	☐ Other: please explain

Flow Assessment

2. Please evaluate this study flow for your craft and skill level for each of the following characteristics. *(Circle one number for each characteristic).*

Characteristic	Rating				
	Acceptable		Neutral	Unacceptable	
	Highly	Moderately		Moderately	Highly
Boatability	(2)	1	0	-1	-2
Availability of challenging technical boating	2	1	(0)	-1	-2
Availability of powerful hydraulics	2	1	(0)	-1	-2
Availability of whitewater "play areas"	2	1	(0)	-1	-2
Overall whitewater challenge	2	1	(0)	-1	-2
Safety	(2)	1	0	-1	-2
Length of run	(2)	1	0	-1	-2
Rate of travel	(2)	1	0	-1	-2
Number of portages	2	1	(0)	-1	-2

NONE

3. What type(s) of watercraft would be suitable for this reach at today's flow? *(Circle all that would be appropriate).*

(a) Kayak
(b) Closed deck canoe
(c) Raft
(e) Open canoe
(f) Cataraft
(g) Inflatable kayak
h. Other: _____

4. Please rate your overall satisfaction with today's flow.

Rating				
Satisfied		Neutral	Unsatisfied	
Highly	Moderately		Moderately	Highly
(2)	1	0	-1	-2

Please explain your rating:
Nice flow for my skill level - close to optimum for me.

Difficulty

5. How would you rate the whitewater difficulty of this run? (Use American Whitewater's International Scale of Whitewater Difficulty that ranges from Class I to Class VI) II+

6. Please identify rapids or sections you needed to portage and rate the difficulty of those portages (using your type of craft at this flow level). NA

Location Description	Portage Difficulty				Requires Technical Portage Ropes	Portage Route (River Right or Left)	Estimated Portage Time
	Easy	Slightly Difficult	Moderately Difficult	Extremely Difficult			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			
	1	2	3	4			

Time

7. Estimate the number of times you stopped and got out of your boat for breaks, scouting, or for portaging and estimate the total amount of time spent.

Number of stops for breaks		Total minutes out of boat	
Number of stops for scouting	1	Total minutes out of boat	15 min (pump station)
Number of stops for portaging		Total minutes out of boat	

Hazards

8. Did you observe any specific safety hazards beyond those normally encountered running a river of this difficulty at this flow? If so, please describe them below.

Location Description	Safety Hazard
1. Debris (old bridge) rebar near conf.	raft ripper
2.	
3.	

Flow Estimates

9. In general, would you prefer a flow that was higher, lower, or about the same as this flow? *(Circle one)*

   a. Much lower flow
   b. Slightly lower flow
   c. About the same; this was close to an optimum flow
   (d.) Slightly higher flow
   e. Much higher flow

Please explain: I think somewhere between 1000 - 1200 would be perfect for me.

10. Based on today's study and your experience, can you identify a range of flows that would be suitable for boating at this location ☒ Yes ☐ No

	yes	no	Flow (cfs)
Minimum Acceptable: The lowest flow at which you would be willing to return to boat on this run.	X		400-450
Optimal: The flow that creates the best combination of characteristics for your craft type and skill level.	X		1000-1200
Maximum Acceptable: The highest flow at which you would be willing to return to boat this run.	X		1700

11. If "No" to question 10, the flow should be: ☐ Higher ☐ Lower

Please explain:

Access

12. Was the put-in that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain: But parking is a problem if there are alot of users.

13. Was the take-out that you used adequate at today's study flow?

a. Yes ☒
b. No ☐

If No, please explain: Great to have a ramp right to the water. Long walk ~~out of the~~ to the parking lot is not fun.

14. Please provide any additional comments about the run at this flow.

Nice Scenery and solitude. No dredgers or ATV use makes this a nice run.

APPENDIX J

Angler Focus Group Materials

May 20, 2008 Angler Focus Group Meeting
List of Potential Focus Group Participants

Placer County Water Agency
Middle Fork American River Project
FERC Project No. 2079

Potential Angling Focus Group Participants					
First Name	**Last Name**	**Affiliation**	**Position**	**Suggested by**	**Notes**
Gray	Allen	Public Relations Consultant	PCWA Board Member	PCWA	
Dan	Bacher	UARF, Fish Sniffer		J Leimbach	younger, planting fish, maybe more access, prefers PM meeting
Tom G.M.	Bartos	Horseshoe Bar Fish and Game Preserve	President	J Leimbach	
Karl	Brustad	Trout Unlimited Granite Bay Flycasters		J Leimbach Brent Smith	
Joe	Byrne	General Public		G Flanagan	
Bill	Carnazzo	UARF Spring Creek Guide Service		J Leimbach	prefers PM meetings fishing guide for last 15 yrs- 35 yrs experience in watershed- uses flyrod and flies
Brad	Cavallo	Fisheries Scientist		J Leimbach	
Sam	Davidson	Trout Unlimited	CA Field Director	J Leimbach	
Gary	Flanagan	Horseshoe Bar Guide Service Federation of Flyfishers		J Leimbach	
Damian	Forsythe	Hooked Up Anglers		J Leimbach	
Grant	Fraser	UARF		J Leimbach	prefers pm meeting
Larry	Goodell	CA Inland Fisheries		G Flanagan	
Monte	Hendricks	Angler		J Leimbach	
Roger	Lee	Wilderness Adventures		J Leimbach	He has knowledge of runs other than the Oxbow reach. Also on Boating list.
Ronald F	Otto	General Public		G Flanagan	Bev is checking email address_040708.
Bart	Petrini	UARF		J Leimbach	
Bill	Templin	Upper American River Foundation		J Leimbach	prefers pm meeting
Ed	Wahl	Flyfisher		J Leimbach	
Heath	Wakelee	Sierra Foothills Audubon	Conservation Coordinator	J Leimbach	
Robert	Weygandt	Placer County Supervisor, District 2		B Storey	Storey to provide contact info per 3/26 meeting heidipaoli@placer.ca.gov_Mr. Weygandt's secretary

Notes:
All personal information including contact information has been removed.

May 20, 2008 Angler Focus Group Meeting
Email Correspondence, Invitation Letter
and Material to Potential Focus Group Participants

"PCWA MFP Relicensing" <Relicensing@pcwa.net>
04/04/2008 12:57 PM

To "Bart Petrini" <bfpetrini@foothillwireless.net>, "Bill Carnazzo" <bcarnazzo@ftcnet.net>, "Bill Templin" <wtemplin@surewest.net>, "Brad Cavallo"
cc
bcc
Subject PCWA/MFP FERC Relicensing - Angler Focus Group Invitation

Dear Stakeholder -

The Placer County Water Agency (PCWA) invites you to participate in a focus group to develop information regarding fishing opportunities on the river and stream reaches associated with the Middle Fork American River Project (MFP). The Angler Focus Group session will be held from 6:00 - 9:00 PM on May 20, 2008, in PCWA's American River Room located at 144 Ferguson Road, Auburn, California. Directions and a map are attached for your use. An invitation, which includes additional information about the purpose of the group and details about the meeting, is attached. This invitation and associated map are also available on PCWA's web site and can be accessed by clicking on the following link: http://relicensing.pcwa.net/meetings.htm.

We look forward to your participation in the Angler Focus Group. Please reply to this message and let us know if you are planning to participate so that we can plan accordingly. As always, feel free to call Mal Toy, MFP Relicensing Manager, at (530) 823-4889 if you have any questions or need additional information.

Sincerely,
Beverly Bell
Administrative Aide
PCWA

(530) 823-4973

April 4, 2008 Angler Focus Group Invitation.pdf Fig 1_ Rivers and Streams.pdf Map to PCWA.doc

PCWA
FIFTY YEARS

PLACER COUNTY WATER AGENCY

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4
Otis Wollan, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

April 4, 2008
File No. 01030A

Re: Invitation to Participate in an Angler Focused Discussion Group
Middle Fork American River Project (FERC Project No. 2079)

Dear Stakeholder -

The Placer County Water Agency (PCWA) invites you to participate in a focus group to develop information regarding fishing opportunities on the river and stream reaches associated with the Middle Fork American River Project (MFP or Project). These river and stream reaches are shown on the Figure 1 (Attachment A).

The Angler Focus Group session will be held from 6:00 – 9:00 PM on May 20, 2008 in PCWA's American River Room located at 144 Ferguson Road, Auburn, California. Resource maps and other materials will be provided during the meeting to aide the discussion. A brief overview of the MFP and the relicensing process is provided in Attachment B.

Your participation is being requested due to your specific knowledge about the fishing opportunities and resources in the Middle Fork American River Watershed (Watershed). The Angler Focus Group participants are identified on the attached invitation list (Attachment C). The Angler Focus Group participants were selected to represent a broad range of experience, skill levels, and interests. The specific topics to be covered are summarized in Attachment D. We encourage you to bring any additional information you think may help us characterize the fishing opportunities on the stream and river reaches associated with the MFP.

PCWA appreciates your participation in the Angler Focus Group. If you have any questions regarding this focus group or need any additional information, please contact Mal Toy, MFP Relicensing Manager, at (530) 823-4889.

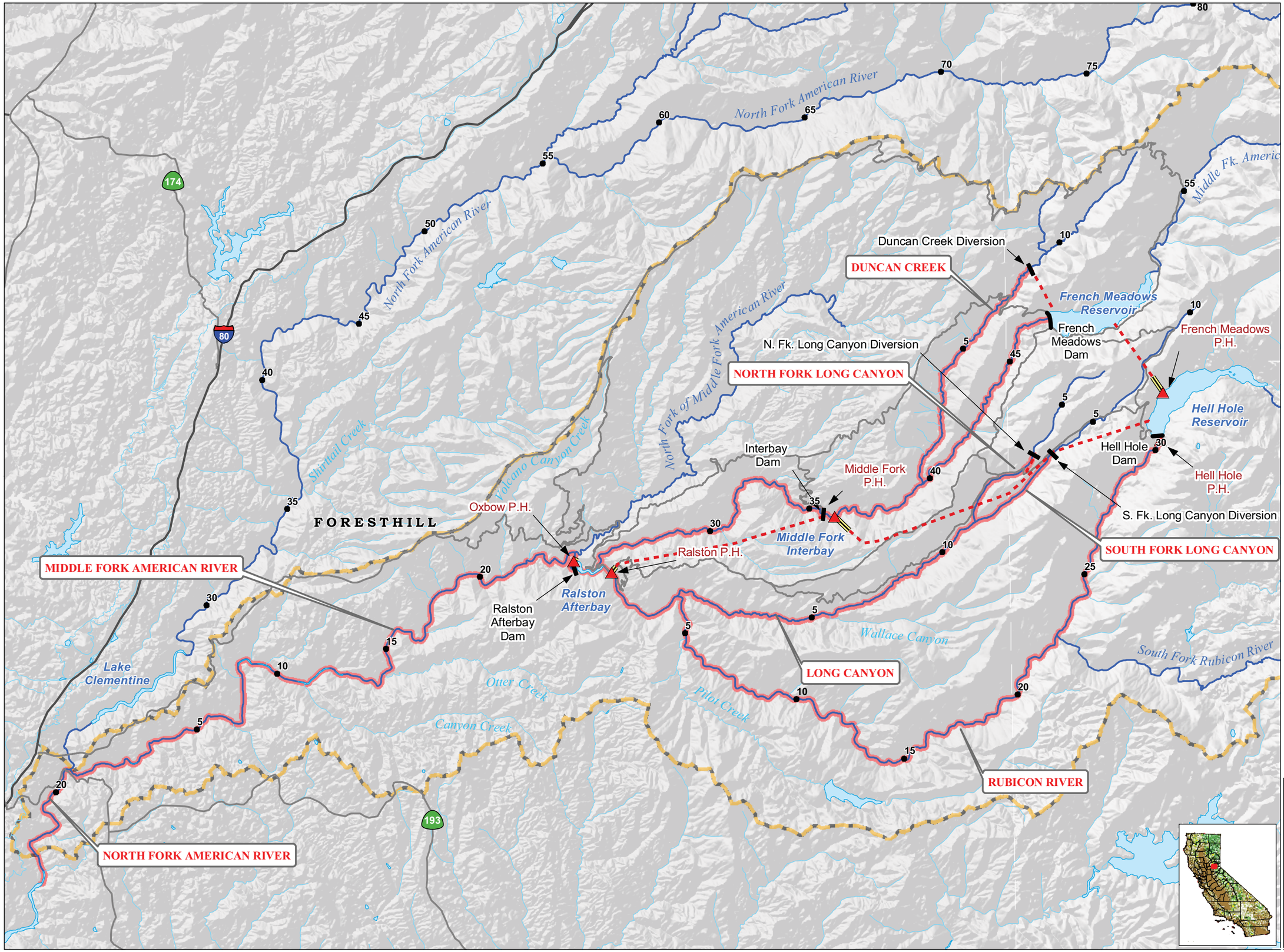
Sincerely,
PLACER COUNTY WATER AGENCY

Mal Toy
Director of Resource Development

Attachments:

A- Figure 1 (Map)
B- Overview of the MFP and the Relicensing Process
C- Angler Focus Group Invitation List
D- Angler Focus Group Topics

ATTACHMENTS



Project Facilities

- Powerhouse
- Dam
- Tunnel
- Penstock

Transportation

- Major Highway
- Minor Highway

Hydrography

- Watercourse with river miles (5 mi. increments)
- Water Body
- Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

- Watercourse Affected by PCWA Operations

PCWA

Placer County Water Agency
Middle Fork American River Project

Figure 1

River and Stream Reaches Associated with the MFP

Miles

Date: 3/3/08

Projection: CA State Plane, Zone 2
Datum: NAD 83

Z:\Entrix\3116501\map\RecreationMaps\PCWA_ProjectWatercourse_FlowAffected_17i11i_01.mxd

Attachment B

Overview of the MFP and the Relicensing Process

PCWA owns and operates the MFP, a multi-purpose water supply and hydro-generation project. The MFP facilities are situated in the foothills and mountainous uplands of the western slope of the central Sierra Nevada, within the Tahoe and Eldorado National Forests. The MFP facilities are located on the Middle Fork American River, the Rubicon River, Duncan Creek, and the North and South Forks of Long Canyon Creek. The MFP began operating in 1967 and supplies water for homes, industry, and agriculture within western Placer County and clean renewable energy to the California electric grid.

The MFP operates under a 50-year license, which was issued by the Federal Energy Regulatory Commission (FERC) in 1963. The current license will expire on March 1, 2013. Accordingly, PCWA has initiated a process to the relicense the Project. PCWA formally began the relicensing process when it filed a Notice of Intent (NOI) and Pre-Application Document (PAD) with the FERC on December 13, 2007. The NOI and PAD are available in their entirety on PCWA's relicensing website at http://relicensing.pcwa.net/pad.htm.

In April and May of 2006, PCWA conducted several Introductory Stakeholder Meetings, organized a Plenary Group to facilitate communication and decision making activities, and formed Technical Working Groups (TWGs). A major accomplishment of the Plenary and TWGs was the collaborative development and approval of 28 separate Technical Study Plans (TSPs), of which five are recreation-related. These five TSPs were included in the PAD and are identified as follows:

REC 1 – Recreation Use and Facilities Assessment TSP
REC 2 – Recreation Visitor Surveys TSP
REC 3 – Reservoir Recreation Opportunities TSP
REC 4 – Stream-based Recreation Opportunities TSP
REC 5 – Visual Quality Assessment Technical Study Plan

All of the TSPs are available on PCWA's website at http://relicensing.pcwa.net/pad_SDH.htm. The five recreation-related TSPs can be accessed by clicking on the Appendix A - Recreation Technical Study Plans link.

PCWA began implementing select elements of the Plenary-approved TSPs in May 2007. These included: selection of instream flow modeling transects; fish, amphibian, and macroinvertebrate surveys; water quality sampling; recreation user counts; cultural resources inventories; vegetation community and wildlife habitat mapping; and bat surveys. The remainder of the technical studies presented in the PAD will be completed in 2008 and 2009. The focus groups are an element of the REC 4 – Stream Based Opportunities TSP and will be conducted in 2008.

Attachment C

Angler Focus Group Invitation List

Gray Allen	Public Relations Consultant
Dan Bacher	Upper American River Foundation (UARF) Fish Sniffer
Tom G.M. Bartos	Horseshoe Bar Fish and Game Preserve Member - Granite Bay Flycasters
Karl Brustad	Trout Unlimited Granite Bay Flycasters
Joe Byrne	General Public
Bill Carnazzo	UARF Spring Creek Guide Service
Brad Cavallo	Fisheries Scientist
Sam Davidson	Trout Unlimited
Gary Flanagan	Horseshoe Bar Fish and Game Preserve Member - Granite Bay Flycasters
Damian Forsythe	Hooked Up Anglers
Grant Fraser	UARF
Larry Goodell	CA Inland Fisheries
Monte Hendricks	Angler
Roger Lee	Wilderness Adventures
Ronald F. Otto	General Public
Bart Petrini	UARF
Bill Templin	UARF
Ed Wahl	Flyfisher
Heath Wakelee	Sierra Foothills Audubon
Robert Weygandt	Placer County Supervisor, District 2

Attachment D

Angler Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Primary fishing method
    - Affiliation(s)
    - Commercial or private
    - Specific experience fishing the river reaches in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Specific Reaches to be Discussed Further, based on Background and Experience of Participants and Project Nexus

3. Characterize Each Reach Identified Above

    - Identify fishing locations, including access points and adequacy (private and public access)
    - Typical fishing season
    - Typical fishing method
    - Fishing quality (success, fish size)
    - Flow related effects on fishability
    - Safety concerns
    - Comparable regional fishing streams
    - Identify sources for other pertinent information (e.g. guide books, anglers, web sites)
    - Adequacy of support facilities
    - Conflicts with other users

May 20, 2008 Angler Focus Group Meeting
Meeting Materials and Sign-in Sheet

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Recreation Resources
Angler Focus Group Discussion Meeting

May 20, 2008
6:00 PM - 9:00 PM

American River Room
Placer County Water Agency
144 Ferguson Road
Auburn, CA 95603

AGENDA

TIME	TOPIC
6:00 PM - 6:30 PM	**Overview by PCWA** • Welcome and Introductions • Review of Meeting Objectives • Overview of Middle Fork American River Project (MFP) and Relicensing Process • Summary of Recreation Technical Studies
6:30 PM - 9:00 PM	**Group Discussion** • Discuss Background and Experience of Participants • Identify Specific Reaches to be Discussed Further, based on Background and Experience of Participants and Project Nexus • Characterize Each Reach Identified Above
9:00 PM	**Adjourn**

MEETING OBJECTIVE

Develop information regarding fishing opportunities on the river and stream reaches associated with the MFP

MIDDLE FORK AMERICAN RIVER PROJECT RELICENSING
ANGLER FOCUS DISCUSSION GROUP MEETING
MAY 20, 2008
6PM – 9PM
SIGN-IN SHEET

NAME	AFFILIATION	INITIALS
Gray Allen	Public Relations Consultant	
Dan Bacher	Upper American River Foundation (UARF) Fish Sniffer	
Tom G.M. Bartos	Horseshoe Bar Fish and Game Preserve Member - Granite Bay Flycasters	
Karl Brustad	Trout Unlimited Granite Bay Flycasters	
Joe Byrne	General Public	
Bill Carnazzo	UARF Spring Creek Guide Service	
Brad Cavallo	Fisheries Scientist	
Sam Davidson	Trout Unlimited	
Gary Flanagan	NCCFFF	
Damian Forsythe	Hooked Up Anglers	
Grant Fraser	UARF	
Larry Goodell	CA Inland Fisheries	
Monte Hendricks	Angler	
Roger Lee	Wilderness Adventures	
Ronald E. Otto	General Public	
Bart Petrini	UARF	
Tom Simms	Member of the Public	
Bill Templin	UARF	
Ed Wahl	Flyfisher	
Heath Wakelee	Sierra Foothills Audubon	
Robert Weygandt	Placer County Supervisor, District 2	

MIDDLE FORK AMERICAN RIVER PROJECT RELICENSING
ANGLER FOCUS DISCUSSION GROUP MEETING
MAY 20, 2008
6PM – 9PM
SIGN-IN SHEET

NAME	AFFILIATION	INITIALS
Jim McNairy	None	JM

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Primary fishing method
    - Affiliation(s)
    - Commercial or private
    - Specific experience fishing the river reaches in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Specific Reaches to be Discussed Further, based on Background and Experience of Participants and Project Nexus

3. Characterize Each Reach Identified Above

    - Identify fishing locations, including access points and adequacy (private and public access)
    - Typical fishing season
    - Typical fishing method
    - Fishing quality (success, fish size)
    - Flow related effects on fishability
    - Safety concerns
    - Comparable regional fishing streams
    - Identify sources for other pertinent information (e.g. guide books, anglers, web sites)
    - Adequacy of support facilities
    - Conflicts with other users

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: _____

Please provide the following information:

1. Your primary fishing method:

_____

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: _____

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☐ No
   If yes, what is that enterprise?

_____

_____

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

_____

_____

_____

_____

_____

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☐ Yes ☐ No

May 20, 2008 Angler Focus Group Meeting
Participant Profiles

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: THOMAS BARTOS

Please provide the following information:

1. Your primary fishing method:
   FLY FISHING

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☒ lakes/reservoirs ☐ both

3. Affiliation(s), if any: HORSESHOE BAR FISH + GAME PRESERV

4. Do you own, or are employed by, a commercial fishing enterprise? ☒ Yes ☐ No
   If yes, what is that enterprise?
   PRIVATE WATER FISHING CLUB

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   5 YEARS OXBOW TO SACRAMENTO
   HAVE ALSO FISHED MANY OF THE
   SIERRA RIVERS IN NORTHERN CALIFORNIA

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: JOE BYRNE

Please provide the following information:

1. Your primary fishing method:

FLY

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: NEVADA COUNTY LAND TRUST; YUBA RIVER PRESERVATION FOUNDATION

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
Years of experience and locations:

1 YEAR AT HORSESHOE BAR

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Bill Carnazzo

Please provide the following information:

1. Your primary fishing method:

   Fly Fishing only

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☑ both

3. Affiliation(s), if any: Granite Bay Flycasters; Federation of Fly Fishers Trout Unlimited; Cal Trout

4. Do you own, or are employed by, a commercial fishing enterprise? ☑ Yes ☐ No
   If yes, what is that enterprise?

   Fly Fishing Guide Service

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   35 years fishing the watershed
   15+ years guiding in the watershed

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☑ Yes ☐ No

Emailed to Entrix 5/28/08

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Brad Cavallo

Please provide the following information:

1. Your primary fishing method:
   (1) flyfishing (2) gear
   ↳ including bait
2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both
3. Affiliation(s), if any: American Fisheries Society
4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?
5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   20 years: MF American (peaking reach), Rubicon upstream of Ralston, Rubicon U/S of Elicot Bridge, Long Canyon near confluence w/ Rubicon, N.F. Middle Fork, Duncan Creek.
6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Monte Hendricks

Please provide the following information:

1. Your primary fishing method:

   fly fishing

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: member trout Unlimited

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   31 years Rubicon River

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Jim McNairy

Please provide the following information:

1. Your primary fishing method:

   Spincasting & fly fishing

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: None

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   Long Canyon Creek } 31 years, primarily Long Canyon
   Duncan Creek

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☐ Yes ☒ No

   But am willing to provide additional information on these reaches.

→ jmcnairy@sbcglobal.net

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

5/20/08

Name: Ron OTT

Please provide the following information:

1. Your primary fishing method:
   f l y (G) - Steelhead, sturgeon

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: Granite Bay Fly casters; Fed. Fly Fishers; Foothills Water Net. et al.

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   None recently on the MFA drainage
   only previous: Pilot Cr., Rubicon R. (Gm) Feb., c. 20-30 years ago

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No
   Some week-ends, yes

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: ED WAHL

Please provide the following information:

1. Your primary fishing method:

   FLY FISHING

2. Your primary type of waters fished (freshwater): ☑ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: _____

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☑ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   20 YRS FLY FISHING RUBICON AND THE REST OF THE DRAINAGE

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☑ Yes ☐ No

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Robert Weygandt

Please provide the following information:

1. Your primary fishing method:
   Fly Fishing

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☒ both

3. Affiliation(s), if any: Caltrout, Trout Unlimited

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   On and off, since mid 1960's

6. Are you willing and able to participate in fishing flow studies on the Middle Fork American River during the summer 2008? ☒ Yes ☐ No

when / if available

May 20, 2008 Angler Focus Group Meeting
Meeting Notes

"PCWA MFP Relicensing"
<Relicensing@pcwa.net>
09/15/2008 04:14 PM

To "Bart Petrini" <bfpetrini@foothillwireless.net>, "Bill Carnazzo" <bcarnazzo@ftcnet.net>, "Bill Templin" <wetemplin@att.net>, "Brad Cavallo"
cc "Ben Rualo" <ben_ffnc@yahoo.com>, "Bill Carnazzo" <bcarnazzo@ftcnet.net>, "Bill Deitchman" <bdeit@parks.ca.gov>, "Brad Cavallo"
bcc

Subject PCWA/MFP - May 20, 2008 Angler Focus Group Meeting Notes

Dear Angler Focus Group and Recreation Resources Technical Working Group Members –

Attached are the spreadsheets containing the notes that were captured during the angler focus group session, which was held at PCWA's headquarters on May 20, 2008. The information contained in the spreadsheets is essentially as it was recorded during the meeting, with one exception. Specifically, additional language was added to clarify access points and roads, where necessary. Please note that the information contained in the focus group spreadsheets is an attempt to capture comments made during a dynamic discussion. This is a starting point and we are continuing to build upon this information as our studies proceed.

If you have any questions, please don't hesitate to call me at (530) 823-4973.

Sincerely,
Beverly Bell

Administrative Aide

1_MFAR FM-Interbay updated.xls
2_MFAR Interbay - Ralston updated.xls
3_ MFAR Oxbow - Ruck updated.xls
4_ MFAR Ruck - Oregon Bar updated.xls
Duncan Crk updated.xls
Rubicon River - HH to Ellicott updated.xls
Long Canyon updated.xls
Rubicon River - Ellicott to Ralston updated.xls

Rubicon River - Hell Hole Reservoir to Ellicott Bridge
Fishing Locations:

Fishing Location and Access Points	
Road or trail used to access fishing location	North side of the river can be accessed using Hunter's Trail, which parallels nearly the entire reach from HH dam to Ellicott Bridge. The south side of the river is accessible using Parsley Bar Trail, Deer Creek Trail and South Fork Trail. Can also access this area by working upstream from Ellicott Bridge
	There used to be a primitive access area upstream of Ellicott Bridge. However, the area was blocked off as part of FS route designation process. Use has since decreased, particularly car camping and families who don't travel far from camp.
	Camping on south side of bridge is still available for primitive car camping.
Public or private access	All public access except for a section of private land on Parsley Bar Trail.
Support facilities available at this fishing location	Deer Creek Trail has small parking area, no info about facilities at South Fork Trail, unpaved parking area at Ellicott bridge, no facilities otherwise
Adequacy of support facilities	Deer Creek Trail access is adequate, toilet facilities at Ellicott Bridge would be a good improvement, parking is adequate at Ellicott Bridge
Typical season of use	Anglers would like to get into fishing areas earlier in the year. Access is limited early in the year due to snow. Usually can't get into Ellicott before Memorial Day.

Fishing Characterization and Quality	
Typical fishing gear used at this location	Generally more spinning and bait fishing closer to access point. More fly fishing as you travel farther than the access point.
Typical method used to fish this location (bank, wading, boat)	Combination bank and wading.
Target species	Rainbow and brown trout.
Average size of fish typically caught at this location	All agreed not to discuss this topic
Approximate number of fish typically caught per day	All agreed not to discuss this topic

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	satisfactory
Variety of fishing areas	can fish the whole area
Variety of fish species	haven't caught any brown trout since last high water event in 1997.
Size of fish	Fish size has declined over the years, particularly over the last 10-12 years. Observed algae in one particular area near Deer Creek (has long shallow runs with more sun)
Road access to fishing location	11 pines road
Trail access to fishing location	Hunters Trail on north side is a well maintained backpacking trail. Deer creek trail is difficult to find. The section of Parsley Bar Trail from Wentworth Springs road to the river does not exist and the section of the trail near Parsley Bar is difficult to find due to logging activity and overgrown vegetation.
Overall fishing experience	Good opportunity for remote hiking, camping, fishing experience. Not heavily used, which adds to uniqueness of this area.

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Standard summertime flow is easy to fish. Flows have usually decreased by the time you can get into the area. Rubicon has water in it when other streams may not, for example Middle Fork American River. This stretch looks the same all the time.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	motorcycles on Hunter's trail
Conflicts with other users	motorcycles on Hunter's trail
Comparable regional fishing streams	
	algae (Didymo?) observed between RM 25 and RM 26.

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations

American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Rubicon River - Ellicott to Ralston
Fishing Locations: Ellicott Bridge Area, Nevada Point Trail Area, Ralston Powerhouse Area

Fishing Location and Access Points	
Road or trail used to access fishing location	The Rubicon from Ellicott Bridge downstream to about RM 18 can be accessed from Ellicott Bridge, Slide Point Trail, and Lawyer Trail. These points are accessed via FR-2. The area between RM 18 and RM 6 is virtually inaccessible. The area downstream of RM 6 can be accessed via Nevada Point Trail, which from the east is accessed by Nevada Point Trail, and from the west is accessed from Road 13N66. The Nevada Point Trail crosses the Rubicon at an old bridge that is located upstream of the Long Canyon confluence. The area near Long Canyon confluence is accessible from the north via 14N25G and from the south via road 13N66. Anglers also fish the Rubicon upstream of Ralston Powerhouse
	There used to be a primitive access area upstream of Ellicott Bridge. Area was blocked off as part o FS route designation process. Use has since decreased, particularly car camping. Families don't travel far from camp.
	Camping on south side of bridge is still available for primitive car camping
	Ed accesses river from Lawyer Trail and fishes upstream to bridge. Monte sets up camp and fishes downstream of Lawyer Trail. From Nevada Point trail he works upstream
Public or private access	All public access points
Support facilities available at this fishing location	Unpaved parking area at Ellicott bridge and near Ralston PH. Otherwise, no support facilities are located at these access points.
Adequacy of support facilities	Toilet facilities at Ellicott Bridge would be a good improvement, parking is adequate at Ellicott Bridge. Directions to Nevada Point trail would be helpful as the trail is difficult to find
Typical season of use	Can get into this area earlier than upstream of Ellicott because it is lower elevation. Can access when flows are too high to fish.

Fishing Characterization and Quality	
Typical fishing gear used at this location	Spin and fly fishing. Upstream of Nevada Point access is a rugged canyon. Usually spin fishing upstream of Nevada Point.
Typical method used to fish this location (bank, wading, boat	Combination bank and wading.
Target species	Rainbow and brown trout.
Average size of fish typically caught at this location	All agreed not to discuss this topic
Approximate number of fish typically caught per day	All agreed not to discuss this topic

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location	
Number of fish caught	satisfactory
Variety of fishing areas	can fish the whole area
Variety of fish species	haven't caught any brown trout since last high water event in 1997. Have caught big suckers
Size of fish	Fish size has declined over the years, particularly over the last 10-12 years.
Road access to fishing location	Limited access to area. Large area in the middle of the reach that is virtually inaccessible.
Trail access to fishing location	
Overall fishing experience	Good opportunity for remote hiking, camping, fishing experience. Not heavily used, which adds to uniqueness of this area.
	Characterizations apply to upstream and downstream reaches.

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Standard summertime flow is easy to fish. Flows have usually decreased by the time you can get into the area. Rubicon has water in it when other streams may not, for example Middle Fork American River. This stretch looks the same all the time.
Variety of useable instream fishing areas	
Ability to fish from streambank	Can not fish when flows are high because you can not cross stream to work up and down river. This typically occurs during the spring when tributary flows are high.
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	

Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	high flows - see above, wading and fording
Conflicts with other users	
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites)	

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Middle Fork American River - French Meadows Dam to Middle Fork Interbay
Fishing Location (link to wall map):

Fishing Location and Access Points	
Road or trail used to access fishing location	Trail access immediately below dam and about 1 mile downstream from FM dam. Can also access at Middle Fork Interbay.
Public or private access	
Support facilities available at this fishing location	none
Adequacy of support facilities	okay
Typical season of use	access constrained by snow

Fishing Characterization and Quality	
Typical fishing gear used at this location	spinning and flyfishing
Typical method used to fish this location (bank, wading, boat)	Wet wade. May have to swim to get to good fishing spots.
Target species	mostly brown trout
Average size of fish typically caught at this location	occasionally some big fish (10 years ago)
Approximate number of fish typically caught per day	

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	Can normally catch quite a few fish. Satisfactory
Variety of fishing areas	satisfactory if you wet wade
Variety of fish species	
Size of fish	Satisfactory
Road access to fishing location	good after snow is cleared
Trail access to fishing location	good if you know the access points
Overall fishing experience	good

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Anglers have to time fishing so that they are not there when flows are too high to wet wade (e.g. after spring run off period).
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	Important to make sure it is possible to get in and out of river canyon. It is possible to end up in a part of the river where it is difficult to get out due to steep banks.
Conflicts with other users	
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g., guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties)	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Middle Fork American River - Middle Fork Interbay - Ralston Afterbay

Fishing Location (link to wall map):

Not great fishing due to lack of water. Better opportunities nearby.

Fishing Location and Access Points	
Road or trail used to access fishing location	
Public or private access	
Support facilities available at this fishing location	
Adequacy of support facilities	
Typical season of use	

Fishing Characterization and Quality	
Typical fishing gear used at this location	
Typical method used to fish this location (bank, wading, boat)	
Target species	
Average size of fish typically caught at this location	
Approximate number of fish typically caught per day	

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	
Variety of fishing areas	
Variety of fish species	
Size of fish	
Road access to fishing location	
Trail access to fishing location	
Overall fishing experience	

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	
Conflicts with other users	
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Duncan Creek

Fishing Location (link to wall map):

Fishing Location and Access Points	
Road or trail used to access fishing location	Western States Trail, which crosses Duncan Creek between Robinson Flat and French Meadows Reservoir. Mosquito Ridge Road (Road 96) where it crosses Duncan Creek. Duncan Creek Diversion Dam access road.
Public or private access	Tahoe National Forest
Support facilities available at this fishing location	Parking is available at Robinson Flat, which is a good area to stage from. Otherwise there are no support facilities.
Adequacy of support facilities	NA
Typical season of use	Open year round but snow on Mosquito Ridge Road limits access during late fall, winter and early spring. Group considers this a spring fishery because after that the water warms up and the fish get "spooked".

Fishing Characterization and Quality	
Typical fishing gear used at this location	Mostly fly fishers.
Typical method used to fish this location (bank, wading, boat)	Float tube at French Meadows inlet - good fishing for browns in the fall
Target species	Brown trout and rainbow trout. Varies by year.
Average size of fish typically caught at this location	NA
Approximate number of fish typically caught per day	NA

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	Satisfactory
Variety of fishing areas	Can fish the whole area
Variety of fish species	Similar to Rubicon River but smaller fish.
Size of fish	
Road access to fishing location	Road 96 provides access.
Trail access to fishing location	Western States Trail provides access.
Overall fishing experience	Good opportunity for remote hiking, camping, fishing experience. Not heavily used, which adds to uniqueness of this area.
Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	No problem fishing or wading under typical flow conditions.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	Anglers mainly fish from banks and typically do not wade in stream.
Ability to cross the stream	No problem fishing or wading under typical flow conditions.
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	
Conflicts with other users	
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations

American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties.)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Long Canyon
Fishing Location (link to wall map):

Fishing Location and Access Points	
Road or trail used to access fishing location	Forest Route 2, Forest Road 14N25, Ramsey Crossing, Buckeye Flat Road (dirt)
Public or private access	Long Canyon traverses patchwork of private and public lands
Support facilities available at this fishing location	Middle Meadows Group Campground is located on the South Fork Long Canyon Creek. Otherwise, there are no facilities. Anglers mainly access Long Canyon from dispersed camping areas.
Adequacy of support facilities	adequate
Typical season of use	access constrained by snow

Fishing Characterization and Quality	
Typical fishing gear used at this location	spinning and fly
Typical method used to fish this location (bank, wading, boat)	bank wading
Target species	all rainbows
Average size of fish typically caught at this location	NA
Approximate number of fish typically caught per day	NA

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	satisfied
Variety of fishing areas	
Variety of fish species	
Size of fish	
Road access to fishing location	
Trail access to fishing location	
Overall fishing experience	

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Adequate. Flow is fairly stable. Flows decrease during the summer but the creek is still fishable.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	none
Conflicts with other users	none
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties)	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Middle Fork American River - Oxbow to Ruck a Chucky
Fishing Location (link to wall map):

Fishing Location and Access Points	
Road or trail used to access fishing location	Indian Bar Rafter Put-in, private access at Horseshoe Bar, Cache Rock Road (OHV), Driver's Flat Road, Sliger Mine Road, Cock Robin Trail to Fords Bar. Can also get to Fords Bar area from the north side of the river via Todd Valley Road, which is gated.
Public or private access	All access is located within ASRA. Road to Horseshoe Bend area is private. Road to Cache Rock is maintained by USFS. Road to Fords Bar is private.
Support facilities available at this fishing location	Toilets and parking at Indian Bar Rafter put-in. Campground and day use facilities, including parking and toilets at Ruck-a-Chucky. Private facilities at Horseshoe Bar. Otherwise, no developed facilities.
Adequacy of support facilities	Adequacy of Indian Bar facilities is good, gate at the end of Drivers' Flat road is a problem
Typical season of use	Year round use

Fishing Characterization and Quality	
Typical fishing gear used at this location	everything
Typical method used to fish this location (bank, wading, boat)	all
Target species	rainbows, brown trout
Average size of fish typically caught at this location	NA
Approximate number of fish typically caught per day	NA

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	adequate
Variety of fishing areas	Limited by lack of access, long distances between public access points, and mixture of public and private land. More access than on the Rubicon but higher expectations because there is more water.
Variety of fish species	Rainbow fishery with more browns as you go downstream. Break in the type of species caught below Cache Rock. More browns below Cache Rock area.
Size of fish	Fair
Road access to fishing location	Road access is okay. There is not good access for boat fishing and people who want to do a multi-day trip. Gated access at Ruck a Chucky makes it difficult to take out because you have to portage gear around Ruck a Chucky rapid.
Trail access to fishing location	Primarily use roads to access this reach.
Overall fishing experience	Fishing is good at high flows and at low flows. Can move around to find where fish are at low flows and at high flows. Fishing is poor when conditions are changing during ramping. Fish stop rising. This occurs over a 3 hour window (2 hours of ramping plus about an hour afterwards)

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	High flows reduce area to fish because you can't cross over to move upstream and downstream.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	

Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Always fishable
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	May cross at low water and then get stranded when flows increase. Forces you to swim to get back to your car.
Conflicts with other users	Haven't had any conflicts with commercial whitewater boaters. Potential conflicts with private property owners (e.g. access along the stream given it is contiguous to private property)
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties)	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Middle Fork American River - Ruck a Chucky to Oregon Bar
Fishing Location (link to wall map):

Fishing Location and Access Points	
Road or trail used to access fishing location	On north side of river: Driver's Flat Road to Ruck-a-Chucky, gated road gated to Poverty Bar, Mammoth Bar, Confluence area, China Bar Recreation Area (Birdsall and Oregon Bar Access points). On south side of river: Sliger Mine Road to Cherokee Bar, Quarry Trail, American River Trail.
Public or private access	All access is located within ASRA. Highway 49 also provides access.
Support facilities available at this fishing location	Day use and overnight facilities located at Ruck-a-Chucky, including parking and toilets. Toilets and parking available at the Mammoth Bar, the Confluence, and in the China Bar Recreation Area.
Adequacy of support facilities	Facilities are okay at Mammoth Bar. Parking is not good at Oregon Bar/China Bar because parking lot is too far from river.
Typical season of use	Year round fishing. However, the gate at China Bar recreation area is only open on weekends.

Fishing Characterization and Quality	
Typical fishing gear used at this location	All.
Typical method used to fish this location (bank, wading, boat)	All fishing methods. Also fished from boats. Pretty good boat fishing from Mammoth Bar to Confluence.
Target species	Fewer trout. Good brown trout fishing in the fall.
Average size of fish typically caught at this location	NA
Approximate number of fish typically caught per day	NA

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	Not many fish compared to upstream.
Variety of fishing areas	
Variety of fish species	Greater variety of fish than upstream.
Size of fish	
Road access to fishing location	See above
Trail access to fishing location	Lots of trails
Overall fishing experience	Not great but close to town

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	High flows reduce area to fish because you can't cross over to move upstream and downstream.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Can fish at fairly low flows in this reach.
Maximum flow at which you would fish at this location (in cfs)	
Other Information	
Safety concerns	Murderer's Bar rapid (just below Mammoth Bar), no place to take out upstream of the whitewater channel adjacent to the pump station (although you can portage around it)
Conflicts with other users	nude bathers downstream of Confluence
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

2008-2009 Freshwater Sportfishing Regulations

American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine counties)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

May 20, 2008 Angler Focus Group Meeting
Stakeholder Comments

FOOTHILLS WATER NETWORK

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September 22, 2009

Comments on Placer County Water Agency's
Draft REC 4 – Stream-based Recreation Opportunities Technical Study Report

Dear Mal Toy and Andy Fecko,

Please accept the following comments on PCWA's Draft REC 4 – Stream-based Recreation Opportunities Technical Study Report (REC 4 Report) on behalf of the Foothills Water Network Middle Fork American Work Group members.

The Foothills Water Network asks that the Recreation Study Report be revised in the manner recommended in our comments below. We are not asking for new studies at this time.

Foothills Water Network
This response was jointly developed and signed by non-governmental organizations and by individuals participating in the Middle Fork American Relicensings. The Foothills Water Network represents a broad group of non-governmental organizations and water resource stakeholders in the Yuba, Bear, and American Watersheds. The overall goal of the Foothills Water Network is to provide a forum that increases the effectiveness of non-profit conservation organizations to achieve river and watershed restoration and protection benefits for the Yuba, Bear, and American Rivers. This includes negotiations at the county, state, and federal levels, with an immediate focus on the FERC relicensing processes.

Organization of Comments
Our comments are divided into three major sections: Hydrology, Angling, and Whitewater Boating. Within each of the two sections, our comments are organized chronologically as they appear in the REC 4 Study Report. Further, we have copied the report's wording directly into this letter and added our recommended changes. The report's wording is italicized; our edits are indicated with strikethrough and underlines.

In addition, we have included two Appendices:
Appendix A: Bill Carnazzo's Comments on the Angling Portions of the Recreation Study
Appendix B: Comments Related to Typography and Presentation

ANGLING

The REC 4 Study Report, inappropriately interprets information received in the Angler Focus Group information to say that angling is best when flows are low and clear on the peaking and

bypass reaches. We find that the interpretation of the study results goes beyond the limited information provided by the study and reads more into the data than is actually there.

In contrast to the report's synopsis of angling results, anglers have found that some of the best fishing in the Middle Fork American and Rubicon watersheds occurs when the flows are higher than the typical summer flows in the bypass reaches and when there is some color to the water, which provides some cover for larger fish to feed. The report's interpretation of the angler focus group results should be revised in the manner recommended below.

Our Network comments are informed by the angler signatories as well as contributions by expert Bill Carnazzo, a member of the Upper American River Foundation and a licensed guide with approximately 50 years of fly fishing experience. He has been fishing the streams found in the Middle Fork drainage for over 40 years. We reference parts of Mr. Carnazzo's comments, which have been submitted to PCWA separately.

Following are our recommended edits and comments to underscore the point that low flow and clear water are not best for angling in all the project reaches:

[p.26]
While the Angler Focus Group Notes indicate that anglers find it possible to wade in all parts of the river during summer flows on the bypass reaches, the notes do not make any reference to whether they prefer those low flows or would prefer a little higher flows, or whether those low flows are "conducive" or support the best fishing experience. We suggest the following edits to reflect the Angler Focus Group Notes.
According to the Angler Focus Group participants, the project's stable summer flows on the bypass reaches, including on the Rubicon River, make the rivers wadeable. Spring flows with accretion from tributaries make it more difficult to wade in the river. However, anglers expressed an interest in being able to access the bypass reaches earlier in the spring. Currently, snow prohibits access because the roads are not plowed. ~~are conducive to fishing when the area is accessible (e.g., snow does not prohibit access).~~

[p.27]
The Angler Focus Group reports that fishing quality declined during the ramping period on the peaking reach. The report should clarify at what threshold rate the fishing quality is affected (40cfs / 15 min ?). If this is not known, the study should say the information is not available.

[p.110]
We disagree with the representation that the Angler Focus Group reported a preference for low flows. The Angler Focus Group Notes do not anywhere say the anglers stated a preference for low flows. Anglers did report that low summer flows made fishing "easy" and a large area of river "wadeable". The notes do not indicate if the anglers might prefer a slightly higher flow than is currently available in the summertime. Neither do the notes speak to anglers' ability to fish from the bank nor instream eddies at higher flows. The notes do not include any numeric flow estimates to correlate to what are referred to as "wadeable" flows, "summer" flows, or "low" or "high" flows. The Angler Focus Group Notes do not mention anything about high flows making

it harder to catch fish because they seek refuge nor due to turbidity. If this information was collected in follow-up interviews, the process and interviews should be described.
The interview question that seems to be the source of the representation for the Draft REC 4 Report is "What is the available instream fishing area?" This question does not ask whether the fishing is satisfactory or what flows they would prefer. Nor does the question ask about the association between wading, low flows, and clarity.

For example, the Angler Focus Group Notes for the Rubicon state:
Availability of usable instream fishing area: Standard summertime flow is easy to fish. Flows have usually decreased by the time you can get into the area. Rubicon from Ellicotts to Ralston has water in it when other streams may not, for example Middle Fork American River. This stretch looks the same all the time. (Appendix J: Angler Focus Group Notes)

Ability to fish from streambank; Ability to walk shoreline/bank; Ability to stand/wade in stream; Ability to cross the stream: Can not fish when flows are high because you can not cross stream to work up and down river. This typically occurs during the spring when tributary flows are high. (Appendix J: Angler Focus Group Notes)

The following indicates that anglers may like to be able to fish the Rubicon at higher flows before the tail-end of the snow-melt hydrograph. This does not support the PCWA Study Report analysis that anglers only prefer clear and low flows. Angler Focus Group Notes state:
Anglers would like to get into fishing areas earlier in the year. Access is limited early in the year due to snow. Usually can't get into Ellicott before Memorial Day. (Appendix J: Angler Focus Group Notes)

Monte Hendricks, one of the anglers in the Angler Focus Group clarified in an email that at the Focus Group, he said, "I stated at the angler's focus group meeting that one reason I fished the Rubicon canyon was because of the higher flows as compared to the Middle Fork coming out of French Meadows. That should not have been taken as overall satisfaction with the current flow regime."

On the subject of fishing the Interbay-Ralston reach, Bill Carnazzo writes: The flows are so attenuated beginning in late spring that you can walk across it and hardly get your ankles wet. The algae is so thick that angling is nearly impossible. There are some plunge pools that hold fish but the water is so warm that it's probably not ethical to fish for them. In short, this stream is sick and needs far more water than the current allotment. If more water is provided, it can recover….

Long Canyon
Availability of usable instream fishing area: Adequate. Flow is fairly stable. Flows decrease during the summer but the creek is still fishable. (Appendix J Angler Focus Group Notes)
Again, this does not mean anglers prefer low or clear flows as reported in the draft REC 4 report.

Peaking Reach – Ralston – Ruck-a-Chucky Campground and to China Bar / Rattlesnake Bar
Fishing is good at high flows and at low flows. Can move around to find where fish are at low flows and at high flows. (Appendix J Angler Focus Group Notes)

Anglers didn't say they prefer low and clear flows on this reach. However, they did say that "High flows reduce area to fish because you can't cross over to move upstream and downstream". But a reduced area to fish and better fishing at slightly higher but still wadeable flows may be preferable.

Accordingly, we suggest the following edits to the Recreation Study Report.
[p.110]
The conclusions one can draw from the Angler Focus Group Notes are very limited. The Angler Focus Group Notes do not reflect ~~focus group participants did not identify any~~ specific flow-related concerns or issues on the bypass reaches, including the Rubicon River. The focus group participants reported that flows on the bypass reaches are typically conducive to wading and fording in the summertime. ~~Fishing~~ when the area is accessible (e.g., the roads are no longer closed due to snow and spring run-off has receded).
~~According to the focus group participants, anglers prefer the lower flows that are typically present when the area is accessible, for several reasons~~:
From the information provided by the Angler Focus Group, we may surmise that lower flows allow easier wading and fording in ~~access to~~ the river channel, and movement upstream and downstream through the channel. Though the Notes do not mention a preference for wading versus fishing from the bank in any of the reaches, anglers may focus on wading due to steep and rugged banks as well as encroaching vegetation that may hinder casting.

The first bullet is the only one that is supported by the Angler Focus Group Notes and it is captured in the paragraph above. The study results do not provide information to support the last two bullets so we recommend they be struck.

- *~~Lower flows allow easier access to the river channel, and movement upstream and downstream through the channel. Lower flows allow anglers to more easily move along the shoreline and cast;~~*
- *~~Fish seek refuge when flows are high and therefore can be harder to catch; and~~*
- *~~Turbidity increases when flows are high, which reduces angling success.~~*

[p.111]
Higher flows are a limitation to wet wading and fording but not fishing from the banks or eddies. Focus group participants said they do a combination of bank and wet-wade on Rubicon (Appendix J Angler Focus Group Notes). Encroaching vegetation due to a lack of spring flushing flows can hinder angling from the bank. The Angler Focus Group Notes are silent on this issue but the question could be informed by correlating angling sites with the Riparian Study. Please change the following statement accordingly:

If planning to wet wade, anglers have to time their fishing excursions so that they are not there when flows are too high to wet wade (e.g., after spring run off period). At flows that are too high to wade, anglers need space on the banks to hike and cast. In bypass reaches vegetation may be encroaching, which hinders angling from the bank. The Angler Focus Group Notes are silent on this issue. The Riparian Study Results should be considered in correlation with the areas anglers are fishing to understand if vegetation encroachment could be limiting angling activities from the bank in some river reaches.

[p.113]
While access for private boat fishing may be poor, commercial rafting / fishing outfitters do provide multi-day trips that should be mentioned here. Please make the following changes:

- *Anglers primarily use roads to access this reach. Access is poor for private boat fishing and for anglers who want to do a multi-day trip. Drivers Flat Road is gated at Ruck-a-Chucky, which means that anglers cannot take a boat or gear out above Ruck-a-Chucky Rapid. This results in a difficult portage around Ruck-a-Chucky Rapid.*
- *There are two commercial rafting/angling outfitters that offer multi-day drift boating and rafting trips down the Middle Fork American River starting at Oxbow and ending at China Bar Recreation Area.*

Despite the challenge of access, the REC 4 Report should note that the Angler Focus Group indicates that they do boat fish in the Mammoth to Oregon Bar reach as stated below:
Typical method used to fish this location: All fishing methods. Also fished from boats. Pretty good boat fishing from Mammoth Bar to Confluence.

[Insert p. 113]
Middle Fork American River – Oxbow Powerhouse to Ruck-a-Chucky Campground
The Aquatics Studies are examining test flows for re-watering the Horseshoe Bend. This river reach, if re-watered, could provide a nursery for fish and enhance angling opportunities on the Tunnel Chute Run.

[p. 114]
We understand the study plan included the North Fork American River down to the high water mark of Folsom Reservoir. That said, in order to give an informative description of the Confluence Reach, the Rattlesnake Bar access and takeout should be included in the description as an alternative takeout and access point for anglers to wade upstream into the project area. Please also include Rattlesnake Bar in the maps. We recommend the description of the reach in the Angling section be changed accordingly:

Middle Fork American River and North Fork American River – Ruck-a-Chucky Campground to China Bar / Rattlesnake Bar

- *The lower portion of this reach is accessible via roads and trails in the China Bar Recreation Area and Rattlesnake Bar. However, China Bar is closed during the weekdays, which limits most use by anglers to weekends. If Folsom Reservoir is high, take-out at Rattlesnake Bar requires a flat water paddle out.*
- *When Folsom Reservoir is low, anglers also can wade upstream from Rattlesnake Bar as in summer 2009. See the descriptions of these runs in the Whitewater Boating sections for put-in, take-out, and whitewater characteristics.*

Please add the following information:

Duncan Creek
Anglers report smaller fish than Rubicon River. Duncan Creek is a spring fishery because after that it warms up too much and fish get spooked.

Peaking Reach
Anglers report peaking reach fishing is "Not great but close to town".

Safety Concerns
The primary safety concern for anglers in the peaking reach is stranding when ramping up takes place.

Facilities
Rubicon - Hell Hole to Ellicott
Toilet facilities at Ellicott Bridge would be a good improvement (Appendix J Angler Focus Group Notes)

WHITEWATER BOATING

[p.20]
Julie Leimbach provides comments on behalf of the Foothills Water Network Middle Fork Working Group, which includes a number of groups. Please clarify that this was not a comment letter provided by an individual. Please make the following edits:

Summary information about each of the reaches identified and discussed during the focus group session is provided in Table REC 4-7. The Foothills Water Network and its members, ~~Ms. Julie Leimbach~~ provided comments about the information developed at the focus group session in a letter dated February 9, 2009. The Foothills Water Network's comments have been incorporated into Table REC 4-7, as appropriate.

[p.20]
Please make the above statement more specific to clarify that one of the bypass reaches has been boated a great deal while only one boater has been reported to boat one bypass reach on the Middle Fork American. This is important to contextualize the whitewater boating information in the REC 4 Report.
Follow-up Consultation with Whitewater Boaters
~~*All of these contacts are considered highly experienced boaters and have boated at least one of the bypass reaches.*~~

All of these boaters have boated the Rubicon reach below Ellicotts Bridge. One of the boaters has boated the lower part of the French Meadows reach and all of the Interbay reach. None of them had boated the reach from French Meadows Dam to the confluence with Duncan Creek.

[p.21]

River/Stream	Reach or Segment	Boatable Flow Range (cfs)
Rubicon River	RM 25 to Ellicott Bridge	400–1500
Rubicon River	Ellicott Bridge to Ralston Afterbay	400–1500

		1501–3000
Middle Fork American River	Duncan Creek Confluence to Middle Fork Interbay	150–200
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	200–800
Long Canyon Creek	Confluence of North and South Fork Long Canyon Creeks to Confluence with Rubicon River	200–600

The flow ranges for Duncan and Middle Fork from Interbay to Ralston should be accompanied by a footnote stating:
These flow ranges are based on one boater's expert opinion formed from his experience on one trip down this river reach. No gauge information was available to him and the data cannot be checked against flows in the river because the trip date is unknown.

[p.21]
Since we don't really know what "most" boaters will do, this statement is too general and vague. We recommend the following edits:
The lower flow range represents the range of flows that both Class IV and V boaters can utilize, based on information developed through the focus group and through follow-up conversations with experienced boaters. The high range represents that range of flows preferred by Class V expert boaters.
The consultation interviewees and other professional boaters, including Phil Boyer and Jared Noceti, who attended the Recreation Work Groups, also underlined the amazing quality and uniqueness of this particular Sierra whitewater boating run.

~~*In the case of the Rubicon River – Ellicott Bridge to Ralston Afterbay reach, two flow ranges were analyzed, a lower range and a higher range. The lower flow range represents the range of flows that most boaters would utilize…*~~

[p.25]
Why is the analysis of boating opportunity days limited to starting in April and ending in October for the peaking reach? While this may be the appropriate window for commercial rafting on the Oxbow to Ruck-a-Chucky reach, the recently opened Confluence reach could be boated year-round. Perhaps an opportunities analysis for that reach from October to March would also be helpful. At a minimum, this section should state that the Confluence reach is used outside the timeframe of the boating opportunity days analysis.

[p.25 Boating Opportunities Analysis and related Table REC 4-12]
We recommend running the boating opportunity analysis with a 3-hour window in addition to the 4-hour window portrayed in this study report. A 3-hr window is the base minimum time needed to run a commercial rafting trip from Oxbow to Ruck-a-Chucky Campground at 1100 cfs. When making management decisions for dry water years, the analysis of the 3-hour window of time should be helpful. The analysis of the four-hour timeframe is also helpful; especially on days with high boating use and lower than optimum flow for commercial rafting.

[p.25]

The boating season is defined as April to October. Although that is the primary or peak season, the report should mention that private boating takes place all year.

[p.25]
The analysis of the study results uses 6 PM as the latest takeout for whitewater boating. This would be an early limit for private boaters from mid-May to mid-August and too late from mid-November to mid-February, especially on the Confluence reach, which is more accessible and can offer a short trip in the evenings.

[p. 29]
5.7.2 Existing Flow Information Sources
Flow information utilized by boaters, anglers and other stream users is typically available on internet and through flow phones, and may also be obtained from local outfitters and specialty stores.

We recommend clarifying that flow information is only available for some of the reaches under study from these various information outlets.
Boaters, anglers and other stream users find information on flows for some of the reaches under study online, through flow phones, local outfitters and specialty stores.

In general, flow information is not available at any of the aforementioned information outlets for any of the bypass reaches – French Meadows to Interbay, Interbay to Ralston, or Hell Hole to Ralston. Flow information is most widely available and most easily accessible in real time at Oxbow.

[Insert at the end of the paragraph] The results from our search for flow information outlets and the type of information they provide can be found in table XX…

[p.30]
5.7.3 Flow Information Enhancement Opportunities
Reaches where flow information may enhance stream-based recreational opportunities were identified based on analysis of the Recreation Visitor Survey conducted as part of the REC 2 – TSP, discussions during the focus group meetings, and follow-up conversations with anglers, equestrian users, and whitewater boaters.

At the end of the paragraph, please insert where the information on flow information for each reach can be found.

[p.32]
Please also discuss operations on weekends. This section only specifies operations on weekdays in the peaking reach. (see *Summer/Fall Season. On summer weekdays…)*

[p.36]
6.2.1 Bypass Reaches

Observations and vehicle count data collected by PCWA in 2007 and 2008 as part of the REC 1 – TSP (PCWA 2007) indicate that these areas experience very little recreation use, even on weekend and holidays (PCWA 2009b).

The above statement needs a qualifier or reference to data demonstrating a range of recreation users that is being qualified as "very little". In other words, please indicate whether "very little" means 3-5 users per day or 20-30 users per day? Or is it very little use compared to other sites?

[p. 38]
Stream-based Recreation Activities
...No one activity type dominated the data so the following discussion considers all user types combined together.

What percentage would an activity need to meet in order to "dominate the data"? It seems that 33% for swimming/water play is much more than the other activities. Please change to:
The following discussion considers all user types combined together.

[p. 47]
Please clarify the statements regarding flow perceptions to include similar wording as in the following statement:

Flow Perception
A total of 27 people, who perceived a change in flow, provided sufficient information to analyze against actual river flow.

[p.49]
Survey respondents were also asked whether the change in the river/stream level negatively affected their recreation experience. None of the respondents who actually experienced a change in flow stated that they were negatively affected.

Was the question in the survey about perceived flow posed so it only referred to the day the respondents took the questionnaire or their general experience on the river? This could account for people's responses about noticing a change in flow when there was no flow on that particular day. This could also be true for the other recreation locations where this resulted from survey questionnaire.

[p.54]
Operation of the MFP reduces flow in the bypass reaches thereby improving stream crossing conditions. Therefore, stream crossing along the bypass reaches is not discussed further in this report.

As part of the PM&E discussions, relicensing stakeholders, may propose to change the flow regime in the bypass reaches so that flows mimic the natural spring snowmelt hydrograph – making the flows in the bypass reaches higher in the spring.

[p.72]

We interpret this section as trying to describe some of the challenges to accessing the bypass reaches and with that in mind, would suggest the following changes. The list should start with the primary challenge to boaters which is lack of flow information on the bypass reaches. The bullet about limited road and trail access is too ambiguous to be useful as it stands. The statement about average gradient for all the combined bypass reaches is not helpful to make management decisions because when boaters decide to boat a river, they will plan to boat one of these bypass reaches, not all of them and therefore, the combination of an average gradient across all of them does not limit or challenge them. If the point about gradient has a place, it is in the individual descriptions of each bypass reach. In the last bullet, we recommend striking the use of the word typical as it is vague and replacing it with more specific wording referring to the study results.

In general, boaters on the bypass reaches are faced with the following challenges: ~~boating on the bypass reaches is limited by a combination of the following factors:~~

- *The biggest challenge is that there are no real-time flow gages on any of the bypass reaches. Accordingly, boaters have to determine whether boatable flows are present by sight, word of mouth, and/or estimate flows based on: (1) flows measured downstream at the Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300); and (2) reservoir storage and/or spill information. The absence of real-time flow information may limit use of the bypass reaches because boaters do not know when boating flows are present.*
- *The bypass reaches bisect remote and rugged terrain, with limited road or trail access for emergency egress or scouting. Though put-in and take-out access to the bypass reaches are paved and dirt roads. There is one put-in that requires a trail hike to access an extra few miles of boating but boaters can put in at the paved road access instead. Despite its ruggedness, travel time to arrive at the reach is not the major challenge. In fact, the bypass reaches are located in relatively short proximity from major urban areas of Sacramento and the Bay Area. Comparable boating reaches identified would require equal or greater travel times.*
- *Due to snow, the roads to some of the access points along the bypass reaches are not accessible by car during the early spring, when boating flows are typically available under current operations. Specifically, roads that traverse areas above about 4,000 feet in elevation are typically not passable by car until the end of April, after the snow melts. Roads that traverse areas above about 5,000 feet in elevation may not be passable until the end of May in some years. However, there is a long record of boaters accessing the Rubicon reach by car in the winter and spring in years when there must have been an early melt to make the roads passable (information provided by whitewater boating focus group and follow-up interviews).*
- *As indicated on Table REC 4-17, the bypass reach gradients are extremely steep. The steep gradients result in difficult rapids and drops that can only be boated by Class IV – V boaters depending on the reach and the flow. ~~advanced and expert boaters, or portaged~~. ~~The average gradient on the bypass reaches ranges from a low of 164 feet per mile on South Fork Long Canyon Creek to as much as 237 feet per mile on Long Canyon Creek. For comparison, the average gradient on the peaking reach is 21 feet per mile between Oxbow Powerhouse and the North Fork American River Confluence and 16 feet per mile between the Confluence and Oregon Bar (Table REC 4-18).~~*
- *The overall character of the small bypass reaches, for example Duncan Creek, and North and South Long Canyon Creeks, ~~is not conducive to~~ boating are not attractive reaches*

for most boaters. *These streams are relatively narrow, boulder choked, and densely vegetated. These types of streams are only attractive to expert boaters.* ~~*They are not typically boated more than once or twice by any one boater.*~~ Based on the boating focus group and follow-up consultation, these small bypass reaches have not been boated more than once or twice by any one boater.

Again, while it is important to note that the Rubicon reach is not accessible by car in some years due to snow, there have been years when it obviously was accessible and there was enough flow. It is critical to note that in a small window of days or weeks, with no public information on flows, expert boaters flock to this river reach because it is a favorite and is accessible infrequently.

[p. 74]
The roads to the put-in/take-out are often impassible by car due to snow when boatable flows are present. These roads are not plowed. The take-out at Ellicott Bridge is usually accessible by late April after the snow melts. The put-in may not be accessible until the end of May. Though in some years, when there is an early melt or winter rain on snow, boaters have been able to access the river reach. When there is such an occurrence, boaters will run the reach twice in a row if possible and there is a lot of chat online between boating groups about when to go and what the run is like.

[p.76]
Other Considerations
Breeding populations of Foothill yellow-legged frogs (FYLF) have been observed in the Rubicon River from Ralston Afterbay upstream to approximately Ellicott Bridge (RM 20.9). FYLF could be affected by flow fluctuations and ramping rates from approximately early May to late September. Both egg masses (spring) and tadpole lifestages (spring through fall) are sensitive to flow fluctuations and ramping rates.

Because they cannot move, egg masses are certainly more sensitive to flow fluctuations and ramping rates than tadpoles. Because tadpoles can swim and move with changing stage heights, moderate flow changes with gradual ramping rates may have insignificant negative impacts on FYLF. Amy Lind is currently studying the sensitivity of tadpoles to flow fluctuations and various ramping rates on the Middle Fork American River. This study is still underway and results have not been published. Thresholds for stage changes and ramping rates that can support Foothill yellow-legged frogs are still to be determined.

Please add the above notes on the current studies and differences in sensitivity between egg masses and tadpoles to all sections labeled "Other Considerations" that repeat the same paragraph as above.

[p.77]
Comparable Runs to the Rubicon River between Ellicott Bridge and Ralston Afterbay
If the focus group identified specific runs on each of these rivers that are comparable, the specific runs should be included here. On some of these rivers, there are many boatable river reaches with a variety of classification of difficulty, access, and quality of experience.

[p.81]

Middle Fork American River – French Meadow Dam to Middle Fork Interbay

Since our information about this run only comes from one boater, it is important to give context that the information he provided is from one experience – not a review of many boaters. In addition, the report should make it clear that this one boater provided some analysis and recommendations – these are not tested so they should not be presented as fact. In particular, the report should not state that an in-channel portage is "required". One boater used this method to navigate the reach but future boaters may be able to find other ways around or through the gorge. In addition, the report should not give the one boater's estimate of boatable flow range as a fact but rather as his expert opinion.

We recommend the following paragraph should replace the one in the report:

Based on the information from the focus group and follow up consultations, PCWA could only find one person who had boated the Middle Fork American River between the Duncan Creek Confluence and Middle Fork Interbay. This person hiked in to Duncan Creek on a snowbound trail. He put in on Duncan Creek and boated to its confluence with the Middle Fork American where he continued to Interbay. The combined run from the hike in put-in on Duncan Creek to the take-out on the Middle Fork Interbay is 5.8 miles (2.1 miles on Duncan Creek and 3.7 on the Middle Fork American River) and was boated in about 5 to 6 hours. The 3.7 mile section of the Middle Fork American River below Duncan Creek is rated Class V with a narrow gorge. The one person who had run the reach, reported that he navigated the narrow gorge with an in-channel portage. He estimated that 200 cfs defines the upper range of feasibility for this type of portage. He is a seasoned expert boater who made this flow estimate without the help of a flow gauge at the put-in or take-out and the flow on that day has not been validated because we don't have an exact date.

Duncan Creek – Duncan Creek Diversion Dam to Middle Fork American River Confluence

As per our above comments, please replace the existing last sentence of the second paragraph with the following:

The one person who had run the reach, reported that he navigated the narrow gorge with an in-channel portage. He estimated that 200 cfs defines the upper range of feasibility for this type of portage. He is a seasoned expert boater who made this flow estimate without the help of a flow gauge at the put-in or take-out and the flow on that day has not been validated because we don't have an exact date.

[p.91]

The Tunnel Chute Run also has a Class II run within it between Kanaka and Canyon Creek that should be listed here and described in brief at the end of this section as suggested below on p. 106.

The peaking reach offers the following boatable runs:

- *Tunnel Chute Run – Middle Fork American River – Indian Bar Rafter Access to Ruck-a-Chucky Campground;*
- *Mammoth Bar Run – Middle Fork American River – Ruck-a-Chucky Campground to Mammoth Bar;*

- *Murderer's Bar Run – Middle Fork American River – Mammoth Bar to the North Fork American River Confluence; and*
- *Confluence Run – North Fork American River – Middle Fork American River Confluence to Oregon Bar / Rattlenake Bar.*
- *Kanaka to Canyon Creek Run*

[p.91]
Please be specific about the reach of the North Fork American to which you are referring. There are many boatable reaches on the North Fork but the only ones studied here and included in the private boating numbers is the reach between the confluence and Folsom Lake.

Please include the total number of private boaters as reported by ASRA. The percentage does not provide as much information. At the time of the ASRA study, the Confluence Run was not yet open, so numbers of boaters on this run have changed.

Recommended changes to text::
Private boating occurs on both the Middle Fork American River and the North Fork American River below the confluence to the high-water mark of Folsom Lake. However, private boating use in the peaking reach is substantially lower than commercial boating use. Based on counts of private boaters made by PCWA in 2007 and on commercial boating use data for 2007 provided by ASRA, private boating use was XX, which represents about 3% of the total boating use on the peaking reach for that year (PCWA 2009b).

[p. 100]
Any flow is suitable for more skilled boaters.
This statement should be replaced with the following: "Higher flows are acceptable for more skilled boaters, but this study did not determine the maximum boatable flow."
.
[p.106]
Please include Rattlesnake Bar as an alternative takeout for boaters on the Confluence Run. This information will inform management decisions pertaining to boating schedules and flows on this reach. We understand the study plan included the North Fork American River down to the high water mark of Folsom Reservoir. That said, in order to give an informative description of the Confluence Reach, the Rattlesnake Bar access and takeout should be included in the description as an alternative takeout and access point for anglers to wade upstream into the project area. Please also include Rattlesnake Bar in the maps. We are not asking for any more study to be conducted on the issue but rather that the results simply include the existence of this alternative takeout. We recommend the description of the reach in the Angling section be changed accordingly:

Access/Shuttle
The put-in is located at the confluence of the Middle Fork and North Fork American Rivers, which is also the take-out for the Murderer's Bar run described above.
Boaters can take-out at ~~either~~ the Birdsall Access, ~~or~~ the Oregon Bar Access, or Rattlesnake Bar. Birdsall and Oregon Bar are both located in the China Bar Recreation Area.

...For the majority of boaters, the distance between the river and the entrance gate is too far to comfortably carry a boat (raft or kayak) and gear. Therefore, the locked gate at the entrance to the China Bar Recreation limits boating on the Confluence Run to the weekends.

[Insert after description of Birdsall and Oregon Bar take-outs]
Rattlesnake Bar is an alternative takeouts to the China Bar Recreation Area and adds 4.5 miles of boating to the trip. Rattlesnake Bar is managed by the Folsom State Recreation Area and is accessible from Rattlesnake Bar Road off Auburn Folsom Road. If Folsom Reservoir is low, as in winter 2009, boaters have current all the way to Rattlesnake Bar. However, when Folsom Reservoir is high, then boaters have to paddle over the flat water to access the take-out at Rattlesnake Bar. The length of the flat water paddle of course depends on the level of the reservoir. However, when China Bar Recreation Area is closed on weekdays, Rattlesnake Bar is an alternative take-out any day of the week and adds an additional 4.5 miles to the boating reach.

[p.105]
With the river restored and access improved, the North Fork American River downstream of the confluence is now open to whitewater boating.
Boaters on this river section also can now enjoy man-made whitewater features installed through a joint agreement by PCWA and Bureau of Reclamation to clean up and enhance the Auburn Dam Site. These features were designed with low flows in mind (insert target design flows). There is one wave feature located in the right-hand channel that flows next to PCWA's Auburn Pump Station and multiple wave features in the left channel. Lower flows may allow for more long-term play at these sites but at higher flows, eddies get washed out and boaters have a harder time attaining the required position in the river and staying at the features. These limitations, combined with the location of the parking lot, keep it from being a typical park and play location, rather most boaters play in the features on their way from the Confluence to China Bar or Rattlesnake Bar.

[Insert on p. 109 after Mammoth Bar Run section:]
Kanaka to Ruck-a-Chucky Falls Run
This 7-mile class II run within the Tunnel Chute Run that begins just after Kanaka Falls and continues down to Canyon Creek. One or two of the rapids may be class II+, or even class III at higher flows. There is currently poor vehicle access to this run, although it could potentially be improved during the license period. Such improvements would open up a scenic wilderness run to novice and intermediate boaters that is generally only seen by class IV boaters. Some drift boaters and anglers may boat this section by putting in at Cache Rock.

This Class II section in the Tunnel Chute Run is not boated much by private or commercial boaters in isolation from the rest of the Tunnel Chute Run.

Access
There is a dirt road from Mosquito Rd down to the river above Kanaka Rapid (the last Class IV rapid before a long section of Class II whitewater). However this road is gated and owners only

give the code to outfitters for emergency access. There is also an access road down to Cache Creek Campground.

This Class II section ends at Canyon Creek above Ruck-a-Chucky Falls. Take-out is possible at Canyon Creek, which is located just upstream of Ruck-a-Chucky rapid and is accessible via Drivers Flat Road. However, a locked gate prohibits use by the general public, except by hikers, anglers and equestrian users. Canyon Creek access road is primarily used by commercial outfitters, who have a key to the gate. Commercial outfitters are not allowed to unload passengers at this location but can use it to unload gear. Composting toilets are available at Canyon Creek.

[Appendix Q, p. 10]
This is a recursive definition of who the typical boater is for this run and suggests that only boaters interested in the run at lower flows would be interested in it at higher flows. If it is running at a Class II flow, it will draw Class II boaters. If it is running at a Class III flow, it will draw Class III boaters. There isn't a particular flow that is inherently more appropriate for the run.

A flow of 2,500 cfs is most likely too high for most of the boaters who would use this run due to their skill levels. A flow of 1,700 is a more likely maximum acceptable flow threshold for the typical boater using this run.

The appendix flow graphs are useful. Would it be possible to plot daily min and max flows on the year-long graphs?

HYDROLOGY

The report does not mention that regulated flows in excess of 1,080 cfs are possible in the peaking reach by coordinating a spill from Ralston Afterbay for a few hours following a period of filling. This coordinated release is important to include as it could provide an enhanced recreational opportunity. The report should state how long and how often the project could release 1500, 2000, and 2500 cfs? This information will inform our management decisions in future PME& discussions.

[p. 33]
Except during high flow times of the year, releases from the Oxbow Powerhouse result in daily fluctuations in flow in the peaking reach between about 200 cfs and 1,080 cfs, which is the capacity of Oxbow Powerhouse (approximately 1,080 cfs) (Figure REC 4-7). However, it is possible to coordinate a spill from Ralston Afterbay for a few hours following a period of filling to create a flow in excess of 1,080 cfs.

[Insert p.35 at end of Section 6.1]
Geomorphology and Recreation
It is important to mention that the recreation opportunities favored in the peaking reach are river beaches and swim holes (see p.40 of this report). River beaches and swim holes are both

impacted by the PCWA project operations that manage flows, which produce different fluvial geomorphologic effects on the peaking reach. PCWA is conducting a Geomorphology Study, which can be correlated with the interest in sandy beaches to inform management decisions.

General Comments

We would like to convey our appreciation for PCWA's efforts in creating this report. The maps, especially, provide a comprehensive review of relevant recreational resources that isn't available elsewhere. They will be a valuable resource for the public, as well as for the relicensing effort.

On behalf of the Foothills Water Network, I would like to request a full set of the DVDs of the whitewater recreation flow studies to share with the Foothills Water Network members.

If you have any questions or clarifications about our comments, please call or email me. julie@foothillswaternetwork.org 530-622-8497.

Sincerely,
Julie Leimbach

Foothills Water Network
Middle Fork Working Group

Bill Carnazzo, Spring Creek Guide Service and Upper American River Foundation
Bill Templin, Upper American River Foundation
Nate Rangel, California Outdoors
John Donovan, Member of the Public
Chris Shutes, California Sportfishing Protection Alliance
Monte Hendricks, Angler
Gary Estes, Protect American River Canyons
Gene Freeland, Western States Trail Foundation
Gary Flanagan, Gold Country Flycasters
Dan Crandall, Current Adventures

Appendix A:

COMMENTS ON THE ANGLING PORTIONS OF THE RECREATION STUDY (REC-4, DRAFT)

Bill Carnazzo
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Background

I am a licensed guide with approximately 50 years of fly fishing experience. I have been fishing the streams found in the Middle Fork drainage for over 40 years, and have extensive experience on all of them, including the Rubicon River, the Middle Fork American both above and below Hell Hole Reservoir, the main Long Canyon Creek as well as its two main forks, Duncan Creek both above and below PCWA's diversion facilities, Wallace Creek , and other small streams.

Due to time constraints relating to my guide business, I have been unable to actively participate in the relicensing process, and could not attend the one angler focus group meeting allowed by PCWA. When I called PCWA to ask if there was further opportunity for angler focus group meetings, I was peremptorily told that it had been decided by PCWA and its consultants that one meeting was enough. I was dismayed by this cavalier attitude, which appears to have carried over into this flawed (at least as to the angling portions) study.

Over the past 15-20 years I have noticed a significant decline in the quality of the fisheries in most of the streams mentioned above. It has been my view for many years that the decline is due to many factors, some of which are unrelated to PCWA facilities. However, some significant impacts on fish and the benthic macroinvertebrates ("BMIs") that are essential to a healthy fishery, can be traced directly to PCWA's operation of its facilities in the watershed, and its failure to properly maintain those facilities, including but not limited to roads and culverts that deposit lethal silt loads in the streams thereby harming BMIs and spawning habitat.

Comments

My comments mainly address the so-called "bypass" reaches which, as I understand the definitions, would all qualify as "impaired" due to the existence of dams and obstructions operated by PCWA. While I have fished extensively below Oxbow dam, there are others who have more experience in this area than I do, and who consequently can provide more insight that I can into the flow and other issues. I will address what I perceive to be statements that are either inaccurate, conclusory (i.e., without factual predicate), or both.

1. The Draft Report posits the conclusion[1] that angling is best when flows are low and clear; this is clearly wrong. In fact, some of the best fishing occurs in situations where the flows are higher than

[1] Draft Rec-4 Report, p. 110: "According to the focus group participants, anglers prefer the lower flows that are typically present when the area is accessible, for several reasons: Lower flows allow easier access to the river channel, and movement upstream and downstream through the channel. Lower flows allow anglers to more easily

normal summer flows, where there is some color to the water and the larger fish are most inclined to feed.

2. From the angler's perspective, wild trout require three things: food, oxygen, and cover (i.e., protection from predators). Of these, experience has taught me that cover trumps the other two. During periods when flows are high but it is still safe to fish (which does not necessarily mean that wading must be possible), all three of these ingredients are present. High flows cause turbidity, which in turn provides cover for trout. Fishing can be good with some turbidity; as turbidity renders the water essentially opaque, however, success rates fall off (but don't necessarily zero out). Higher flows naturally also increase available oxygen content in the water. Food availability is increased dramatically, with entrained aquatic insects and terrestrials (worms, ants, beetles, etc.) washed into the flow from the watershed. Thus, the three essential ingredients for increased success are present during higher flows.

3. By way of contrast, during the summer months when flows are low aquatic insect activity lessens in frequency and tempo, the water warms significantly thereby reducing dissolved oxygen content, and all-important cover is dramatically reduced. These factors operate to reduce fish activity, and negatively affect angling success. In other words, the three essential ingredients for angling success, mentioned above, are either lacking or significantly attenuated.

4. The fall months are generally characterized by low flows, at least until the arrival of the rainy season. Nevertheless, as air and water temperatures moderate, insect hatch activity (at least among certain mayfly and stonefly species) becomes more frequent and regular. Less dissolved oxygen leaves the water, and shade, cloud cover, and inclement weather provide cover. The river bottom is also littered with foliage that has fallen from trees and shrubs, increasing available cover and camouflage for trout. With rain, fog, and cold air temperatures, fall fishing improves. Other than the three factors' increased presence during fall, there is also the trout's increased instinctive push to feed in advance of winter. Accordingly, despite low water conditions, fall fishing can be excellent.

5. From the above analysis, it is clear that the conclusions reached in the draft report regarding when angling is most successful[2] are simplistic, inaccurate, and without adequate evidentiary support. Those faulty conclusions were used to abbreviate the study on angling-related flows, and used in an apparent effort to justify current flow conditions as satisfactory for angling in the future. This approach should be contrasted with the far more extensive and detailed analysis used for whitewater rafting.

6. With the above analysis in mind, what summer flows in the bypass reaches would provide the best angling experience?[3] In reaching the conclusions mentioned below, I have considered the information

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move along the shoreline and cast. Fish seek refuge when flows are high and therefore can be harder to catch; and turbidity increases when flows are high, which reduces angling success. These reasons are similar to those expressed by stakeholders interviewed as part of Pacific Gas and Electric's (PG&E's) Chili Bar Project relicensing effort (SMUD/PG&E 2005)."

[2] See fn. 1 above.

[3] To some extent, the analysis is made more difficult due to the lack of definition of what is considered to be a "low" flow. Experienced anglers who are not scientists will say something like "I know it when I see it." What is "low" for the Rubicon will differ from that for the Middle Fork, or Duncan Creek, or Long Canyon Creek. What can

provided in Figures 4-5 and 4-6 describing historical flows in the large and small bypass reaches, and Figures 16-20 describing conditions for whitewater rafting. I have also taken into account Appendices K and L, which depict historical flow information in the bypass reaches in the form of hydrographs. The information in these figures and appendices could be rendered significantly more helpful if associated numbers were provided for the flow rates depicted on the graphs. For example, approximately one week ago I fished on the Rubicon above Ellicott's Bridge, near its confluence with the South Fork of the Rubicon. The water was very warm (67 degrees at approximately 8:00 a.m. and near 70 degrees at 11:00 a.m.) and the flows were very low. I cannot state with any accuracy what the flow numbers were, but I can say that the water was so warm and low that it was close to being unethical to fish—meaning that even practicing catch and release and being careful to not play fish for more than a moment, hooked fish were probably subjected to too much stress given the warmth of the water and scarce dissolved oxygen content.

7. Here are my tentative conclusions regarding the best possible bypass stream flows for angling purposes:

    a. **Rubicon above Ellicott's Bridge**: 75 cfs following the end of snowmelt and during the summer and fall months; prior to that the flows should mimic the snowmelt hydrograph.

    b. **Rubicon below Ellicott's Bridge (10-15 miles below the bridge)**: 125 cfs following the end of snowmelt and during the summer and fall months; prior to that the flows should mimic the snowmelt hydrograph.

    c. **Duncan Creek below diversion facility**: 20-25 cfs following the end of snowmelt and during the summer and fall months; prior to that the flows should mimic the snowmelt hydrograph.

    d. **Long Canyon Creek (north and south forks) below diversion facilities**: 20-25 cfs following the end of snowmelt and during the summer and fall months; prior to that the flows should mimic the snowmelt hydrograph.

    e. **Middle Fork below Interbay**: 25 cfs following the end of snowmelt and during the summer and fall months; prior to that the flows should mimic the snowmelt hydrograph.

8. Based on the above analysis, it is my recommendation that the Draft Study be reopened in order to provide more opportunity for angler input, and more extensive analysis of appropriate angling flows—at least comparable to the analysis devoted to whitewater rafting. As set forth above, the current state of the record on this issue is inaccurate and inadequate, and should not be used to make conclusions as to appropriate flows for angling purposes.

9. Finally, based on my experience with CEQA and NEPA requirements, the Draft Study, if challenged as inadequate, would be determined to be insufficient to support any agency decision as to appropriate flows for angling purposes.

---

be said with certainty is that the flows in each of these streams at this point in time, i.e., early September, 2009, is clearly low and possibly "very low." I have, consequently, used the term "summer flows," meaning flows during the months of July through September (although this will vary on either end of that time period by water year type).

Appendix B: Comments Related to Typography and Presentation

A note should be made that Oregon Bar refers to Oregon Bar on the NFA within Folsom Lake SRA and not the historical Oregon Bar on the MFA near Ruck-a-Chucky campground, which is shown on USGS topo maps.

When the name Ruck-a-Chucky is used, the report should specify whether it refers to Ruck-a-Chucky Campground or Ruck-a-Chucky Falls. The reports use of the term Ruck-A-Chucky to refer to both the falls and the campground/take-out is confusing and can be misleading. “Ruck-a-Chucky” and “Ruck-A-Chucky” are both used throughout the report text, figures, and maps. One of these should be chosen and used throughout.

The trail crossing opportunities sections are verbose and repeat the same parallel structure. It could be more concisely presented in a table rather than paragraph form.

On p.84] Note that Shirttail Creek, North Fork American Watershed in list of Comparable Runs.

Throughout the report, many occurrences of "then" should be changed to "than". For example, on p. 101, "then would have occurred" should be "than would have occurred". Additional instances include "then would", "then under", and "less then".

On p. 114 "form the north" should be "from the north". "American River Trial" should be "American River Trail"

On p. 120 "USGS National Water System Information" should be "USGS National Water Information System"

On p. 122 "Peaking Reach Reach" should be "Peaking Reach"

On p. 127 "Protect the American River Coalition (PARC)" should be "Protect American River Canyons (PARC)"

Fig 4-7 should say which years are shown.

Fig. 4-9 Does the discharge axis apply to the curves other than OXB? If not, that caveat should be explained with regard to unrated cross sections and the figure title should use "water level" or "stage" instead of "flow release". The X-axis needs units and labels on at least two of the ticks. Is it possible to get a plot of pump station flow data over OXB flow?

Fig. 4-10 "Ruck-a-Chucy" in note should be "Ruck-a-Chucky". "Indian" should be "Indian Bar".

Fig 4-22 Left Y-axis titles are hard to understand. Should it read ">= 2000 cfs" ? Not sure what "peaking and flows" refers to. Why does cutting the number of days per month in half only cut the average per day by a smaller amount? Were there more hours of ramping on the ramping days to compensate? Is the average number per day only counting days when ramping occurred? If so, that should be stated.

Map 4-6 Title "Dispersed Concentreated Use" should be "Dispersed Concentrated Use"

Figure M-1 should say if it is a daily average, or a daily sample, etc. It should say if it is modeled or observed data.

Figure M-3 title should say "below normal water year" instead of "below water year".

Figure N-2, N-5, etc. Would it be possible to get faint/thin vertical grid lines or alternating light background colors for days so it would be easier to tell the time of day when flows came up and dropped? If not, then add ticks across the top.

Fig. N-3, N-6, etc. Could we get one color for Monday to Friday and a different color for weekends? This would make it easier to read.

received
1.21.10 AF/BB

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January 18, 2010

Mssrs. Mal Toy and Andrew Fecko
Placer County Water Agency
P.O. Box 6570
144 Ferguson Road
Auburn, CA 95604

Re: In-stream Flows (Upcoming February 2, 2010 meeting)

Dear Mssrs. Toy and Fecko:

I will be present at the February 2, 2010 meeting. My interest statement will be embodied within that being prepared by Julie Leimbach, representing the Foothills Water Network. In short, I am representing myself, both as an individual and as a licensed fly fishing guide, as well as the angling community that is interested in the adverse environmental impacts of PCWA's facilities in this watershed on the "bypass reaches" including the Rubicon River above Ralston powerhouse, the Middle Fork of the American above Ralston powerhouse, Duncan Creek, and Long Canyon Creek.

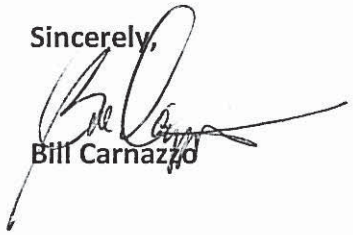
I am particularly concerned by your consultant's cavalier approach on the issues affecting angling on the Rubicon River above Ralston. When, at the last meeting, the consultant was asked why there were no slides on angling included within the Power Point program, the answer was that they were summarily deleted. That comment left the anglers present at the meeting somewhat nonplussed at the clear message it conveyed regarding the importance of anglers' input.

I sincerely hope that the consultant's attitude does not reflect PCWA's approach to angling interests. Judging by your expressed intent to avoid the problems created by SMUD and others in the South Fork American relicensing process, I assume that you are indeed willing to negotiate in good faith to address the issues that I and other interested anglers will express.

You already have some preliminary comments from me on the flawed draft Rec-4 study document, as well as the comments on that document submitted by Foothills Water Network. At the February 2, 2010 meeting you will see further comments and other issues will be raised. For your convenience I have attached a copy of those comments, most of which appear within the FWN document.

Finally, a cautionary note regarding the so-called "anglers focus group" results. As I have pointed out previously, the information, opinions, and conclusions contained in the narrative from that single meeting are inaccurate at best. I could not be present at that meeting, and when I later asked for a second or follow-up meeting, my request was flatly refused. In short, you should not rely on the information in that narrative in moving forward. Rather, in the upcoming meetings, I trust that you will utilize the more accurate information that we will endeavor to provide. Thank you.

Sincerely,



Bill Carnazzo

COMMENTS ON THE ANGLING PORTIONS OF THE RECREATION STUDY

(REC-4, DRAFT)

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9. Finally, based on my experience with CEQA and NEPA requirements, the Draft Study, if challenged as inadequate, would be determined to be insufficient to support any agency decision as to appropriate flows for angling purposes.

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March 4, 2010 Angler Focus Group Meeting
Email Correspondence, Invitation Letter
and Material to Potential Focus Group Participants

From:	PCWA MFP Relicensing
To:	"bcarnazzo@ftcnet.net"; "melodemar@sbcglobal.net"; "gbfs@surewest.net"; "meritage@starstream.net"; "wetemplin@att.net"; "banjomaker@hendricksbanjos.com"; "blancapaloma@msn.com"; "bjohnson@tu.org"; "Flanagan@surewest.net"; "bcavallo@fishsciences.net"; "grant@sierraflyfishers.com"; "edlwahl@sbcglobal.net"; "Dave Martinez"; Andy Fecko; "julie@foothillswaternetwork.org"
Bcc:	"Mary Preuss"; "Sandy Perry"; Mal Toy; Ben Ransom; "Ed Bianchi"
Subject:	PCWA/MFP - March 4, 2010 Angler Meeting - 7pm
Date:	Thursday, February 25, 2010 3:49:40 PM
Attachments:	Map to Canyon View Community Center.pdf

Dear Relicensing Participant –

Per conversations with the Foothills Water Network, it appears most participants can attend the Angler meeting on March 4th. The meeting will begin at 7pm in the American River Room at the Canyon View Community Center. The American River Room is located downstairs. A map to the Canyon View Community Center is attached for your use.

If you have any questions, please don't hesitate to call me at (530) 823-4973.

Thanks,
Beverly

Beverly Bell
Administrative Aide
(530) 823-4973
(530) 823-4960 (fax)

Mary Preuss

From: PCWA MFP Relicensing [Relicensing@pcwa.net]

Sent: Tuesday, March 30, 2010 2:00 PM

To: bcarnazzo@ftcnet.net; melodemar@sbcglobal.net; gbfs@surewest.net; meritage@starstream.net; wetemplin@att.net; banjomaker@hendricksbanjos.com; blancapaloma@msn.com; bjohnson@tu.org; Flanagan@surewest.net; bcavallo@fishsciences.net; grant@sierraflyfishers.com; edlwahl@sbcglobal.net; Dave Martinez; Andy Fecko; julie@foothillswaternetwork.org; hwakelee@gmail.com; strelch@aol.com; hansgeyer@hotmail.com; bs@surewest.net; sierraguide@sbcglobal.net; montehendricks@comcast.net; jwbryne@brynecompanies.com; Andy Fecko; Antonio Rossmann; April Moore; Ben Ransom; Beth A. Paulson; Beth Lawson; Bill Carnazzo; Bill Center; Bill Deitchman; William Spain; Bill Templin; Bob Hughes; Bob Snyder; Brett Storey; Bryan Tibbs; Colfax-Todds Valley Consolidated Tribe; Dan Teater; Dana Gard; Dave Martinez; Dave Steindorf; Dennis Smith; Dick Maclay; Donna Day; Donna Williams; Ed Bianchi; Ed Moore; Eileen Dessaso; Gary Estes; Gary Fildes; Gary Flanagan; Gene Freeland ; Heath Wakelee; Hilde Schweitzer; Janet Peterson; Jared Noceti; Jim Micheaels; John Donovan; Julie Leimbach; Leon Poitras; Lester Lubetkin; Lori Powers; Mal Toy; Marie Davis; Marie Rainwater; Marilyn Jasper ; Mary Preuss; MaryLisa Lynch; Mo Tebbe; Nate Rangel; Pat Trimble; Patricia Gibbs; Phil Boyer; Rich Johnson ; Roger Lee; Russ Kanz; Sandra Walter-Perry; Sharon Stohrer; Stafford Lehr; Stephen Bowes; Tom Bartos; Tom Johnson; Tyrone Gorre; Vicki Jowise ; Alana Eichenhofer; Amy Lind; Andy Fecko; Ben Ransom; Beth Lawson; Bob Center; Bradley J. Cavallo; Brian Deason; Camilla Williams; Carol Szuch; Carrie Smith; Cheri Sprunck; Chris Shackleton; Chris Shutes; Christopher Fischer; Clay Schmidt; Dan Crandall; Darcy Erickson; Dave Hinshaw; David Breninger; Dawn Lipton; Dean Tibbs; Denise M Morison; Dick Warren; Dudley McFadden; Ed Horton; Einar L Maisch; El Dorado County Water Agency; Eldon Cotton; Eric Peach; Eric Waidmann; Grant Fraser; Gray Allen; Hank N White; Harold Flood; Jack Sanchez; Jan Goldsmith; Jane Hamilton; janelle@robertson-bryan.com; Jann O Williams; Jeff Meyer; Jeff Murray; Jenny Hatch; Jeremiah Karuzas; Jeri Scambler; Jim Linsdau; John Dunlap; John Greene; John Hauschild; John Robinson; Jon Jue; jtupper01@fs.fed.us; Katie Ross; Katina Bird; Katy Parr; Kim Morales; Krista Deal; Lowell Jarvis; Lynda Shoshone; Marie Barry; Matt Myers; Matt Triggs; Max Colorado; Michael Anderson; Michael Garabedian; Mike Pickett; Neil Cochran; Nicolas Fonseca; Nolan Smith; Pat Malberg; Patrick S Dwyer; Paul Sanders; Robert Schnetzler; Roger Canfield; Ron Nelson; Ross Hooper; Scott Finley; Scott Husmann; Sean Barry; Sherry Wicks; Susan Durham; Ted Frink; Terry Davis; Thomas Christofk; Tim Woodall; Tom Barham; Tom Jones; Tom Toy; Tony D.; Tracey Eden-Bishop; Waldo Walker; William Haigh

Subject: PCWA/MFP - March 4, 2010 Angler Focus Group Meeting Materials

Dear Relicensing Participant –

At the request of some stakeholders, PCWA recently conducted a second Angler Focus Group session. The Angler Focus Group session was conducted at the Canyon View Community Center on March 4, 2010, from 7:00 – 9:45 P.M. The objective of this meeting was to develop additional information regarding fishing opportunities on the river and stream reaches within the MFP. The meeting was attended by 13 anglers, as follows:

Bill Carnazzo
Ed Wahl
R. Heath Wakelee
Daniel Street
Nick Strelchuk
Thomas Bartos
Hans Geyer
Frank Rinella
Monte Hendricks
Joe Byrne

Charles Fullerton
Bob Schardt
Mel Odemar

Information developed during the meeting was documented "live" in an Excel work book and concurrently edited with those present at the meeting. The workbook and all associated meeting materials, including two letters provided by Bill Carnazzo and Tom Bartos, are available for review on PCWA's web site at the following link: http://relicensing.pcwa.net/html/public/twgrecreation.php, click on *2010*, then click on *March 4, 2010 Angler Focus Group Meeting*. This information will be used to augment information developed during a previous Angler Focus Group meeting conducted in May 2008 and documented in the REC 4 – Stream-based Opportunities TSR.

If you have any questions, please don't hesitate to call me at (530) 823-4973.

Thanks,
Beverly

Beverly Bell
Administrative Aide
(530) 823-4973
(530) 823-4960 (fax)

March 4, 2010 Angler Focus Group Meeting
Meeting Materials and Sign-in Sheet

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group Meeting

March 4, 2010
7:00 PM – 9:00 PM

Canyon View Community Center
American River Room
471 Maidu Drive
Auburn, CA 95603

AGENDA

TIME	TOPIC
7:00 PM – 7:15 PM*	Introductions ➢ Review Agenda ➢ Review of Meeting Objectives
7:15 PM – 7:30 PM	Overview of Middle Fork American River Project (MFP) and Relicensing and Focus Group Process
7:30 PM – 8:45 PM	Group Discussion ➢ Background and Experience of Participants ➢ Identify Specific Reaches to be Discussed based on Background and Experience of Participants and Project Nexus ➢ Characterize Each Reach Identified Above
8:45 PM – 9:00 PM	Review of Information Developed
9:00 PM	Adjourn

**Times are approximate and are subject to change on the meeting day.*

MEETING OBJECTIVES

Develop information regarding fishing opportunities on the river and stream reaches associated with the MFP

PLACER COUNTY WATER AGENCY
MIDDLE FORK AMERICAN RIVER PROJECT RELICENSING
ANGLER FOCUS GROUP MEETING
MARCH 4, 2010
SIGN-IN SHEET

NAME	INITIAL	AGENCY/AFFILIATION	PHONE	E-MAIL
Bill Garnazzo		FFF	(530) 367-1209	bcarnazzo@ffemt.net
Ed Wahl		N/A	916-595-2898	EDLWAHL@SBCGLOBAL.NET
Heath Wakelee		Horseshoe Bar Fish & Game Preserve	916870-5253	hwakelee@gmail.com
Dan Street		Horse Bar	916-920-9005	dstreet@sacbeeoutdoors.com
Chas Fullerton		"	916 482 5021	—
Nick Streelchuk		Reel Life Recoveries	415 505 3276	STRELCH@AOL.COM
Thomas Bhatos		HBP	916-791-6072	HBP@SURFWEST.NET
Hans Geyer		HBP	916-996-4361	HANSGEYER@HOTMAIL.COM
Bob Endott		HBP	916 847-1853	BS@surfwest.net
Frank Rivella		Fed of Fly Fishers	530 878 8708	SierraGuide@SBCglobal.net.
Monte Hendricks		angler	530-644-6891	montehendricks@comcast.net
Joe Byrne		HBP	530-268-8158	JOEBYRNE@BYRNEMANAGED.COM
Mel Odemar		Granite Bay Flycasters	916-961-4435	melodemar@sbcglobal.net

Placer County Water Agency
Middle Fork American River Project

Overview of Relicensing Process

PCWA owns and operates the Middle Fork American River Project (MFP), a multi-purpose water supply and hydro-generation project. The MFP facilities are situated in the foothills and mountainous uplands of the western slope of the central Sierra Nevada, within the Tahoe and Eldorado National Forests. MFP facilities are located on the Middle Fork American River, the Rubicon River, Duncan Creek, and the North and South Forks of Long Canyon Creek. The MFP began operating in 1967 and supplies water for homes, industry, and agriculture within western Placer County and clean renewable energy to the California electric grid. The MFP operates under a 50-year license, which was issued by the Federal Energy Regulatory Commission (FERC) in 1963. The current license will expire on March 1, 2013. Accordingly, PCWA has initiated a process to the relicense the Project. PCWA formally began the relicensing process when it filed a Notice of Intent (NOI) and reapplication Document (PAD) with the FERC on December 13, 2007. The NOI and PAD are available in their entirety on PCWA's relicensing website at:

http://relicensing.pcwa.netlpad.htm.

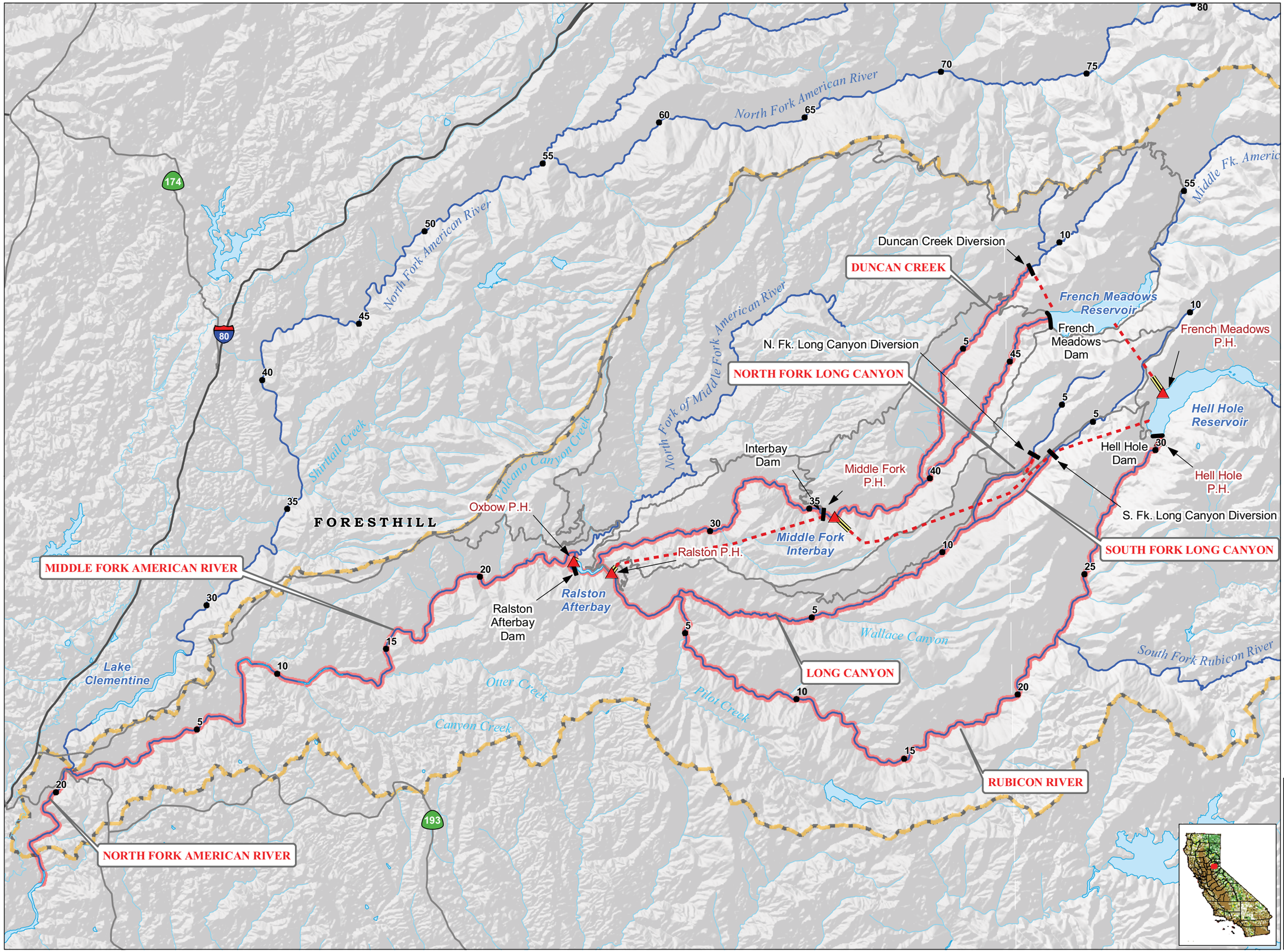
In April and May of 2006, PCWA conducted several Introductory Stakeholder Meetings, organized a Plenary Group to facilitate communication and decision making activities, and formed Technical Working Groups (TWGs). A major accomplishment of the Plenary and TWGs was the collaborative development and approval of 28 separate Technical Study Plans (TSPs), of which five are recreation-related. These five TSPs were included in the PAD and are identified as follows:

- REC 1 - Recreation Use and Facilities Assessment TSP
- REC 2 - Recreation Visitor Surveys TSP
- REC 3 - Reservoir Recreation Opportunities TSP
- REC 4 - Stream-based Recreation Opportunities TSP
- REC 5 - Visual Quality Assessment Technical Study Plan

The Angler focus group process is an element of the REC 4 – Stream Based Opportunities TSP.

PCWA began implementing elements of the Plenary-approved TSPs in May 2007. These included: selection of instream flow modeling transects; fish, amphibian, and macro invertebrate surveys; water quality sampling; recreation user counts; cultural resources inventories; vegetation community and wildlife habitat mapping; and bat surveys. The technical studies presented in the PAD will be completed, and Technical Study Reports finalized, in 2010. The status of the TSP and corresponding reports are available on PCWA's Website:

http://relicensing.pcwa.net/html/science/planimplementation.php



Project Facilities

- Powerhouse
- Dam
- Tunnel
- Penstock

Transportation

- Major Highway
- Minor Highway

Hydrography

- Watercourse with river miles (5 mi. increments)
- Water Body
- Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

- Watercourse Affected by PCWA Operations

PCWA

Placer County Water Agency
Middle Fork American River Project

Figure 1

River and Stream Reaches Associated with the MFP

Miles

Date: 3/3/08

Projection: CA State Plane, Zone 2
Datum: NAD 83

Z:\Entrix\3116501\map\RecreationMaps\PCWA_ProjectWatercourse_FlowAffected_17i11i_01.mxd

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group Discussion Topics

Overview by PCWA

1. Welcome and Introductions
2. Review of Meeting Objectives
3. Overview of Middle Fork American River Project (MFP) and Relicensing Process
4. Summary of Recreation Technical Studies

Group Discussion

1. Discuss Background and Experience of Participants

    - Primary fishing method
    - Affiliation(s)
    - Commercial or private
    - Specific experience fishing the river reaches in the Middle Fork American River Watershed (years of experience, locations)
    - Interests

2. Identify Specific Reaches to be Discussed Further, based on Background and Experience of Participants and Project Nexus

3. Characterize Each Reach Identified Above

    - Identify fishing locations, including access points and adequacy (private and public access)
    - Typical fishing season
    - Typical fishing method
    - Fishing quality (success, fish size)
    - Flow related effects on fishability
    - Safety concerns
    - Comparable regional fishing streams
    - Identify sources for other pertinent information (e.g. guide books, anglers, web sites)
    - Adequacy of support facilities
    - Conflicts with other users

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: _____

Please provide the following information:

1. Your primary fishing method:

_____

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: _____

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☐ No
   If yes, what is that enterprise?

_____

_____

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

_____

_____

_____

_____

_____

March 4, 2010 Angler Focus Group Meeting
Participant Profiles

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Bill GARNAZZO

Please provide the following information:

1. Your primary fishing method:

   FLY FISHING

2. Your primary type of waters fished (freshwater): ☑ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: FEDERATION OF FLY FISHERS; UPPER AMER. RIVER FOUNDATION; GRANITE BAY FLY CASTERS; OTHER CLUBS

4. Do you own, or are employed by, a commercial fishing enterprise? ☑ Yes ☐ No
   If yes, what is that enterprise?

   SPRING CREEK GUIDE SVC.

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   40 years in canyon - all reaches.

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: ED WAHL

Please provide the following information:

1. Your primary fishing method:

   FLY FISHING

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☑ both

3. Affiliation(s), if any: _____

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☑ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   20 + YEARS - RUBICON + TRIBS
   MIDDLE + NORTH FORK AMERICAN + TRIBS
   UPPER M F AMERICAN
   UPPER RUBICON

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: R. Heath Wakelee

Please provide the following information:

1. Your primary fishing method:

   Dry Fly & Nymph W/o indicator

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: Granite Bay Flycasters - Horseshoe Bar Fish & Game Preserve - Sierra Foothills Audubon Society

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☐ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   Ralston Afterbay, Rubicon, Middle fork Am River below oxbow.

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Daniel Street

Please provide the following information:

1. Your primary fishing method:

   Flyfishing.

2. Your primary type of waters fished (freshwater): ☑ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: Horseshoe Bar Fish & Game

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☑ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   2 yrs at HBFG
   Flyfishing, camping, hiking with family
   Enjoy the stretch at HBFG - fish are wild & scenery is beautiful

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: NICK STRELCHUK

Please provide the following information:

1. Your primary fishing method:
   FLY FISHING

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: REEL LIFE RECOVERIES, GOLDEN GATE ANGLING & CASTING CLUB

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   2 YEARS AT HORSESHOE BAR PRESERVE

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: THOMAS BARTOS

Please provide the following information:

1. Your primary fishing method:

   FLY FISHING

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: HORSESHOE BAR, GRANITE BAY FF, GOLDEN GATE ANGLERS + CASTING CLUB, CALIF SPORTSFISHING PROTECTION ASSOC.

4. Do you own, or are employed by, a commercial fishing enterprise? ☒ Yes ☐ No
   If yes, what is that enterprise?

   OWNER HORSESHOE BAR FISH + GAME PRESERVE, INC

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   14 PLUS YEARS. I FISH THE MFA PEAKING REACH APPROXIMATELY 150 TIMES A YEAR.

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: HANS GEYER (916) 996-4361

Please provide the following information:

1. Your primary fishing method:
   FLY FISHING

2. Your primary type of waters fished (freshwater): ☐ rivers/streams ☐ lakes/reservoirs ☒ both

3. Affiliation(s), if any: MEMBER HBP

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   MAINLY HBP (OXBOW DOWN TO 2 MI. BELOW TUNNEL CHUTE) - ALL C&R FLY FISHING SINCE SPRING 2007

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Frank Rinella

Please provide the following information:

1. Your primary fishing method:
   Fly Fishing

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☒ both

3. Affiliation(s), if any: Nor. Cal. Council Federation of Fly Fishers

4. Do you own, or are employed by, a commercial fishing enterprise? ☒ Yes ☐ No
   If yes, what is that enterprise?
   Sierra Guide Service Fly Fishing

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:
   2 years HBP Middle Fork Locations
   40 year's fishing experience – 20 year Pro Guide for Fly Fishing

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: Monte Hendricks

Please provide the following information:

1. Your primary fishing method:

   fly fishing

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: trout unlimited - do not represent

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   Rubicon River below Hell Hole Reservoir 33 years

PLACER COUNTY WATER AGENCY
Middle Fork American River Project Relicensing

Angler Focus Group - Participant Profile Form

Name: JOE BYRNE

Please provide the following information:

1. Your primary fishing method:

   FLY FISHING

2. Your primary type of waters fished (freshwater): ☒ rivers/streams ☐ lakes/reservoirs ☐ both

3. Affiliation(s), if any: HORSESHOE BAR PRESERVE

4. Do you own, or are employed by, a commercial fishing enterprise? ☐ Yes ☒ No
   If yes, what is that enterprise?

5. What is your fishing experience in the Middle Fork American River Watershed:
   Years of experience and locations:

   10 YEARS - MIDDLE FORK BELOW OXBOW
   RUBICON, NORTH FORK OF MIDDLE FORK

March 4, 2010 Angler Focus Group Meeting
Meeting Notes

Rubicon River - Hell Hole Reservoir to Ellicott Bridge

Fishing Location and Access Points	
Road or trail used to access fishing location	Hunter's trail off of Eleven Pines Road, Crystal Basin down to Parsley Bar, Parsley Bar Trail does not exist anymore, the Deer Creek Trail - 13N24 (no trailhead sign- have to know where it is and it is hard to find) but is in good shape, a hunter's trail that goes along the south side (Rubicon Trail) but has missing segments - parts are still available. Also from Crystal Basin you can go down to the South Fork Rubicon Trail. Potential conflicts with motorized trail use on Hunter's Trail and on the Deer Creek Trail.
Public or private access	Various sections of private property? (previously) No current problems.
Support facilities available at this fishing location	Fish and Game Angler Survey Box, undeveloped parking for access to hunter's trail
Adequacy of support facilities	Parking area to access hunter's trail needs restroom facilities (used by backpackers). Majority of people are using trail for day use along the stream for the first segment (lots of families)- refer to Bill's comments about the recreation management plan. Used to have problems under bridge along camping area but it is currently blocked off
Typical season of use	Limited by snow (usually about middle of May- later on higher access points until the first impassable snow)

Fishing Characterization and Quality	
Typical fishing gear used at this location	All types of gear
Typical method used to fish this location (bank, wading, boat)	Basically all wading
Target species	Trout (brown and rainbow)
Average size of fish typically caught at this location	Most are small (6-12 inches); might occasionally find bigger. They are smaller than they historically have been (in the last 15 years, haven't seen "big" fish)
Approximate number of fish typically caught per day	Highly variable, seasonal, but less than it used to be (steady decline over the years)

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	See above
Variety of fishing areas	Great variety, "classic"
Variety of fish species	What you would expect, but population of brown trout seems to be declining (variety contributes to overall fishing experience)
Size of fish	See above
Road access to fishing location	Satisfactory
Trail access to fishing location	In good shape, pending motorcycle conflicts. Some places are unstable and could use a little bit of work.
Overall fishing experience	Satisfactory, anglers will pass to future generations. Didymo algae ranges from Parsley Bar to the bridge. It is especially bad from Parsley's Bar to Hale's Crossing. Algae affects insects and anglers cannot fish in that area (little insect life and gear becomes covered, also difficult to wade)

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Haven't seen high water in this area - typically by the time the area is accessible, the flows are low enough to have adequate fishing areas
Variety of useable instream fishing areas	When the area is accessible, the flows are fishable
Ability to fish from streambank	Excessive riparian vegetation constrains ability to fish from streambank and could also be a safety issue
Ability to walk shoreline/bank	See above, riparian vegetation makes walking along the shoreline extremely difficult (another safety issue)
Ability to stand/wade in stream	Pretty good (as long as you can get to it) - described above
Ability to cross the stream	Can safely get across in a lot of places, satisfactory
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Good flows typically occur early to mid June (would be the preferred flow)
Maximum flow at which you would fish at this location (in cfs)	No reference available

Other Information	
Safety concerns	See stream-side vegetation, didymo, some portions of trail could be dangerous
Conflicts with other users	Historical long term camping use associated with Ellicott's Bridge caused undesirable issues. Closure of this area has helped to clean it up and there is less trash now.
Comparable regional fishing streams	Unique stream (wild trout) and should be "highlighted"

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	Angler Box from DFG

2008-2009 Freshwater Sportfishing Regulations

American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in	0

Rubicon River - Ellicott Bridge to Ralston Afterbay

Fishing Location and Access Points	
Road or trail used to access fishing location	Eleven Pines Road (see Bill C's document and previous focus group comments)
Public or private access	Public, but access to Nevada Point Trail goes through subdivision and is not obvious
Support facilities available at this fishing location	Fish and Game Angler Survey Box, undeveloped parking for access to hunter's trail
Adequacy of support facilities	Parking area to access hunter's trail needs restroom facilities (used by backpackers). Majority of people using trail for day use along the stream for the first segment (lots of families)- refer to Bill C's comments about the recreation management plan. Used to have problems under bridge along camping area but it is currently blocked off
Typical season of use	Limited by snow (usually about middle of May- later on higher access points until the first impassable snow). Nevada Point Trail is potentially seasonally closed, typically is could be used to access by April 1. Buckeye Flat off of Ralston Ridge Road.

Fishing Characterization and Quality	
Typical fishing gear used at this location	All types of gear
Typical method used to fish this location (bank, wading, boat)	Basically all wading
Target species	Trout (brown and rainbow)
Average size of fish typically caught at this location	Most are small (6-12 inches) but might occasionally find bigger. They are smaller than they historically have been (in the last 15 years, haven't seen "big" fish)
Approximate number of fish typically caught per day	Highly variable, seasonal, but less than it used to be (steady decline over the years)

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	See above
Variety of fishing areas	Great variety, "classic"
Variety of fish species	What you would expect, but population of brown trout seems to be declining (variety contributes to overall fishing experience). Reported potential spawning migration from Ralston Afterbay in spring.
Size of fish	See above
Road access to fishing location	Mostly satisfactory but better signage needed (for Nevada Point Trail access)
Trail access to fishing location	Trails get little to no maintenance and are quite steep.
Overall fishing experience	Concerning reach above powerhouse up to confluence of Long Canyon Creek - fallen off in quality in the last 20 years (more so than above). Fishing success rate in 3-3.5 miles has decreased greatly. From Nevada Point Trail - about mid-season (mid-July) the water temperature is up (~70 degrees) and fishing quality drops off.

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Typically by the time the area is accessible, the flows are low enough to have adequate fishing areas. Springtime has higher flows.
Variety of useable instream fishing areas	When the area is accessible, the flows are fishable
Ability to fish from streambank	Excessive riparian vegetation constrains ability to fish from streambank and could also be a safety issue
Ability to walk shoreline/bank	See above, riparian vegetation makes walking along the shoreline extremely difficult (another safety issue)
Ability to stand/wade in stream	Pretty good (as long as you can get to it) - described above
Ability to cross the stream	Can safely get across in a lot of places, satisfactory
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Good flows typically occur early to mid June (would be the preferred flow)
Maximum flow at which you would fish at this location (in cfs)	No reference available

Other Information	
Safety concerns	See stream-side vegetation, some portions of the trail could be dangerous
Conflicts with other users	Historical long term camping use associated with Ellicott's Bridge caused undesirable issues. Closure of this area has helped to clean and there is less trash now. At the bottom of Buckeye Trail access, there are no facilities but the "leftover" from other users is left behind. Miners have gotten aggressive (weapons conflict).
Comparable regional fishing streams	Unique stream (wild trout) and should be "highlighted"

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	Angler Box from DFG

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.)	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in	0

Middle Fork American River - French Meadows Dam to Middle Fork Interbay

Fishing Location and Access Points	
Road or trail used to access fishing location	Referenced in earlier meeting
Public or private access	Public
Support facilities available at this fishing location	None
Adequacy of support facilities	Not needed
Typical season of use	Constrained by access

Fishing Characterization and Quality	
Typical fishing gear used at this location	All types of gear
Typical method used to fish this location (bank, wading, boat)	Wading
Target species	Rainbow and brown trout
Average size of fish typically caught at this location	Not enough information to say
Approximate number of fish typically caught per day	

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	Not enough current information to say
Variety of fishing areas	
Variety of fish species	
Size of fish	
Road access to fishing location	
Trail access to fishing location	Middle Fork Powerhouse facility limits access to the upstream region
Overall fishing experience	In the past, maybe 4-6 fish on a good day, but currently 0 (Bill C doesn't go there anymore)

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	Below the powerhouse is good; areas that are accessible are good.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Not enough current information to say
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	No comment
Conflicts with other users	
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	NA

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.)	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only	0

Middle Fork American River - Middle Fork Interbay to Ralston Afterbay

Fishing Location and Access Points	
Road or trail used to access fishing location	Reference previous meeting comments. An access trail is located midway between the Afterbay and Interbay (Mosquito Ridge Trail). Only 2 points of access aside from the Interbay.
Public or private access	No comment
Support facilities available at this fishing location	Bathrooms and tables at picnic area
Adequacy of support facilities	Adequate
Typical season of use	Year round

Fishing Characterization and Quality	
Typical fishing gear used at this location	All gear
Typical method used to fish this location (bank, wading, boat)	Wading
Target species	Brown and rainbow trout
Average size of fish typically caught at this location	Not big
Approximate number of fish typically caught per day	Haven't caught more than 3-4 in a day

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	Satisfactory
Variety of fishing areas	Satisfactory
Variety of fish species	Satisfactory
Size of fish	Unsatisfactory
Road access to fishing location	Good
Trail access to fishing location	Limited (only 2 access points)
Overall fishing experience	Has become a hard place to fish due to overgrown vegetation.

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	More water would greatly improve conditions
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Current flows are below minimum for good fishing
Maximum flow at which you would fish at this location (in cfs)	Unknown
Other Information	
Safety concerns	None
Conflicts with other users	None
Comparable regional fishing streams	NA

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	NA

2008-2009 Freshwater Sportfishing Regulations
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only artificial lures with barbless hooks may be used.	0

Duncan Creek

Fishing Location and Access Points	
Road or trail used to access fishing location	Refer to previous meeting comments
Public or private access	Public
Support facilities available at this fishing location	No comment
Adequacy of support facilities	
Typical season of use	

Fishing Characterization and Quality	
Typical fishing gear used at this location	No comment
Typical method used to fish this location (bank, wading, boat)	
Target species	Above the diversion facilities - the fishing is excellent.
Average size of fish typically caught at this location	No comment
Approximate number of fish typically caught per day	

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	No comment
Variety of fishing areas	
Variety of fish species	
Size of fish	
Road access to fishing location	
Trail access to fishing location	
Overall fishing experience	At base of the dam, a pool provides good fishing until the water warms up in the late part of the season (mid-July-Sept). Down from there to the gauging station, there are fewer fish than in previous years. More rainbows than browns. From the gauging station down to the FS road, conditions are the same as from the pool to the gauging station. In the section below from the road on down, farther downstream towards the confluence the access becomes more dangerous. Characterized as a "great little stream." Won't go in (above or below diversion) after the end of July (fish are present but stressed).
Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	More water would improve fishing (year round). Wouldn't need a great amount for improvement.
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	

Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	No comment
Maximum flow at which you would fish at this location (in cfs)	

Other Information	
Safety concerns	None
Conflicts with other users	Messy campers (no direct conflicts with users, but items are left behind)
Comparable regional fishing streams	NA

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	NA

2008-2009 Freshwater Sportfishing Regulations

American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.)

Open Season	Bag Limit
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in	0

Long Canyon

Fishing Location and Access Points	
Road or trail used to access fishing location	Refer to previous meeting comments
Public or private access	Public (FS)
Support facilities available at this fishing location	Primitive and formal campgrounds
Adequacy of support facilities	Lack of facilities to support camping and parking (ex. Ramsey Crossing)
Typical season of use	Same as Rubicon River

Fishing Characterization and Quality	
Typical fishing gear used at this location	All types of gear
Typical method used to fish this location (bank, wading, boat)	Wading
Target species	Rainbow trout
Average size of fish typically caught at this location	Small (4-8 inches) with occasional 10 inches
Approximate number of fish typically caught per day	Varies (but pretty good)

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location	
Number of fish caught	Satisfactory
Variety of fishing areas	Satisfactory
Variety of fish species	One species
Size of fish	See above
Road access to fishing location	Ramsey Crossing is adequate, but the access above the North Fork diversion needs work.
Trail access to fishing location	Adequate (more signage would be nice)
Overall fishing experience	Good

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	If the area is accessible, then the stream is fishable
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	Late in the summer is difficult; not enough water to support anything
Maximum flow at which you would fish at this location (in cfs)	NA

Other Information	
Safety concerns	None
Conflicts with other users	Messy campers
Comparable regional fishing streams	NA

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	NA

2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in	0

Middle Fork American River - Oxbow to Ruck-a-Chucky

Fishing Location and Access Points	
Road or trail used to access fishing location	Refer to previous meeting comments
Public or private access	Both
Support facilities available at this fishing location	Paved parking, restrooms at Indian Bar, chemical toilets at Tunnel Chute, 3 first aid stations located on Horseshoe Bar Preserve, extraction equipment at Tunnel Chute
Adequacy of support facilities	Adequate
Typical season of use	Year round

Fishing Characterization and Quality	
Typical fishing gear used at this location	All gear types - Horseshoe Bar Preserve fly fishing only, catch and release
Typical method used to fish this location (bank, wading, boat	Bank, wading, flow tubes behind tunnel, and boats
Target species	Trout (rainbow and brown)
Average size of fish typically caught at this location	5% are below 12 inches, 65% are 12-14 inches, 25% are 16-18 inches, and about 5% are 18-22 inches. The average is approximately 12-16 inches.
Approximate number of fish typically caught per day	Approx. 5-6 on average (anywhere from 2-15)

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	Good or better than average
Variety of fishing areas	Wide variety when the flows are low, definitely depends on flows (during high flows there is less variety/access. For example, at 1,000 cfs - can't fish it and it is more dangerous.) Access to multiple fishing areas can be hindered during high flows. And anglers can be stranded on the wrong side until the flow subsides.
Variety of fish species	Good variety
Size of fish	Good
Road access to fishing location	Good
Trail access to fishing location	Good
Overall fishing experience	Depends upon flows; can be very good or can be very bad (fishing is better at lower flows, during higher flows people are compacted in smaller areas but during low flows people can spread out and fishing is then better).

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	See above (fishing is depressed during ramping periods and for some period afterwards; between 1-2 hours)
Variety of useable instream fishing areas	See above
Ability to fish from streambank	800-1,000 cfs most factors decrease and fishing becomes dangerous, not good for fishing success
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	400 cfs is about max for crossing

Flow Estimates	
Minimum flow at which you would fish at this location (in cfs	300 cfs
Maximum flow at which you would fish at this location (in cfs)	600 cfs for all types of anglers, fishable flows may increase in magnitude as fishermen are more skilled and experienced/athletic (1,000 cfs max)

Other Information	
Safety concerns	See above, also fast ramping with no warning and no consistency - get surprised and can get stuck on the other side of the stream for hours
Conflicts with other users	None
Comparable regional fishing streams	NA

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	Horseshoe Bar website, CDEC site, other anglers

2008-2009 Freshwater Sportfishing Regulations

American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos

Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April.	0

Middle Fork American River - Ruck-a-Chucky to Oregon Bar

NO COMMENT

Fishing Location and Access Points	
Road or trail used to access fishing location	
Public or private access	
Support facilities available at this fishing location	
Adequacy of support facilities	
Typical season of use	

Fishing Characterization and Quality	
Typical fishing gear used at this location	
Typical method used to fish this location (bank, wading, boat)	
Target species	
Average size of fish typically caught at this location	
Approximate number of fish typically caught per day	

Fishing Experience	
Rate your satisfaction with the following factors as they relate to this location:	
Number of fish caught	
Variety of fishing areas	
Variety of fish species	
Size of fish	
Road access to fishing location	
Trail access to fishing location	
Overall fishing experience	

Flow Related Effects on Fishibility	
How does flow affect:	
Availability of usable instream fishing area	
Variety of useable instream fishing areas	
Ability to fish from streambank	
Ability to walk shoreline/bank	
Ability to stand/wade in stream	
Ability to cross the stream	
Flow Estimates	
Minimum flow at which you would fish at this location (in cfs)	
Maximum flow at which you would fish at this location (in cfs)	
Other Information	
Safety concerns	
Conflicts with other users	
Comparable regional fishing streams	

Sources of Other Pertinent Information	
Sources of other pertinent information (e.g. guide books, anglers, web sites):	

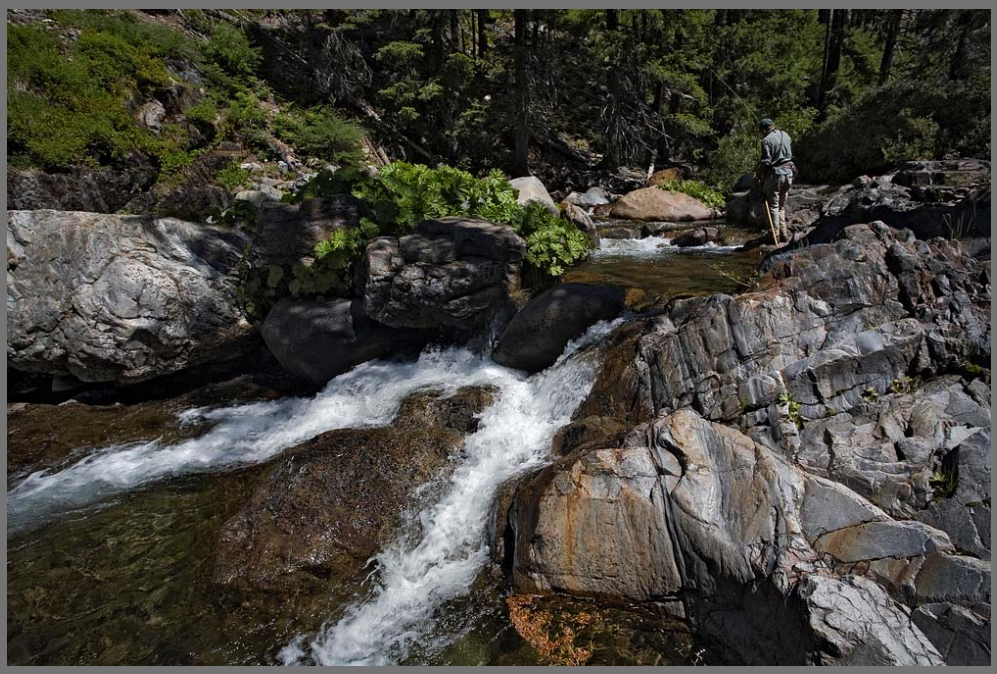
2008-2009 Freshwater Sportfishing Regulations	
American River, North Fork, Middle Fork, South Fork and their tributaries w/in the Sierra District (Placer, Eldorado, Amador, and Alpine cos.)	
Open Season	**Bag Limit**
Last Saturday in April through November 15	5 per day 10 in possession
November 16 through the Friday preceding the last Saturday in April. Only	0

March 4, 2010 Angler Focus Group Meeting
Stakeholder Comments

2010

BYPASS REACH ANGLERS COMMENTS FOR ANGLER FOCUS GROUP MEETING MARCH 4, 2010

Joint comments of Bill Carnazzo, Bill Templin, Monte Hendricks, and Ed Wahl, on the subject of angling quality, and related issues, on the "bypass reach" streams of the Middle Fork American River Project: The Rubicon River, the Middle Fork American, Duncan Creek, and Long Canyon Creek



Bill Carnazzo
Spring Creek Guide Service
Representing: Northern California Council of the Federation of Fly Fishers, Upper American River Foundation, Granite Bay Flycasters, and others

ANGLER FOCUS GROUP MEETING

MARCH 4, 2010

JOINT COMMENTS OF ANGLERS EXPERIENCED ON THE BYPASS REACHES

(Bill Carnazzo, Bill Templin, Monte Hendricks, Ed Wahl)

Document Written By Bill Carnazzo

I. Bill Carnazzo

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B. Background and general comments applicable to all bypass reaches.

I am a licensed guide (and have been for 20 years) with over 50 years of fly fishing experience. In these proceedings, I represent myself and my guide service, as well as the following: Northern California Council, Federation of Fly Fishers (I have assumed this function in place of Gary Flanagan); the Upper American River Foundation, a California Non-Profit Corporation; Granite Bay Flycasters; and a host of other fly fishing groups and clubs.

I have been fishing the streams found in the Middle Fork drainage for over 40 years, and have extensive experience on all of them, including the Rubicon River, the Middle Fork American both above and below French Meadows Reservoir, the main Long Canyon Creek as well as its two main forks, Duncan Creek both above and below PCWA's diversion facilities, Wallace Creek, and other small streams. I am familiar with the type, numbers, size, and health of the fish, as well as the BMI populations that form a major part of the food source for the fishery, based on personal observation and angling experience.

I am very appreciative of PCWA's willingness to now hold this additional angler focus group meeting to gather more information on angling in the bypass reaches. That said, I noted on the agenda for this meeting that "project nexus" is an issue to be discussed. Unless this is a

typographical error, I believe that the nexus issue is inappropriate for purposes of this focus group meeting. Because nexus is a complex legal/factual issue involving questions of qualitative and quantitative relationship to the project's improvements and operations, it could consume the entire short time allotted for this meeting—and then some. For example, a potential component of a nexus analysis is the need for mitigation for adverse project impacts caused by nearly 50 years of operation. In other words, the "nexus" concept is broader than **current** direct (or indirect) connections between a particular adverse impact and project facilities/operations. It is therefore respectfully requested that the nexus issue be deferred to a later time when it is more relevant.

Over the past 15-20 years I have noticed a significant general decline in the quality of the fisheries in most of the streams mentioned above; i.e., the numbers and size of fish have both been significantly adversely impacted. It has been my view for many years that the decline is due to many factors, some of which may possibly be unrelated to PCWA facilities. However, some significant adverse impacts on fish, as well as the benthic macroinvertebrates ("BMIs") population and diversity, together with the aquatic habitat and streamside vegetation that are essential to a healthy fishery, can be traced directly to PCWA's operation of its facilities in the watershed. Additionally, before getting to some specific comments on each of the bypass reaches, I offer the following general comments, some of which will be familiar because they were presented in a different context; they are included again here solely for the purpose of general bypass reach angling information:

1. From the angler's perspective, wild trout require three things: food, oxygen, and cover (i.e., protection from predators). If you add "cold water," there are four important factors. Of these, experience has taught me that in general cover trumps the others. During periods when flows are high but it is still safe to fish (which does not necessarily mean that wading must be possible), all of these ingredients are present. High flows cause turbidity, which in turn provides cover for trout. Fishing can be good with some turbidity; as turbidity renders the water essentially opaque, however, success rates fall off (but don't necessarily zero out). Higher flows naturally also increase available oxygen content in the water. Food availability is increased dramatically, with entrained aquatic insects and terrestrials (worms, ants, beetles, etc.) washed into the flow from the watershed. And, of course, water temperatures are lower. Thus, all of the essential ingredients for increased success are present during higher flows.
2. During the summer months when flows are low aquatic insect activity decreases in frequency and tempo, flows are lower, the water warms significantly thereby reducing dissolved oxygen content, and all-important cover is dramatically reduced

due to reduced flows and accordingly habitat. These factors operate to reduce fish activity, and negatively affect angling success. In other words, the essential ingredients for angling success, mentioned above, are either lacking or significantly attenuated.

3. The fall months are generally characterized by low flows, at least until the arrival of the rainy season. Nevertheless, as air and water temperatures moderate, insect hatch activity (at least among certain mayfly and stonefly species) becomes more frequent and regular. Cooler water holds more oxygen, and shade, cloud cover, and inclement weather provide cover. The river bottom is also littered with foliage that has fallen from trees and shrubs, increasing available cover and camouflage for trout. With rain, fog, and cold air temperatures, fall fishing improves. In addition, there is the trout's increased instinctive push to feed in advance of winter. Accordingly, despite low water conditions, fall fishing can be excellent.
4. The chart set forth below is intended to be an informational summary, representing a very general array of MFP bypass stream fishing conditions under the different broad flow categories as noted on the left side, from an angler's perspective, vs. five general angler success levels arrayed across the top of the chart. The success assignments ("X") for the flow types assume a competent, experienced angler familiar with fishing techniques appropriate to each of the 6 broad flow categories.

	Very Good	Good	Fair	Difficult or Dangerous	Poor or Unethical
Very High Flow/Heavy Turbidity				**X**	
High Flow, Some Turbidity		**X**			
High Flow, Clear Water		**X**			
Medium Flow, Clear Water	**X**				
Low Flow, Clear Water			**X**		
Very Low Flow, Clear Water					**X**

C. Specific comments on the quality of the angling experience in the bypass reaches.

The quality of the angling experience in the bypass reaches is affected by many factors; the main factors are listed below. I base the following comments on my own personal experience plus the views, expressed to me, of the many clients that I have introduced to the MFA drainage through my guide service, as well as friends and acquaintances who have accompanied me on fishing trips into the canyons. Comments on specific bypass reaches will be dealt with in subsection D below.

1. Fishery health. Fisheries such as those of the bypass streams, where there has been a steady decline in both numbers and size of catchable trout (rainbows and browns) cannot be deemed "healthy." The fact that young-of-the-year and fry are present does not end the "health" inquiry; rather, the real questions are related to survival

rates of these young fish and their ability to mature in sufficient numbers to a size that will provide a reasonably good angling experience. In turn, survival rates depend on the presence or absence of many converging factors, including available habitat, cover and protection from predators, adequate ability to migrate upstream and downstream, food availability in sufficient quantity, appropriate water temperatures, beneficial flow rates, and sufficient oxygen content in the water column. All of these factors have been adversely affected by the MFA project's disturbance of the historical unimpaired seasonal hydrograph that governed the adaptive life cycles of native rainbow and brown trout, and around which their genetic patterns (including survival techniques) evolved.

2. Fish numbers. As mentioned earlier, fish numbers have declined to an extent that, at times, renders the angling experience poor in quality. Catch rates twenty years ago in bypass reaches, for reasonably capable anglers, could easily exceed ten to fifteen fish caught and released. The current catch rate under ideal conditions often does not approach that number. Brown trout have always been scarcer than rainbows, but under present conditions it is rare to catch one where one or two might have been caught at the same location in past years.
3. Fish size. As also mentioned earlier, average fish size has grown continuously smaller. Twenty or more years ago, it was not unusual to catch at least one or two fish in excess of 14 inches; under present conditions, such a fish would be a rarity. The current average fish caught is between six and eight inches. Many anglers find this to present a poor angling experience.
4. Food production. Trout feed on both aquatic and terrestrial (grasshoppers, ants, beetles, etc.) insects. Based on my personal observations and experience, most of a trout's diet will consist of aquatic insects, where they are available in sufficient abundance. The available numbers and diversity of BMIs in the MFA drainage has decreased dramatically.Terrestrial insects that are only available by happenstance, sporadically and in unreliable numbers, cannot sustain a viable trout population in the MFA drainage. My observations regarding numbers and diversity of BMIs are based on constantly searching for aquatic insects by using seine nets, turning over rocks, and shaking streamside vegetation; I do this, in part, to aid in fly selection for myself and my clients—all as part of the quality of the angling experience. I also do it because I have an intense interest in stream entomology and collection of representative specimens. My conclusions are as follows: (a) Most of the larger mayfly species that were previously found in these streams have either been extirpated or are on the verge of extirpation; smaller species, such as *baetis* mayflies, are still present but their numbers are reduced. (b) The larger stoneflies,

such as Pteronarcys ("Salmon Fly") have all but disappeared; Golden Stoneflies still exist, but in reduced numbers; (c) Caddis flies have fared better, but are not abundant or diverse. Because food availability obviously affects fish numbers and size, the reduction in BMIs has degraded the angling experience in the bypass reaches.

5. Riparian vegetation. Enormous floods that periodically occur in the MFA drainage scour sediments out of deep holes, creating cold water refugia for summer habitat, but are insufficient by themselves to remedy streamside vegetation problems. In fact, they make the angling experience worse by virtue of debris piles that are difficult or impossible to avoid, and laid-down willows and alders that impede access and create serious streamside hiking and wading safety issues. Normal spring flushing flows that characterize a natural hydrograph tend to minimize these problems by keeping streamside vegetation pared back so that streamside hiking and wading during later months is much safer. Without adequate flushing flows, the angling experience is degraded by having fewer deep, cold water pools for fish to survive in during hot summers and by reducing both convenience of access and safety .
6. Inadequate flow conditions. The consultant's studies have shown that the project, at times (summer and early fall), delivers more water to the bypass reaches than would normally be available under the unimpaired hydrograph. Nevertheless, the disturbance of the natural hydrograph at other times (winter and spring) causes irremediable damage that is not mitigated by the slight benefit of increased summer flows. While flows are addressed elsewhere, it is worth mentioning here that the current minimum flows in the bypass reaches during summer and fall seasons are woefully inadequate in terms fishery life cycles and therefore for the angling experience. The effect of inadequate flows on the fishery is devastating not only because of the factors mentioned above, but also because of water temperature increases that accompany low flows. In order to address quality of the angling experience, it is essential that flows in the bypass reaches be increased, to provide cooler temperatures and increased fish/BMI habitat during the critical summer and fall months.
7. Access issues. We will present extensive comments on this issue in our recreation plan comments. For purposes of this document, adequate access is essential for a high quality angling experience in the bypass reaches. At present, there are access barriers that, if removed, would increase the quality of angling experience.

D. Comments relating to specific bypass reaches.

Each bypass reach is unique in myriad ways. Nonetheless, they have common characteristics (pocket water, pools, riffles, side channels, etc.) that form the basis for the general comments mentioned above. Another commonality is that each stream has remote, nearly inaccessible reaches, as well as areas where access is reasonable (although it could be improved in order to increase the quality of the angling experience). Where there are differences from an angling standpoint, they are addressed below.

1. **Rubicon River**.

    a. **River above Ellicott's Bridge**. The most convenient access to this reach is via the Hunter Trail, which for the most part is relatively high above the river on river-right (north side). From the Hunter Trail there are two main trails down to the river (other points do exist, but they involve some relatively steep and potentially hazardous traverses): one at the confluence of the South Fork Rubicon/Main Rubicon (approximately 1.5 miles above the bridge), and another at Hale's Crossing (approximately 5 miles above the bridge). From the south side of the river there is access to Parsley Bar from the Crystal Basin area via USFS roads. Water temperatures in this reach increase over the ten miles between Hell Hole dam and the confluence. In July, August, and September, assuming minimum flow conditions, the water at the confluence is far too warm to ethically fish because the fish are already stressed and even if caught and quickly released, there will be significant hooking mortality. In order to improve the quality of the angling experience in this reach from July through September, there needs to be higher minimum flows for all of the reasons set forth above. Angling at the South Fork confluence area, during ideal angling conditions as described above, can be characterized as mediocre compared to (for example) 20 years ago. While there is a fair population of rainbows, 95% of them are in the 6-8" range; the largest specimen I have seen in many years was 13". Browns are so scarce that they are nearly nonexistent in this area. Between the confluence and Hale's Crossing there are obstacles that make streamside travel difficult at times, but not impossible. The angling in this reach is, compared to 20 or 25 years ago, also mediocre for the same reasons although in some places the fish are slightly larger but not more plentiful. Between Hale's Crossing and Hell Hole (Parsley Bar, for example), the angling is slightly better for larger (10-12") rainbows, with a few browns mixed in. Still, the numbers are quite low. Angling near the bridge is characterized by small fish in low numbers.

b. **River between Ellicott's Bridge and Long Canyon Creek Confluence**. From Ellicott's Bridge down to the confluence of Long Canyon Creek/Main Rubicon, access is difficult. There are several trails that meet the river a few miles downstream of the bridge (e.g., Lawyer Trail, Slide Point Trail, and Nevada Point Trail). Angling here has, at times been somewhat better than above the bridge, but again can be described as mediocre compared to 20-25 years ago. There is a road at Pennsylvania Point which reaches the river near a footbridge. Angling here in the summer months is poor due to excessive water temperatures and inadequate flow. At other times more fish can be caught but they are very small, and most likely are fish that have migrated downstream from Long Canyon Creek. No temperature assistance is provided by Long Canyon Creek because it too is overheated at the confluence.

c. **River between Long Canyon Creek Confluence and Ralston Powerhouse**. The canyon along this stretch is very steep; the best access is hiking up from Ralston Powerhouse. Angling from the powerhouse upstream to the first major pool (approximately 150-200 yards) consists of a series of pools and pockets. While a few fish in the 12-14" range can be found here in the spring, most are in the 6-10" range; the numbers are low for all sizes. Once the water warms above 60 degrees, virtually all fish move either upstream or down below the powerhouse. This can occur as early as late June; temperatures after that can reach 70 degrees, resulting in a negative angling experience. The area above the first large pool consists mainly of pocket water, plunge pools, and a variety of riffles and runs with some larger, deeper pools mixed in. During early spring, larger rainbow trout enter this section of the river, apparently from Oxbow, to spawn. Access to these spring fish is not possible without crossing the river at the base of the first large pool above the powerhouse because there is a bedrock face on the north side (river right) that is extremely slick at this time of year and very dangerous to try to cross (there is a gaging station on this rock face). A slip by an angler wearing waders could be fatal because he/she would end up sliding down the face into the large pool (possibly with injuries from the fall) which is over 10 feet in depth in places and the water will be cold. Prior to 1997 (I believe that is the correct year), this bedrock face had areas covered with soil, which made it relatively safe to traverse in order to get to the water above the pool. High flows and heavy rains removed virtually all of the soil that provided the necessary footholds for safety. Since the water level at the base of the pool is too high at this time of year to cross safely (without being

swept into the fast water below the pool), the spring fish are now inaccessible in all but the most dry years. Once the flow is reduced enough to safely cross at the base of the pool, access to the river above the pool is relatively easy and safe, although there are areas where anglers must climb around obstacles. However, by the time that the water level has dropped sufficiently for safe crossing, the spawners have returned to Oxbow. Compared to 20-25 years ago, angling in this reach during this time, all the way up to the Long Canyon Creek footbridge, is at best fair in quality, due to the small size and sparse number of fish available.

2. **<u>Middle Fork American</u>**

    a. **Middle Fork Below French Meadows, to Interbay powerhouse**. The stretch below French Meadows Res. can be reached from the USFS road and overland hiking. Beyond a mile or so below the dam the terrain becomes difficult and dangerous to attempt. Down to that point, the angling 20-25 years ago, and earlier, was reasonably good for fair sized (12-14" with occasional larger specimens) rainbows and a very few browns, especially in the spring (when road access opened). Since then there are so few fish in this reach that it is hardly worth the effort, even in the spring. Access to the river below Interbay is very limited due to the steep terrain. Above the powerhouse, angling has now been blocked off completely by PCWA. Prior to that, during the spring and early summer angling was fair for small fish; in earlier years angling success was much better. There are some sizeable trout (wild browns and rainbows) in the stream as it exits the powerhouse and enters the afterbay—and in the afterbay itself, but they are limited in number. It is my belief (backed by physical evidence and observations by me and by other anglers) that they feed on entrained and damaged fish and perhaps other aquatic species that are in the water exiting the powerhouse.

    b. **Middle Fork from Interbay to Ralston Picnic Area**. There is apparently a trail from Mosquito Ridge Road down to the Middle Fork. I have not found it yet, and therefore have not personally used this trail, but intend to do so this spring in order to assess the angling quality in this area. The Middle Fork is safely accessible from the Ralston picnic area, where there is a short trail leading upstream. Beyond a mile or so above the picnic area, the terrain becomes very steep and difficult to access. Impaired spring flows here are insufficient to flush gravels and other material out of what would otherwise

be clean, deeper, and cooler holes, and clean the stream of accumulated detritus, mosses, algae, weeds, and riparian overgrowth. This makes this reach difficult to fish at all times, but especially so in the summer and early fall. There are some rainbows that remain in this stretch, but they are quite small with the exception of a few larger specimens. I personally have not caught brown trout here (nor have my clients), but I have heard of others who in years past have. Again, 20-25 years ago the fishing here was easier due to less vegetation and in-stream materials, and more available (albeit small) fish.

3. **Duncan Creek**. In general, this little creek was a back-country angler's dream—full of eager rainbows and browns in the 6-10" category. The creek above the diversion facility still can be categorized in that manner, at least until late summer and early fall when flows are very low and the fish are extremely shy. The creek below the diversion facility is but a shadow of its former self, with far fewer fish.

    a. **Duncan Creek above the Diversion Facility.** As stated above, this part of the creek remains relatively pristine, characterized by some boulderous pockets above and below the PCWA bridge, with mostly bedrock riffles, runs, and plunge pools above the informal "campground" area. The fish are small (6-8") but numerous, and readily take well-presented dry flies and small nymphs. They are mostly rainbows, with an occasional brown mixed in.

    b. **Duncan Creek at the Diversion Facility.** There are some fish that inhabit the small pond above the dam; the pond is shallow and very clear, which makes fishing it during summer months extremely challenging. During the spring months (assuming road access is available) anglers fishing the pond can have some success. The fish here tend to be a bit larger (6-10"). It is my belief that a large number of fish from the upper creek become entrained in the diversion tunnel; at one point I saw a very large brown trout swimming just beyond the trash barrier. It could have come up through the tunnel—I have no way of knowing that.

    c. **Duncan Creek pool just below the dam.** At the base of the dam there is a pool that supports a fair fishery. During spring and early summer the fish swim throughout this pool; in later months they locate themselves up near the minimum flow pipe. Angling is generally good here until August when the water is too warm and the water is very clear. The fish are mostly rainbows although I and some of my clients have caught a few browns here.

d. **Duncan Creek below the dam and pool down to the gaging station.** The fishing in this freestone reach, down to the gaging station, has deteriorated over the years. There are still a fair number of fish, but they are virtually all small rainbows with a very sparse number of browns. Access is somewhat difficult due to excessive riparian vegetation overgrowth caused by insufficient flushing flows. This, combined with the relative paucity of the fish population, impairs the quality of the angling experience.

e. **Duncan Creek below the gaging station down to the USFS road bridge.** The fishing in this reach is very similar to that found above the gaging station. My experience here is that there are a few more fish in this stretch.

f. **Duncan Creek below the USFS road bridge.** This stretch is accessible for a relatively short distance before the terrain begins to steepen sufficiently, making access difficult. In the distant past, brown trout of surprisingly large size were found in this area—but that is no longer the case due to lack of sufficient spawning and rearing habitat in the fall. The rainbow population is similar to that found above the bridge, and is subject to the same problems inherent in that fishery. Further downstream, a dirt road along the eastern side of the creek provides additional access opportunities to less heavily fished reaches where bigger and more fish may still exist; the area downstream from the terminus of this road probably receives even less angling pressure.

4. **<u>Long Canyon Creek.</u>**

a. **North and South Forks above Diversion Facilities.** While the North Fork has somewhat less water available, the two forks are similar in their stream character, and in the number and size of fish. In spring the fishing can be fairly good (assuming road access is open) for small rainbows. Due to excessive erosion (from poorly maintained culverts and range cattle destruction of vegetation) along the paved road to Hell Hole Res. (along the north side of the South Fork) and debris flows in this reach, much of the water goes underground as the flows decrease in the summer, leaving wild rainbows stranded in small pools to die of exposure or from predation. It is my view that the diversion facilities entrain a large number of these fish, with a resulting adverse impact on the downstream fishery (due also in part to the lack of ability for fish to migrate downstream because of the type of dam

structures that exist). There are a number of available access points to this area.

b. **North and South Forks at Diversion Facilities.** Once the flows drop the pools above the dam become shallow and clear and difficult to fish. During spring small rainbows can be caught in the inflow area. The diversion facility on the South Fork requires frequent sediment removal because of the highly erosive materials upstream and the land use impacts of roads and cattle. Some anglers and researchers believe that the reach above the South Fork diversion is the primary source of sediments entering the Rubicon River below its confluence with Long Canyon Creek and into the Ralston Afterbay Reservoir (Oxbow).

c. **North and South Forks below Diversion Facilities to Confluence.** The angling here, on both forks, is similar in quality to that available in Duncan Creek below the pool beneath the dam. The fish are uniformly rainbows of small size.

d. **Long Canyon Creek below Confluence, down to Ramsey Crossing.** The terrain here is difficult to hike and wade, but there is reasonable access upstream from Ramsey Crossing. The fishing near the bridge at Ramsey Crossing is reasonably good for small fish in the spring as access becomes available, but tapers off steeply as the water level lowers, clarity increases, and temperatures rise.

e. **Long Canyon Creek below Ramsey Crossing down to Rubicon Confluence.** There is reasonable access from the bridge to downstream areas for a relatively short distance. There are also trails down to the creek via Wallace Creek and from the USFS road. This area is populated by a relatively large number of very small fish that have migrated upstream from the Rubicon River. Again, in the summer and early fall, fishing here is poor due to low, warm flows and crystal clear water.

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http://horseshoebarpreserve.com/

2/19/10

Placer County Water Agency
Resource Development Department
Mr. Mal Toy
Project Manager
P.O. Box 6570
144 Ferguson Road
Auburn, CA 95604

RE: FERC Project # 2079 Middle Fork of the American River Project

Dear Mr Toy,

Horseshoe Bar Fish & Game Preserve (HBP) is a private organization that was created to expand the recreational activity on the Middle Fork of the American River (MFA). HBP is a stakeholder in MFA FERC project # 2079. HBP hosts a variety of events for philanthropic and nonprofit organizations, such as Wounded Warriors, Casting for Recovery (breast cancer survivors) numerous Nonprofit Fly Fishing clubs, scouting, as well as, fund raisers and events for local schools and other nonprofit organizations in Northern CA. In addition, HBP brings guests from all walks of life (in both public and private sector) to use and enjoy the property/river which extends five miles on both sides of the river. HBP has been attending the FERC meetings on a regular basis and has participated in various studies. The reason for writing this letter and submitting the attached survey is to put forth an accurate picture of the angling and recreational activity that occurs on the MFA Peaking Reach project.

Since the creation of HBP the recreational activity and angling on the upper MFA peaking reach has doubled each year. During the calendar year of 2009 angling activity at HBP exceeded 1200 visits and is expected to nearly double during the 2010 calendar year. Recreational activities, such as camping, hiking, observing nature, bird watching, recreational mineral exploration, historical and cultural field trips, that have occurred at HBP *have not* been recorded in any of the project Recreational Studies. The members of the public that participated in all of these activities come from a wide range of cultural, ethnic, geographical and economic

backgrounds. Their ages range from kindergarten school children to senior citizens. Their use and activities *should be* included in the Recreational Studies.

HBP is also actively involved in the restoration of fish habitat and population throughout the MFA and other FERC projects in Northern California. HBP is currently pursuing the restoration and recreation of over a mile and a half stretch of river, known as Horseshoe Bar. During the 1880's the Tunnel Chute was created that diverted the river in order to dewater the mile and a half of the MFA River known as Horseshoe Bar. HBP efforts to restore a flow around Horseshoe Bar to create a native and wild fish spawning area will not only benefit the members and guests, it will also benefit many miles above and below the property and could eventually become an important and key asset to the restoration of anadromous fish.

The PCWA Recreational Study relied on the input from relatively few anglers to establish its findings. Had the 1200 plus anglers who fish the upper reach of the MFA been allowed to have their input considered, the results would have been significantly different.

Our desire is to work with other recreational groups to develop a flow regime that best serves all vested parties. From an angling perspective we believe that flows of 400 CFS to 600 CFS will provide a safe and successful angling experience. Of course, the scientific studies developed to maintain a healthy fishery must take precedent over all of the interests.

HBP would be happy to supply documented accounts and letters confirming the activity and accuracy of this letter and survey. Please ensure that this letter and all of its attachments are entered as part of the official records of these proceedings.

Sincerely,

Thomas G.M. Bartos
President

CC: Kimberly D. Bose, Secretary Federal Energy Regulatory Commission
Placer County Supervisors
PCWA Board of Directors
Department Fish & Game
US Department of Forestry
Stakeholders FERC Project # 2079

1. Bob Schrer bs@sohewest.net
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(over)

7. R. Heath Wakelee R. H. Wakelee hwakelee@gmail.com
8. Daniel A. Street dstreet@sacdawyers.com

General Visitor Survey
Horseshoe Bar Fish & Game Preserve
FERC Project # 2079
Middle Fork of the American River Project
2-21-09

During the numerous recreational use meetings held over the last 12 months we have requested that PCWA conduct surveys of the 1200 plus anglers that fish the upper reach of the MFA FERC Project #2079. It is unfortunate that individual surveys were not taken during the process. As a consequence we will attempt to provide the information as accurately as we can.

The Survey Location site would be the Horseshoe Bar Fish & Game Preserve, Foresthill, CA. This preserve covers approximately five miles of the river, on both sides of the river, starting just below Oxbow Dam and continuing downstream for five miles. This stretch of the river is very significant because it represents the highest level of angling activity on the peaking reach and is approximately 20% of the MFA. The time frame for this survey is the calendar year 2009. The hours of the day were generally from sunrise to sunset with overnight events on various occasions.

The following estimates are best estimates based on documented records and accounts from the caretaker, owner and individuals (HBP members, numerous nonprofit Fly Fishing Clubs members, philanthropic, government and nonprofit organizations) who participated.

1. Camping at semi-developed site: 200
   Day use along Stream/river: 1200
   Fishing: 1000

2. What types of vehicles were used? Car/SUV and light trucks

3. How many people were in each vehicle? 50% 1 per vehicle and 50% had 2 or more.

4. How Many people in your group are in the following age categories:
   Under 18 250 18 and over 950

5. How many & what types of vehicles were used? 100% Car/SUV/Van and light trucks

6. County of Residence?

Santa Clara County: 40	Marin: 20
San Mateo: 40	San Francisco: 80
Sacramento: 300	Nevada: 150
Placer: 530	Santa Clara 40

7. What is your age?
   4 –17 100
   18 – 25 200
   25 – 65 700
   Over 65 200

8. Which Cultural or ethnic group do you most closely identify with?
   Hispanic/Latino: 250
   Black/African American: 25
   White /Caucasian: 750
   Asian: 175

9. Primary spoken language? English

10. How Many years have you recreated in the area? 3 to 5

11. How many trips do you take to this area annually Jan to December? 6

12. How much money do you spend during your visit to this area? These estimates vary greatly depended on where the individuals live. SF Bay Area counties would be at the high end and placer county residents would be much lower as such things as gas, food and lodging would not be as expensive for those that live locally. Regardless of where an individual lives they spend money in all of the areas listed below.

    Placer County $200 to $500
    Auburn Area $101 to $200
    Foresthill Area $51 to $100

13. Reason why you chose this area to recreate:

	Main Reason	Secondary Reason
Close to home:	50%	
Scenic Quality:	100%	

Recreational activities/opportunities:	100%	
Access to stream/river:	100%	
Cost of facility access fee	100%	
Presence of onsite mgr/host:		30%
Lack of Crowding	100%	

14. How important are each of the flowing facilities

	Very Import	Important	Somewhat	Not Import
Hiking Trails				X
Fishing Access Trails	X			
Educational & Historical exhibits				X

15. Activities:

Picnicking in undeveloped sites			X	
Camping in Undeveloped sites			X	
Stream Fishing	X			
Hiking/Walking			X	
Visiting Historical/Cultural sites		X		
Viewing wildlife/scenery/photography		X		
Rock Hounding			X	
Relaxing	X			
Solitude	X			

16. Rate available /adequacy Information

	Somewhat Acceptable	Not Acceptable
River/Stream Flow Info	60%	40%

Explain: PCWA website provides historical river flow information but does not provide information in advance so that you can plan for angling activities.

17. How would you rate your overall recreational experience?

Very satisfied 45% Satisfied 20% Unsatisfied 35%

The most common complaint is high, peaking, dangerous & unfishable flows. Peaking flows have a very negative effect on fishing as fish do not like change. Depending on the peaking rate and period anywhere from 4 to 6 hours (one third to one half of the day) can be lost during the day because of the effect peaking has on the fish. Also the high flows

restrict access to a very significant portion of the river thereby forcing anglers into a few areas where increased fishing pressure not only reduces the success rate; it also has a negative effect on the recreational experience.

18. Are there additional recreational facilities, amenities, or opportunities that would improve your recreational experience? Yes A website that would allow the public to view what the flows will be throughout the day in advance. A more balance approach that would allow anglers to fish at lower flows in the latter part of the day is needed to allow anglers to fish safely and successfully.

19. What was fishing method was use? Catch & Release 100% fly fishing barbless flies.

20. Indicate the type and number of fish caught and released. 100% of fish caught were released. 95% were Rainbow Trout 5% were Brown Trout

21. Average number of fish caught: 5

22. Average size of fish: 6" to 12" 5% : 12" to 14" 65%: 16" to18" 25%: 18" to 22" 5%

APPENDIX K

Impaired and Unimpaired Flows by Reach
Large River Bypass Reaches
(Wet, Above Normal, Below Normal, Dry, and Critically Dry Water Years)

Page

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Figure K-2. Rubicon River example above normal water year (1999) flows below Hell Hole Reservoir (top), downstream of South Fork Rubicon River (middle), and downstream of Long Canyon Creek (bottom). 2
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Figure K-9. Middle Fork American River example dry water year (2001) flows below French Meadows Reservoir (top) and at the bottom of the reach upstream of Middle Fork Interbay (bottom). 9
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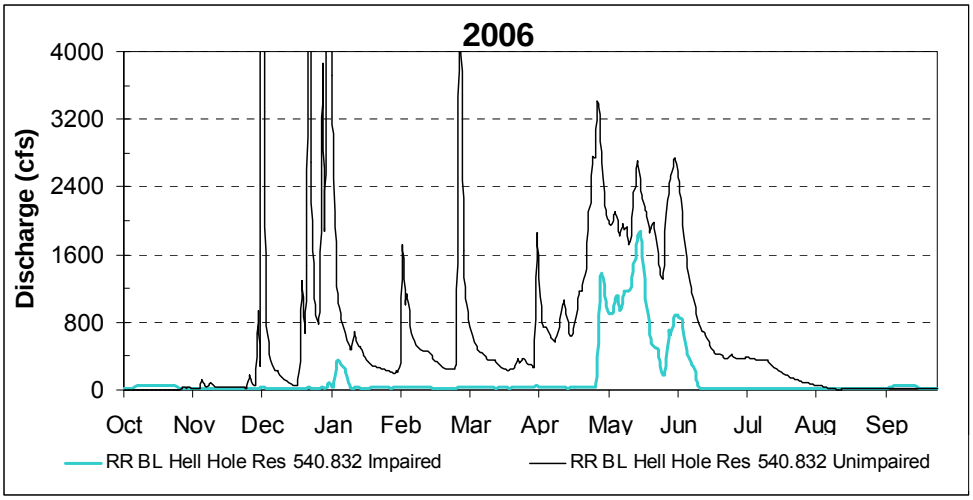
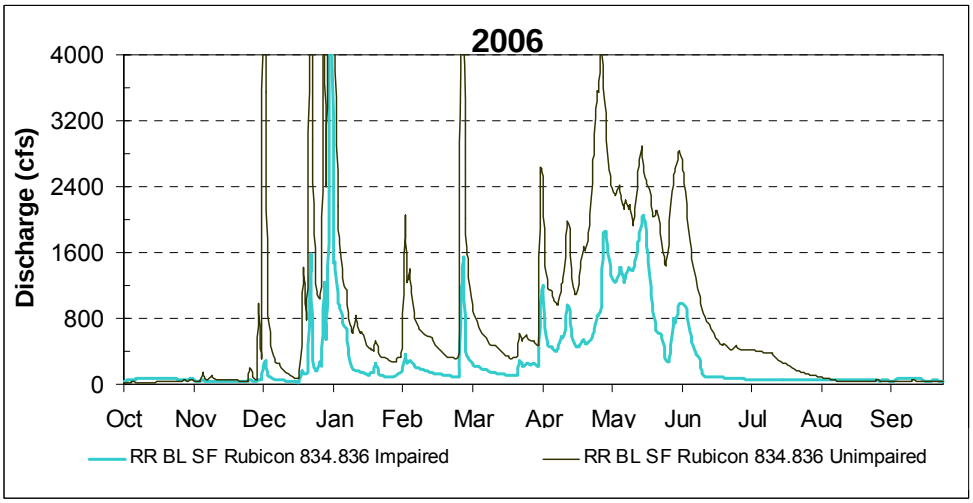
Figure K-12. Middle Fork American River example above normal water year (1999) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom). 12
Figure K-13. Middle Fork American River example below normal water year (2003) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom). 13

Figure K-14. Middle Fork American River example dry water year (2001) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom). 14
Figure K-15. Middle Fork American River critical dry water year (1988) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom). 15

Rubicon River

Figure K-1. Rubicon River example wet water year (2006) flows below Hell Hole Reservoir (top), downstream of South Fork Rubicon River (middle), and downstream of Long Canyon Creek (bottom).





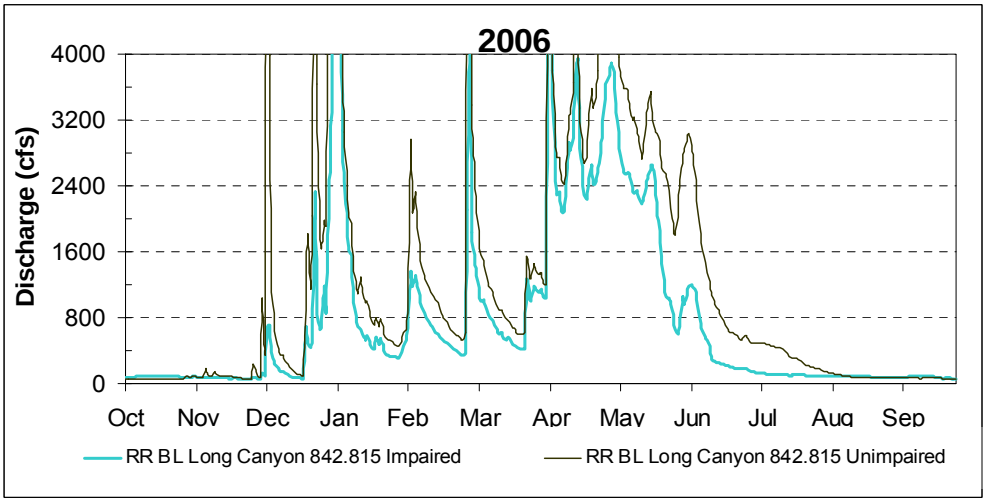


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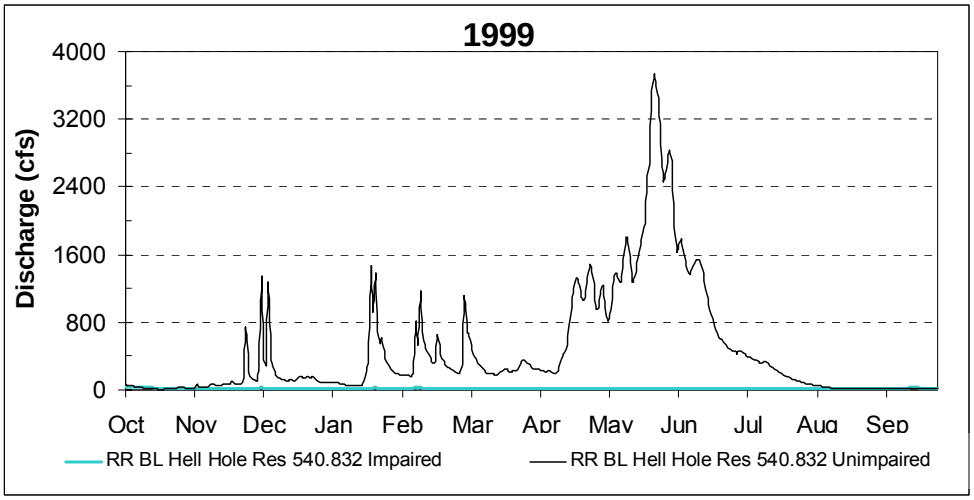
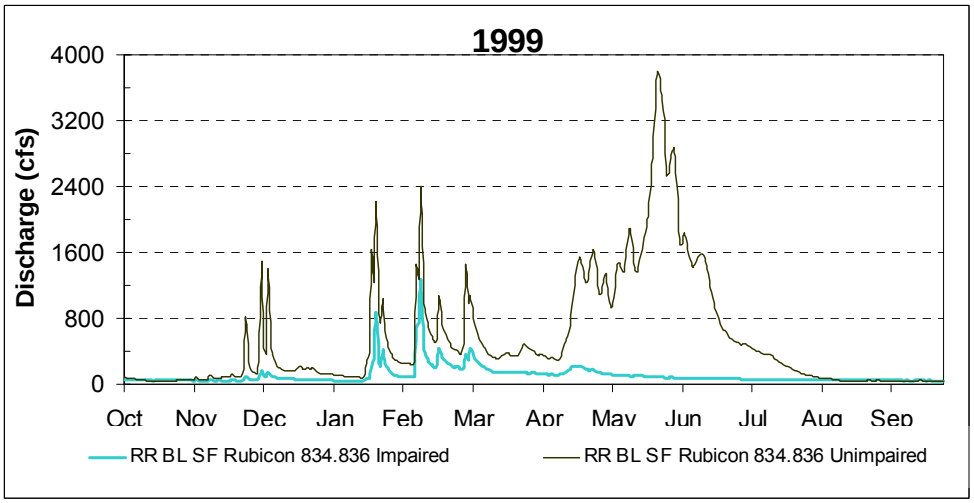
Figure K-2. Rubicon River example above normal water year (1999) flows below Hell Hole Reservoir (top), downstream of South Fork Rubicon River (middle), and downstream of Long Canyon Creek (bottom).





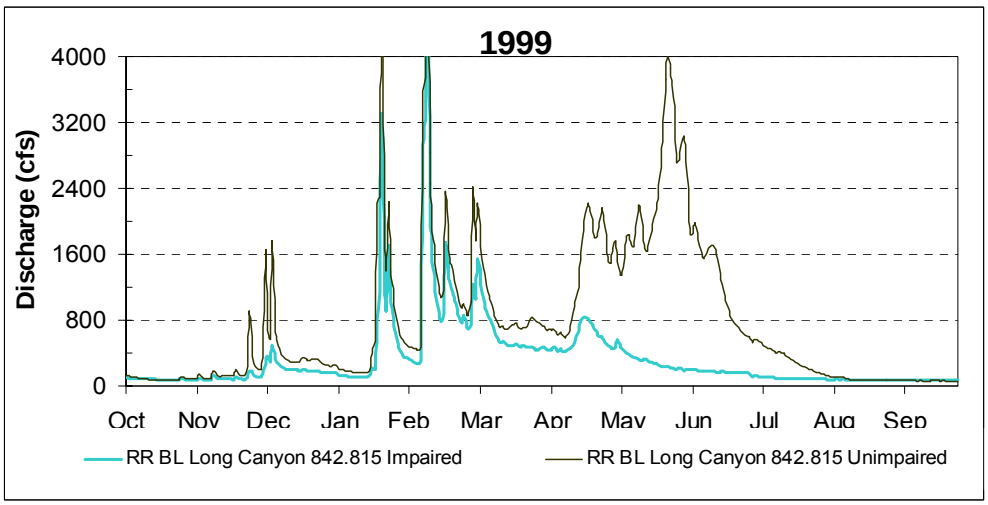
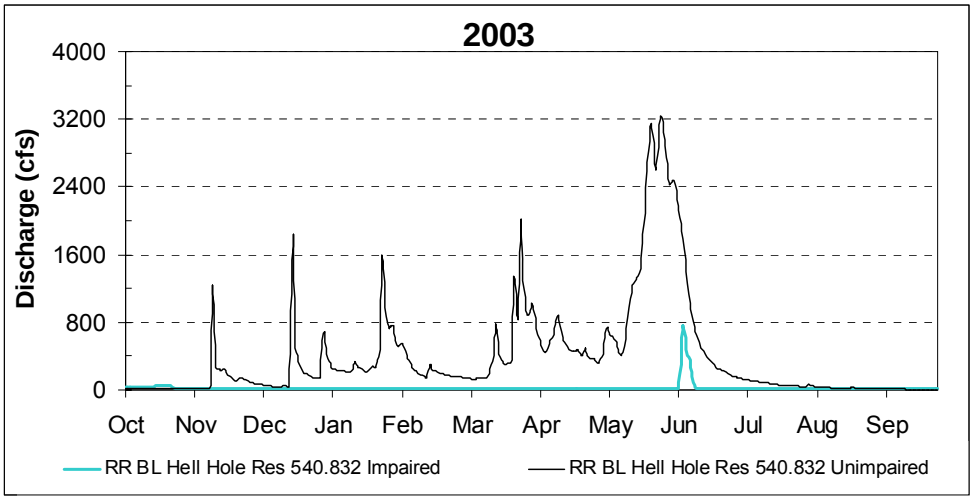
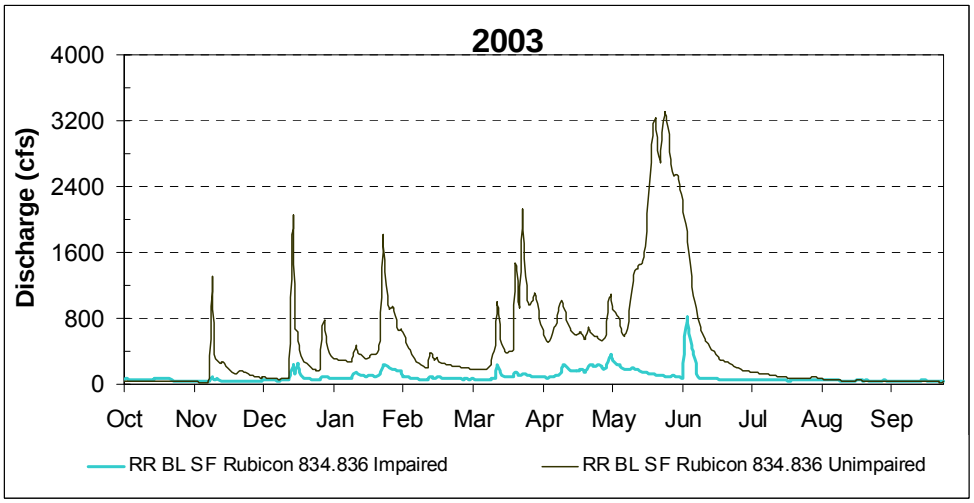


Figure K-3. Rubicon River example below normal water year (2003) flows below Hell Hole Reservoir (top), downstream of South Fork Rubicon River (middle), and downstream of Long Canyon Creek (bottom).





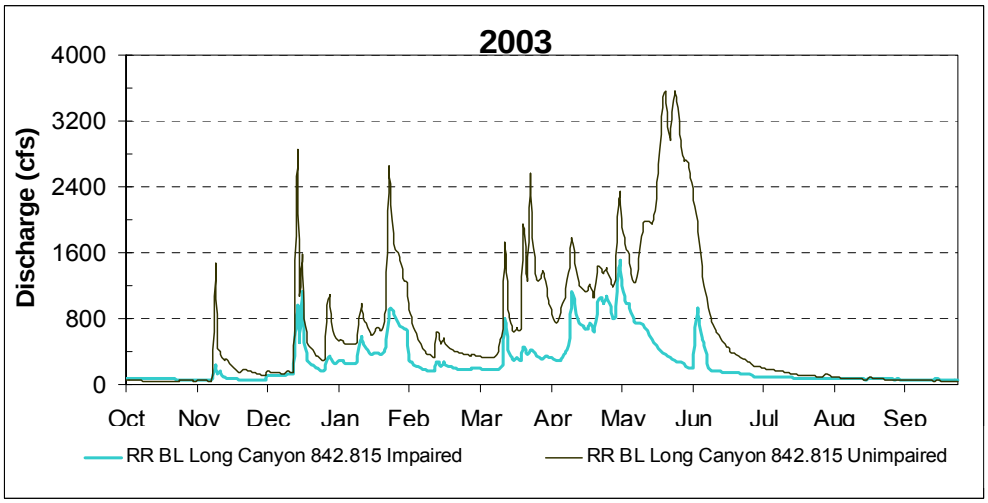


Figure K-4. Rubicon River example dry water year (2001) flows below Hell Hole Reservoir (top), downstream of South Fork Rubicon River (middle), and downstream of Long Canyon Creek (bottom).

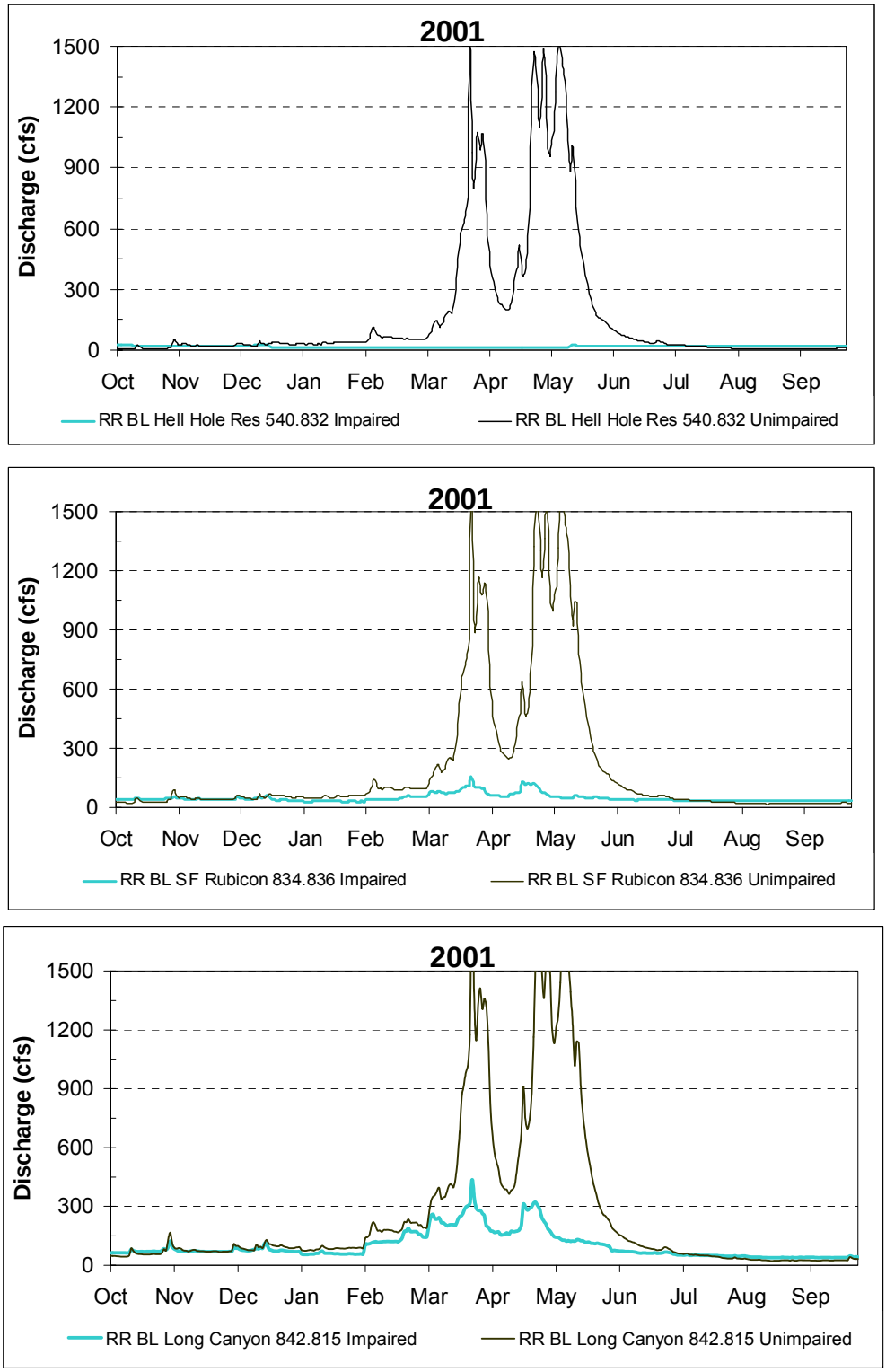
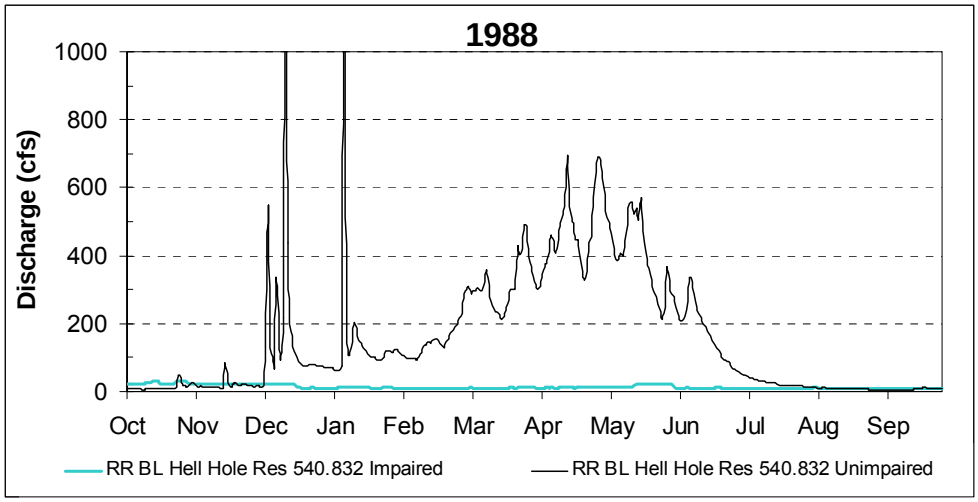
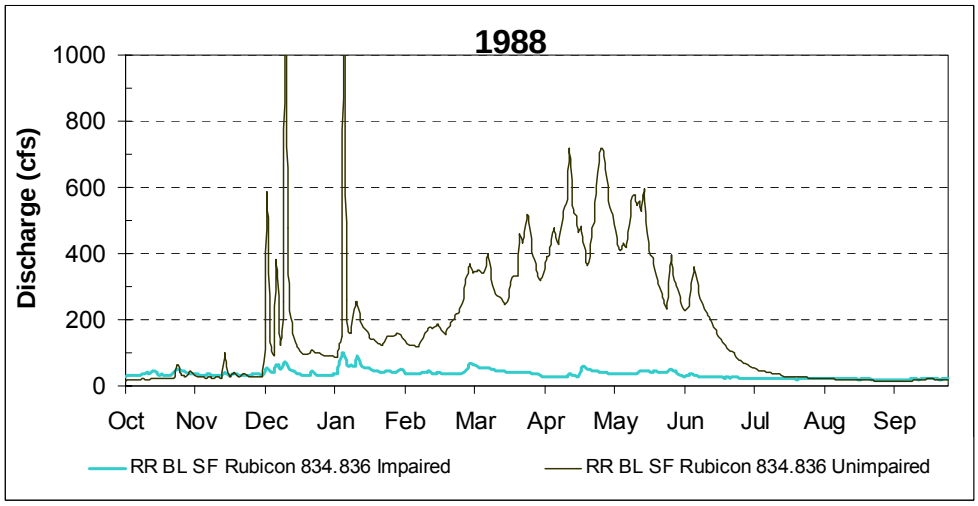
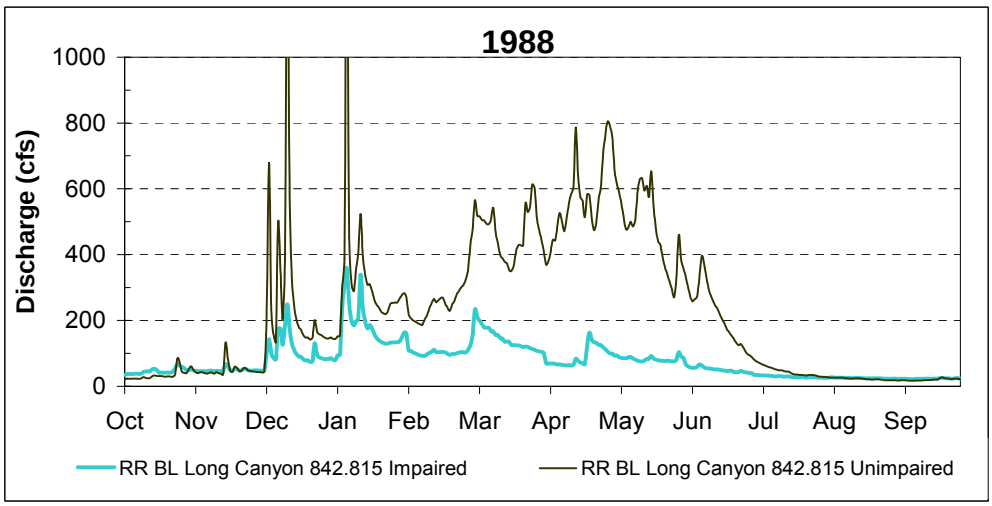


Figure K-5. Rubicon River critical dry water year (1988) flows below Hell Hole Reservoir (top), downstream of South Fork Rubicon River (middle), and downstream of Long Canyon Creek (bottom).







Middle Fork American River

Figure K-6. Middle Fork American River example wet water year (2006) flows below French Meadows Reservoir (top) and at the bottom of the reach upstream of Middle Fork Interbay (bottom).

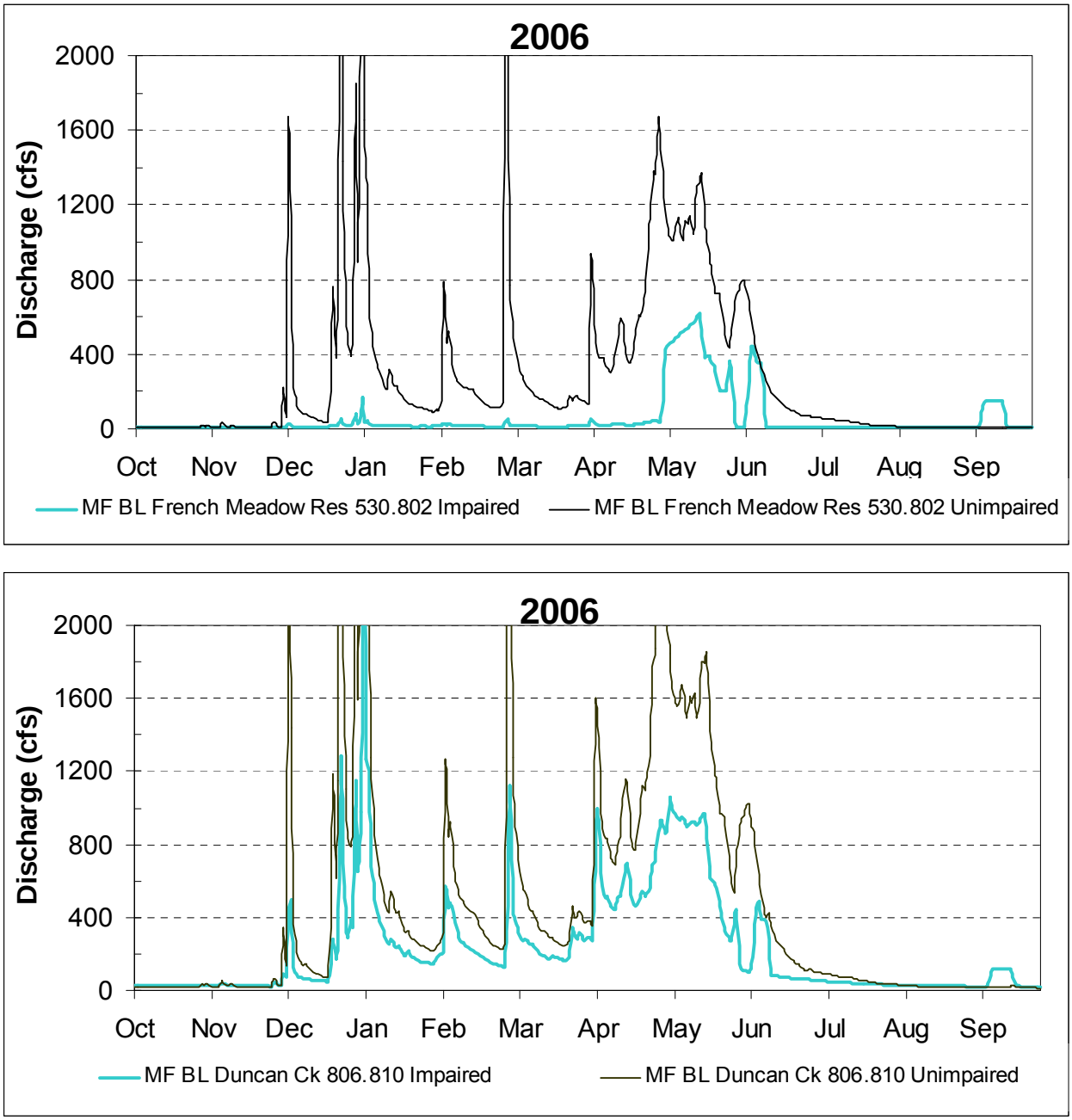


Figure K-7. Middle Fork American River example above normal water year (1999) flows below French Meadows Reservoir (top) and at the bottom of the reach upstream of Middle Fork Interbay (bottom).

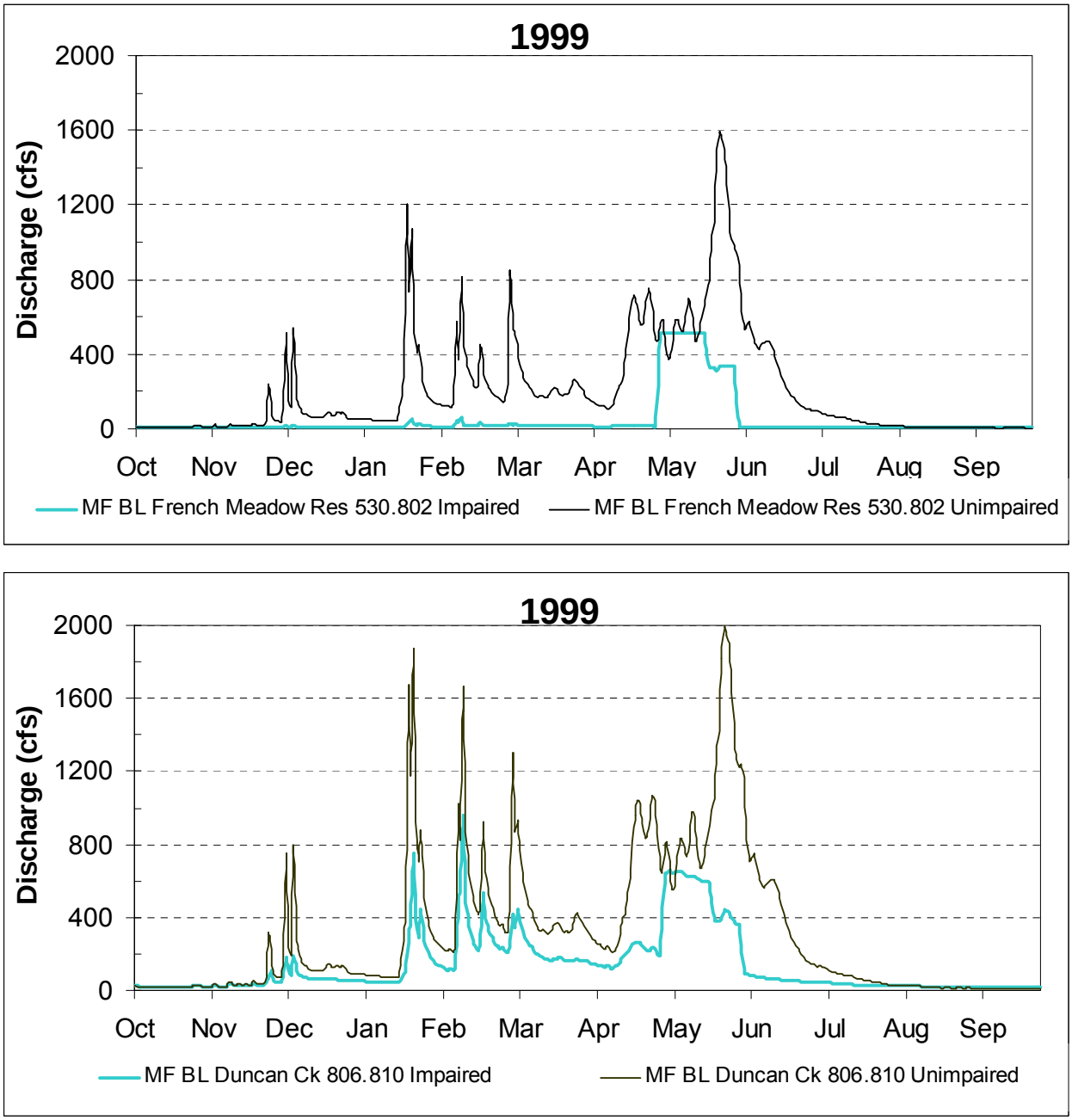


Figure K-8. Middle Fork American River example below normal water year (2003) flows below French Meadows Reservoir (top) and at the bottom of the reach upstream of Middle Fork Interbay (bottom).

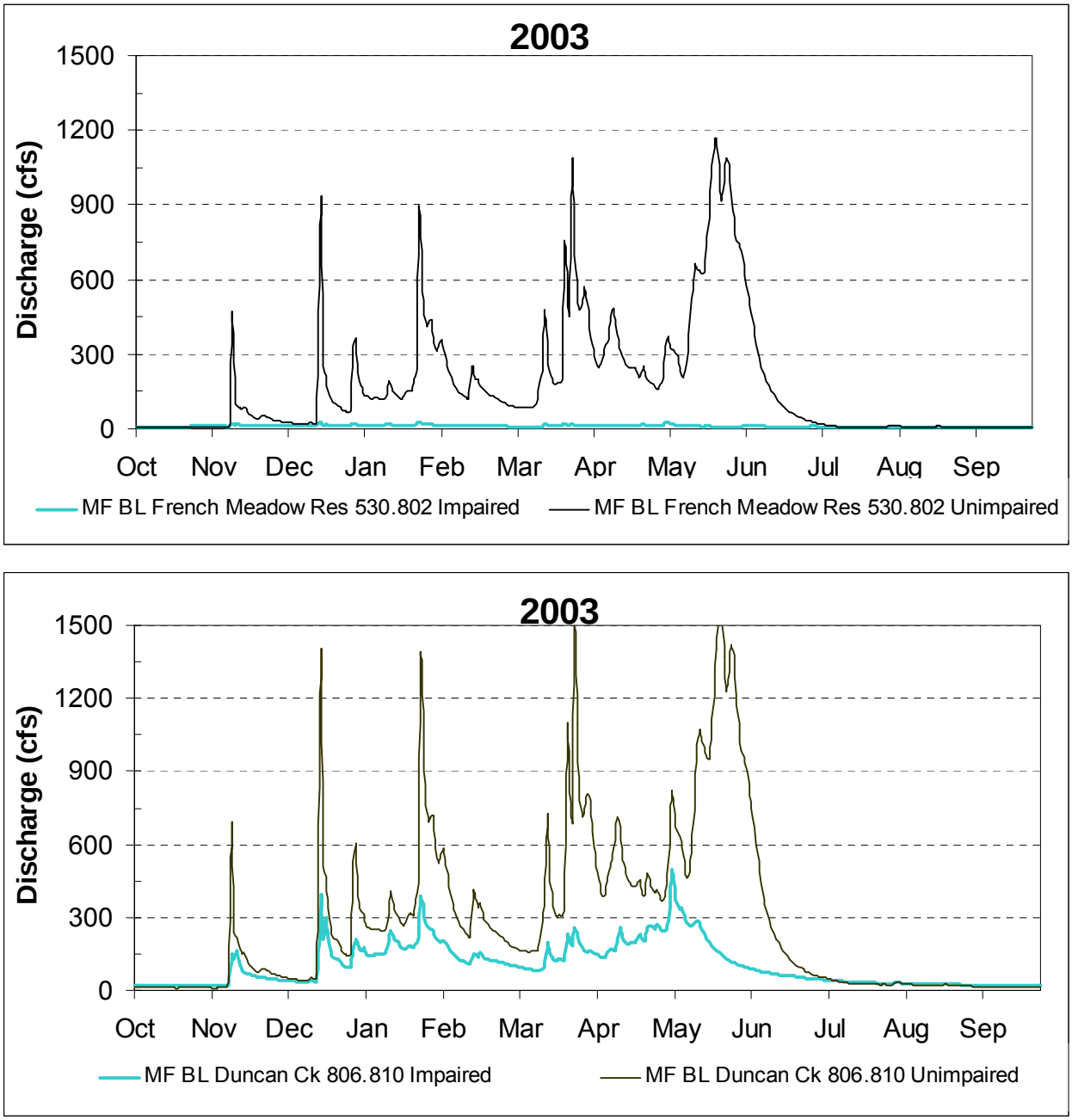


Figure K-9. Middle Fork American River example dry water year (2001) flows below French Meadows Reservoir (top) and at the bottom of the reach upstream of Middle Fork Interbay (bottom).

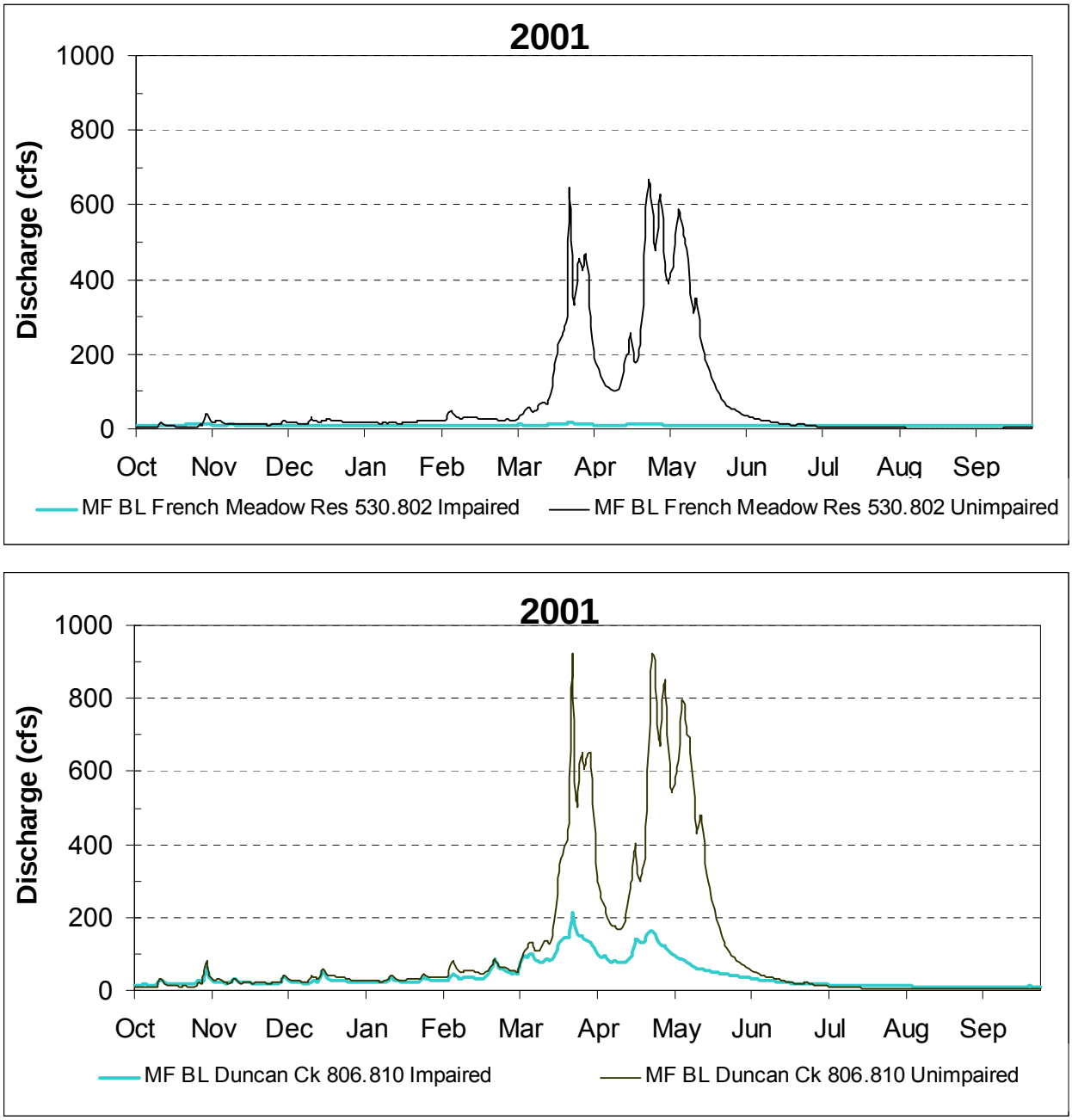
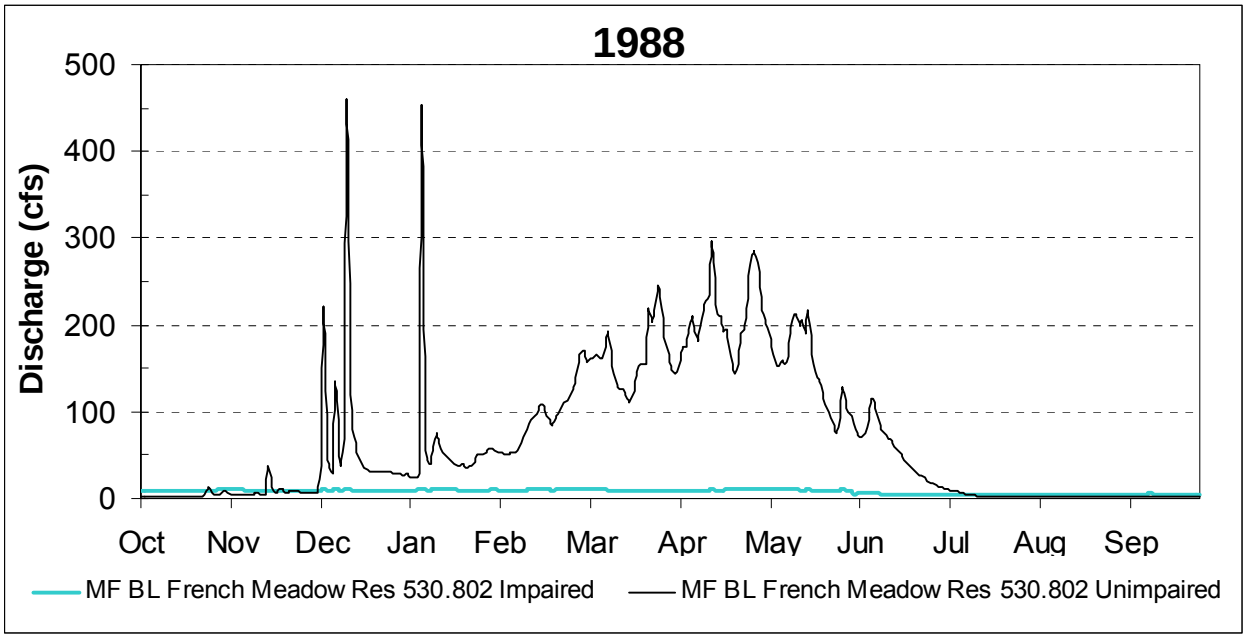


Figure K-10. Middle Fork American River critical dry water year (1998) flows below French Meadows Reservoir (top) and at the bottom of the reach upstream of Middle Fork Interbay (bottom).



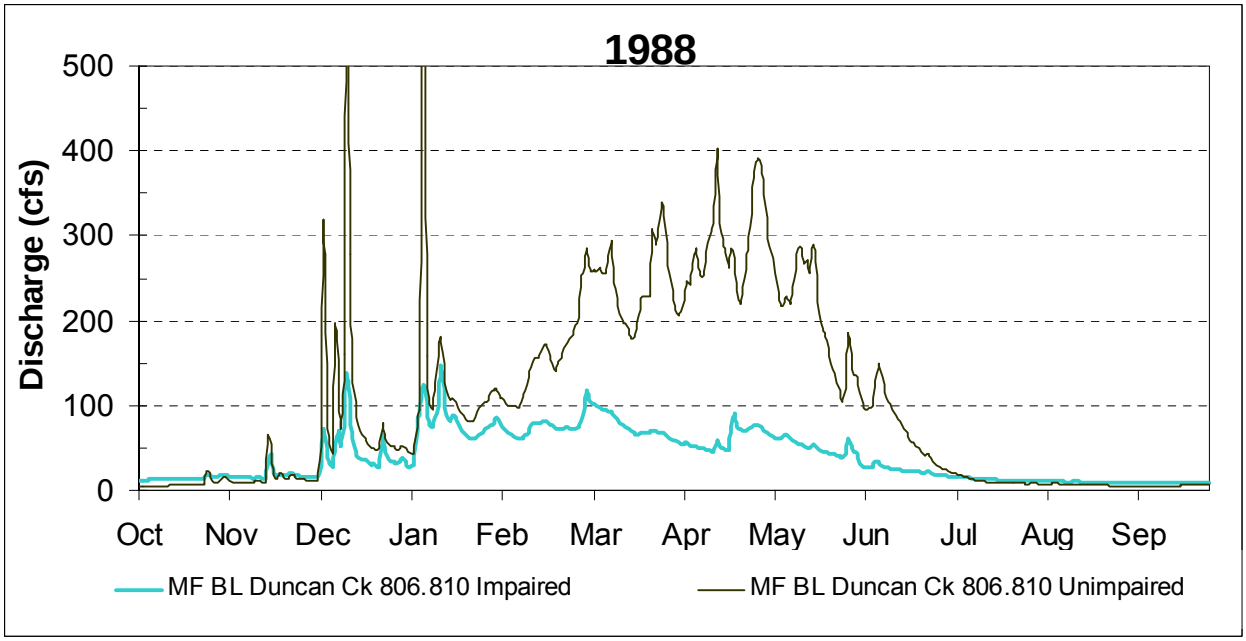
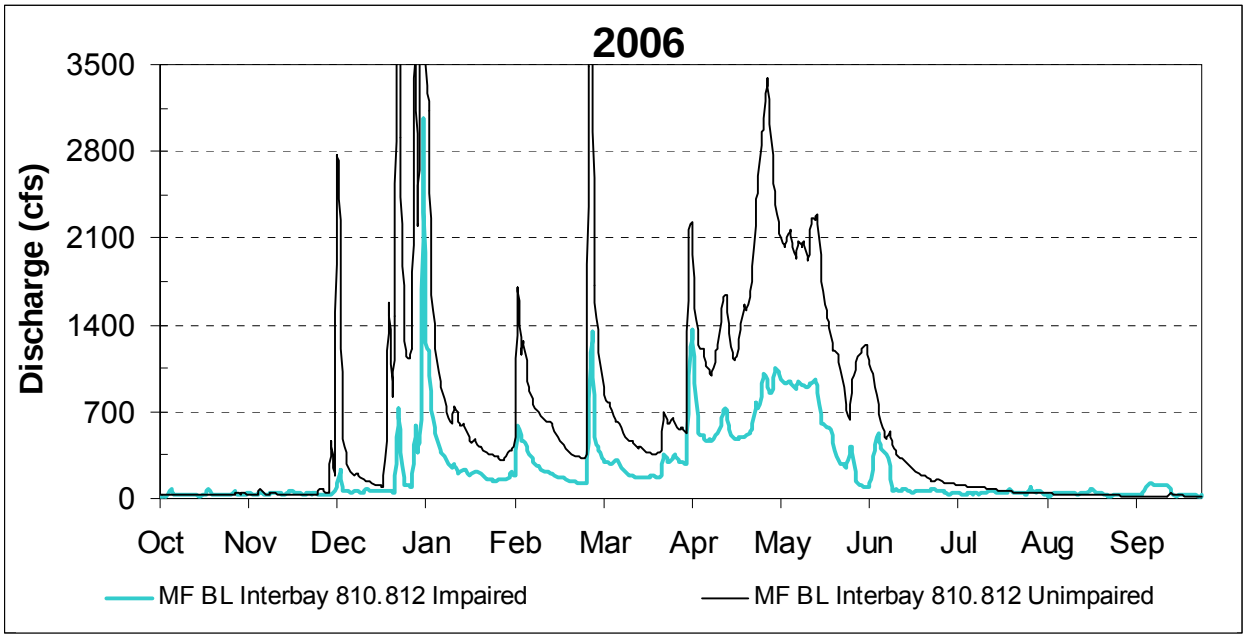


Figure K-11. Middle Fork American River example wet water year (2006) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom).



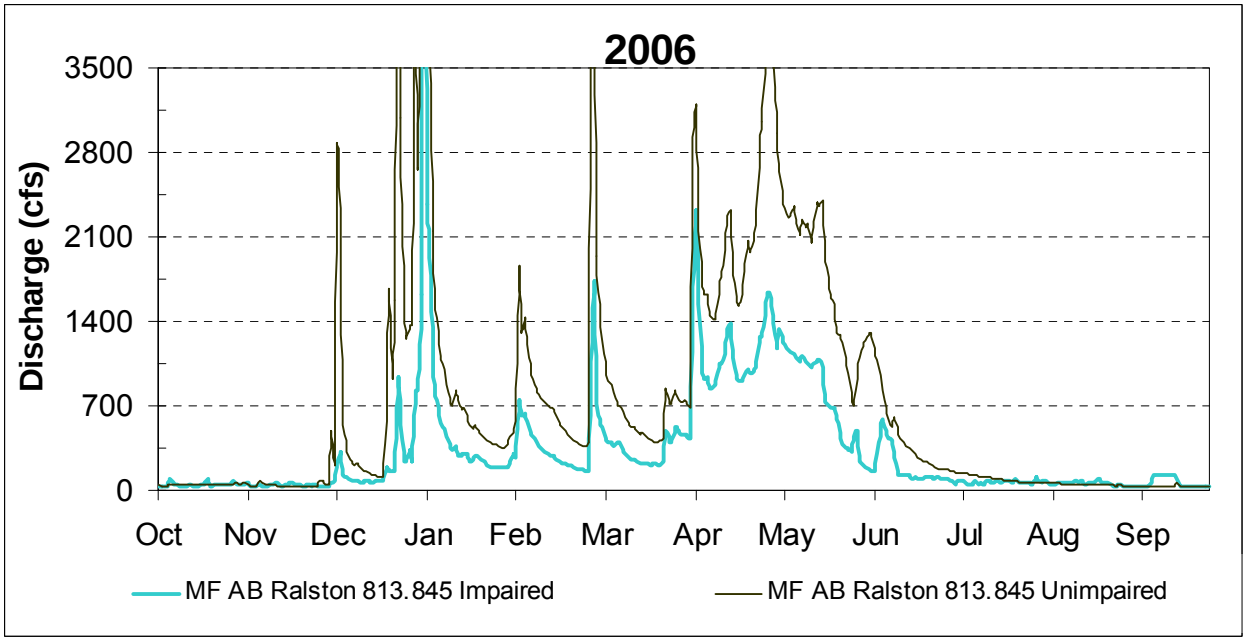


Figure K-12. Middle Fork American River example above normal water year (1999) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom).

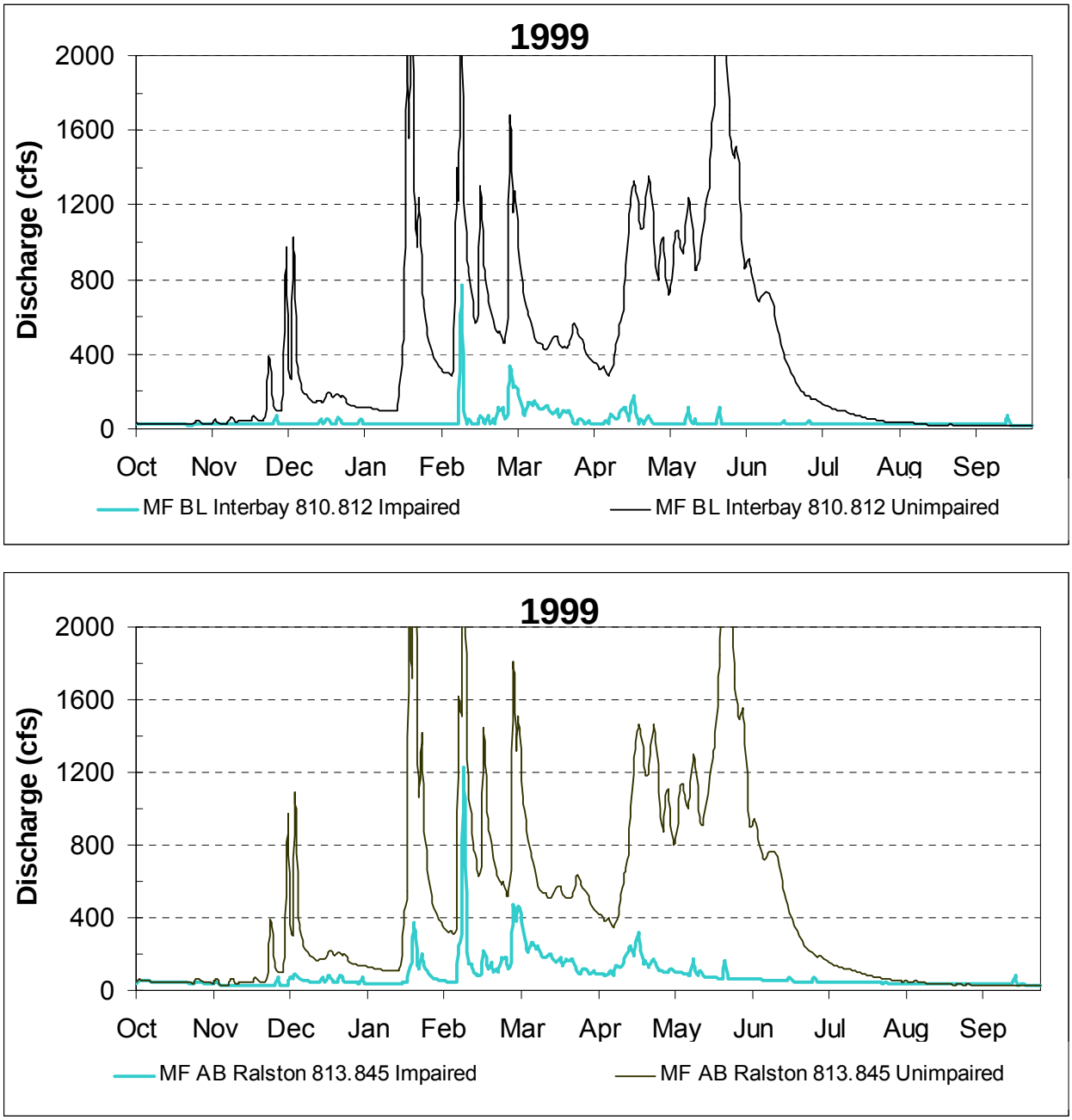
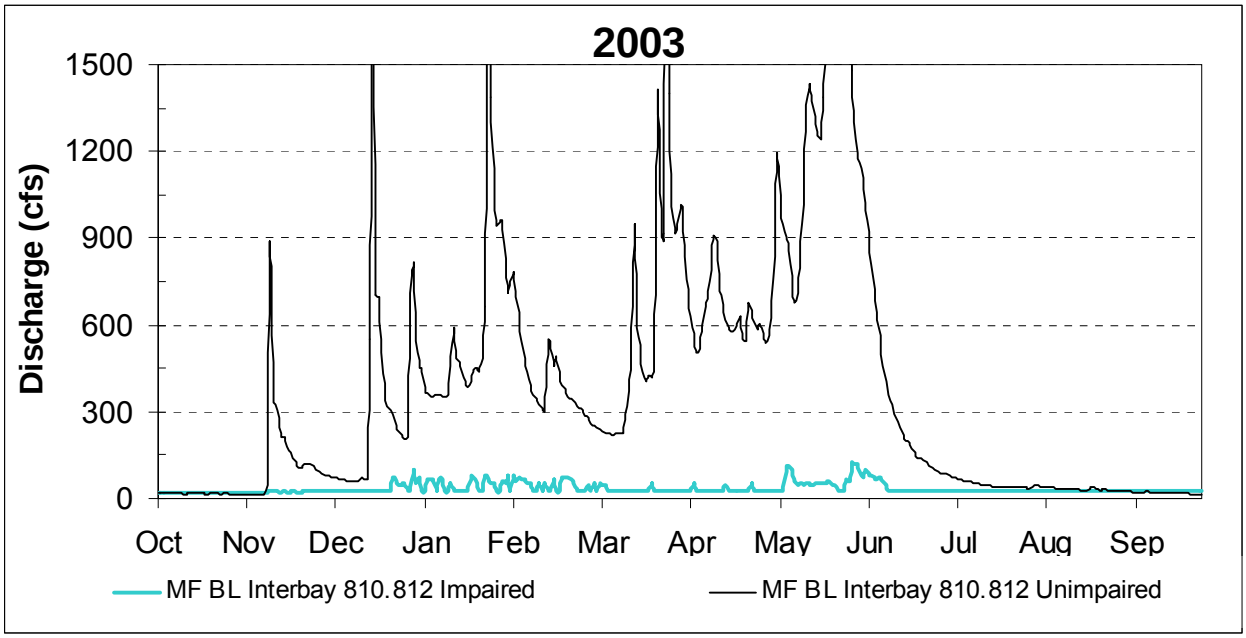


Figure K-13. Middle Fork American River example below normal water year (2003) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom).



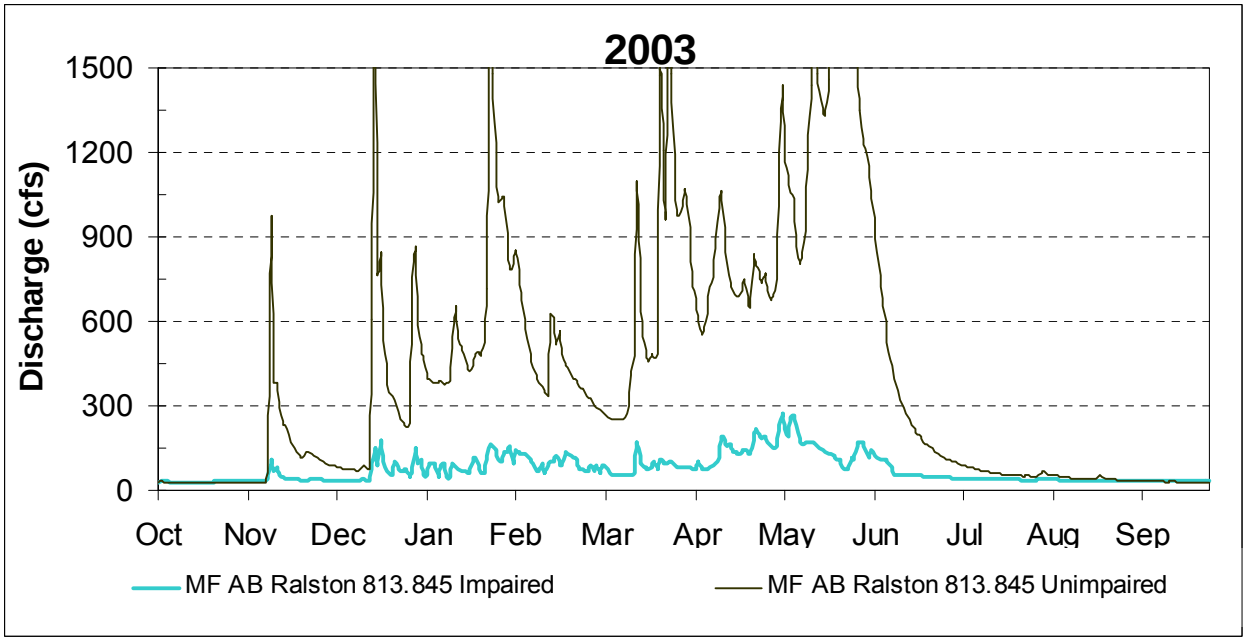


Figure K-14. Middle Fork American River example dry water year (2001) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom).

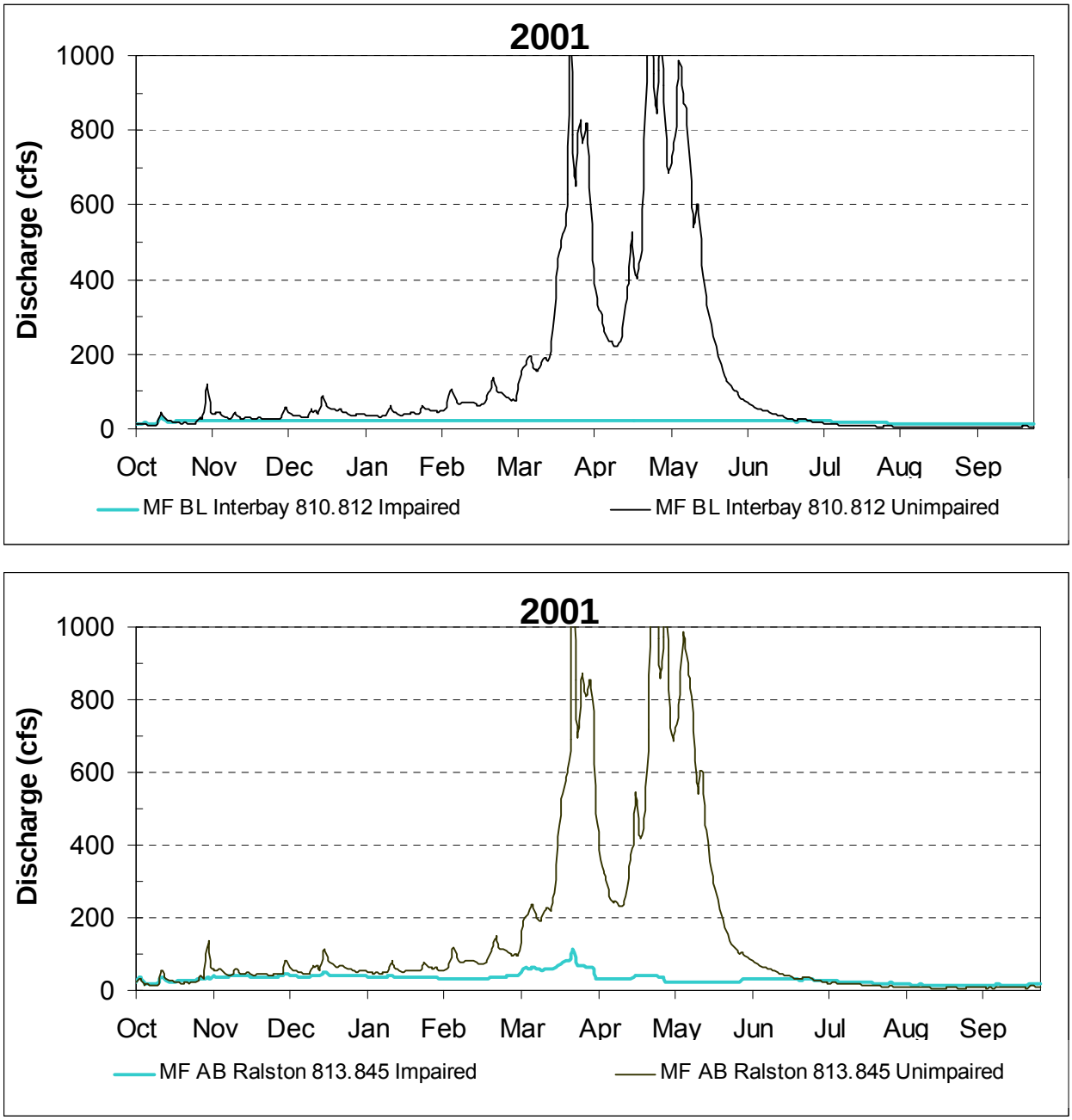
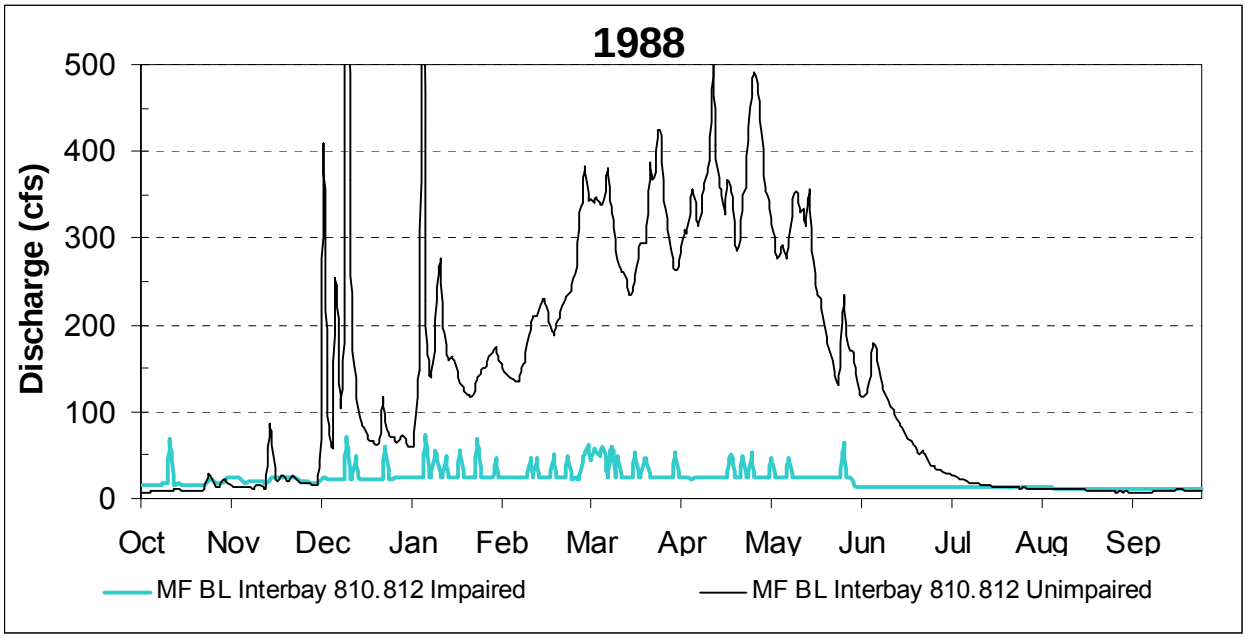
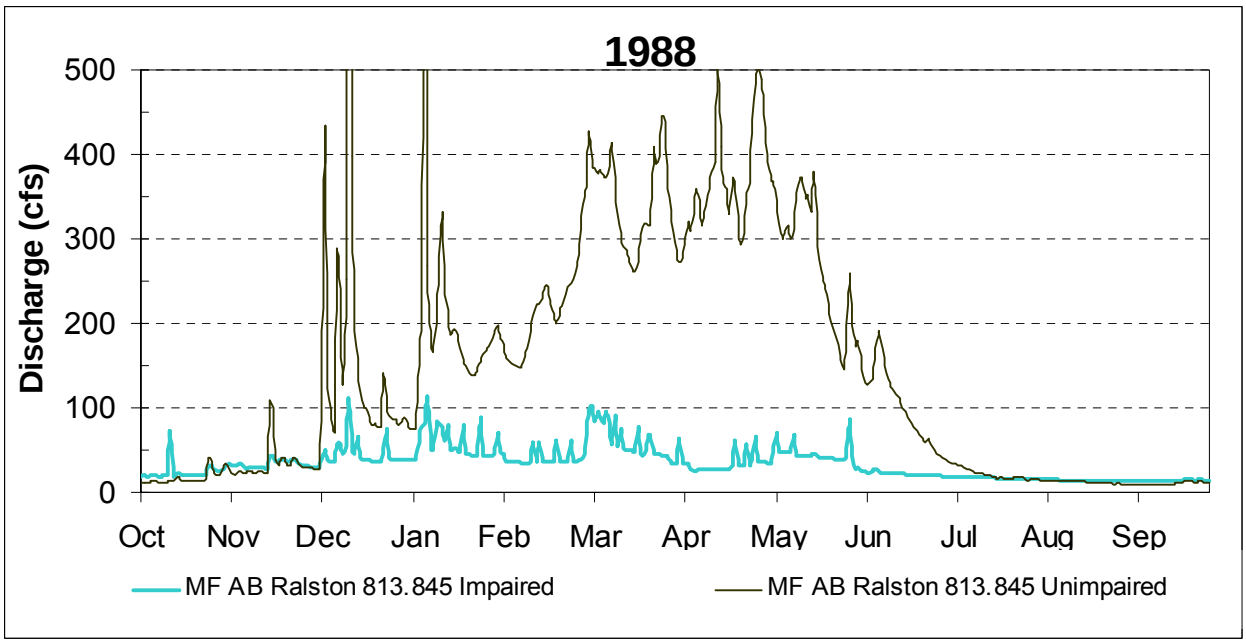


Figure K-15. Middle Fork American River critical dry water year (1988) flows below Middle Fork Interbay (top) and at the bottom of the reach upstream of Ralston Afterbay (bottom).





APPENDIX L

Impaired and Unimpaired Flows by Reach
Small Stream Bypass Reaches
(Wet, Above Normal, Below Normal, Dry, and Critically Dry Water Years)

Page

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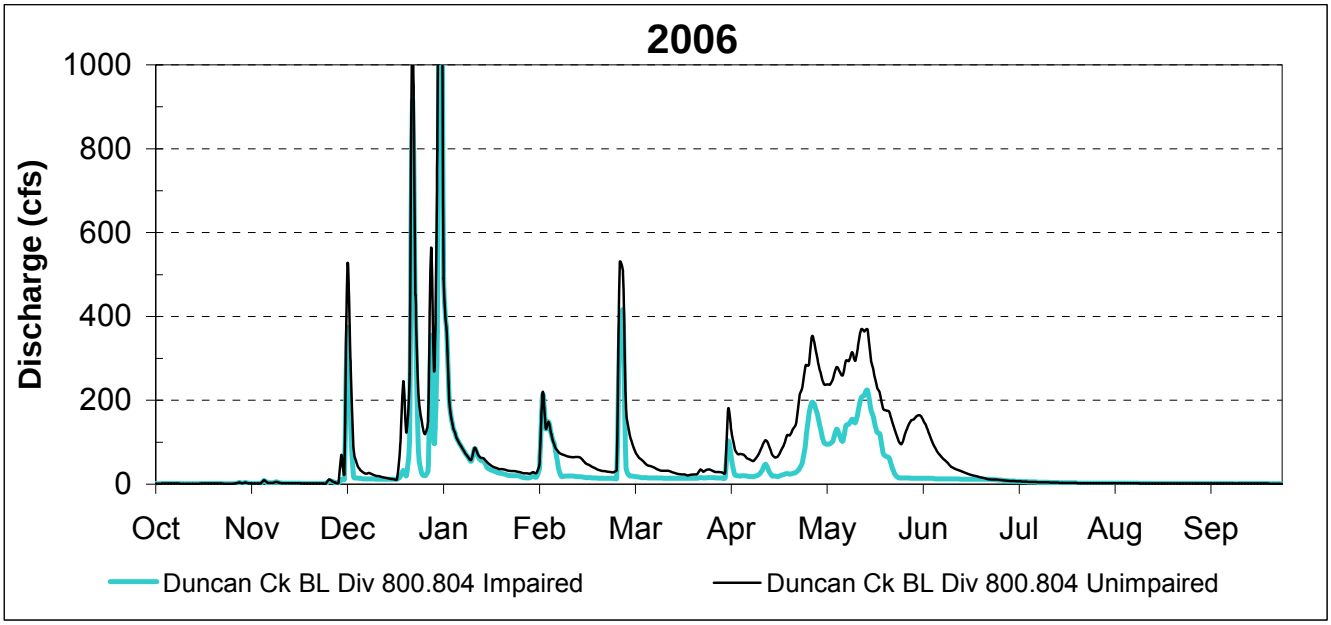
Duncan Creek

Figure L-1. Duncan Creek example wet water year (2006) flows below the diversion (top) and at the bottom of the stream near the confluence with the Middle Fork American River (Duncan Creek mouth) (bottom).



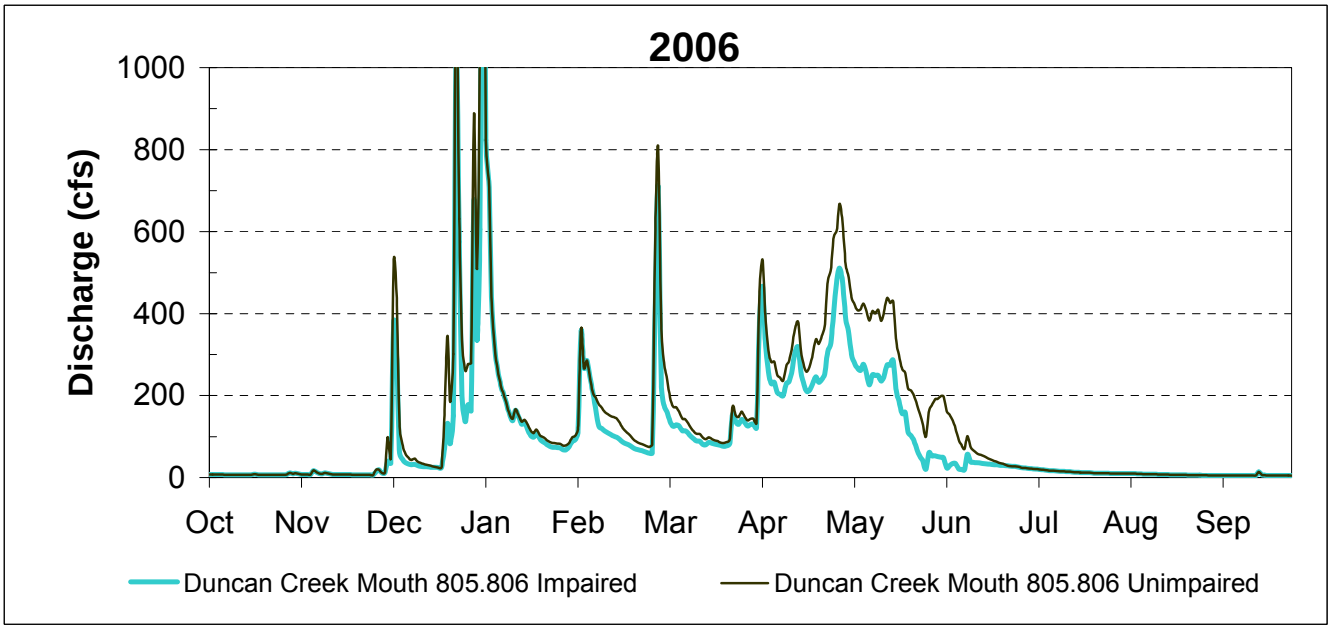
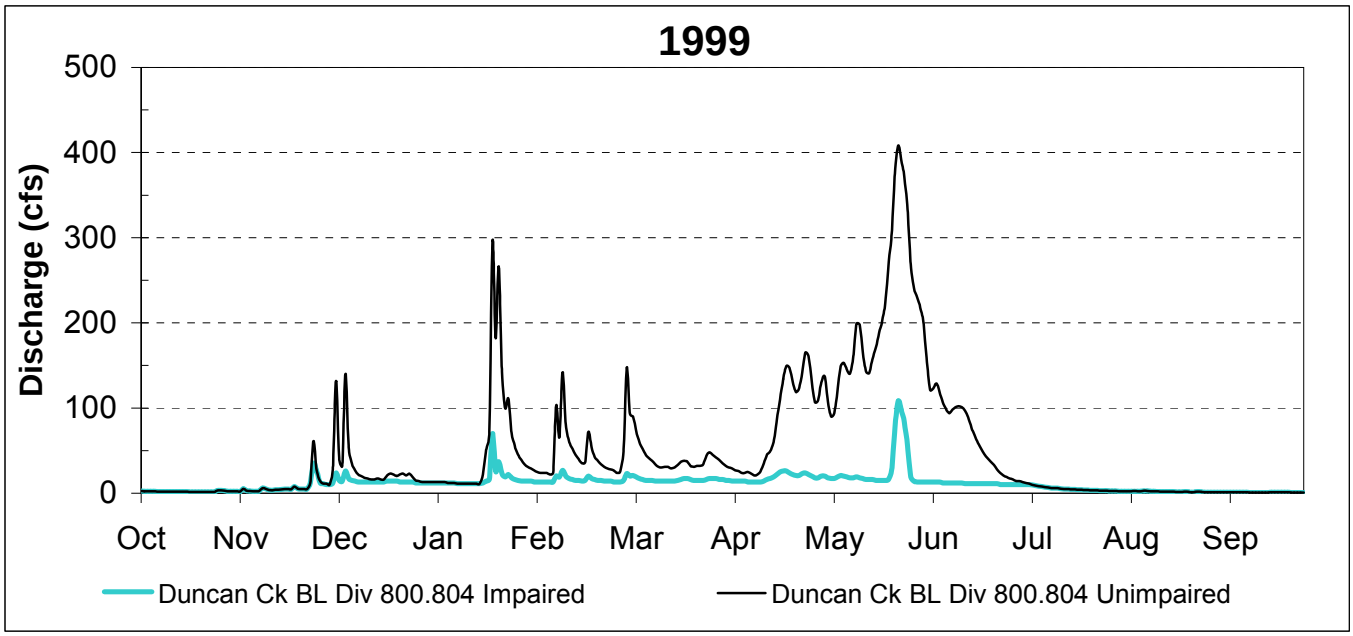


Figure L-2. Duncan Creek example above normal water year (1999) flows below the diversion (top) and at the bottom of the stream near the confluence with the Middle Fork American River (Duncan Creek mouth) (bottom).



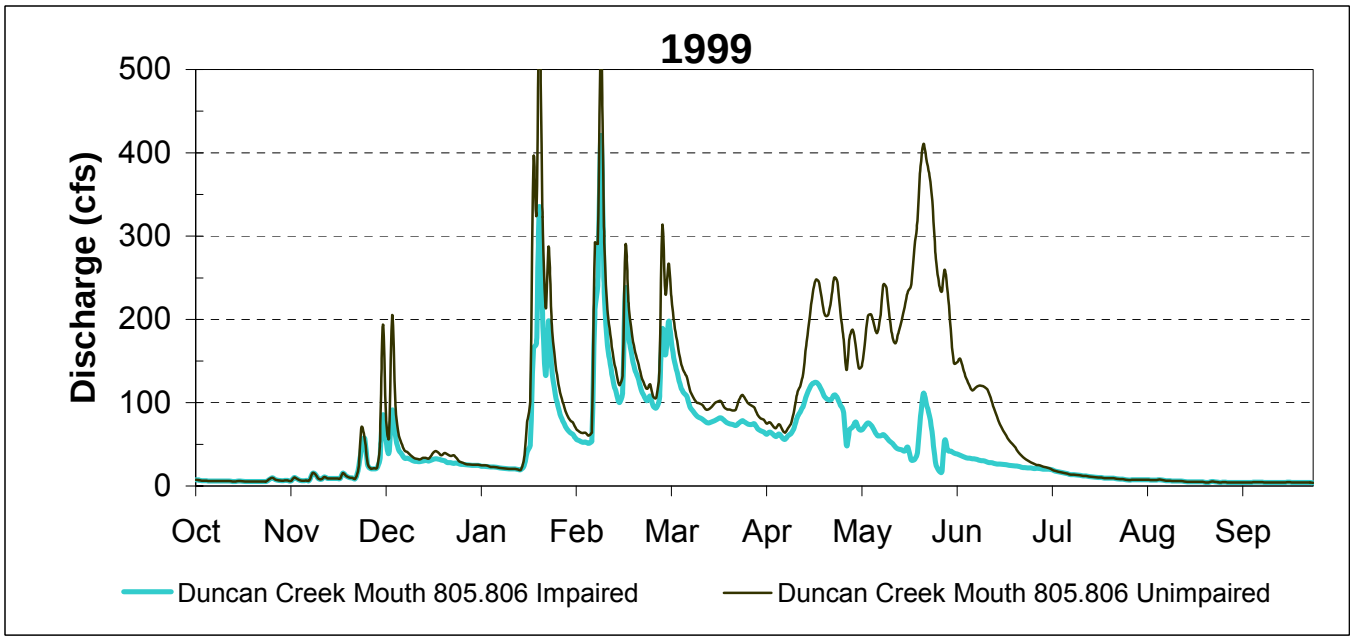
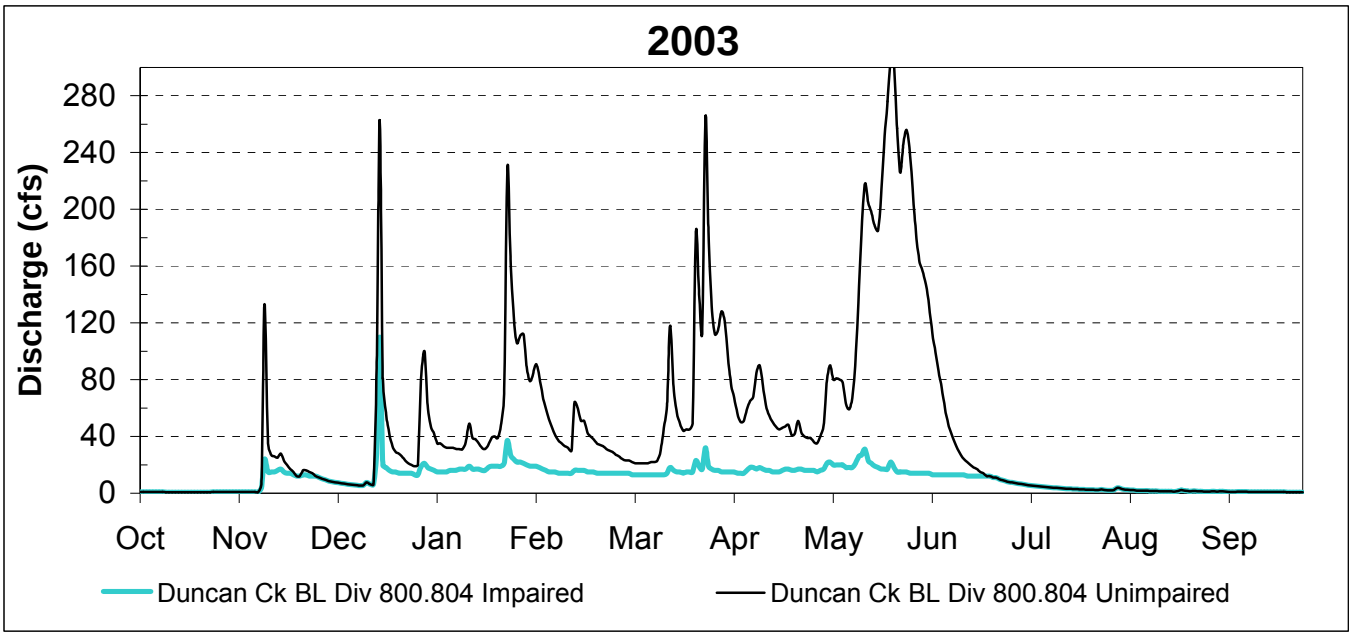


Figure L-3. Duncan Creek example below normal water year (2003) flows below the diversion (top) and at the bottom of the stream near the confluence with the Middle Fork American River (Duncan Creek mouth) (bottom).



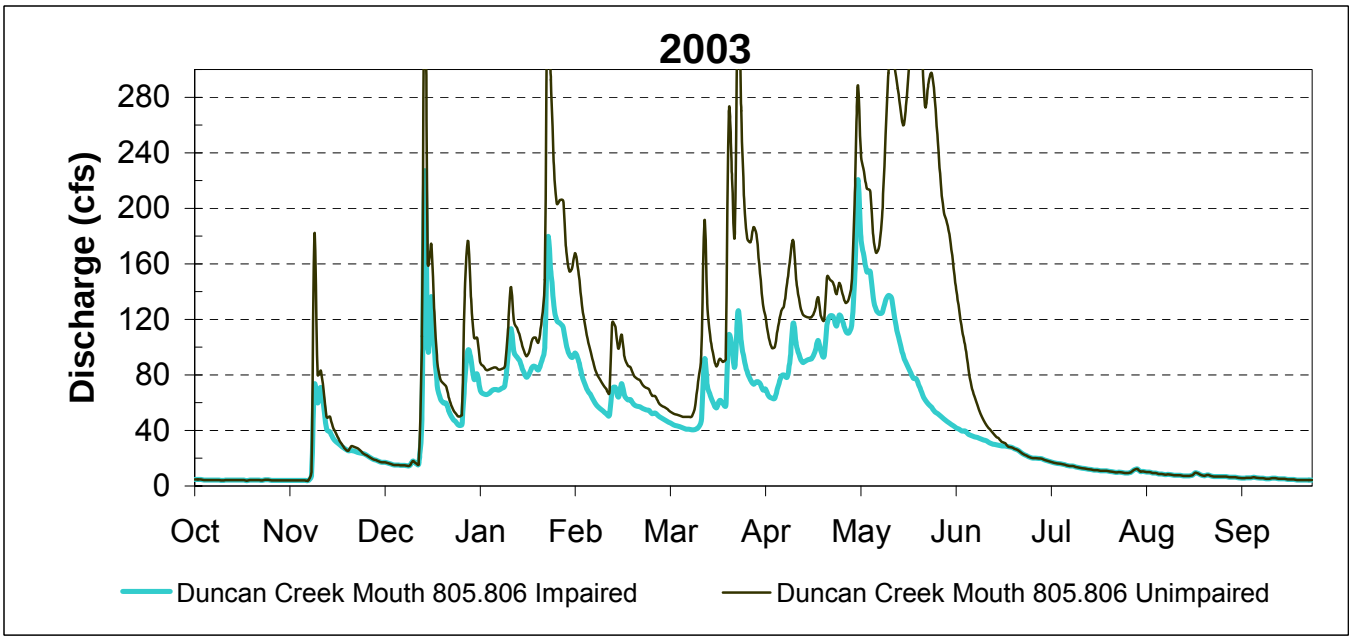
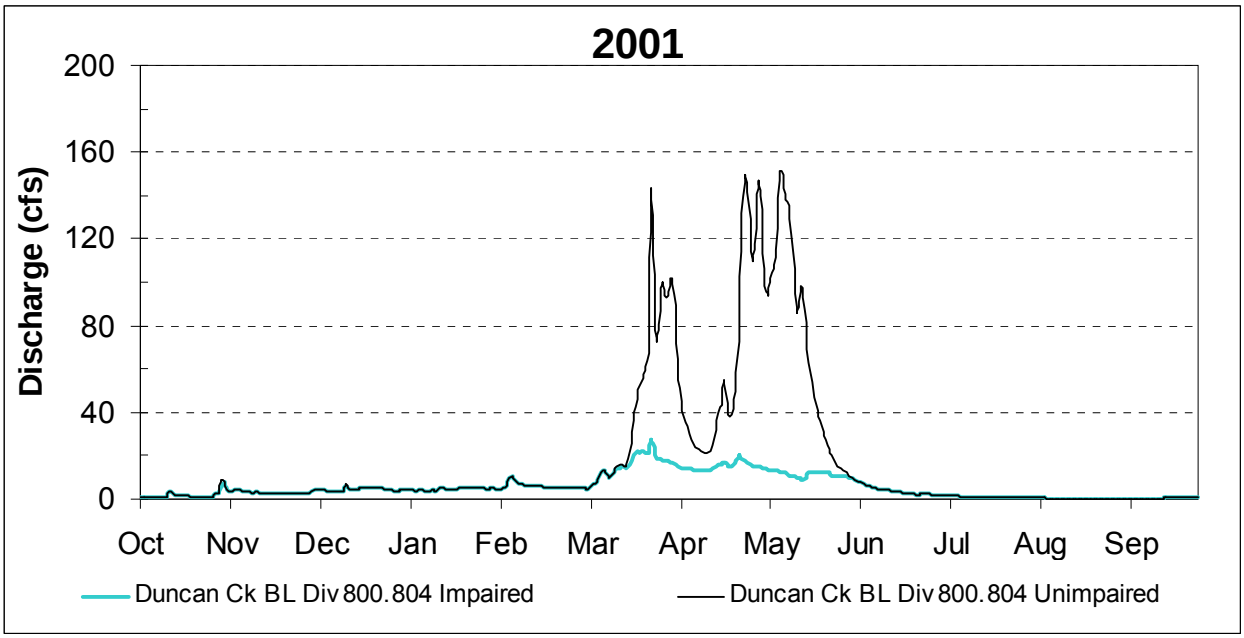


Figure L-4. Duncan Creek example dry water year (2001) flows below the diversion (top) and at the bottom of the stream near the confluence with the Middle Fork American River (Duncan Creek mouth) (bottom).



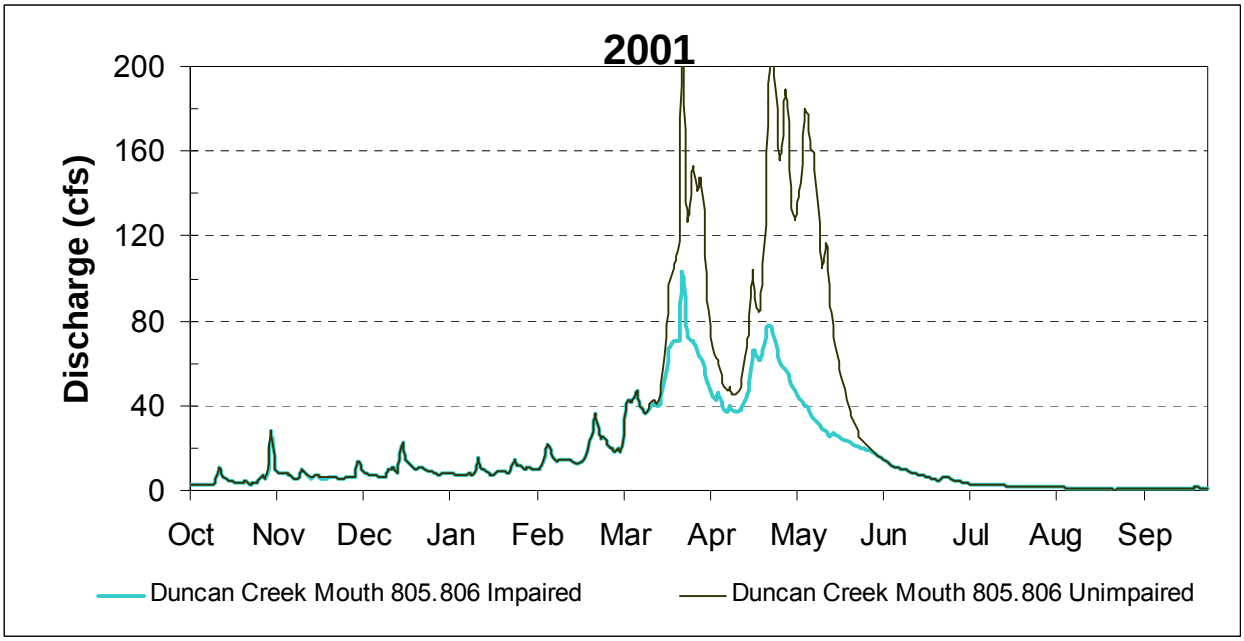
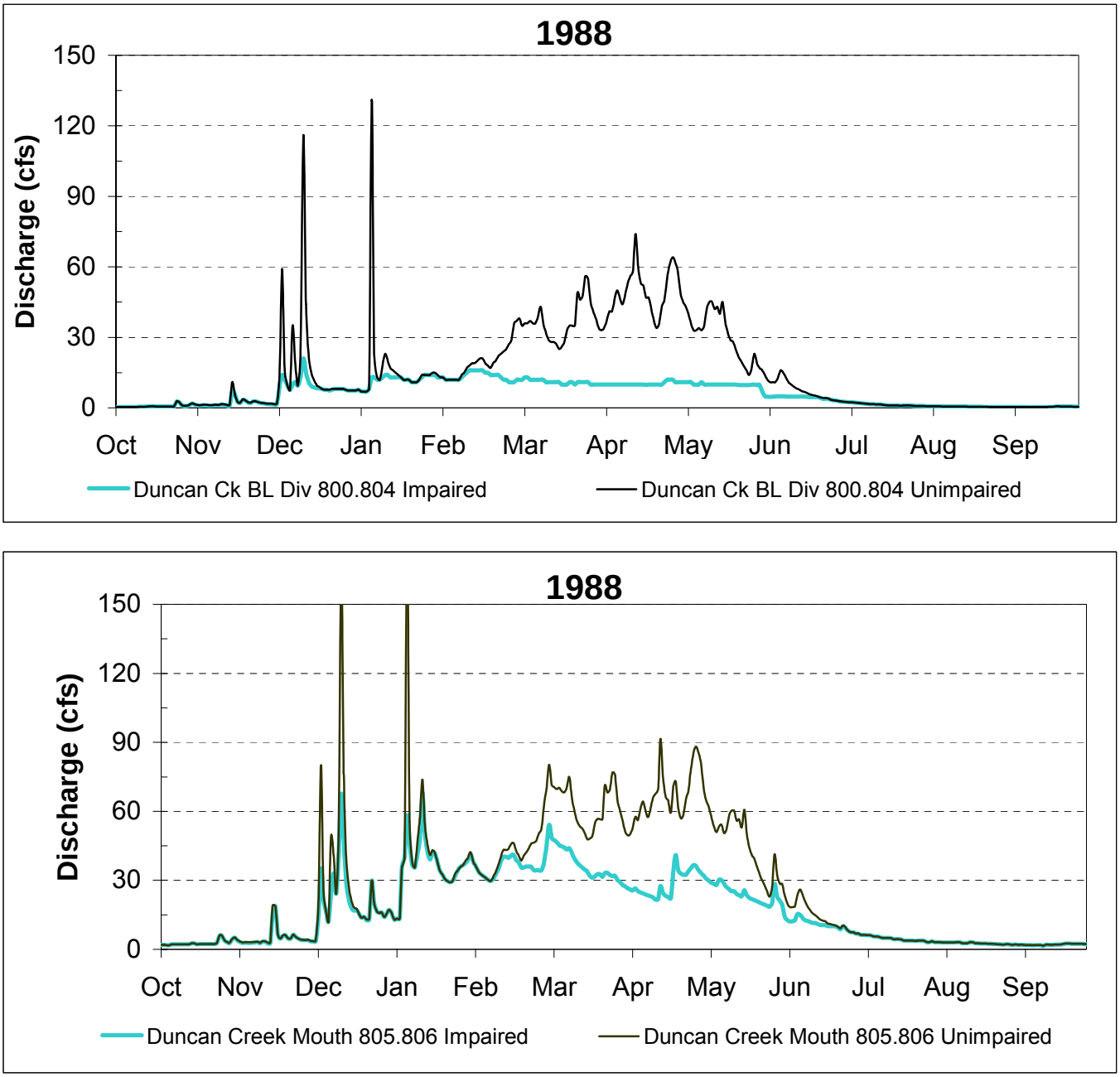
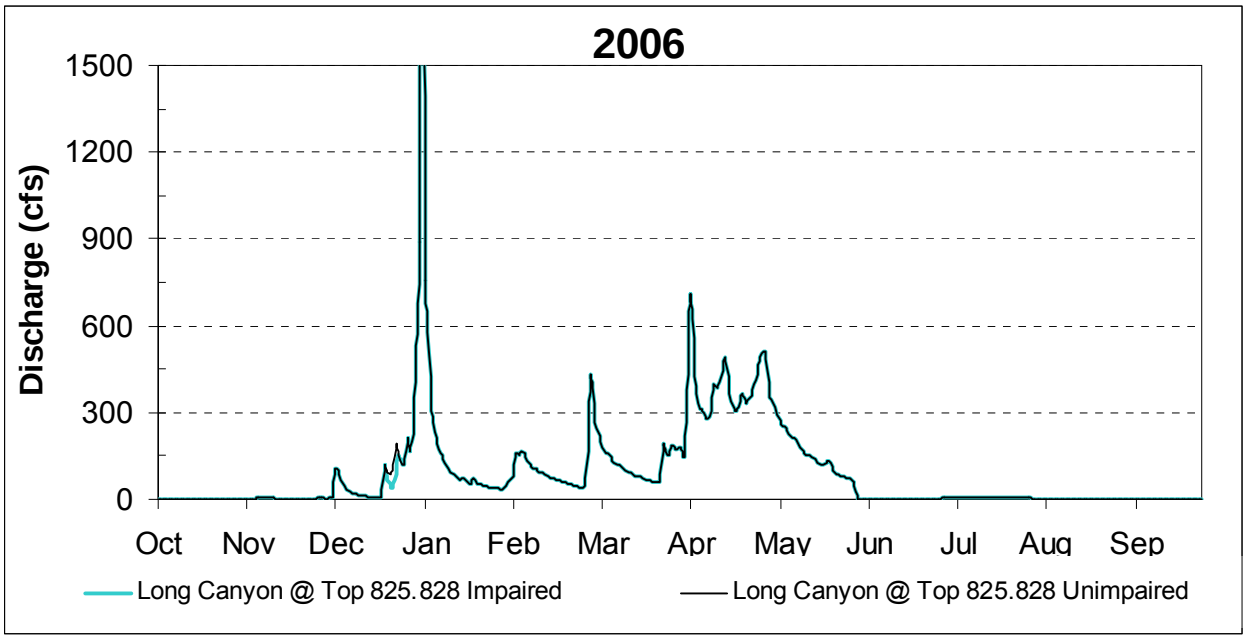


Figure L-5. Duncan Creek critically dry water year (1988) flows below the diversion (top) and at the bottom of the stream near the confluence with the Middle Fork American River (Duncan Creek mouth) (bottom).



Long Canyon Creek

Figure L-6. Long Canyon Creek example wet water year (2006) flows below the confluence of North Fork and South Fork Long Canyon Creeks (top) and at the bottom of the stream near the confluence with the Rubicon River (bottom).



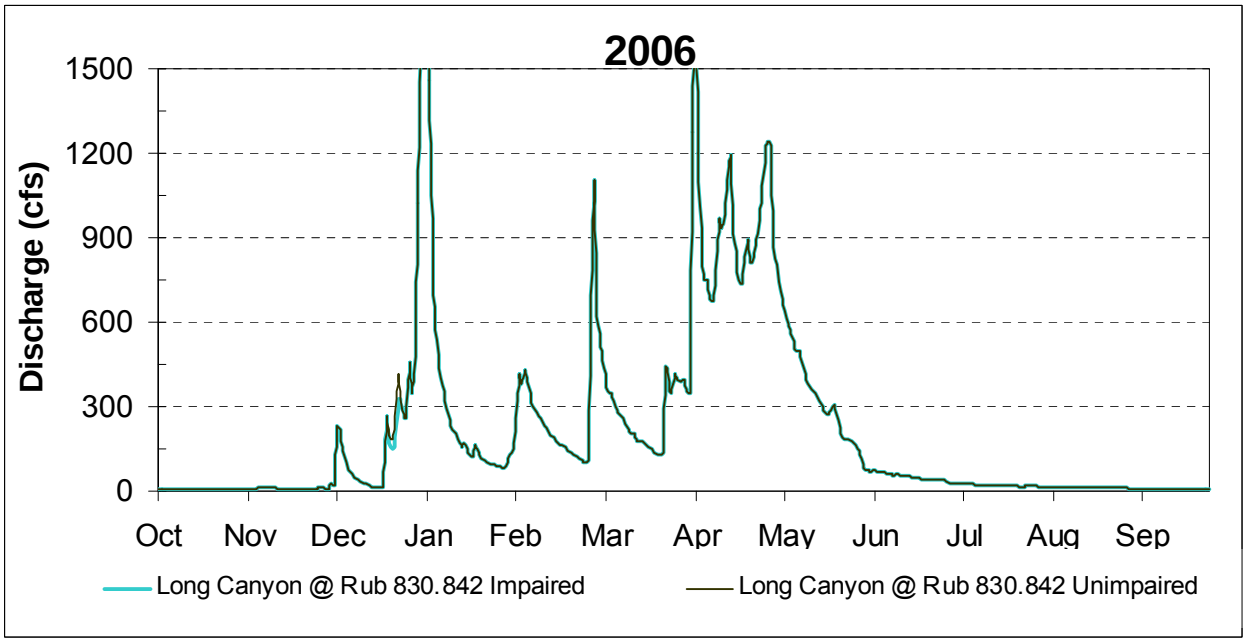


Figure L-7. Long Canyon Creek example above normal water year (1999) flows below the confluence of North Fork and South Fork Long Canyon Creeks (top) and at the bottom of the stream near the confluence with the Rubicon River (bottom).

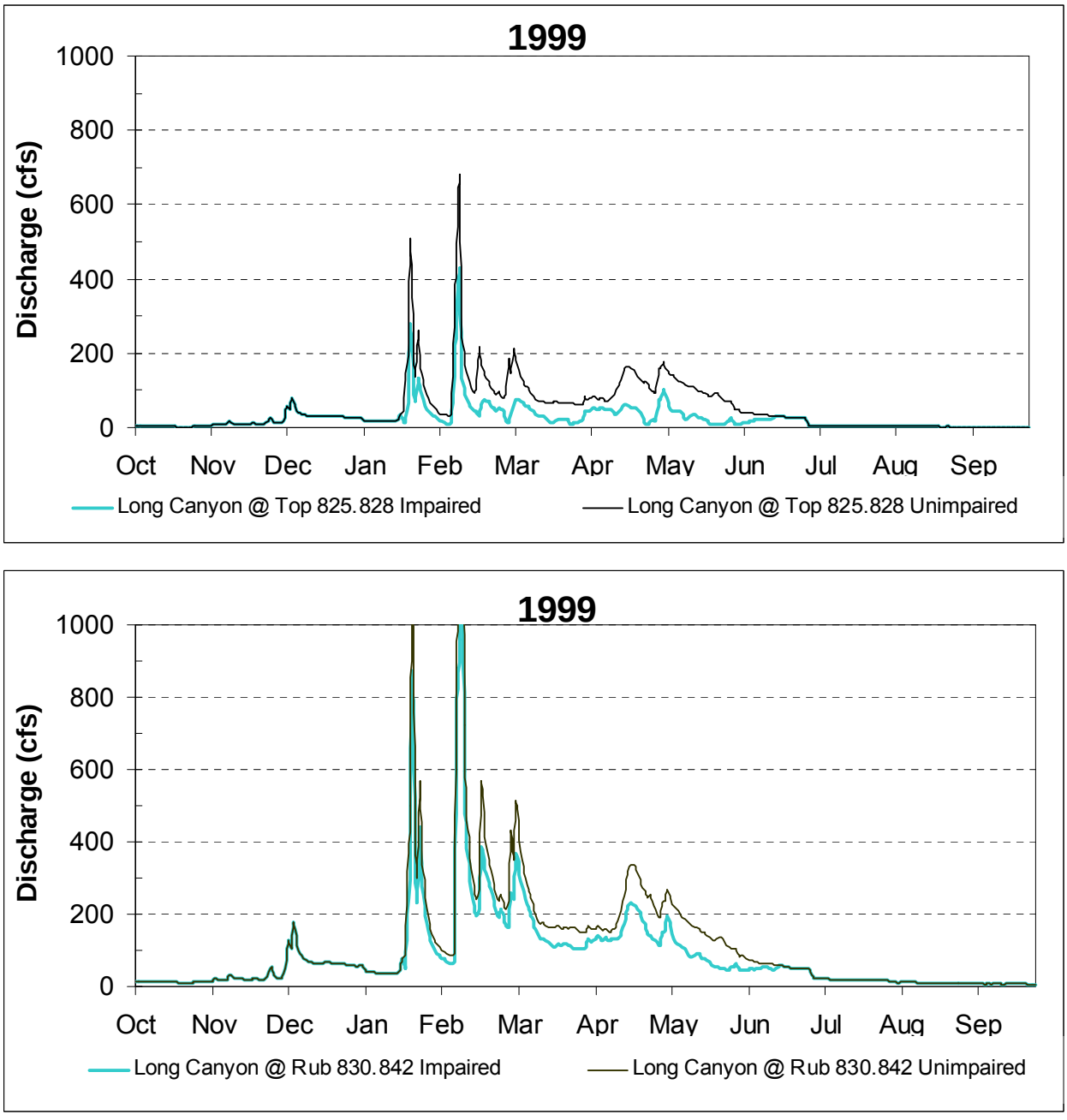
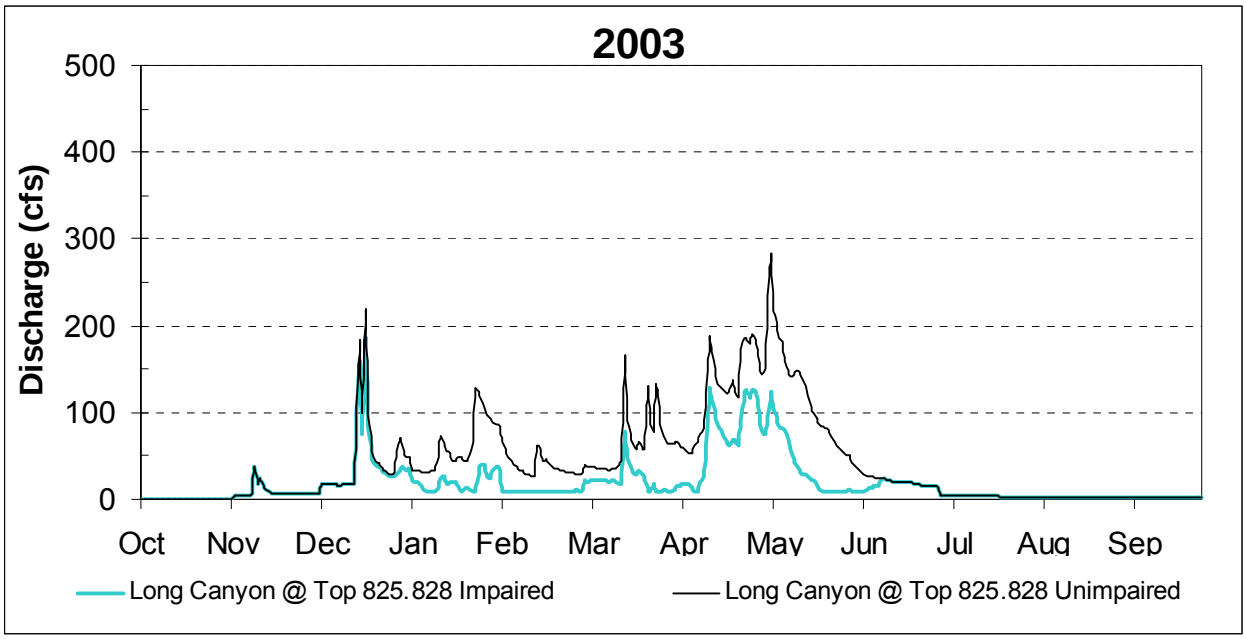


Figure L-8. Long Canyon Creek example below normal water year (2003) flows below the confluence of North Fork and South Fork Long Canyon Creeks (top) and at the bottom of the stream near the confluence with the Rubicon River (bottom).



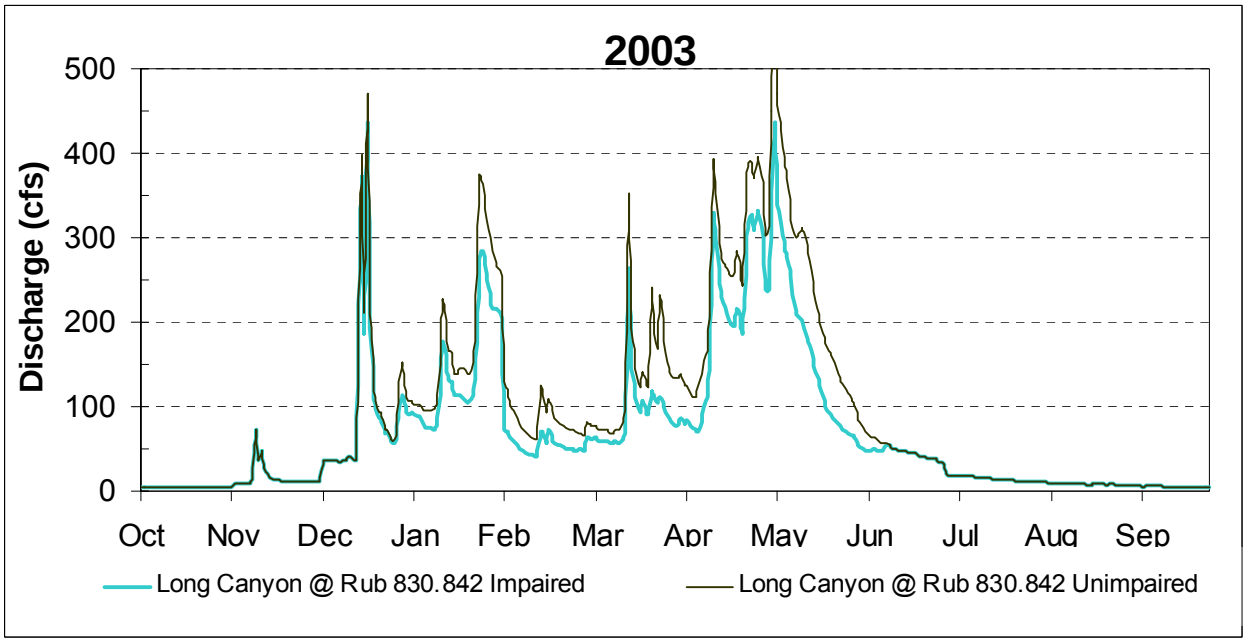
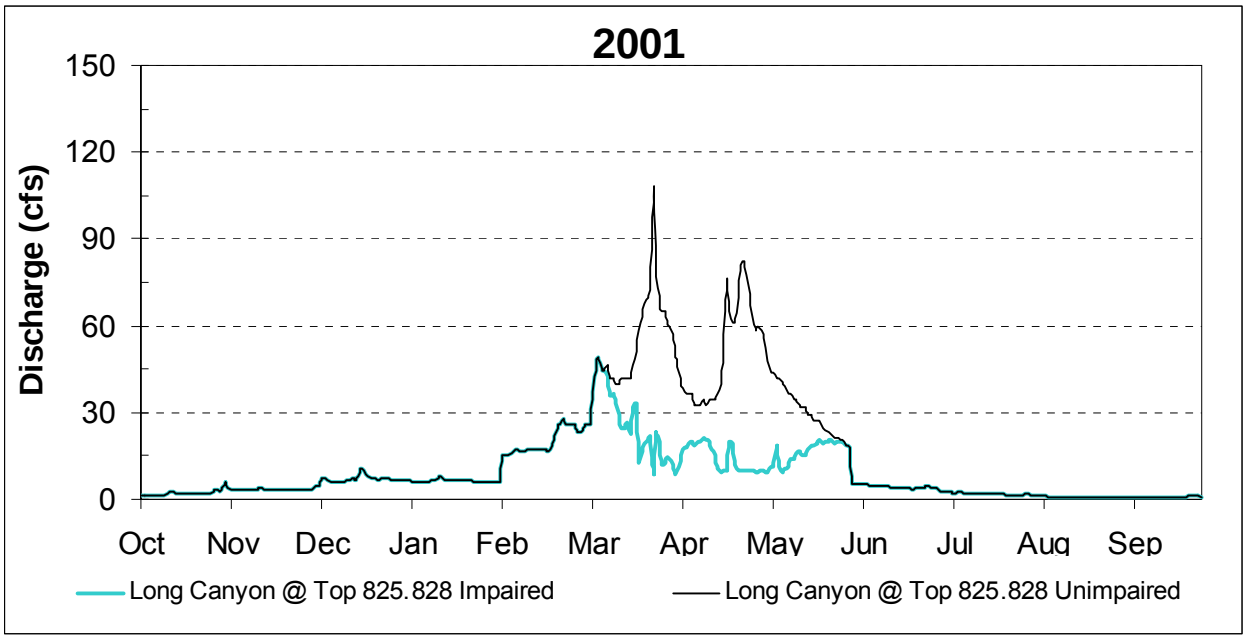


Figure L-9. Long Canyon Creek example dry water year (2001) flows below the confluence of North Fork and South Fork Long Canyon Creeks (top) and at the bottom of the stream near the confluence with the Rubicon River (bottom).



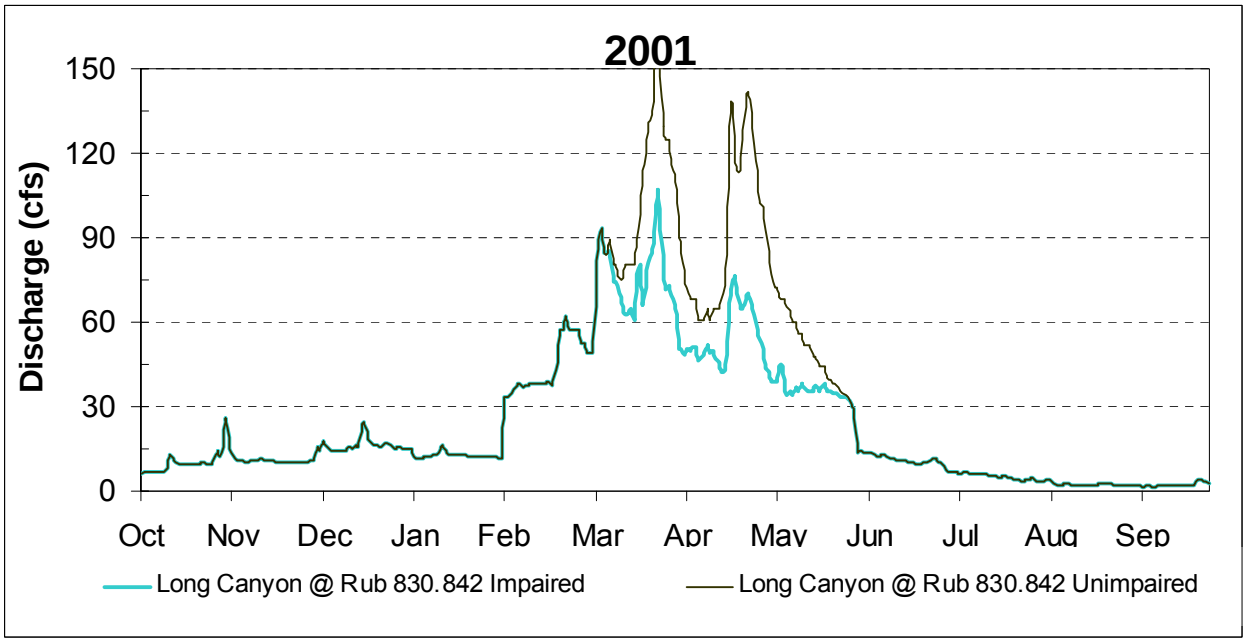
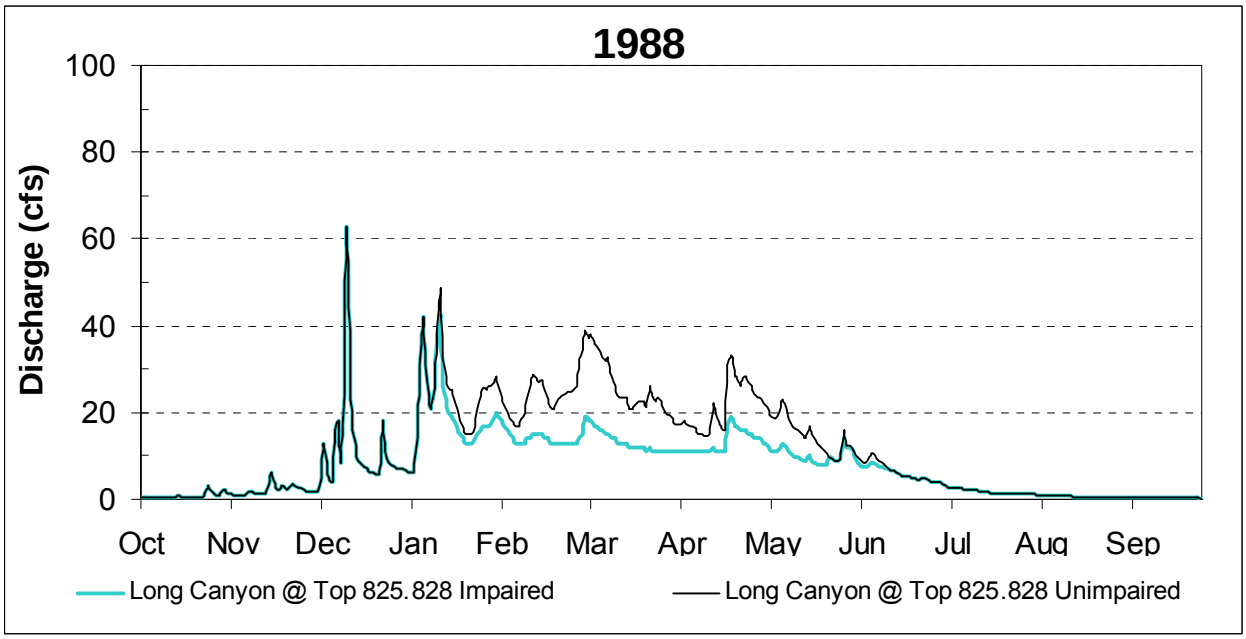
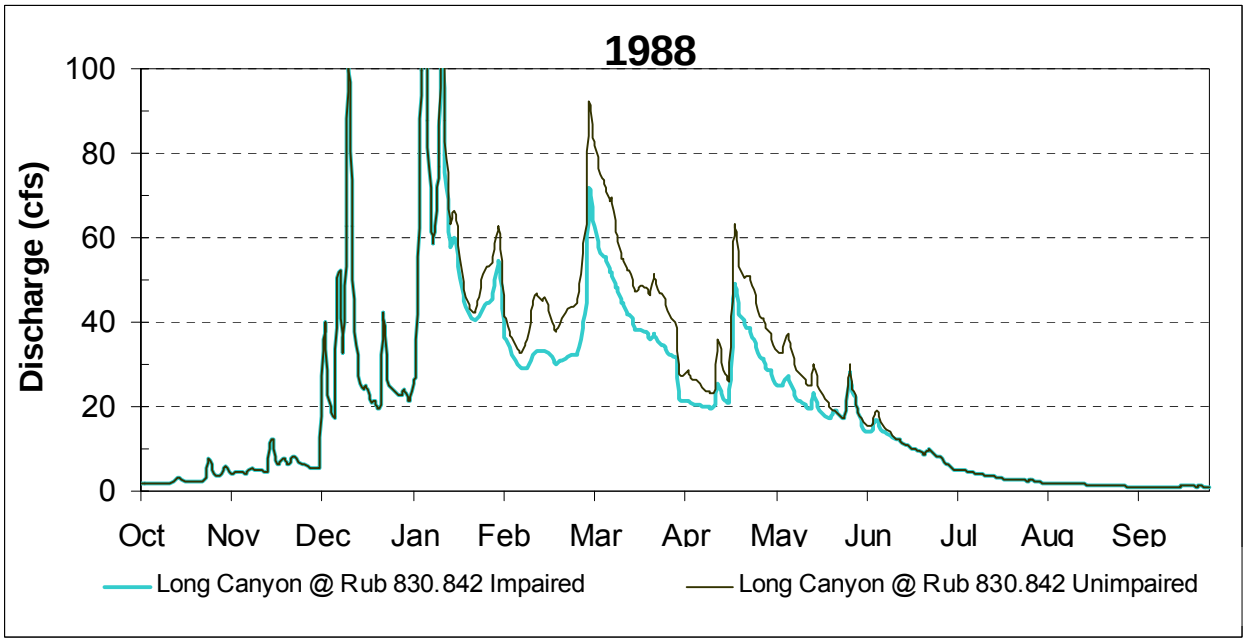


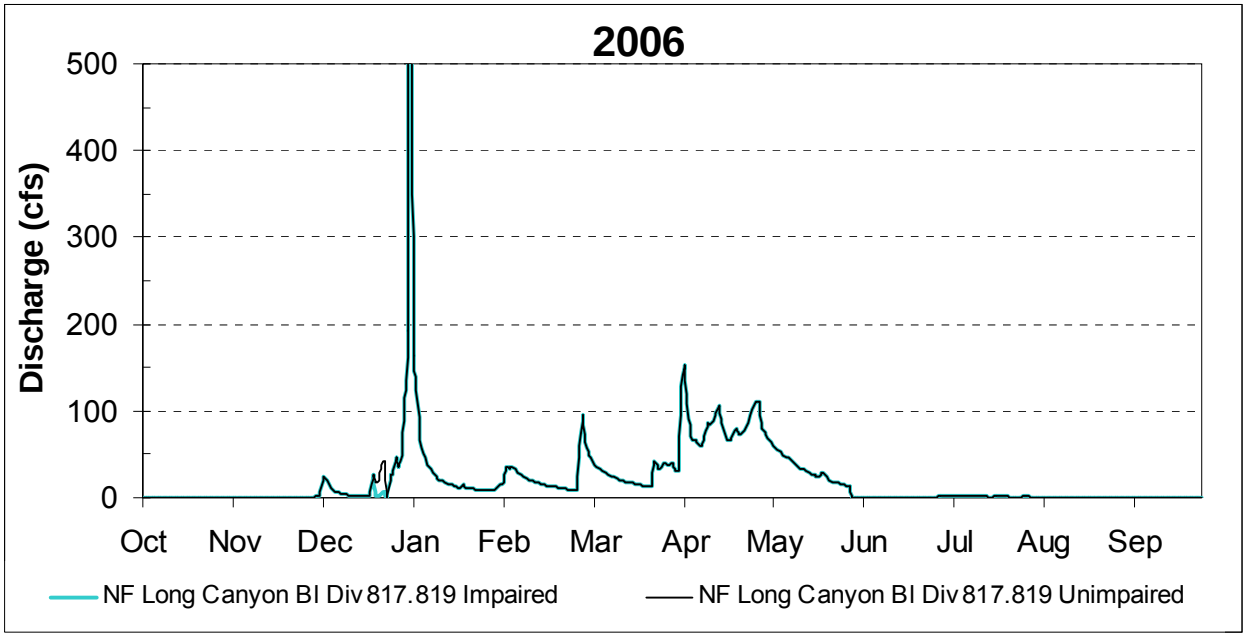
Figure L-10. Long Canyon Creek critical dry water year (1988) flows below the confluence of North Fork and South Fork Long Canyon Creeks (top) and at the bottom of the stream near the confluence with the Rubicon River (bottom).





North Fork Long Canyon (top) and South Fork Long Canyon (bottom)

Figure L-11. North Fork Long Canyon (top) and South Fork Long Canyon (bottom) flows during an example wet water year (2006).



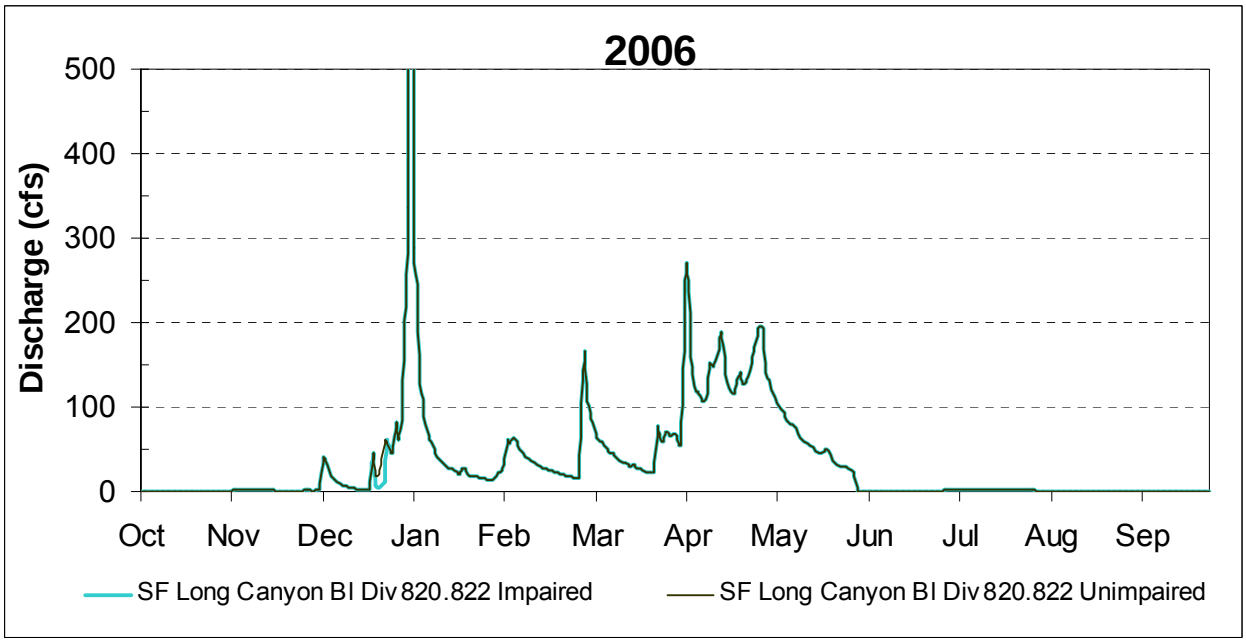
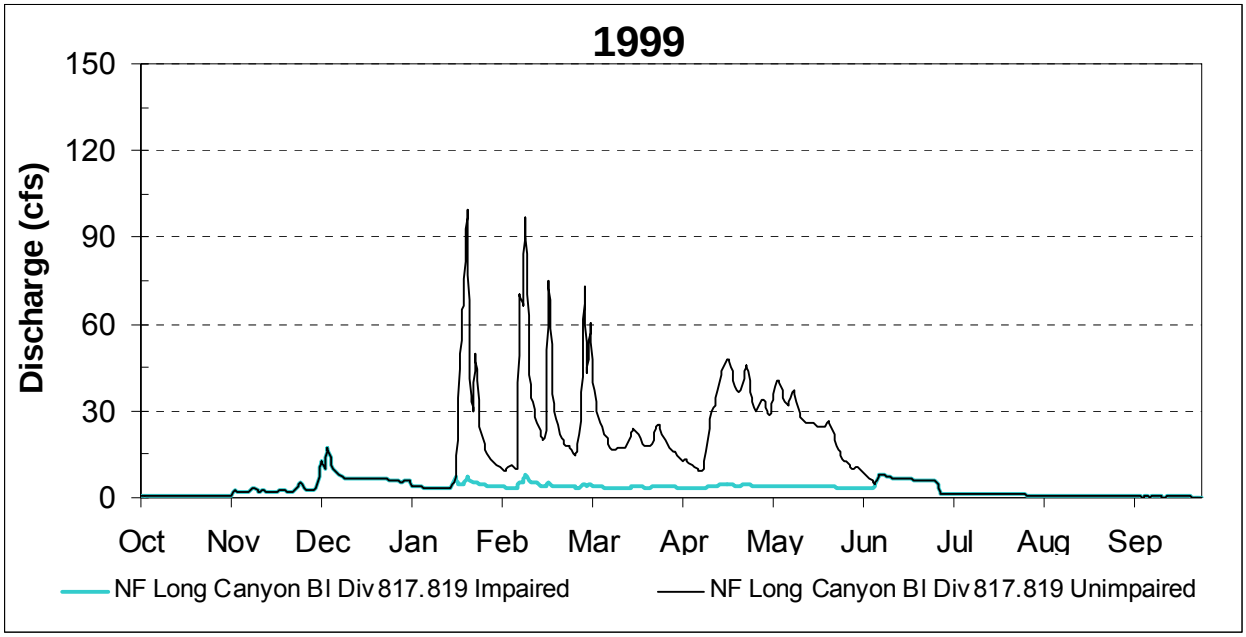


Figure L-12. North Fork Long Canyon (top) and South Fork Long Canyon (bottom) flows during and example above normal water year (1999).



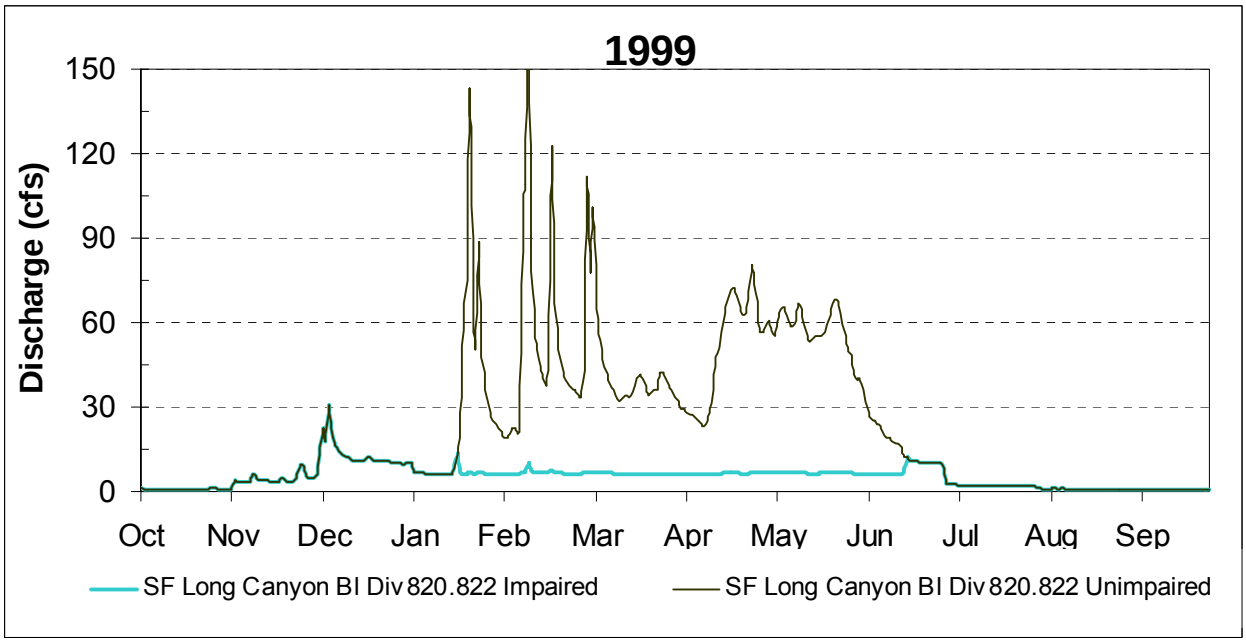
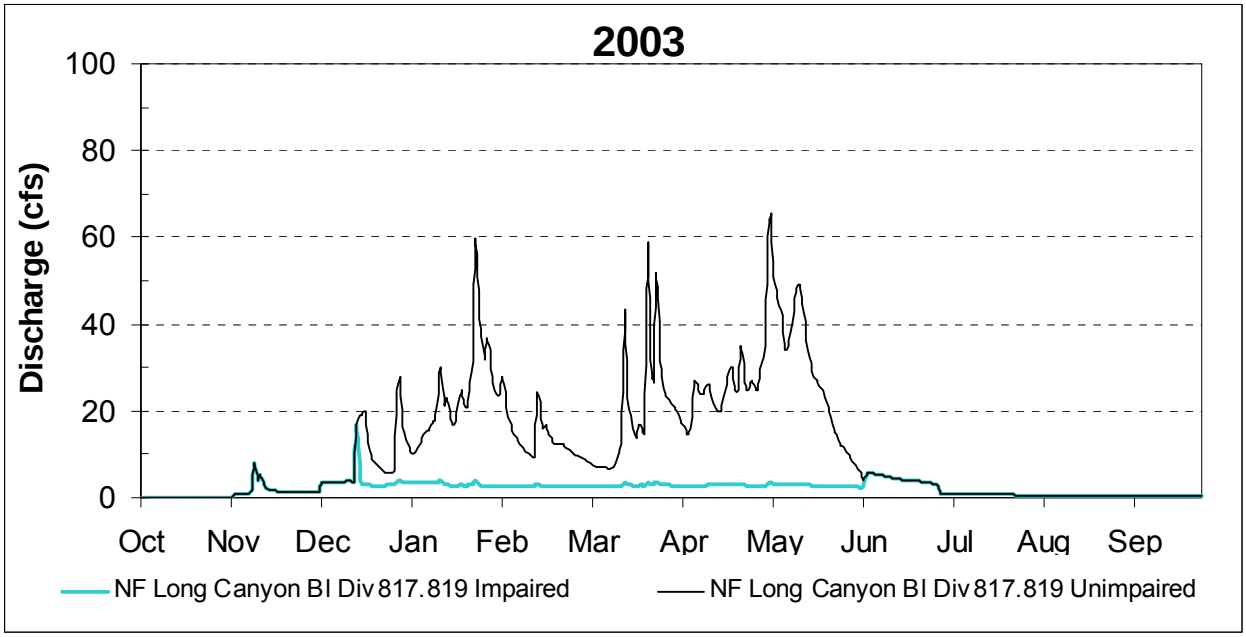


Figure L-13. North Fork Long Canyon (top) and South Fork Long Canyon (bottom) flows during an example below normal water year (2003).



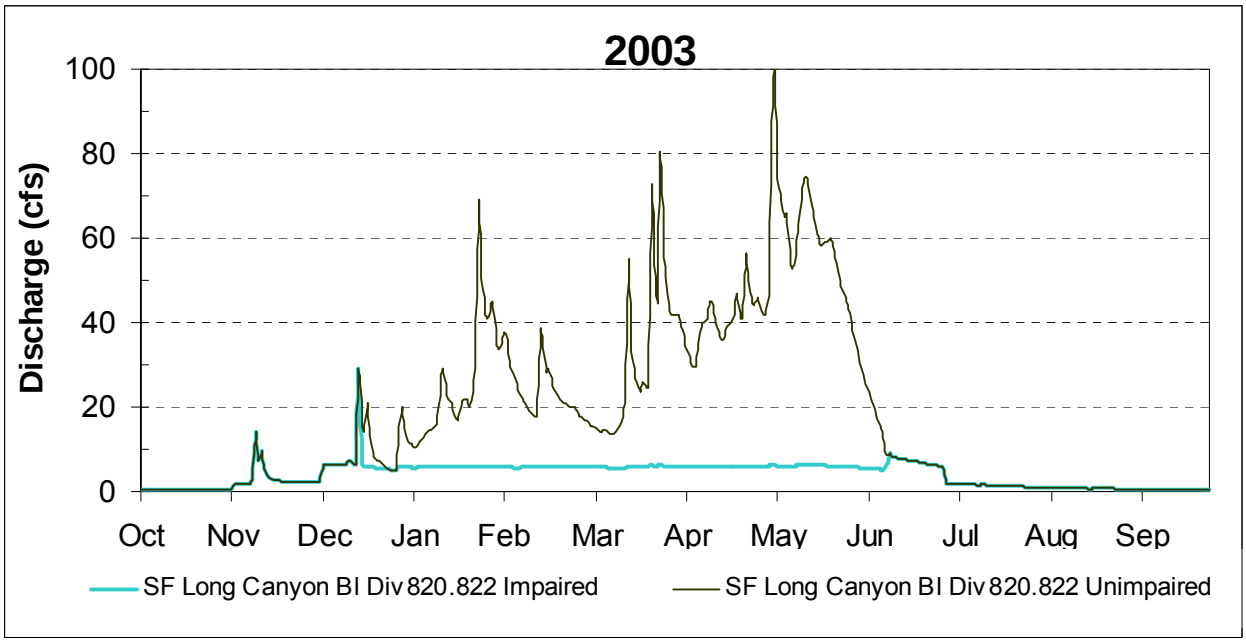
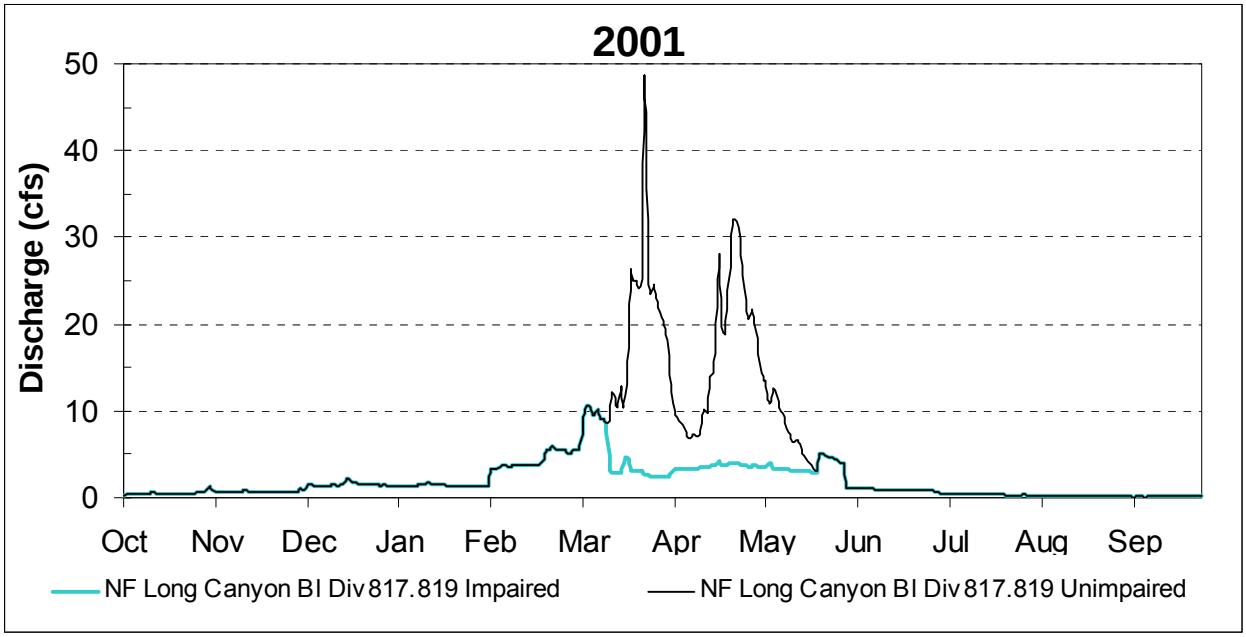


Figure L-14. North Fork Long Canyon (top) and South Fork Long Canyon (bottom) flows during and example dry water year (2001).



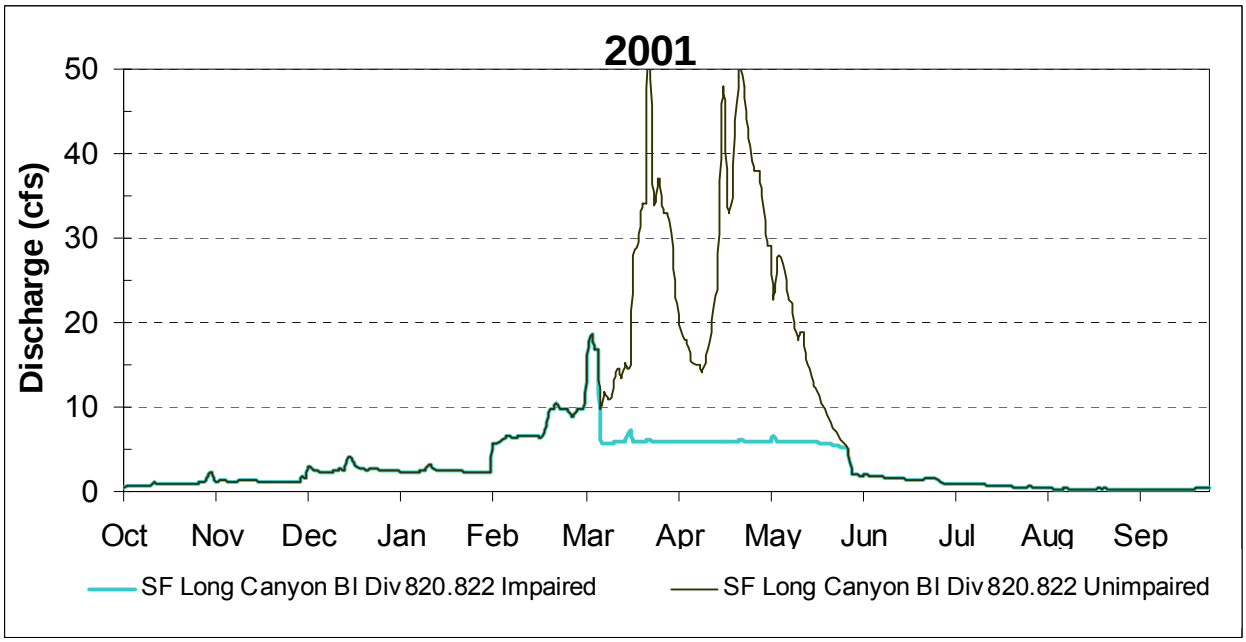
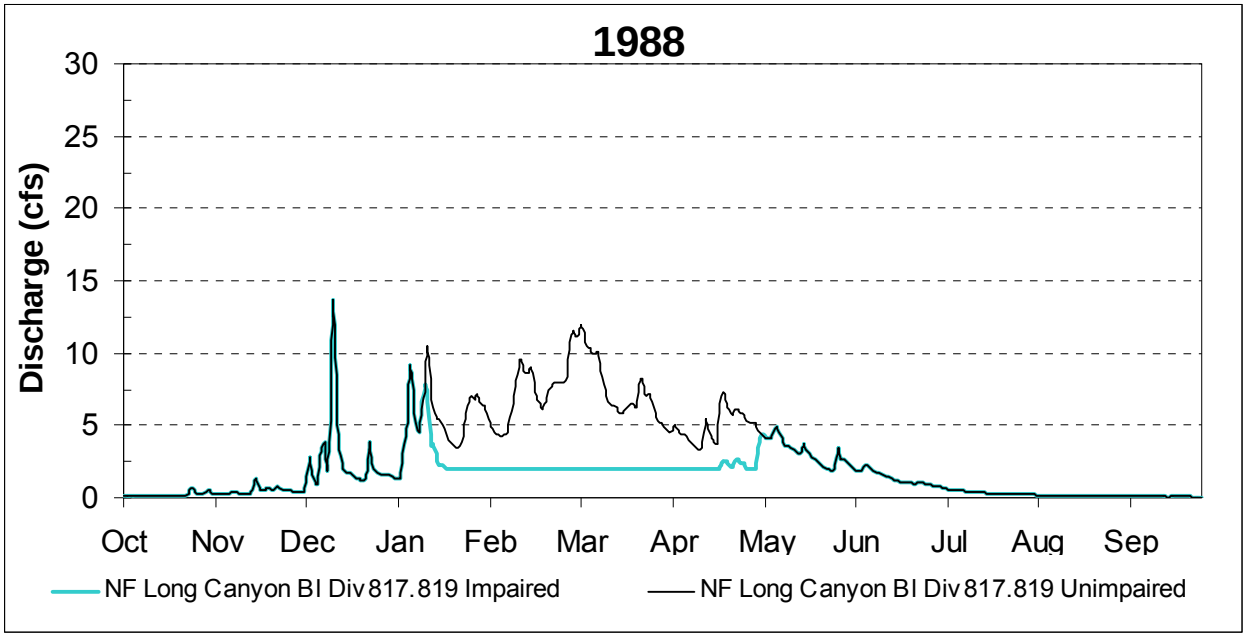
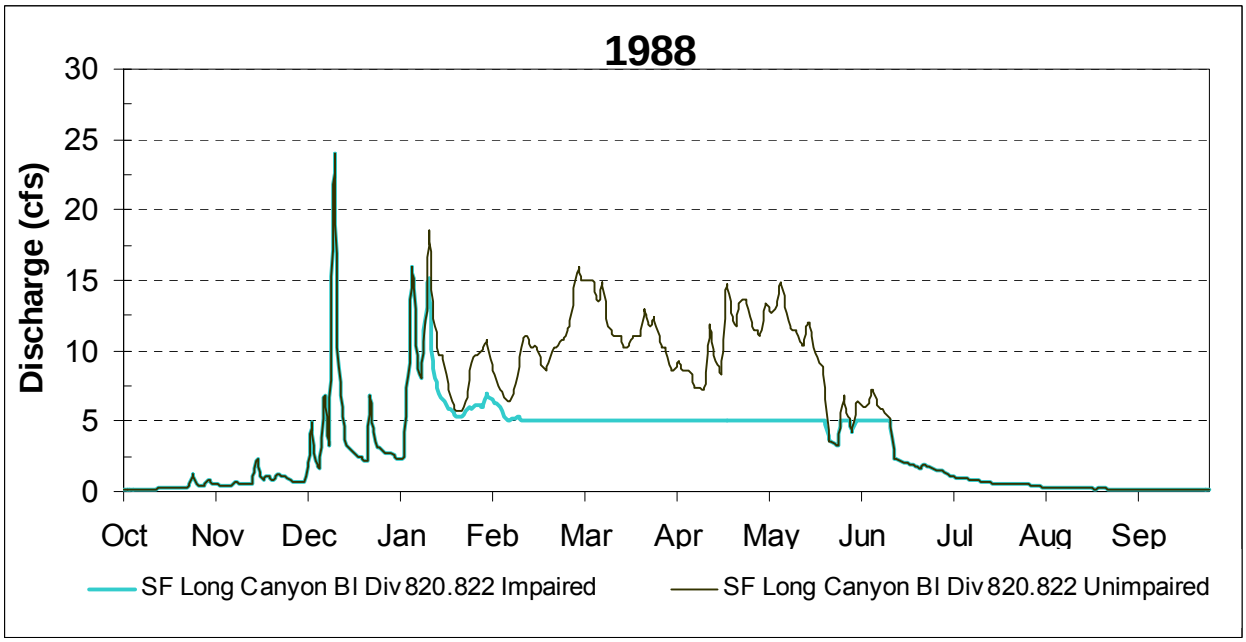


Figure L-15. North Fork Long Canyon (top) and South Fork Long Canyon (bottom) flows during a critical dry water year (1988).





APPENDIX M

Peaking Reach Impaired and Unimpaired Flows
(Wet, Above Normal, Below Normal, Dry, and Critically Dry Water Years)

Page

Figure M-1. Example daily average wet water year (2006) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom)..... 1

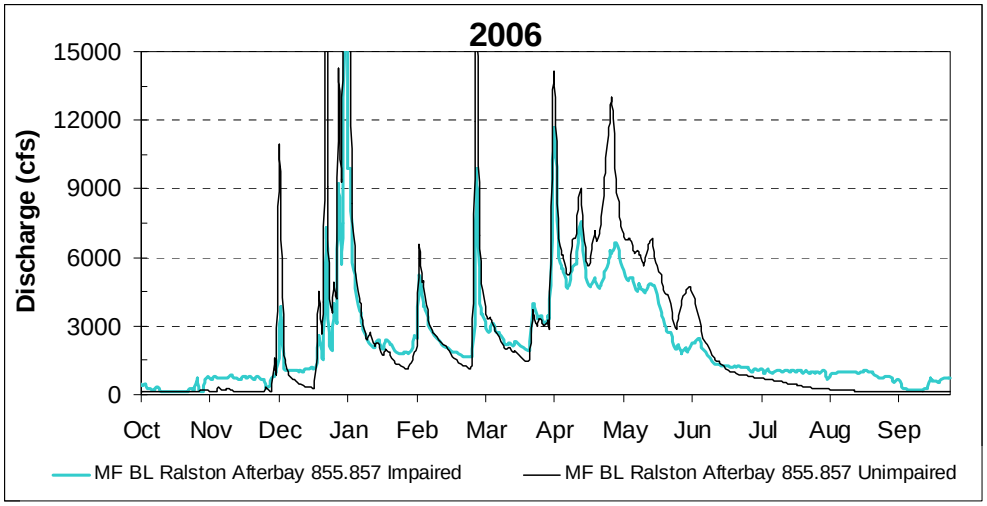
Figure M-2. Example daily average above normal water year (1999) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom). 2

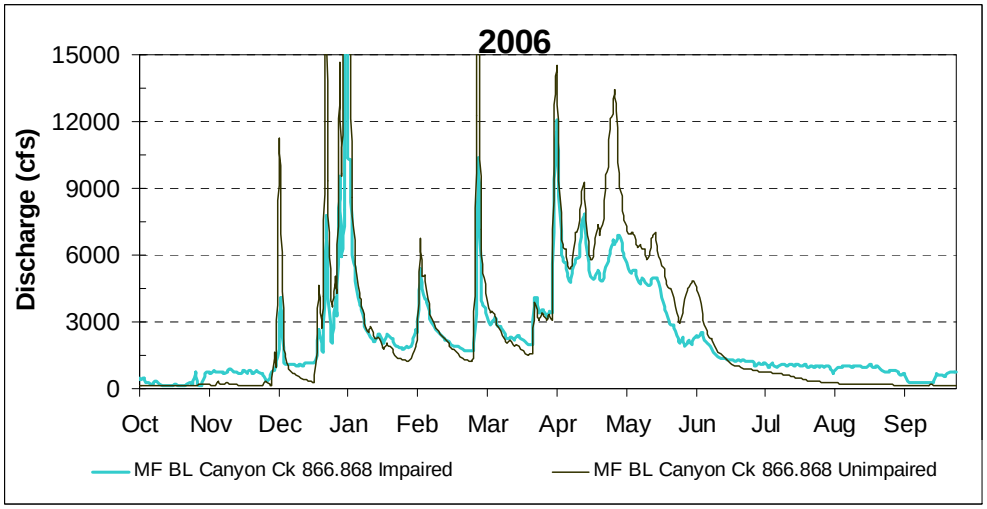
Figure M-3. Example daily average below water year (2003) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom)..... 3

Figure M-4. Example daily average dry water year (2001) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom)..... 4

Figure M-5. Example daily average critical dry water year (1999) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom). 5

Figure M-1. Example daily average wet water year (2006) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom).





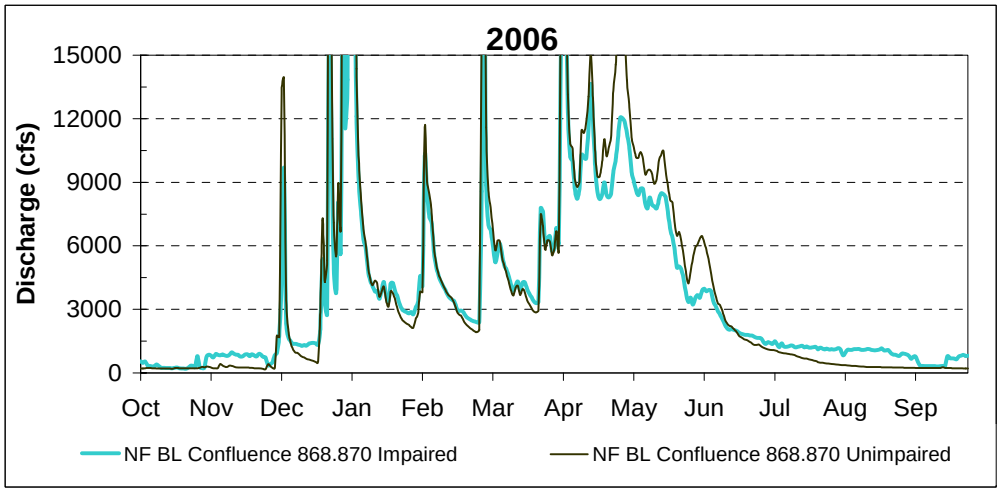


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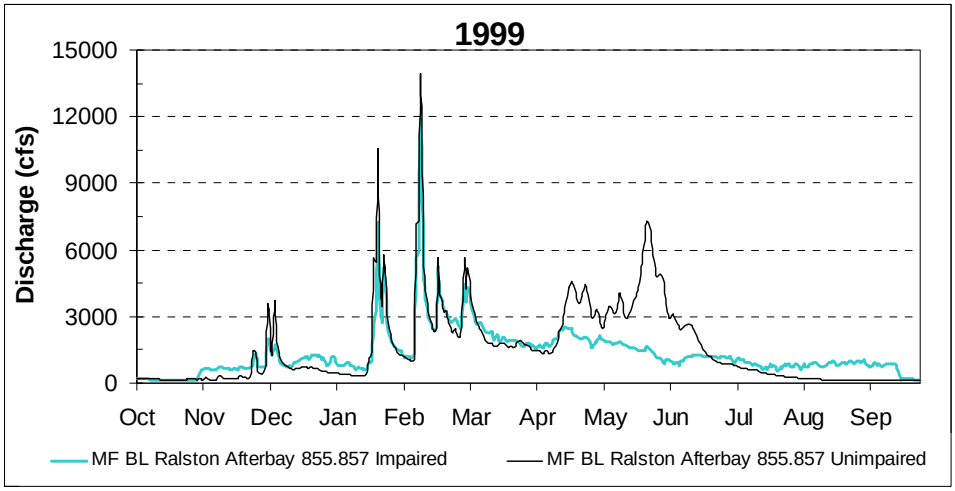
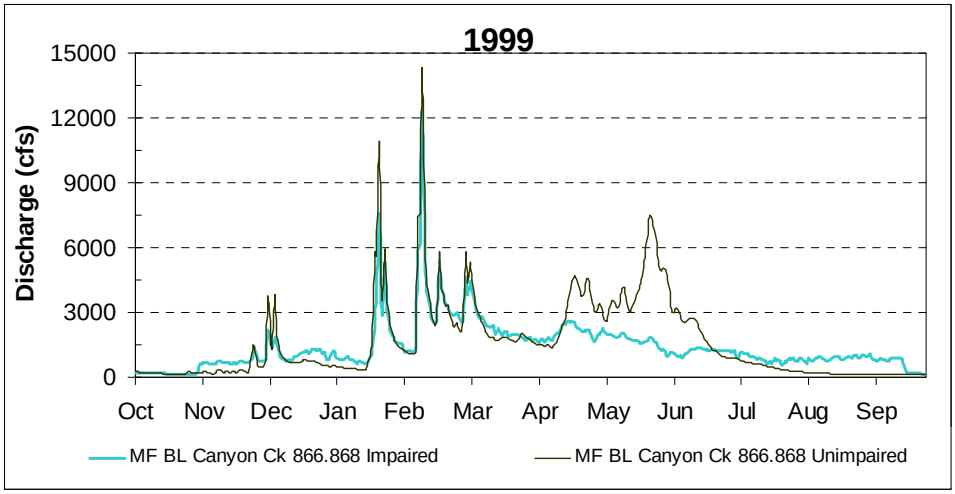
Figure M-2. Example daily average above normal water year (1999) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom).





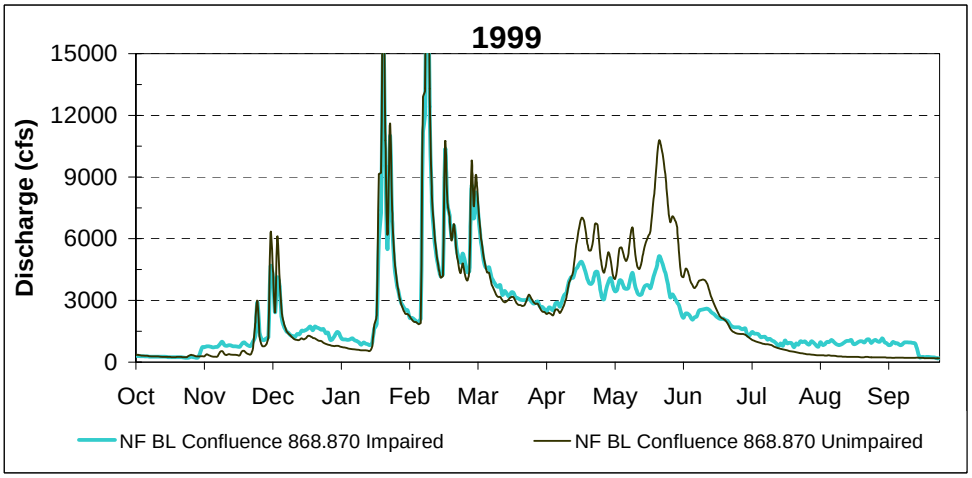


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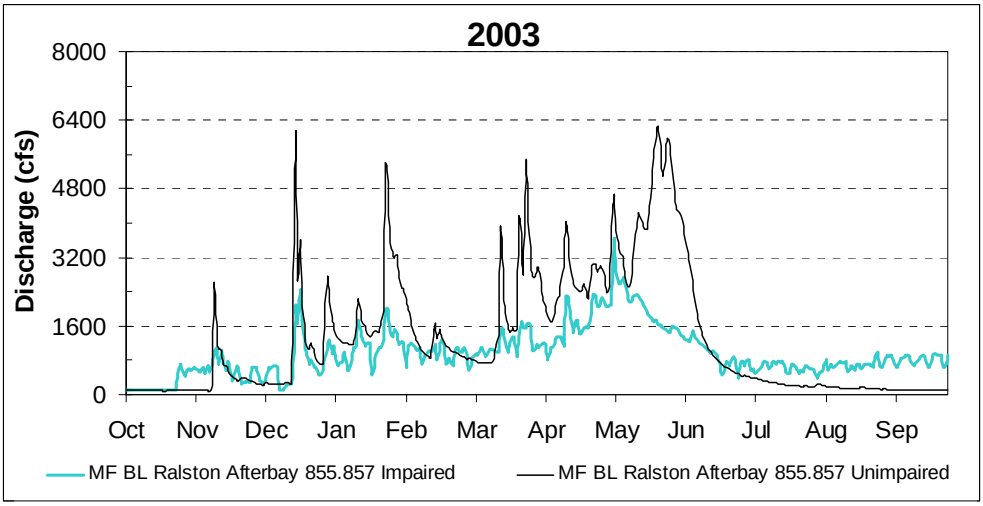
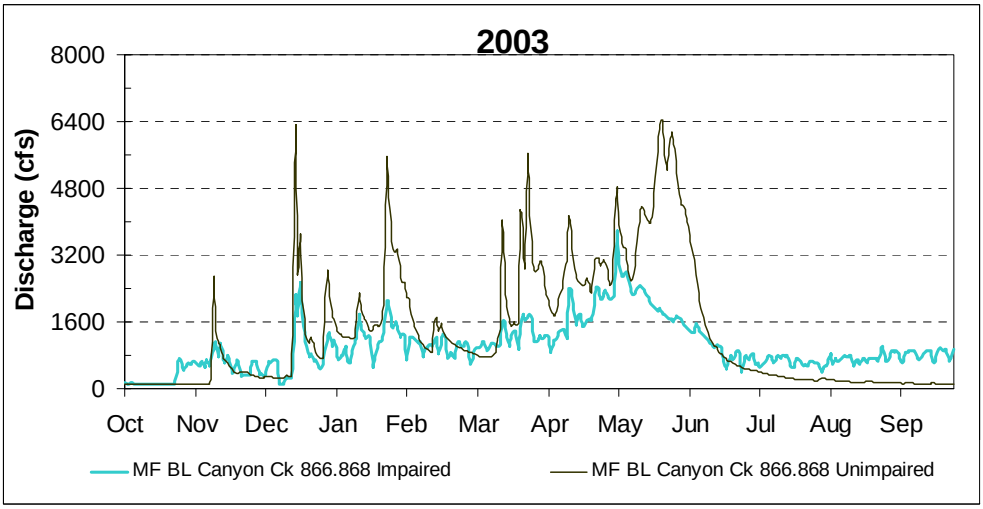
Figure M-3. Example daily average below water year (2003) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom).





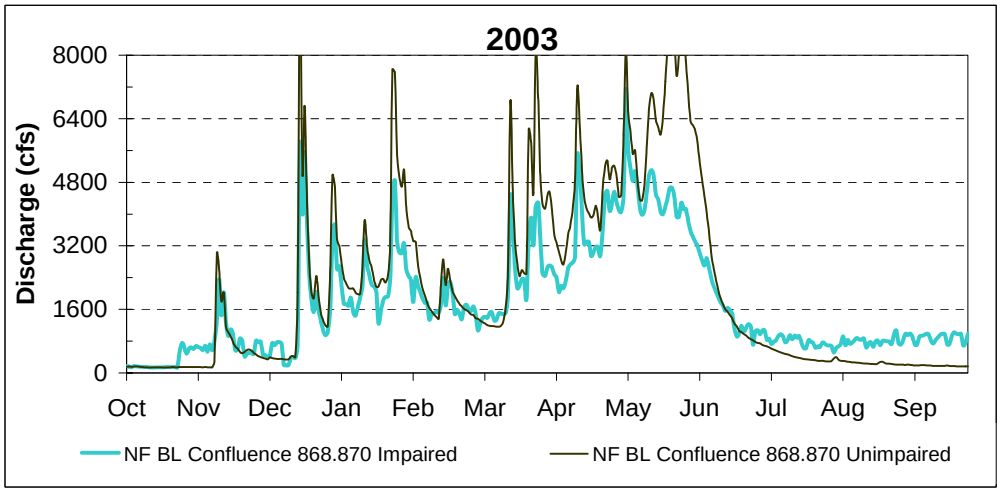


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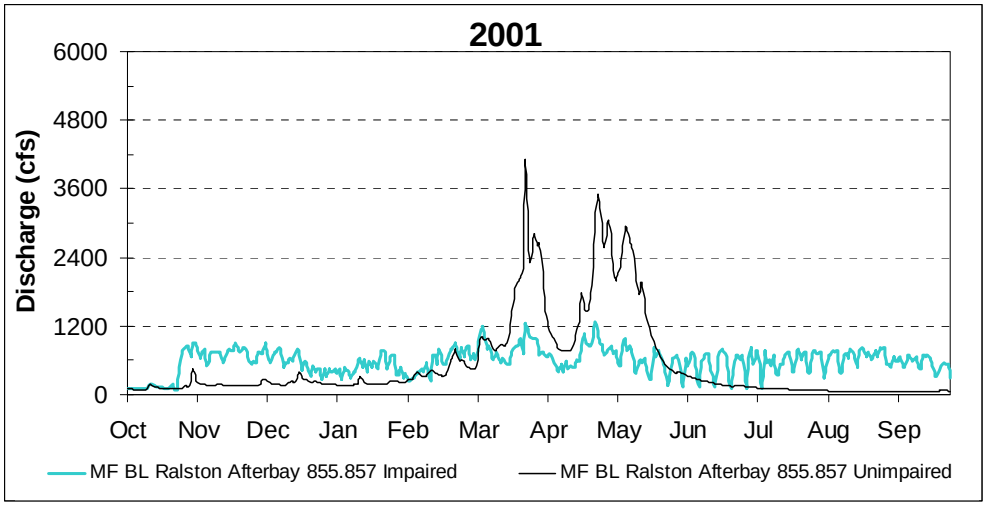
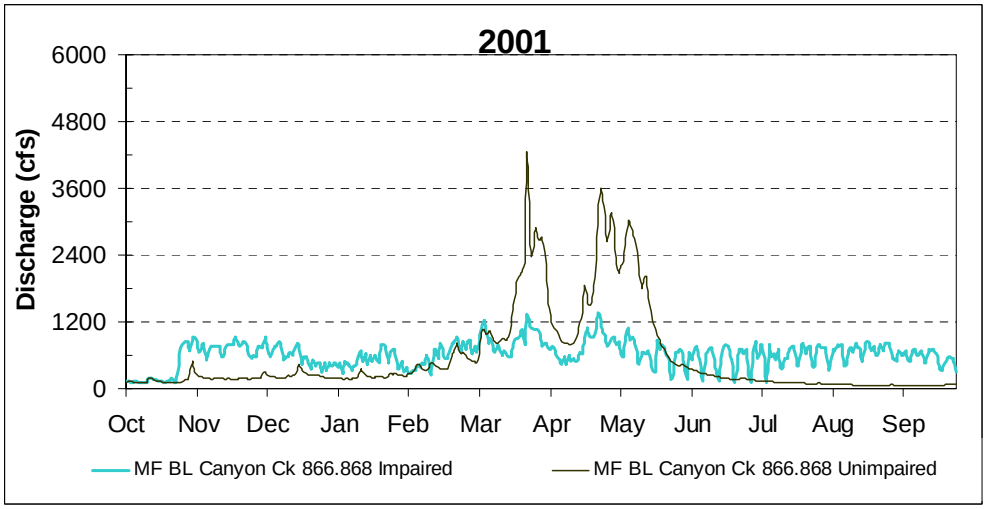
Figure M-4. Example daily average dry water year (2001) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom).





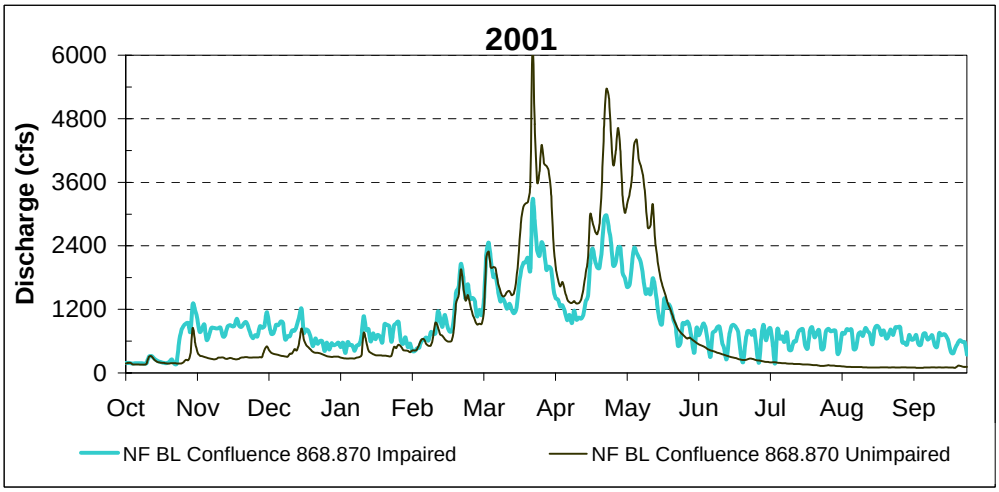


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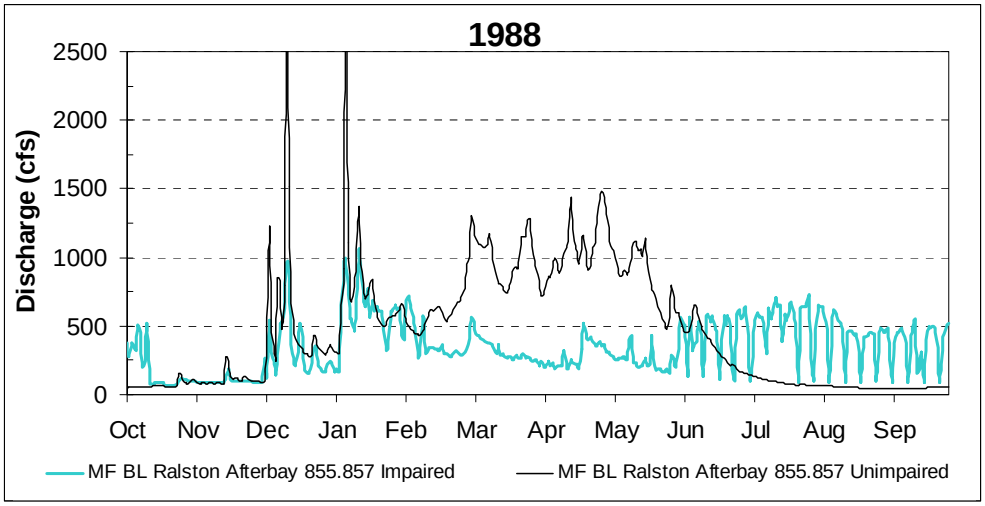
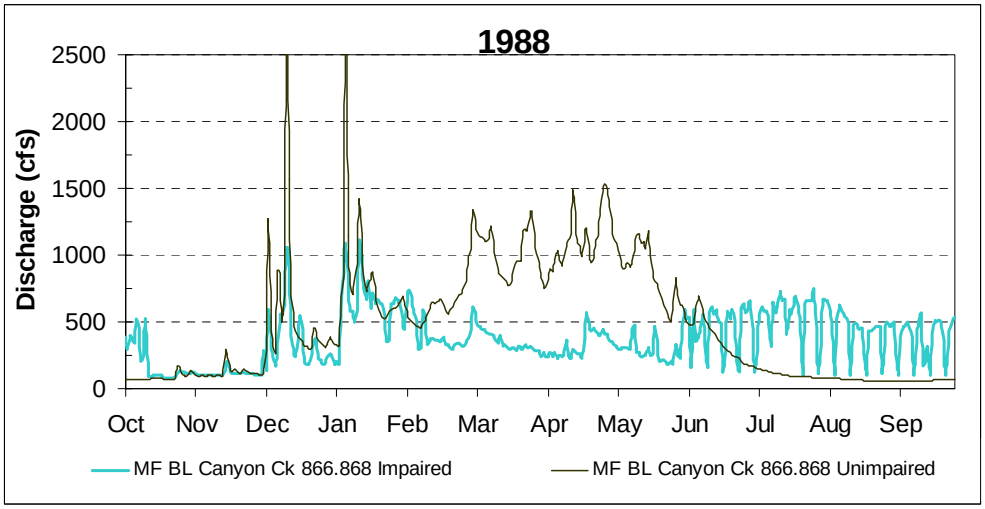
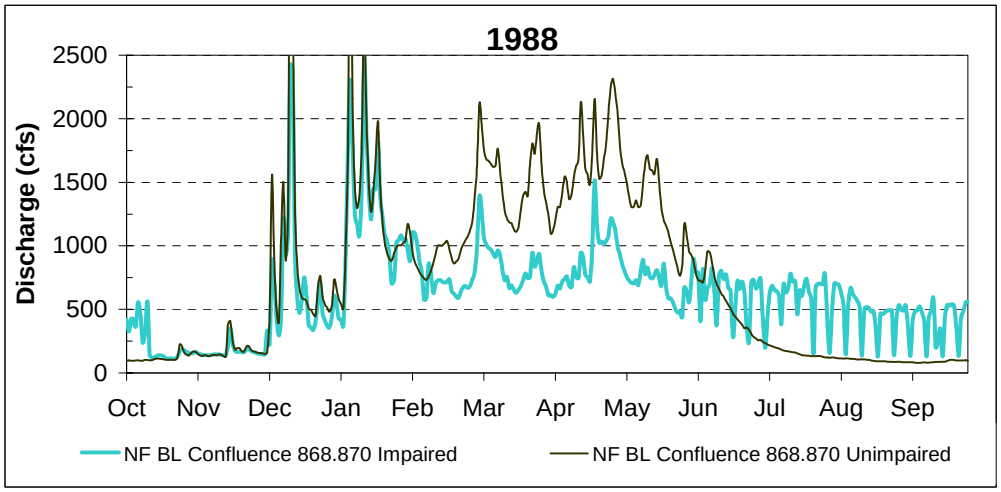
Figure M-5. Example daily average critical dry water year (1999) flows in the Middle Fork American River below Ralston Afterbay (top), Middle Fork American River downstream of Canyon Creek (middle), and the North Fork American River below the Middle Fork American River Confluence (bottom).







Note:
Impaired condition is based on recorded gage data. Unimpaired condition is based on modeled data

APPENDIX N

Peaking Reach Flow Fluctuation Characterization at Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300) (Wet, Above Normal, Below Normal, Dry, and Critically Dry Water Years)

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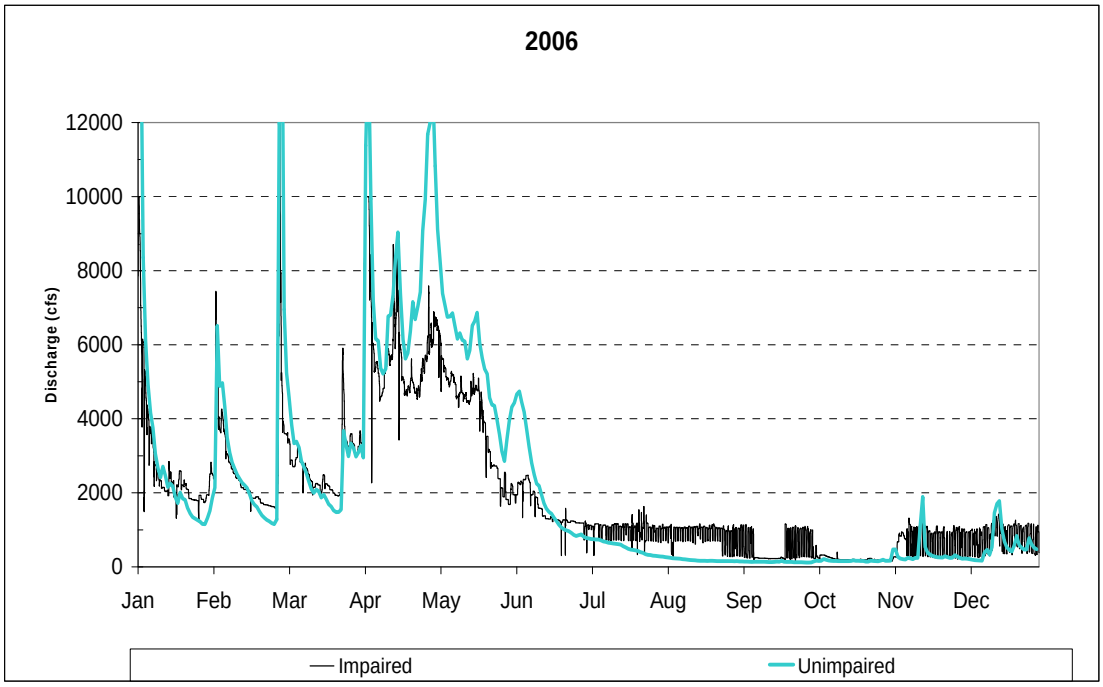
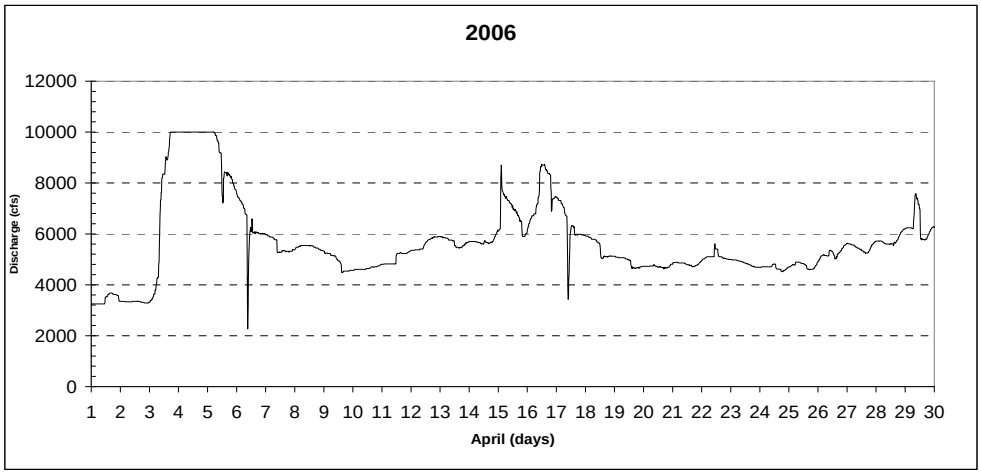
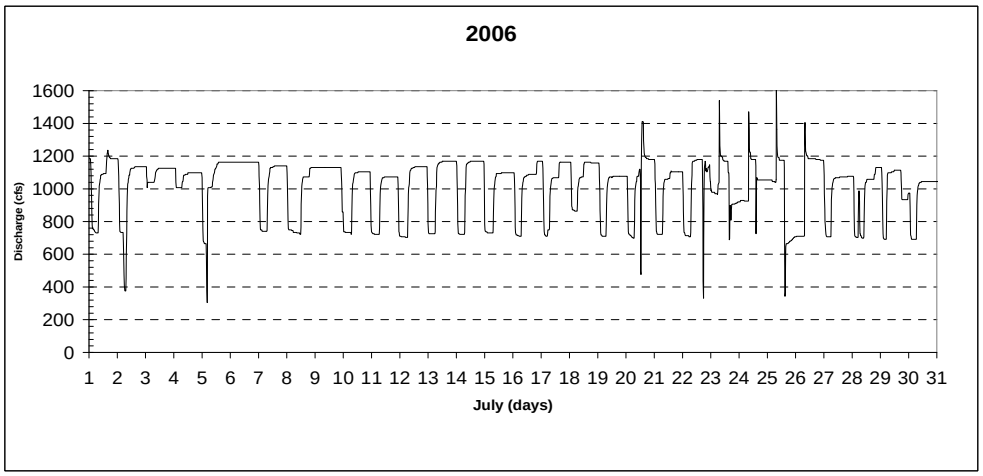


Figure N-2. April, July, and August/September flow time series (15 min) in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a wet water year (2006).





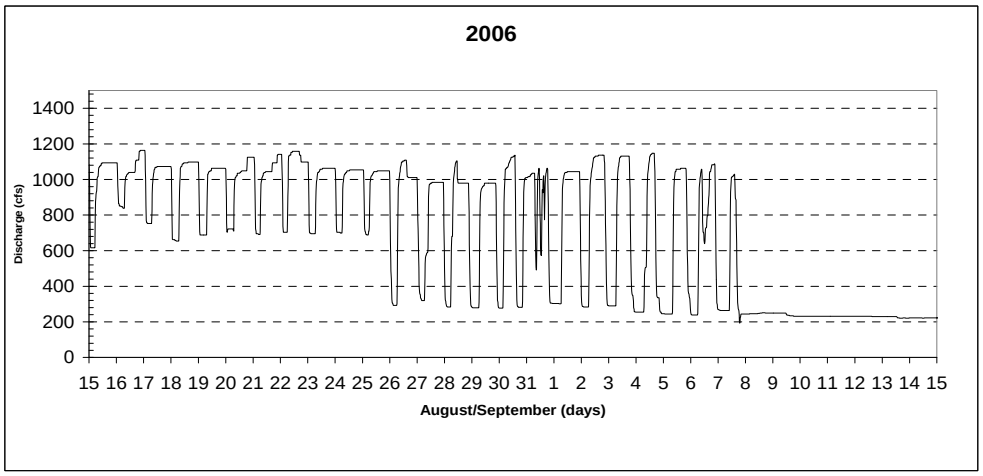


Figure N-3. Daily peaking events for the months of April through September of a wet water year (2006).

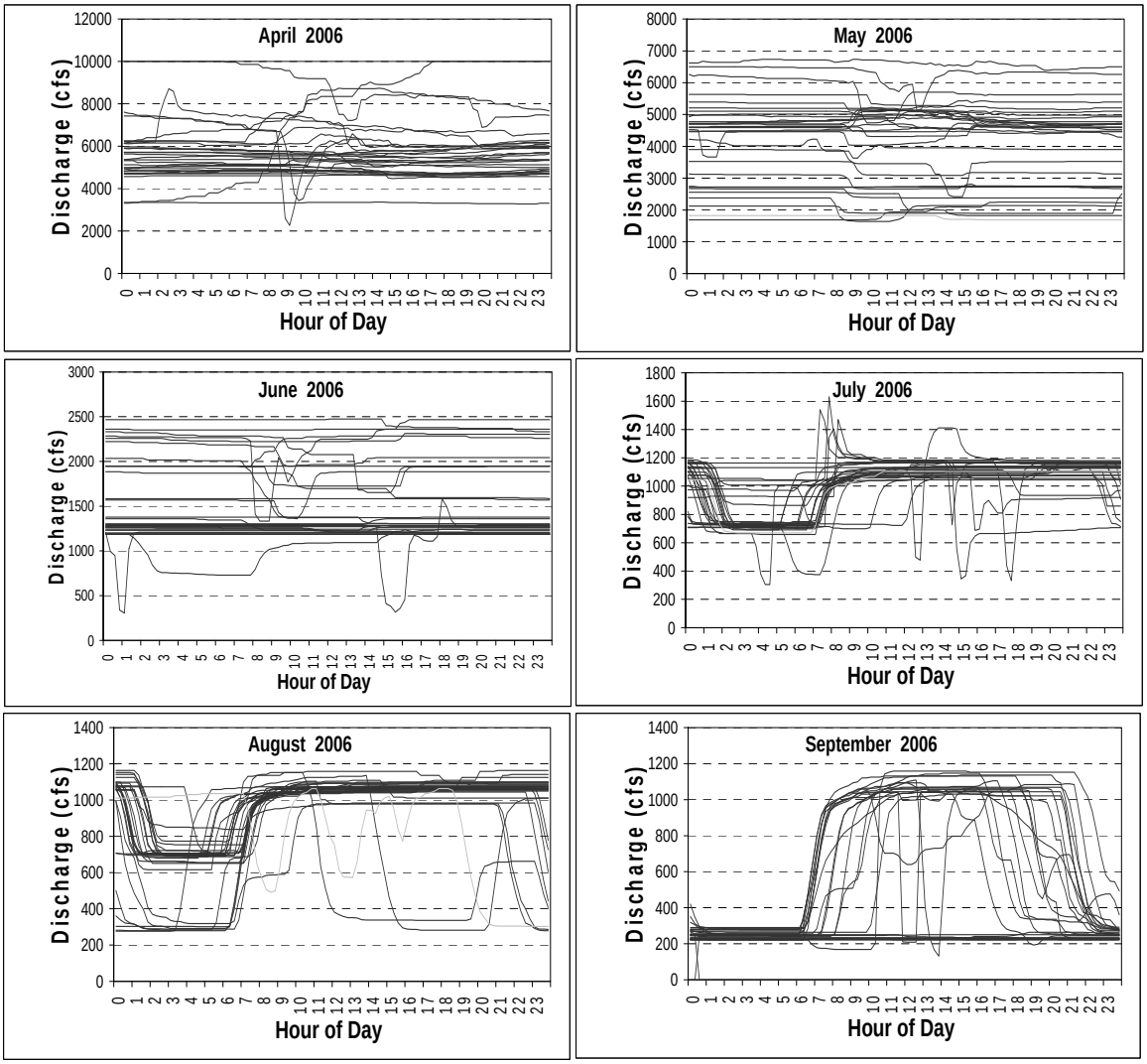


Figure N-4. Unimpaired and impaired (existing) flow time series in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during an above normal water year (1999).

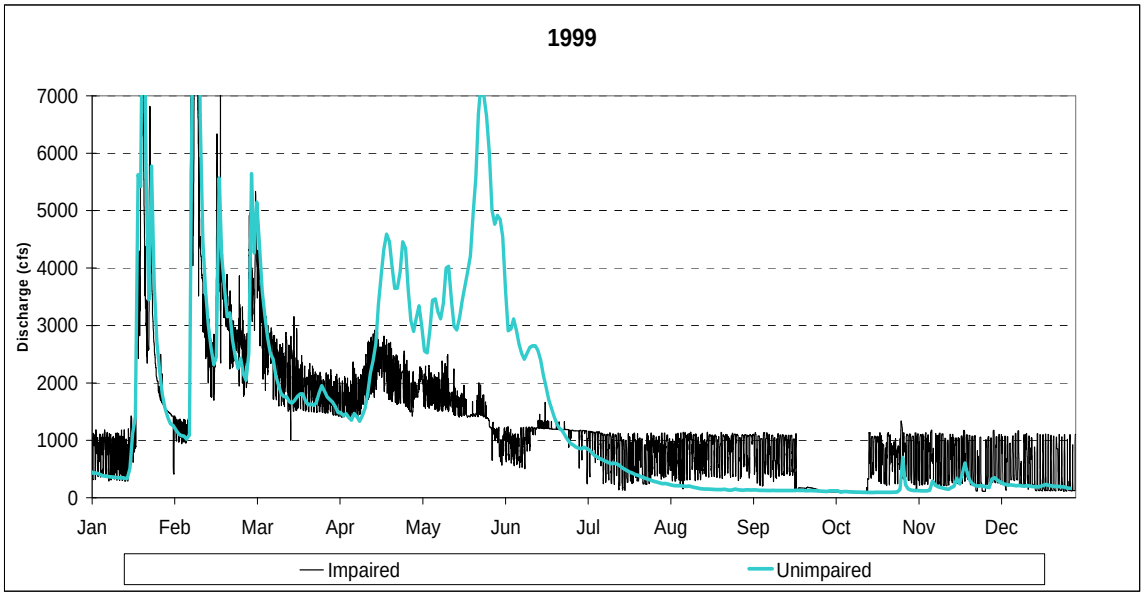


Figure N-5. April, July, and August/September flow time series (15 min) in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during an above normal water year (1999).

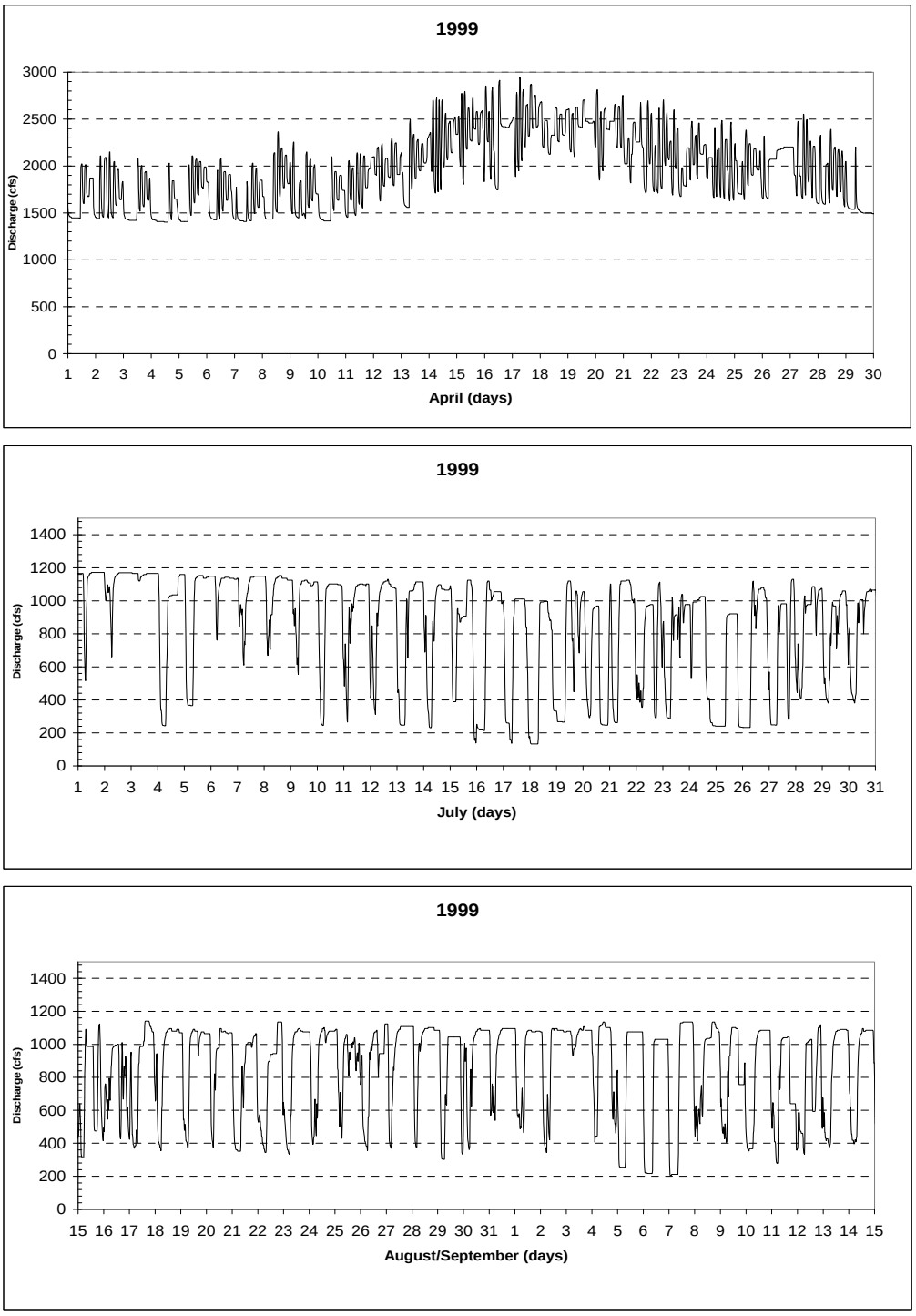


Figure N-6. Daily peaking events for the months of April through September of an above normal water year (1999).

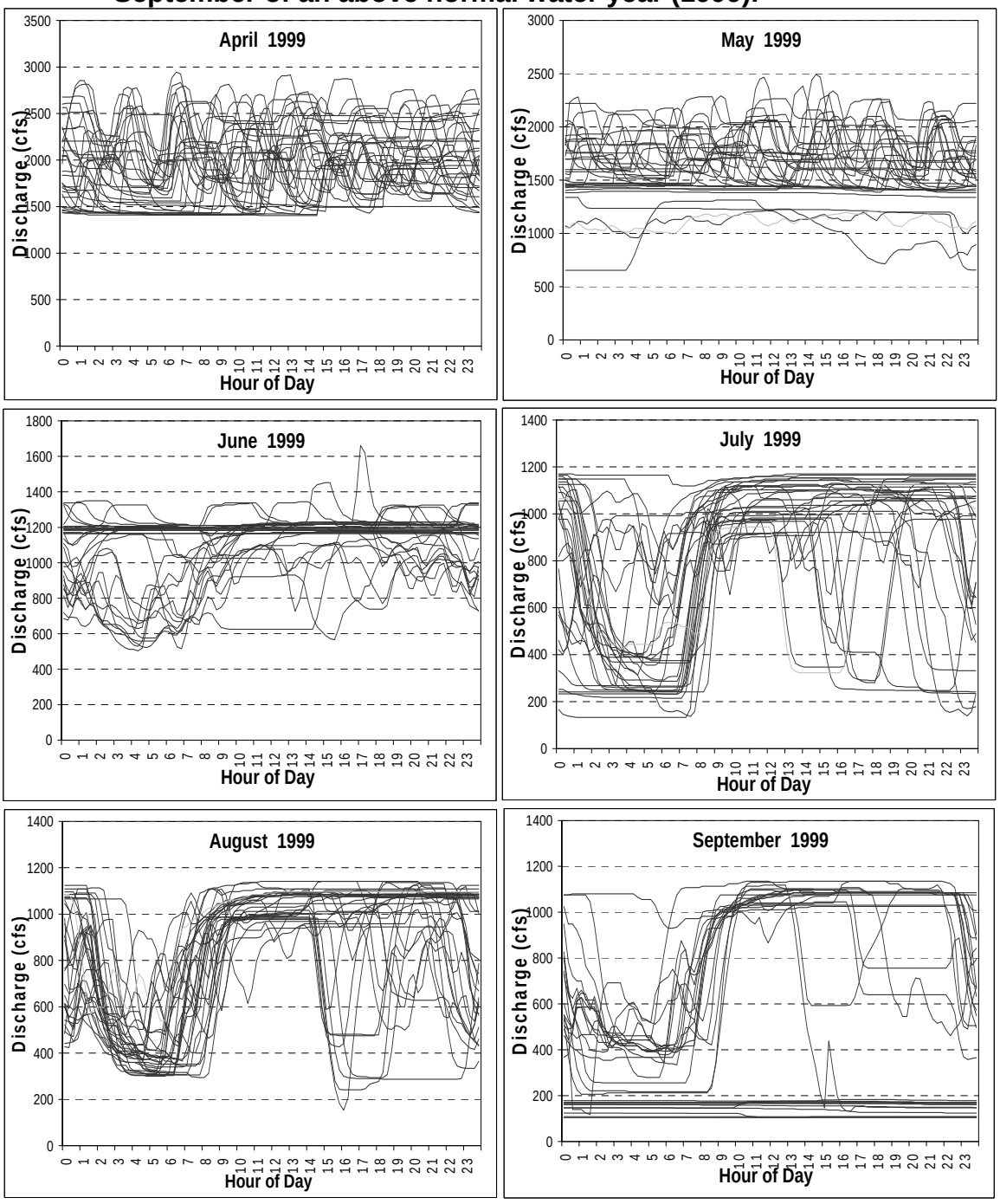


Figure N-7. Unimpaired and impaired (existing) flow time series in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a below normal water year (2003).

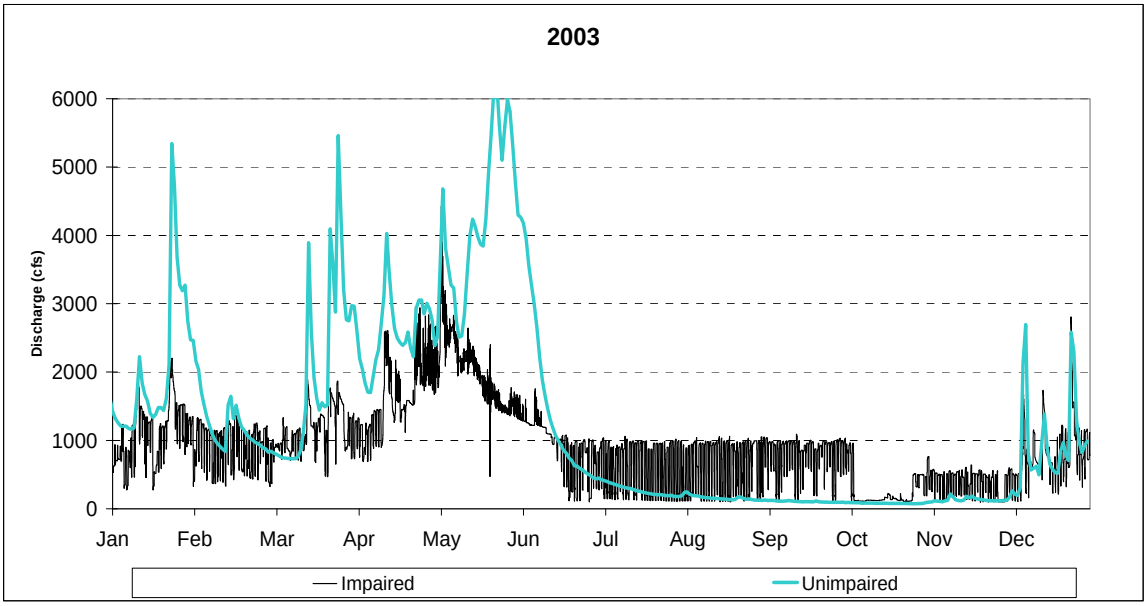


Figure N-8. April, July, and August/September flow time series (15 min) in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a below normal water year (2003).

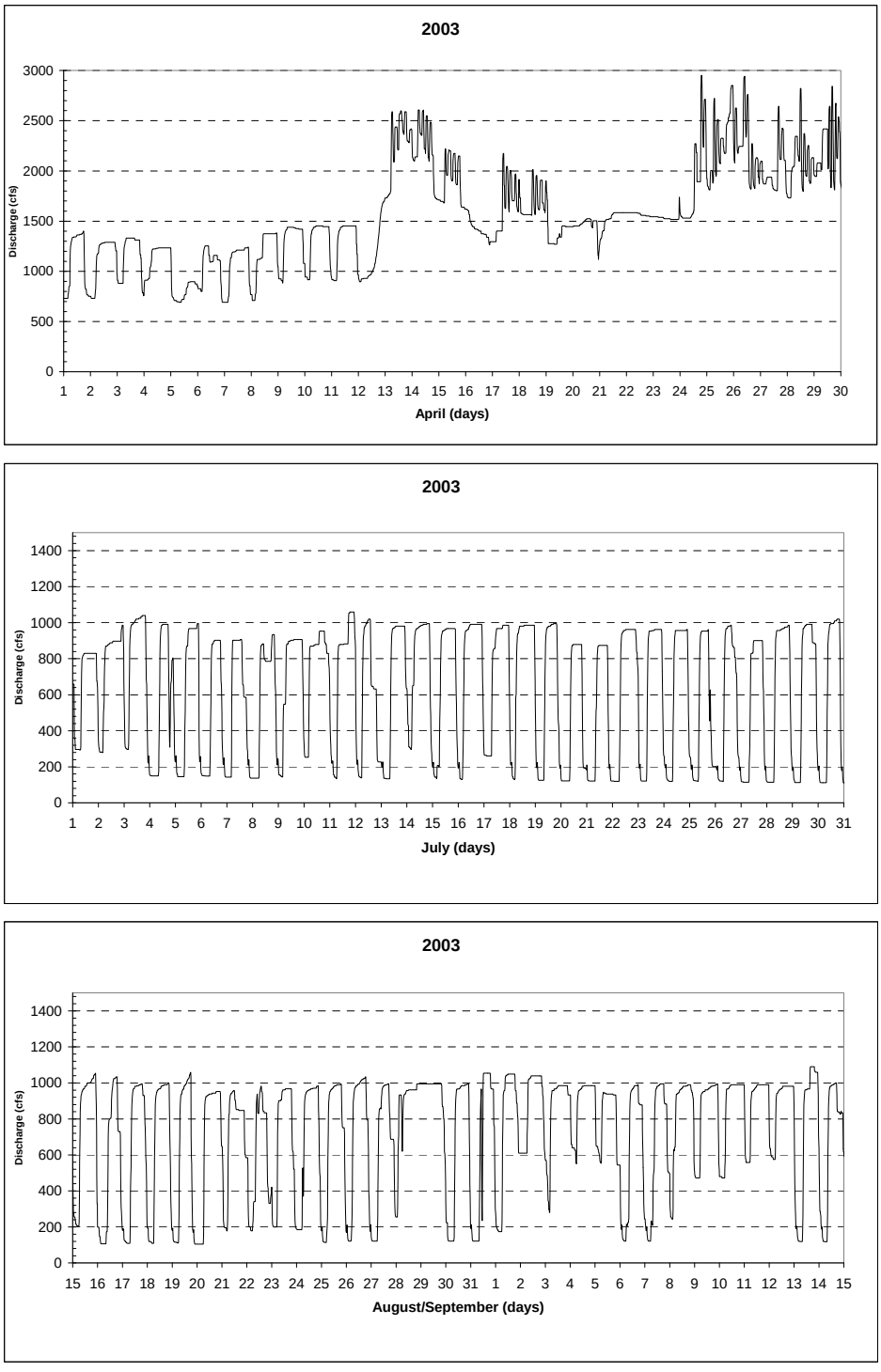


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Figure N-9. Daily peaking events for the months of April through September of a below normal water year (2003).

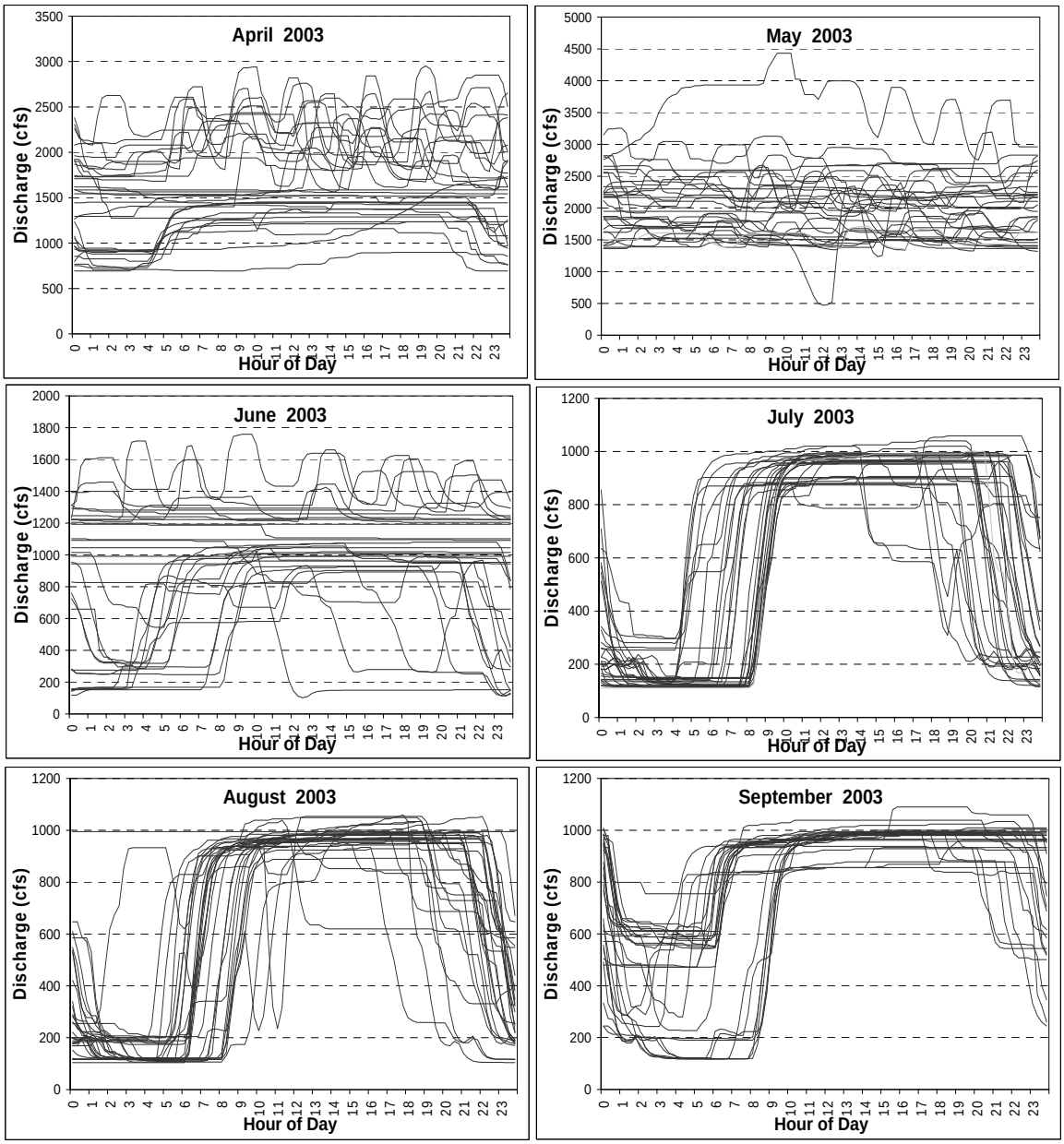


Figure N-10. Unimpaired and impaired (existing) flow time series in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a dry water year (2001).

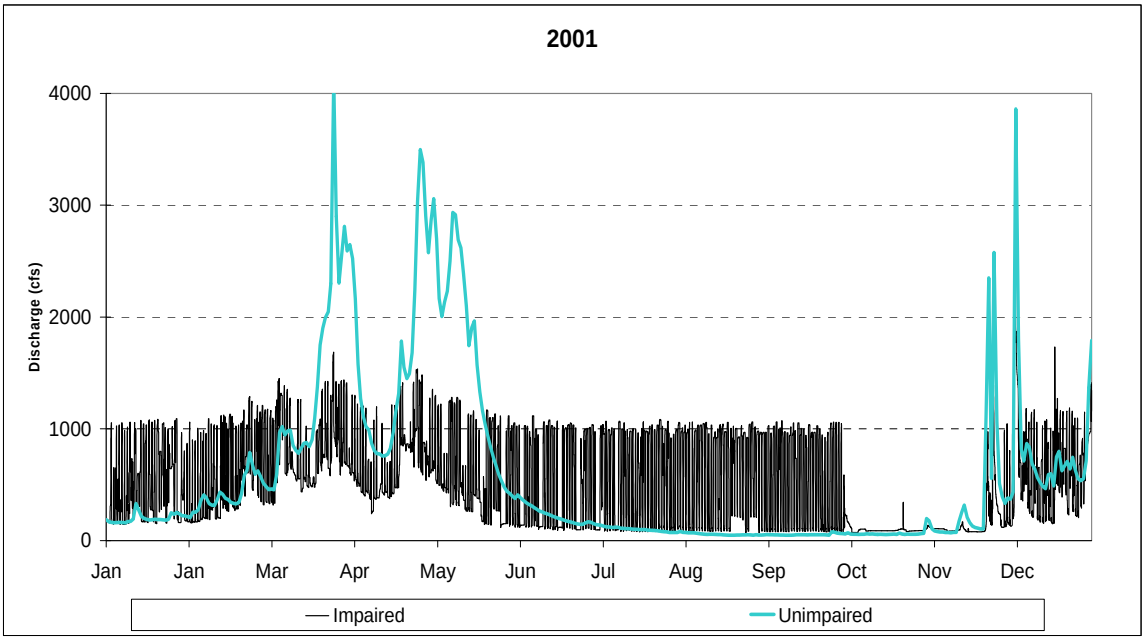
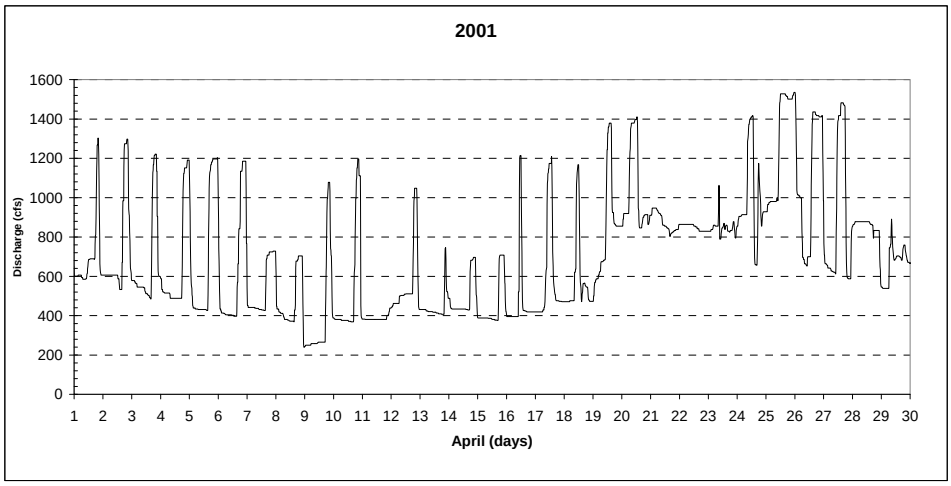
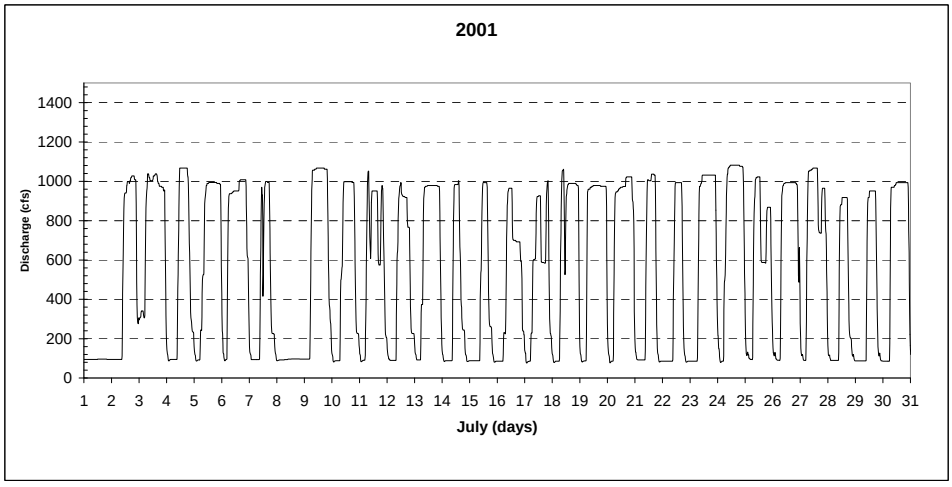


Figure N-11. April, July, and August/September flow time series (15 min) in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a dry water year (2001).





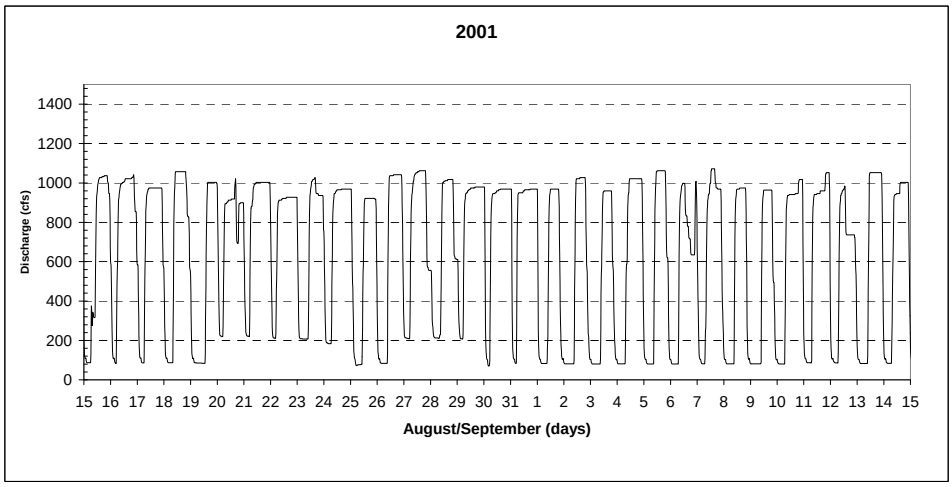


Figure N-12. Daily peaking events for the months of April through September of a dry water year (2001).

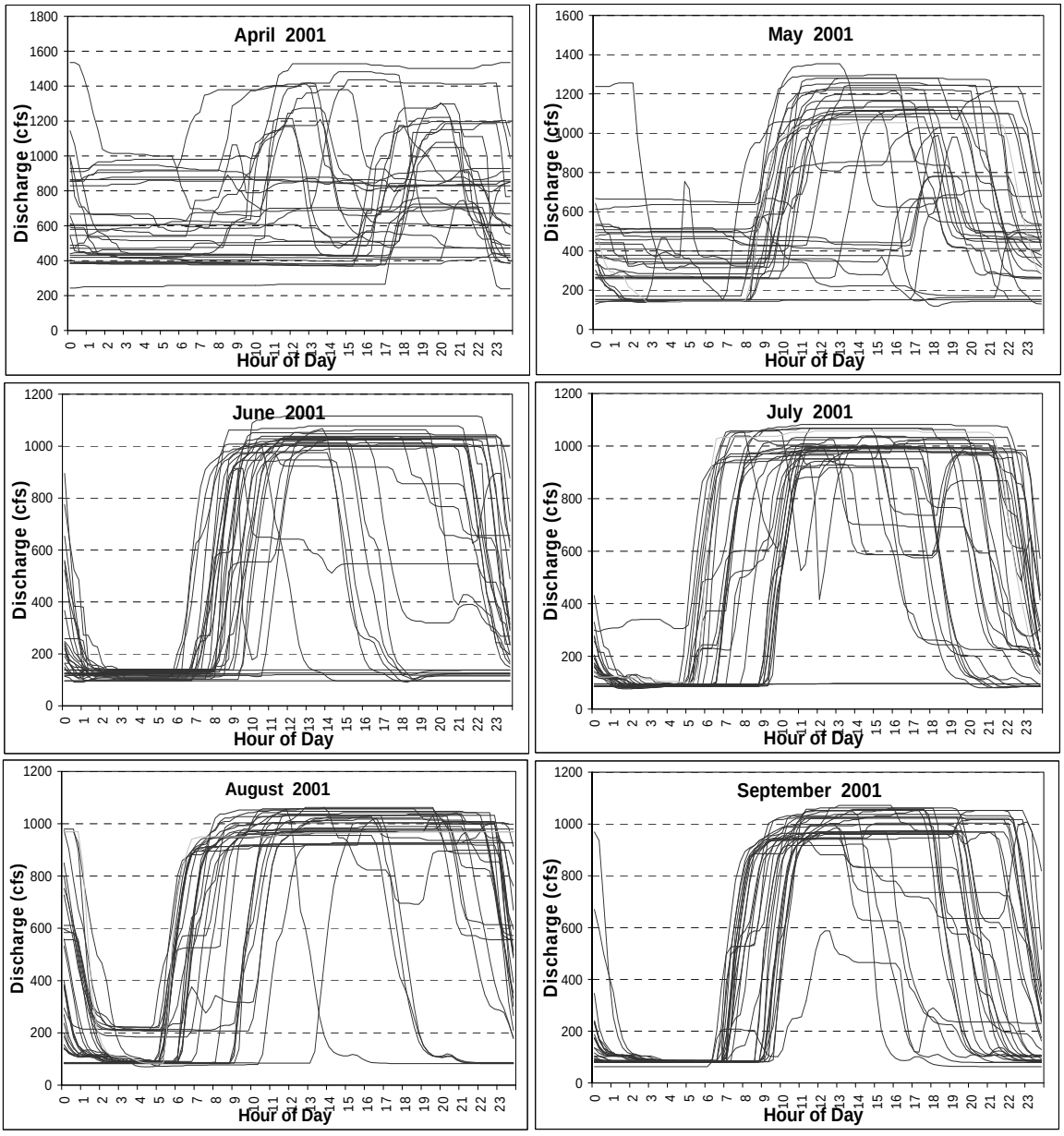


Figure N-13. Unimpaired and impaired (existing) flow time series in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a critically dry water year (1988).

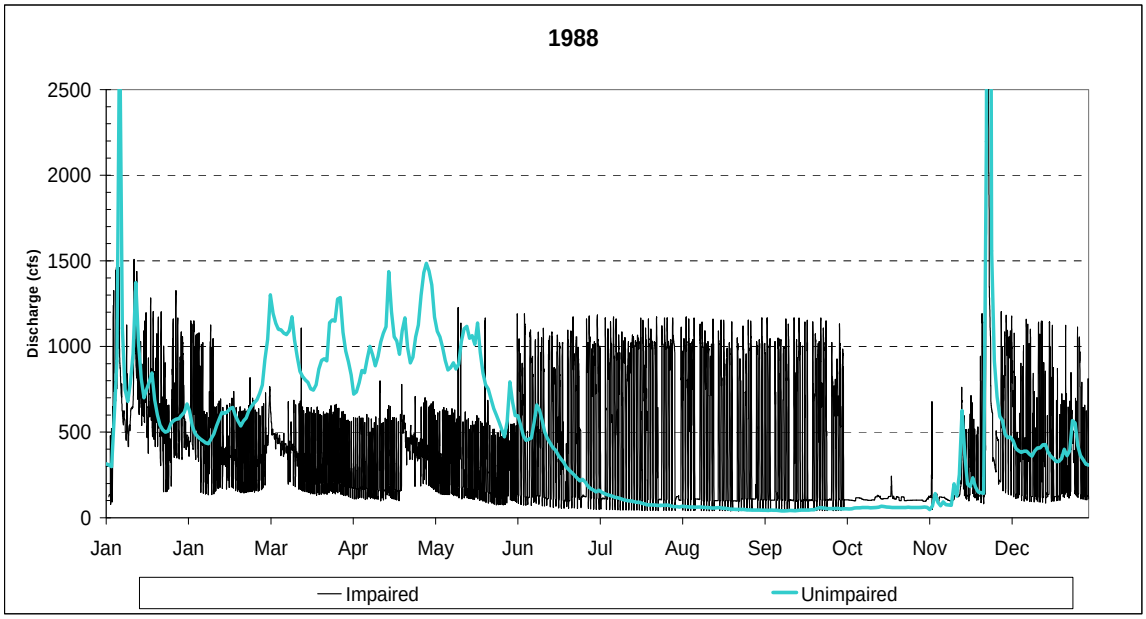


Figure N-14. April, July, and August/September flow time series (15 min) in the peaking reach at Middle Fork American River Gage below Oxbow Powerhouse during a critically dry water year (1988).

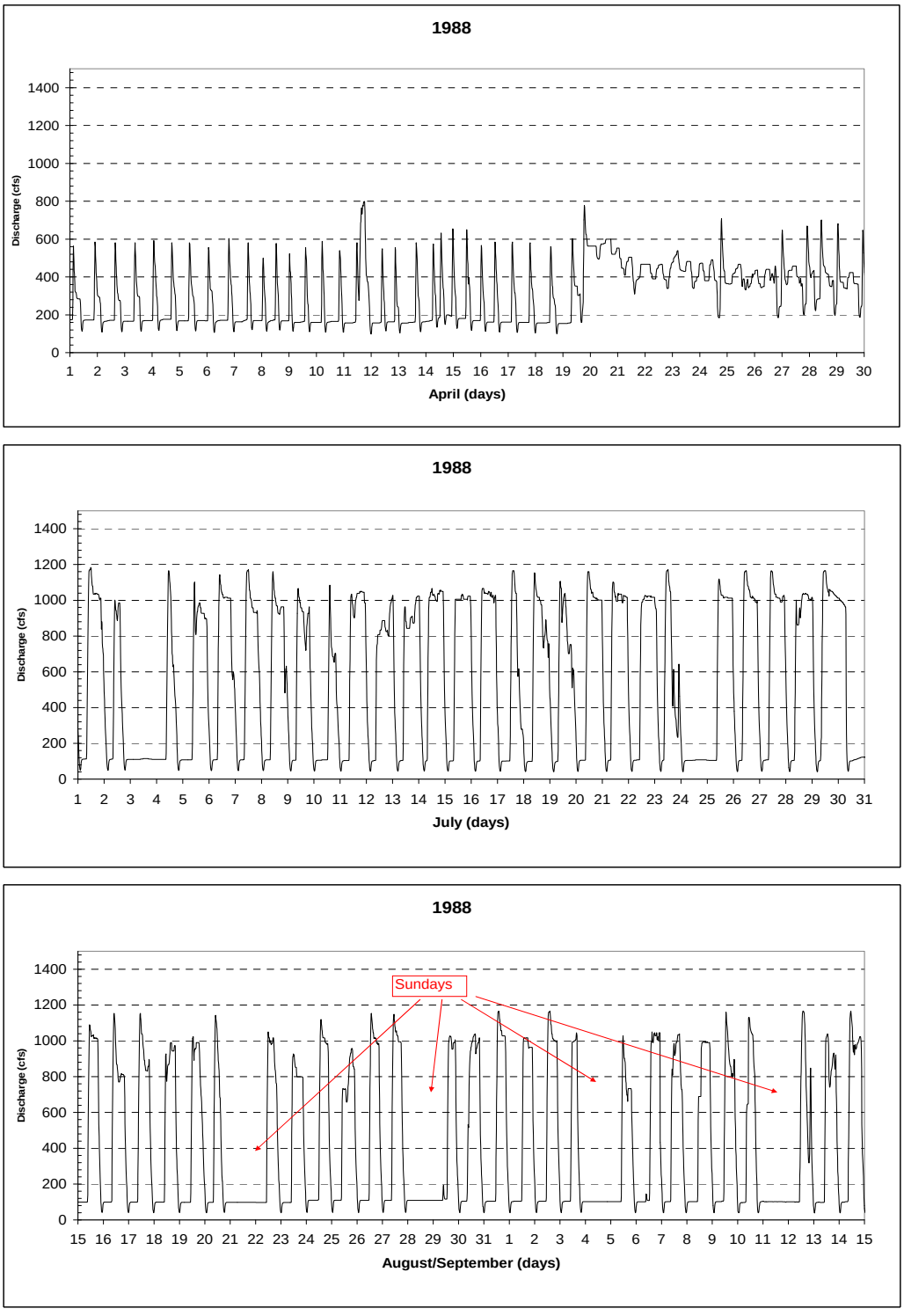
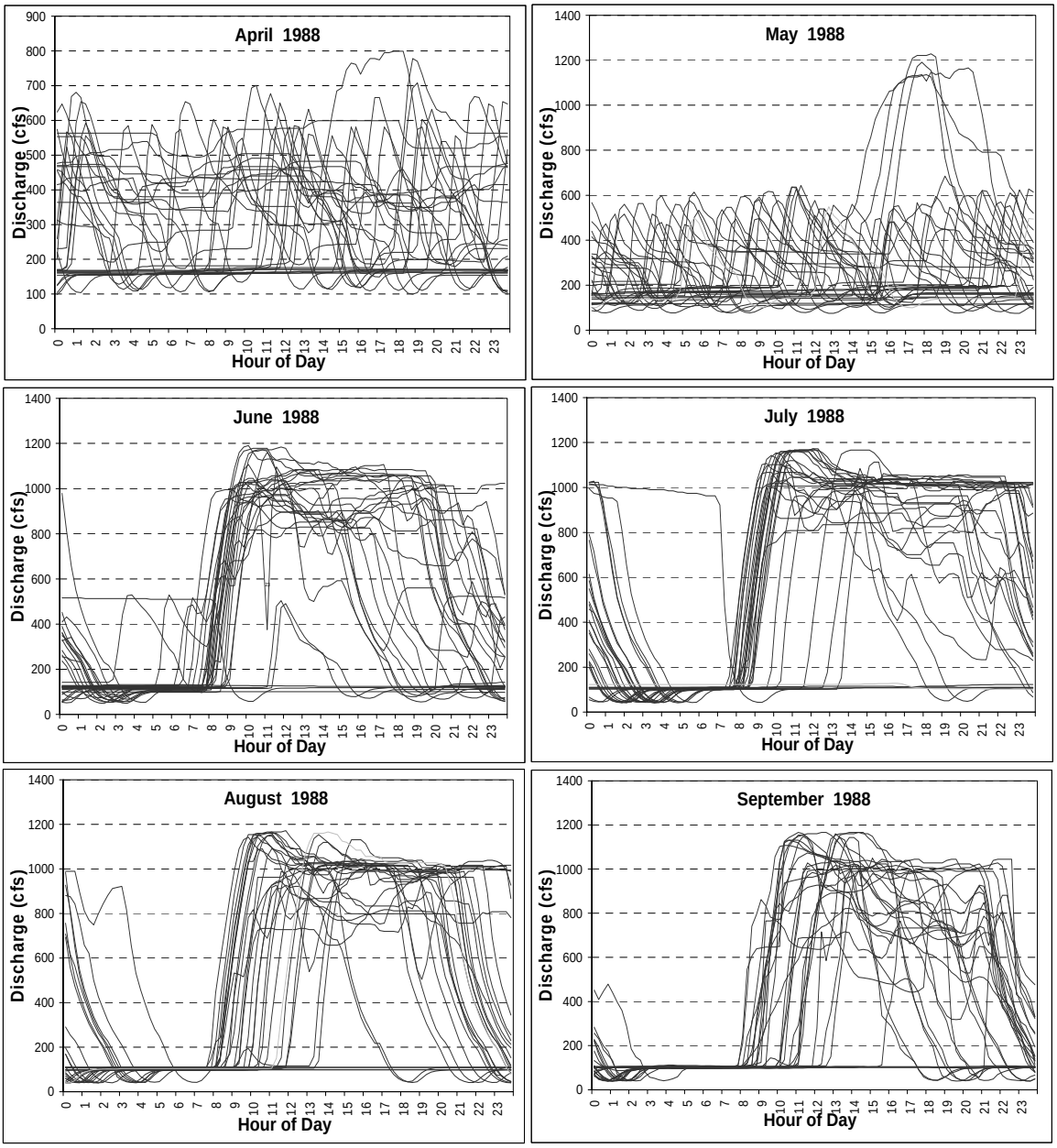


Figure N-15. Daily peaking events for the months of April through September of a critically dry water year (1988).



APPENDIX O

REC 2 – Recreation Visitor Survey Results Relevant to Stream-based Recreation

Table O-1. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Bypass and Peaking Reaches
Q-1, Q-2 and Q-3: All Responses Combined

Q-1. Survey No: A total of 968 people participated in the General Visitor Survey. Of those, 249 people completed all or a portion of Section A-5.

Q-2. Primary stream/river reach used:

River or Stream	Bypass Reaches	# of Respondents
Middle Fork American River	French Meadows Dam to Middle Fork Interbay	0
	Middle Fork Interbay Dam to Ralston Afterbay (near Ralston Afterbay)	3
Rubicon River	Hell Hole Dam to Ralston Afterbay (near Ralston Afterbay)	3
Middle Fork American River and/or Rubicon River	Either Middle Fork American River or Rubicon River near Ralston Afterbay	15
Duncan Creek	Duncan Creek Diversion Dam to the Middle Fork American River Confluence	0
North Fork Long Canyon Creek	North Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek	0
South Fork Long Canyon Creek	South Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek	0
Long Canyon Creek	Confluence of North and South Forks of Long Canyon Creek to confluence of Rubicon River	0
River or Stream	**Peaking Reaches**	**# of Respondents**
Middle Fork American River	Oxbow Powerhouse to the North Fork American River Confluence	199
North Fork American River	Middle Fork American River Confluence to the Folsom Reservoir High Water Mark	20
River or Stream	**Other**	**# of Respondents**
Rubicon River	Upstream of Hell Hole Reservoir	5
Middle Fork American River	Upstream of French Meadows Reservoir	1
Middle Fork American River/Rubicon River	Not Specified	3

Table O-1. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Bypass and Peaking Reaches
Q-1, Q-2 and Q-3: All Responses Combined

Q-3. Other stream/river reach(s) used:

River or Stream	# of Respondents
North Fork American River	3
South Fork American River	2
Lake Clementine	1
Confluence of North Fork and Middle Fork American River	1
Rubicon River	1

Table O-2. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Bypass Reaches
Q-4 – Q-10: All Activities Combined

Of the 249 respondents who filled out Section A-5 of the survey, 21 were identified as having recreated along a bypass reach; all of these respondents were intercepted at the Ralston Afterbay.

Q-4. What was your main recreation activity at the primary stream/river reach identified above?

Activity	Frequency	Percent
Swimming/water play/wading	7	33.3
Fishing	4	19.0
Picnicking	3	14.3
Whitewater rafting/kayaking	2	9.5
Relaxing/reading/outdoors	2	9.5
Walking/hiking	1	4.8
Sunbathing/tanning/enjoy sun	1	4.8
Not specified	1	4.8

Q-5. Approximately what time did you arrive at the primary stream/river reach identified above?

Time Block	Frequency	Percent
Before 8:00 AM	0	0
8:00 AM - 10:00 AM	0	0
10:00 AM - 12:00 PM	2	9.5
12:00 PM - 2:00 PM	6	28.6
2:00 PM - 4:00 PM	8	38.1
4:00 PM - 6:00 PM	0	0
6:00 PM - 8:00 PM	0	0
After 8:00 PM	0	0
Not specified	5	23.8

Q-6. Approximately how many hours did you, or will you, stay at the primary stream/river reach identified above?

Total # of Respondents	Range	Frequency	Percent
18	Less than 3 hours	4	22.2
	3-6 hours	11	61.1
	More than 6 hours	3	16.7

Table O-2. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Bypass Reaches
Q-4 – Q-10: All Activities Combined

Q-7. Please rate the following factors at the identified stream/river reach identified above.

Factor	Total # of Respondents	Possible Answers	Frequency	Percent
Availability of beach/useable areas	20	Acceptable	15	75.0
		Somewhat Acceptable	4	20.0
		Not Acceptable	1	5.0
Ability to enter/exit water	20	Acceptable	14	70.0
		Somewhat Acceptable	5	25.0
		Not Acceptable	1	5.0
Ability to stand or wade in river/stream	20	Acceptable	13	65.0
		Somewhat Acceptable	6	30.0
		Not Acceptable	1	5.0
Ability to safely swim in river	20	Acceptable	15	75.0
		Somewhat Acceptable	4	20.0
		Not Acceptable	1	5.0
Ability to safely cross river/stream	20	Acceptable	14	70.0
		Somewhat Acceptable	5	25.0
		Not Acceptable	1	5.0
Adequacy of put-ins and take-outs	18	Acceptable	12	66.7
		Somewhat Acceptable	3	16.7
		Not Acceptable	3	16.7
Adequacy of road access to river or stream	20	Acceptable	17	85.0
		Somewhat Acceptable	2	10.0
		Not Acceptable	1	5.0
Adequacy of trail access to river or stream	19	Acceptable	16	84.2
		Somewhat Acceptable	1	5.3
		Not Acceptable	2	10.5
Adequacy of law enforcement	20	Acceptable	13	65.0
		Somewhat Acceptable	5	25.0
		Not Acceptable	2	10.0
Other	0	Acceptable	-	-
		Somewhat Acceptable	-	-
		Not Acceptable	-	-

Table O-2. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Bypass Reaches
Q-4 – Q-10: All Activities Combined

Q-8a. Did you perceive a **change** in river/stream level during your visit?

Total # of Respondents	Possible Answers	Frequency	Percent
19	Yes	6	31.6
	No	13	68.4

Q-8b. If yes, did the **change** in the river/stream level **negatively** affect your recreation experience?

Total # of Respondents	Possible Answers	Frequency	Percent
5	Yes	0	0
	No	5	100.0

Q-9. Was your recreation experience **negatively** affected by:

Factor	Total # of Respondents	Possible Answers	Frequency	Percent
Crowding	20	Yes	1	5.0
		No	19	95.0
Other activities taking place	18	Yes	0	0
		No	18	100.0
River/stream flow	17	Yes	0	0
		No	17	100.0
Other	0	Yes	-	-
		No	-	-

Q-10. How would you rate your overall experience at the river/stream reach identified above?

Total # of Respondents	Possible Answers	Frequency	Percent
21	Very Satisfied	14	66.7
	Satisfied	6	28.6
	Somewhat Satisfied	0	0
	Unsatisfied	0	0
	Very Unsatisfied	1	4.8

Table O-3. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-4: All Responses Combined

Q-4. What was your main recreation activity at the primary stream/river reach identified above?

Activity	Frequency	Percent
Swimming/water play/wading	74	33.7
Whitewater rafting/kayaking	45	20.5
Relaxing/reading/outdoors	19	8.7
Walking/hiking	16	7.3
Fishing	10	4.6
Gold panning	9	4.1
Sunbathing/tanning/enjoy sun	7	3.2
Picnicking	6	2.7
Biking	3	1.4
Horseback riding	3	1.4
Camping	3	1.4
Play with dogs	3	1.4
Boating	1	0.5
Not specified	20	9.1

Note: The table only includes the responses of those people who indicated they primarily used the peaking reach (219).

Table O-4. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-5 - Q-10: All Responses
Except Whitewater Boaters intercepted at Ruck-a-Chucky

A total of 219 respondents recreated in the peaking reach. Of these, 33 were whitewater boaters intercepted at Ruck-a-Chucky. The following tables summarize the responses of the remaining 186 people intercepted at Indian Bar, Mammoth Bar, the Confluence, China Bar, and non-whitewater boaters interviewed at Ruck-a-Chucky.

Q-5. Approximately what time did you arrive at the primary stream/river reach identified above?

Time Block	Frequency	Percent
Before 8:00 AM	5	2.7
8:00 AM - 10:00 AM	22	11.8
10:00 AM - 12:00 PM	24	12.9
12:00 PM - 2:00 PM	54	29.0
2:00 PM - 4:00 PM	40	21.5
4:00 PM - 6:00 PM	10	5.4
6:00 PM - 8:00 PM	2	1.1
After 8:00 PM	0	0
Not specified	29	15.6

Q-6. Approximately how many hours did you, or will you, stay at the primary stream/river reach identified above?

Total # of Respondents	Range	Frequency	Percent
166	Less than 3 hours	50	30.1
	3-6 hours	100	60.2
	More than 6 hours	16	9.6

Table O-4. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-5 - Q-10: All Responses
Except Whitewater Boaters intercepted at Ruck-a-Chucky

Q-7. Please rate the following factors at the identified stream/river reach identified above.

Factor	Total # of Respondents	Possible Answers	Frequency	Percent
Availability of beach/useable areas	182	Acceptable	145	79.7
		Somewhat Acceptable	36	19.8
		Not Acceptable	1	0.5
Ability to enter/exit water	182	Acceptable	155	85.2
		Somewhat Acceptable	25	13.7
		Not Acceptable	2	1.1
Ability to stand or wade in river/stream	179	Acceptable	152	84.9
		Somewhat Acceptable	26	14.5
		Not Acceptable	1	0.6
Ability to safely swim in river	179	Acceptable	147	82.1
		Somewhat Acceptable	27	15.1
		Not Acceptable	5	2.8
Ability to safely cross river/stream	176	Acceptable	122	69.3
		Somewhat Acceptable	38	21.6
		Not Acceptable	16	9.1
Adequacy of put-ins and take-outs	161	Acceptable	117	72.7
		Somewhat Acceptable	29	18.0
		Not Acceptable	15	9.3
Adequacy of road access to river or stream	173	Acceptable	138	79.8
		Somewhat Acceptable	27	15.6
		Not Acceptable	8	4.6
Adequacy of trail access to river or stream	174	Acceptable	148	85.1
		Somewhat Acceptable	22	12.6
		Not Acceptable	4	2.3
Adequacy of law enforcement	167	Acceptable	114	68.3
		Somewhat Acceptable	38	22.8
		Not Acceptable	15	9.0
Other	1	Acceptable	1	100.0
		Somewhat Acceptable	0	0
		Not Acceptable	0	0

Table O-4. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-5 - Q-10: All Responses
Except Whitewater Boaters intercepted at Ruck-a-Chucky

Q-8a. Did you perceive a **change** in river/stream level during your visit?

Total # of Respondents	Possible Answers	Frequency	Percent
178	Yes	57	32.0
	No	121	68.0

Q-8b. If yes, did the **change** in the river/stream level **negatively** affect your recreation experience?

Total # of Respondents	Possible Answers	Frequency	Percent
56	Yes	6	10.7
	No	50	89.3

Q-9. Was your recreation experience **negatively** affected by:

Factor	Total # of Respondents	Possible Answers	Frequency	Percent
Crowding	180	Yes	21	11.7
		No	159	88.3
Other activities taking place	172	Yes	14	8.1
		No	158	91.9
River/stream flow	173	Yes	12	6.9
		No	161	93.1
Other	0	Yes	-	-
		No	-	-

Q-10. How would you rate your overall experience at the river/stream reach identified above?

Total # of Respondents	Possible Answers	Frequency	Percent
181	Very Satisfied	122	67.4
	Satisfied	54	29.8
	Somewhat Satisfied	4	2.2
	Unsatisfied	1	.6
	Very Unsatisfied	0	0

Table O-5. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-5 – Q-10: Whitewater Boaters intercepted at Ruck-a-Chucky

Of the 219 respondents who recreated in the peaking reach, 33 people intercepted at Ruck-a-Chuckky cited whitewater boating as their primary activity. The following tables summarize the responses of these 33 people.

Q-5. Approximately what time did you arrive at the primary stream/river reach identified above?

Time Block	Frequency	Percent
Before 8:00 AM	2	6.1
8:00 AM - 10:00 AM	24	72.7
10:00 AM - 12:00 PM	1	3.0
12:00 PM - 2:00 PM	1	3.0
2:00 PM - 4:00 PM	0	0
4:00 PM - 6:00 PM	0	0
6:00 PM - 8:00 PM	0	0
After 8:00 PM	0	0
Not specified	5	15.2

Q-6. Approximately how many hours did you, or will you, stay at the primary stream/river reach identified above?

Total # of Respondents	Range	Frequency	Percent
29	Less than 3 hours	0	0
	3-6 hours	11	37.9
	More than 6 hours	18	62.1

Table O-5. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-5 – Q-10: Whitewater Boaters intercepted at Ruck-a-Chucky

Q-7. Please rate the following factors at the identified stream/river reach identified above.

Factor	Total # of Respondents	Possible Answers	Frequency	Percent
Availability of beach/useable areas	30	Acceptable	26	86.7
		Somewhat Acceptable	4	13.3
		Not Acceptable	0	0
Ability to enter/exit water	31	Acceptable	30	96.8
		Somewhat Acceptable	1	3.2
		Not Acceptable	0	0
Ability to stand or wade in river/stream	31	Acceptable	29	93.5
		Somewhat Acceptable	2	6.5
		Not Acceptable	0	0
Ability to safely swim in river	29	Acceptable	29	100.0
		Somewhat Acceptable	0	0
		Not Acceptable	0	0
Ability to safely cross river/stream	29	Acceptable	26	89.7
		Somewhat Acceptable	3	10.3
		Not Acceptable	0	0
Adequacy of put-ins and take-outs	30	Acceptable	28	93.3
		Somewhat Acceptable	2	6.7
		Not Acceptable	0	0
Adequacy of road access to river or stream	29	Acceptable	24	82.8
		Somewhat Acceptable	4	13.8
		Not Acceptable	1	3.4
Adequacy of trail access to river or stream	28	Acceptable	27	96.4
		Somewhat Acceptable	1	3.6
		Not Acceptable	0	0
Adequacy of law enforcement	28	Acceptable	22	78.6
		Somewhat Acceptable	5	17.9
		Not Acceptable	1	3.6
Other	0	Acceptable	-	-
		Somewhat Acceptable	-	-
		Not Acceptable	-	-

Table O-5. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Peaking Reach
Q-5 – Q-10: Whitewater Boaters intercepted at Ruck-a-Chucky

Q-8a. Did you perceive a **change** in river/stream level during your visit?

Total # of Respondents	Possible Answers	Frequency	Percent
31	Yes	7	22.6
	No	24	77.4

Q-8b. If yes, did the **change** in the river/stream level **negatively** affect your recreation experience?

Total # of Respondents	Possible Answers	Frequency	Percent
7	Yes	1	14.3
	No	6	85.7

Q-9. Was your recreation experience **negatively** affected by:

Factor	Total # of Respondents	Possible Answers	Frequency	Percent
Crowding	29	Yes	5	17.2
		No	24	82.8
Other activities taking place	28	Yes	0	0
		No	28	100.0
River/stream flow	30	Yes	3	10.0
		No	27	90.0
Other	0	Yes	-	-
		No	-	-

Q-10. How would you rate your overall experience at the river/stream reach identified above?

Total # of Respondents	Possible Answers	Frequency	Percent
31	Very Satisfied	27	87.1
	Satisfied	4	12.9
	Somewhat Satisfied	0	0
	Unsatisfied	0	0
	Very Unsatisfied	0	0

Table O-6. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Qualitative Comments

Q 8. Did you perceive a **change** in river/stream level during your visit? If yes, did the **change** in river/stream level **negatively** affect your recreation experience? If "yes," please explain:

Location	Comment
Ruck-a-Chucky	Lower water level
	In fact, having the river lower allowed us to go to other parts
Mammoth Bar	Not this time, an in flow occurs daily, which is fine but should be better advertised
	Not enough water early in dam
Confluence/ Quarry Trail	I know when it changes (local)
	Water somewhat stagnant
	It is much lower than last time
China Bar/Oregon Bar	I have experienced a sudden river flow in the past due to dam release

Q-9. Was your recreation experience negatively affected by: Crowding; Other activities taking place; River or stream flow; Other? If "yes," please explain:

Location	Comment
Indian Bar	Too many people one place
Ruck-a-Chucky	Regular river release
	Need more
	Earlier
Mammoth Bar	River too low at 9:00am
	At one O/N campsite unexpected presence of motorized bike
	Dirt bikes were somewhat of a nuisance
Confluence/ Quarry Trail	Loud people
	Stupid kids doing drugs
	You can't do anything about immigration or over population
	I saw some one brushing the teeth in the river, is this safe
	Lots of people- youngins
	Too many squirrels
	Dogs on leash rule not fun

Table O-6. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Qualitative Comments

Q-10. How would your rate your overall experience at the river/stream reach identified above? If unsatisfied, please explain:

Location	Comment
South Fork Long Canyon	Long canyon is experiencing an overabundance of sediment. Ephemeral stream conditions
Indian Bar	It's important to keep this area preserved, environmentally sound.
Ruck-a-Chucky	Need more gold
Mammoth Bar	Although wish you would widen the road down here. Please
Confluence/ Quarry Trail	Lack of bathrooms
	Lack of waste areas, trash cans, trash pick up/river clean up
	Over crowded
	Justin was very polite to us we appreciate it. Thanks :)
	I am afraid if it is overly regulated it will become a negative experience and people will not enjoy the freedom they currently do and the price will go up
	There were also life jackets available for my children to use while we were here, thank you
	More law enforcement in morning
China Bar/Oregon Bar	Did not appreciate being charged for two vehicles when I dropped off boaters and picked up. Only one vehicle stayed.

Table O-7. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Background Information – Peaking Reach

Q-13. Please rate the availability and adequacy of the following information resources.

Information Resources	Total # of Respondents	Possible Answers	Frequency	Percent
Interpretive/educational information	186	Acceptable	80	43.0
		Somewhat Acceptable	41	22.0
		Not Acceptable	10	5.4
		Not Applicable	55	29.6
Recreation visitor information	191	Acceptable	90	47.1
		Somewhat Acceptable	41	21.5
		Not Acceptable	9	4.7
		Not Applicable	51	26.7
Safety/warning information	197	Acceptable	123	62.4
		Somewhat Acceptable	36	18.3
		Not Acceptable	8	4.1
		Not Applicable	30	15.2
Reservoir water surface elevation information	182	Acceptable	76	41.8
		Somewhat Acceptable	35	19.2
		Not Acceptable	14	7.7
		Not Applicable	57	31.3
River/stream flow information	191	Acceptable	95	49.7
		Somewhat Acceptable	37	19.4
		Not Acceptable	19	9.9
		Not Applicable	40	20.9
Other	0	Acceptable	-	-
		Somewhat Acceptable	-	-
		Not Acceptable	-	-
		Not Applicable	-	-

Table O-8. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Background Information – Bypass Reaches

Q-13. Please rate the availability and adequacy of the following information resources.

Information Resources	Total # of Respondents	Possible Answers	Frequency	Percent
Interpretive/educational information	16	Acceptable	7	43.8
		Somewhat Acceptable	1	6.2
		Not Acceptable	0	0
		Not Applicable	8	50.0
Recreation visitor information	17	Acceptable	8	47.1
		Somewhat Acceptable	1	5.9
		Not Acceptable	1	5.9
		Not Applicable	7	41.2
Safety/warning information	17	Acceptable	12	70.6
		Somewhat Acceptable	0	0
		Not Acceptable	2	11.8
		Not Applicable	3	17.6
Reservoir water surface elevation information	16	Acceptable	6	37.5
		Somewhat Acceptable	2	12.5
		Not Acceptable	0	0
		Not Applicable	8	50.0
River/stream flow information	16	Acceptable	7	43.8
		Somewhat Acceptable	2	12.5
		Not Acceptable	1	6.2
		Not Applicable	6	37.5
Other	0	Acceptable	-	-
		Somewhat Acceptable	-	-
		Not Acceptable	-	-
		Not Applicable	-	-

Table O-9. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Qualitative Comments related to the Availability of River and Stream Flow Information

Location	Comment
Ruck-a-Chucky	Regular river release
Mammoth Bar	Better signs warning about the daily change in water flow as the day progresses
	Not this time, an in flow occurs daily, which is fine but should be better advertised
Confluence/ Quarry Trail	More information
	Would be nice to have river flow speed/and water level
China Bar/ Oregon Bar	More signage
	More warning when a dam release happens for people picnicking and swimming
	Need good signage
	Signs about water

Note. These comments are a compilation of comments made in response to various questions contained in the General Background Section and Section A-5.

Table O-10. REC 2 – General Visitor Survey Results – Section A-5: Day Use Along a Stream/River.

Qualitative Comments Related to Public Safety along Rivers and Streams

Location	Comment
Ruck-a-Chucky	Need more ranger presence after regular hours
	Regular river release
Mammoth Bar	Better signs warning about the daily change in water flow as the day progresses
	Not this time, change in flow occurs daily, which is fine but should be better advertised
Confluence/ Quarry Trail	More exposure and detailed education
	More information
	Safer trails to walk down from the road
	Supervision
	More law enforcement in morning
	Would be nice to have river flow speed/and water level
	More control of glass use and leash law for dogs
	Walk ways are rocky and unsafe
China Bar/ Oregon Bar	More warning when a dam release happens for people picnicking and swimming
	I have experienced a sudden river flow in the past due to dam release
	More signage

Note. These comments are a compilation of comments made in response to various questions contained in the General Background Section and Section A-5.

APPENDIX P

Wading/Crossing Suitability Plots for Select Stream Crossing Locations

Figure P-1.
Fords Bar: Wading/Crossing Suitability

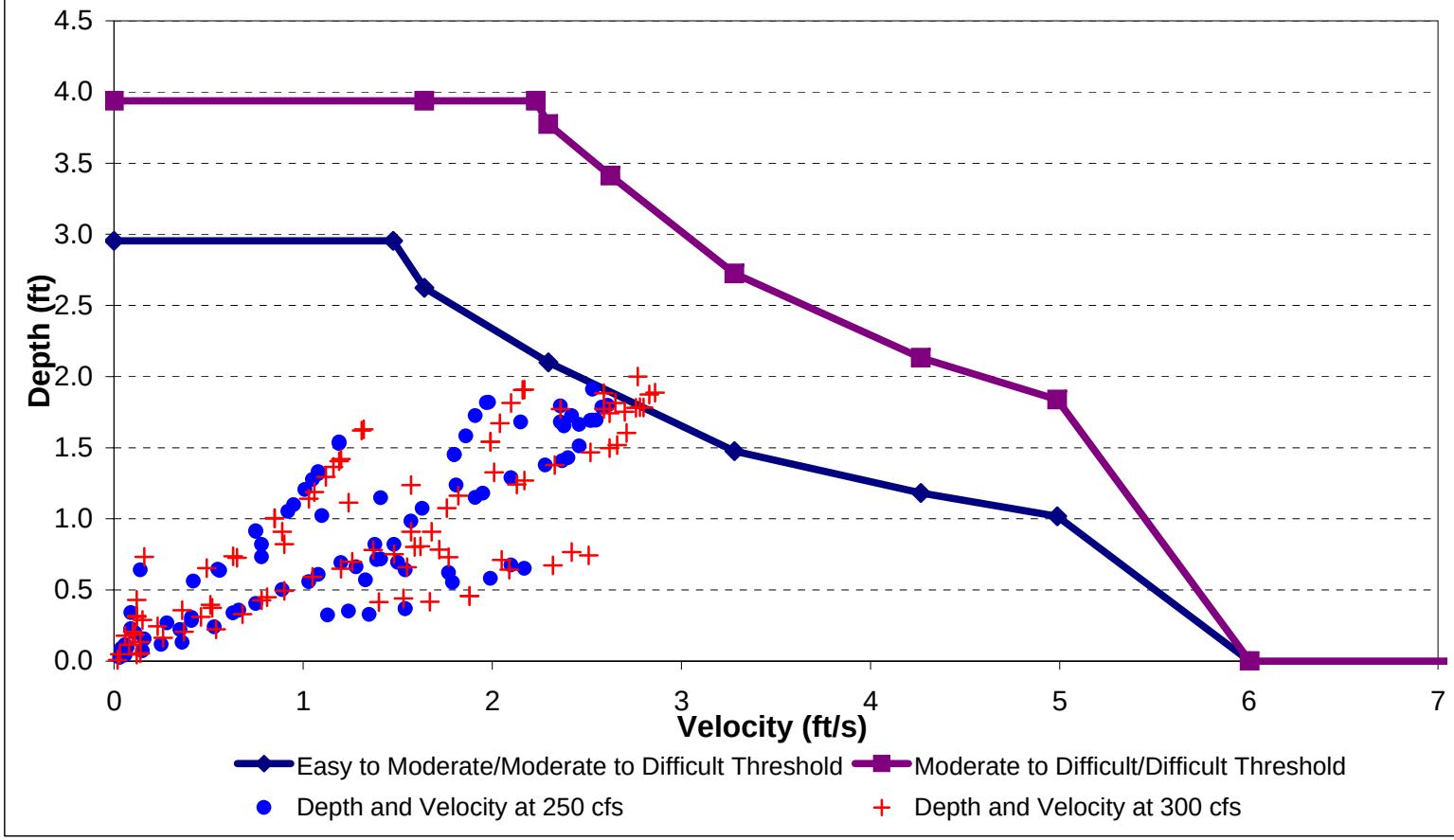


Figure P-2.
Fords Bar: Wading/Crossing Suitability

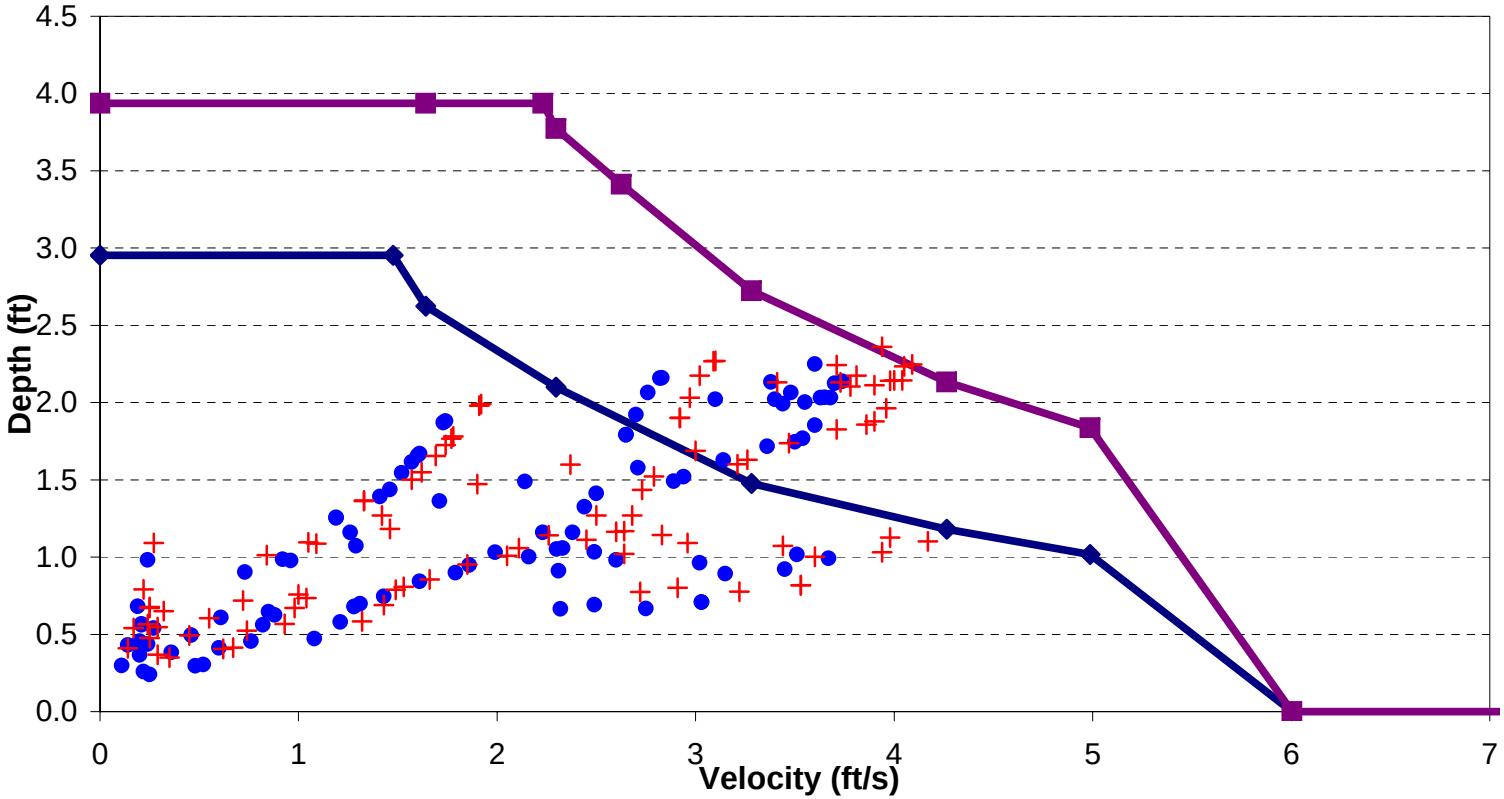


Figure P-3.
Ruck-a-Chucky: Wading/Crossing Suitability

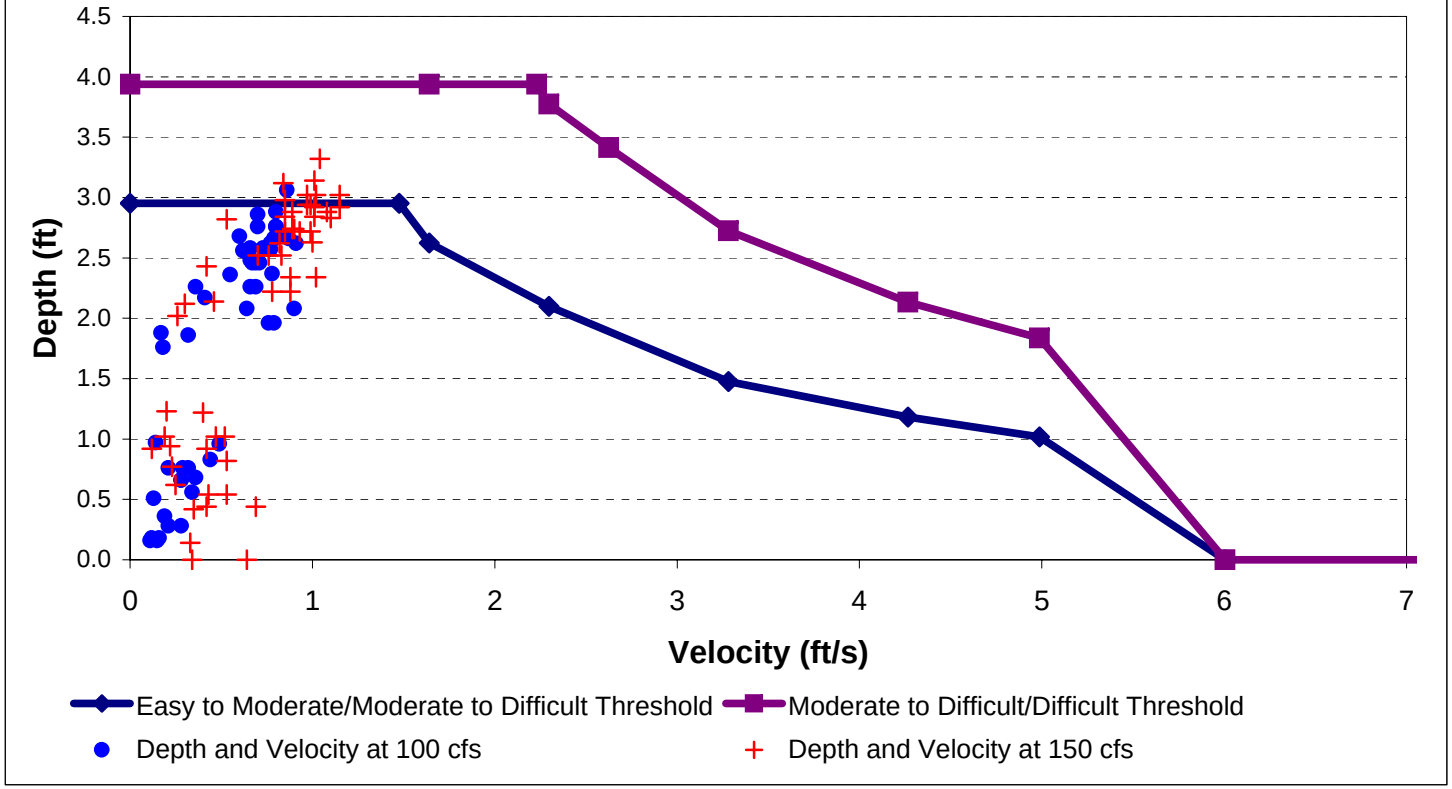


Figure P-4.
Ruck-a-Chucky: Wading/Crossing Suitability

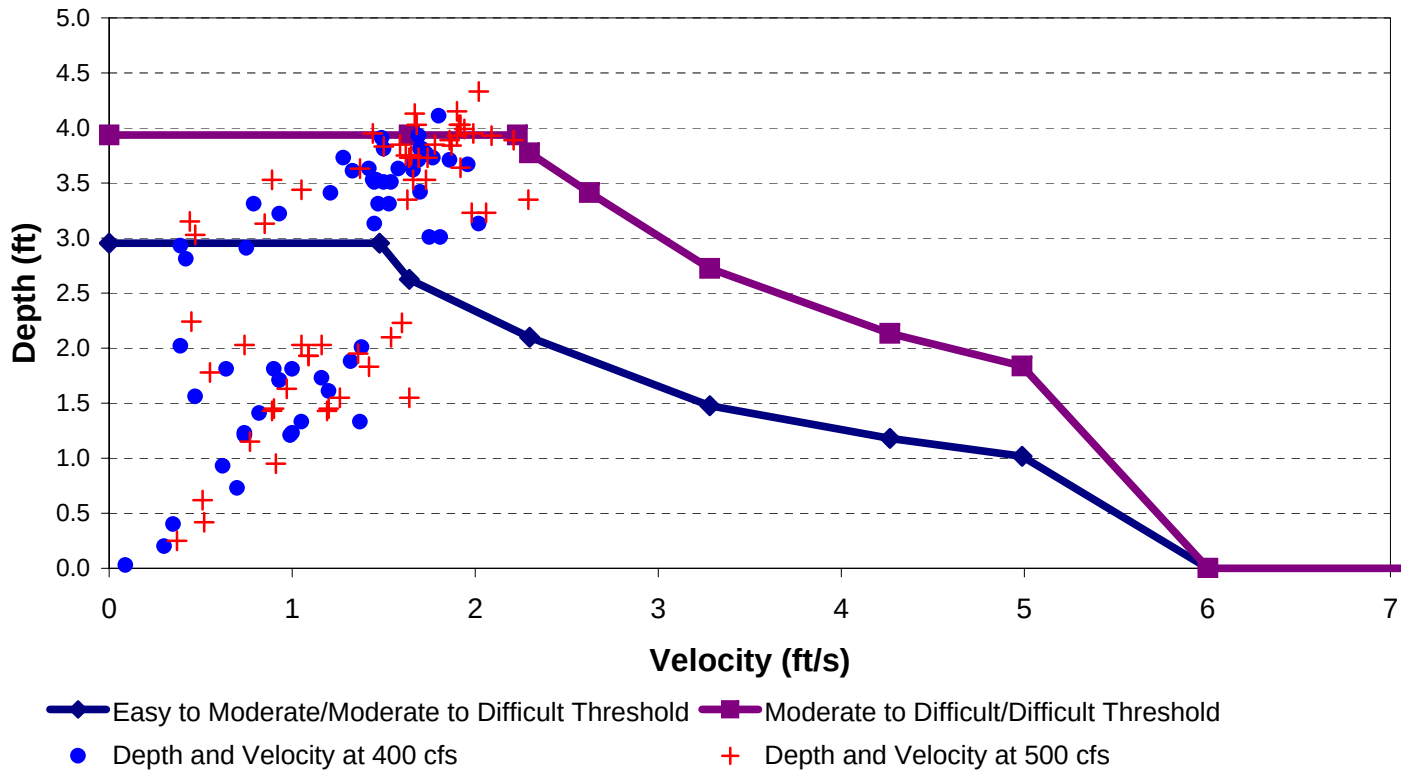


Figure P-5.
Poverty Bar: Wading/Crossing Suitability

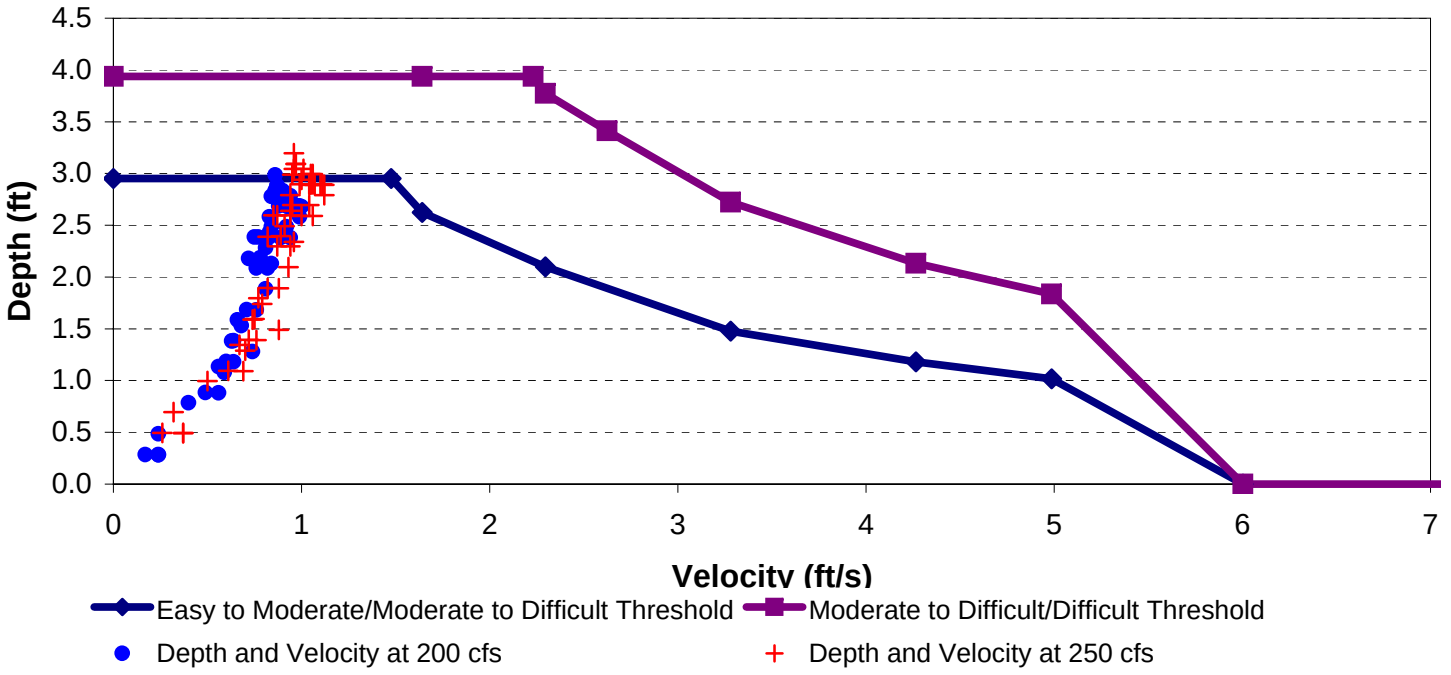


Figure P-6.
Poverty Bar: Wading/Crossing Suitability

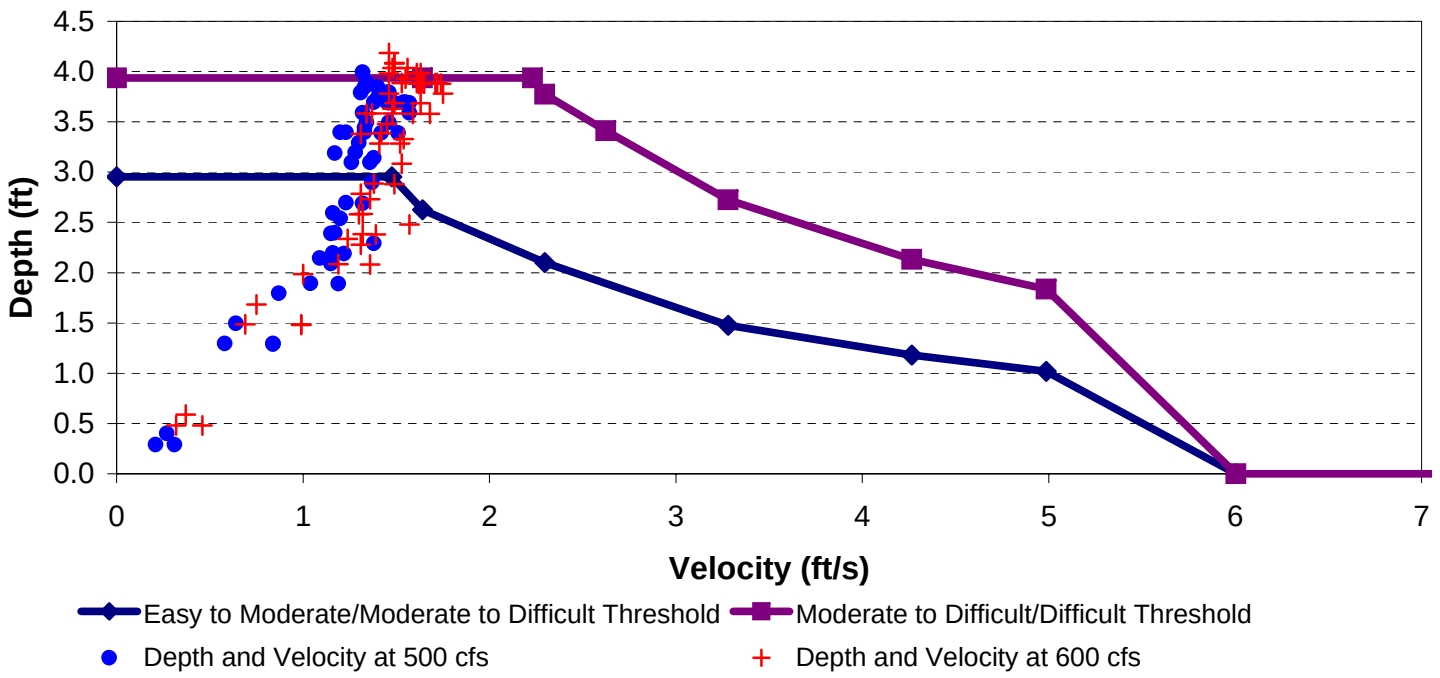


Figure P-7.
Mammoth Bar: Wading/Crossing Suitability

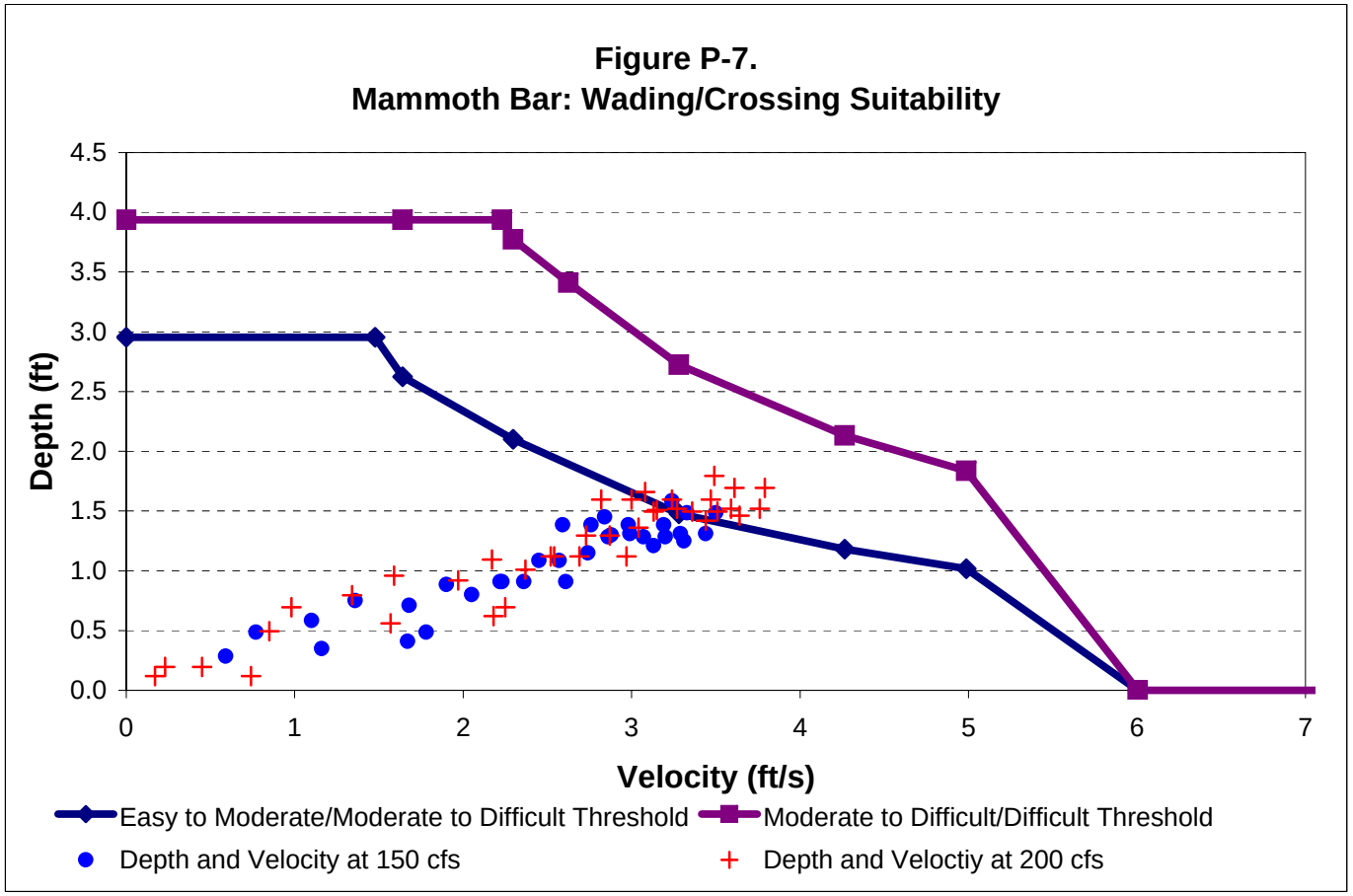


Figure P-8.
Mammoth Bar: Wading/Crossing Suitability

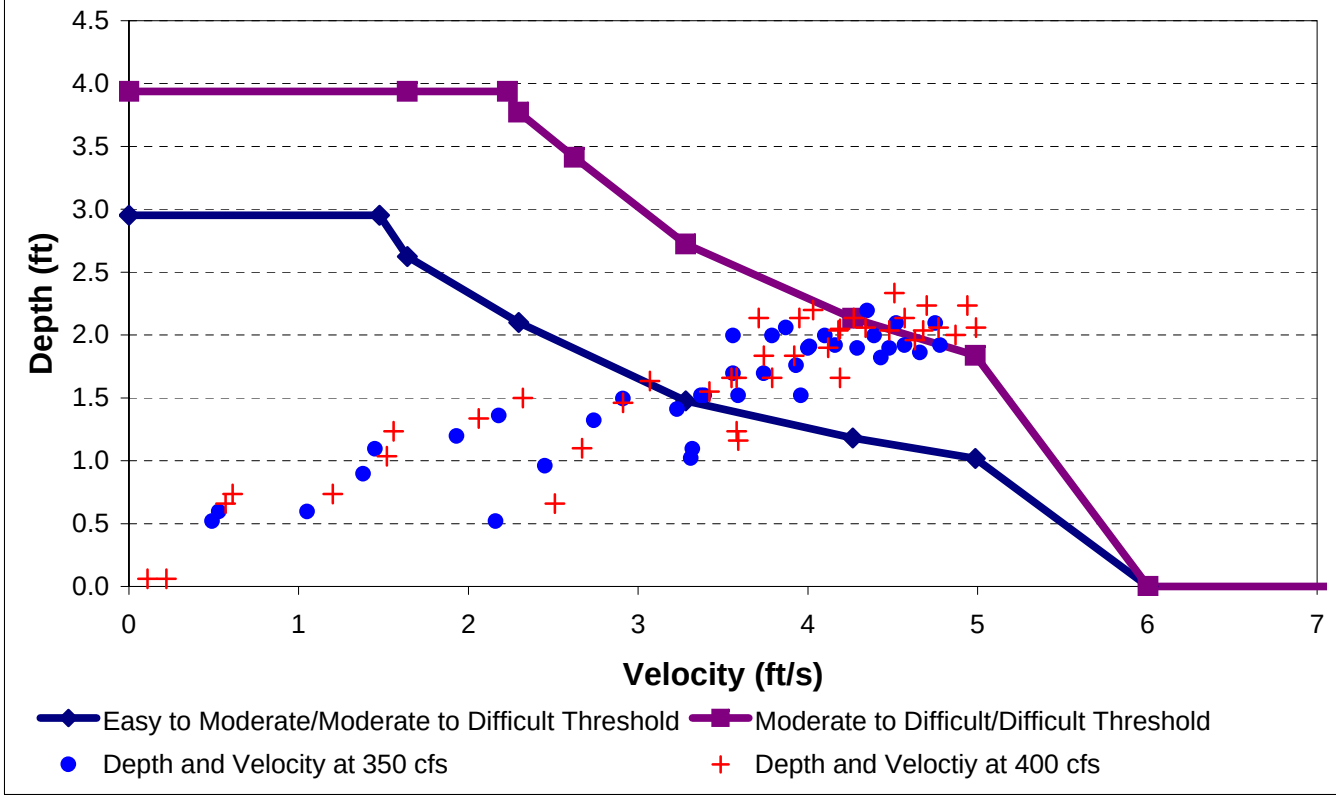


Figure P-9.
Coffer Dam: Wading/Crossing Suitability

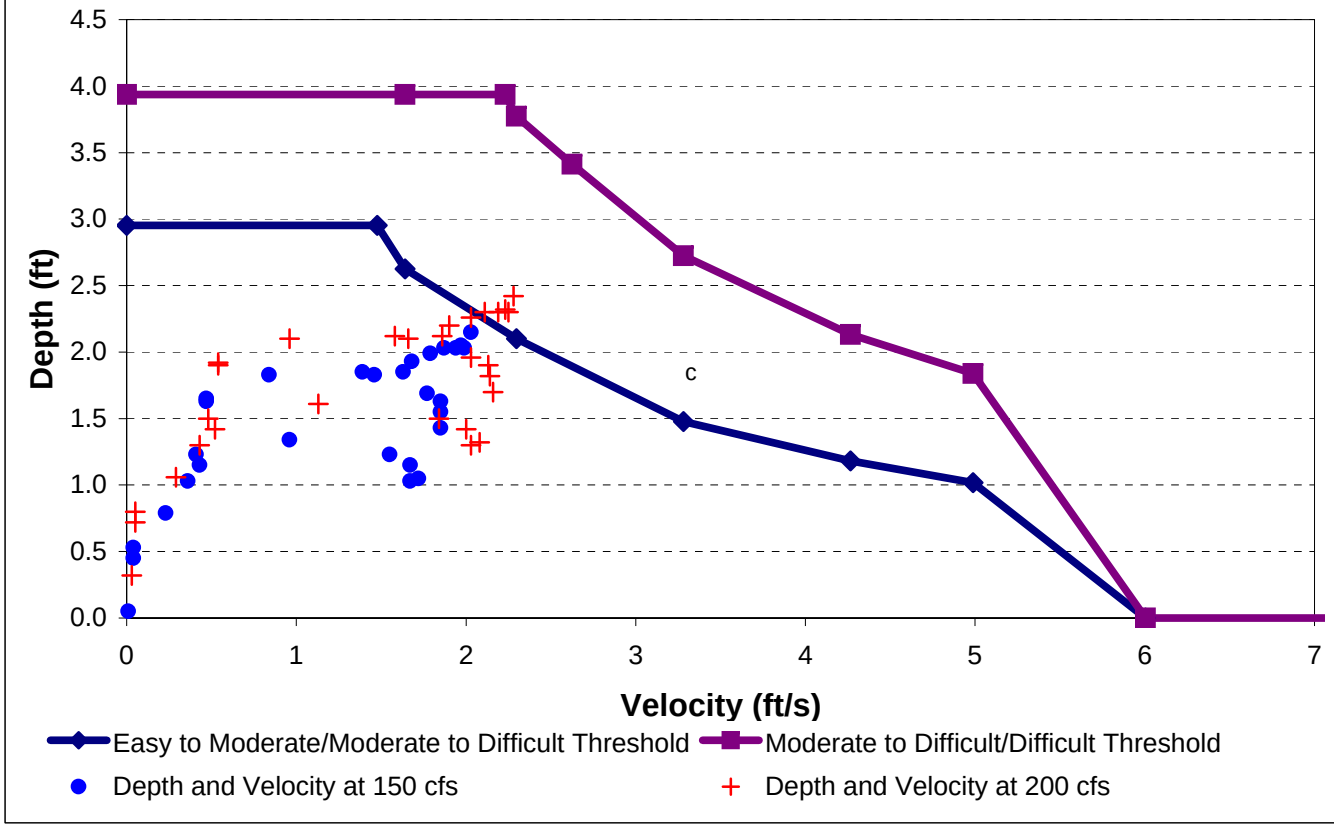
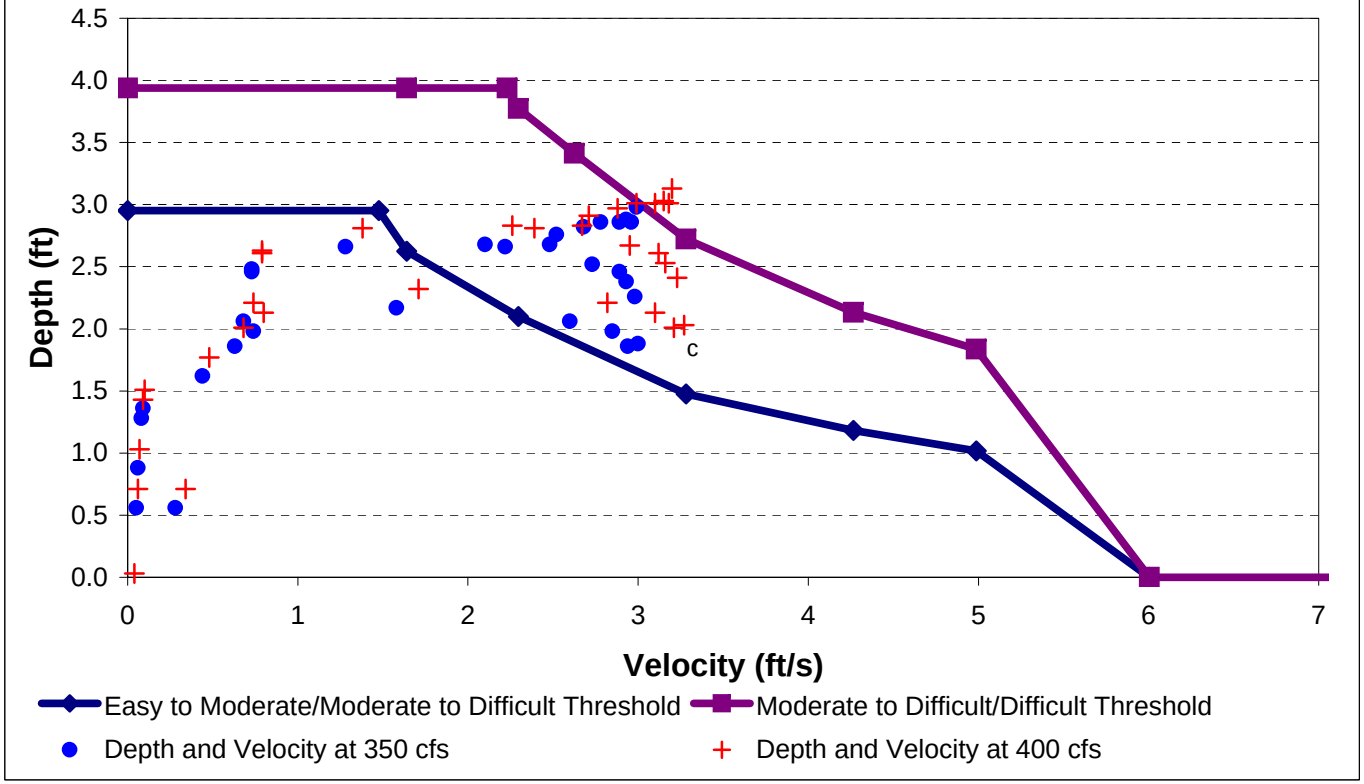


Figure P-10.
Coffer Dam: Wading/Crossing Suitability



APPENDIX Q

Whitewater Boating Flow Study Results and Supporting Information for Boatable Flow Ranges

INDIAN BAR RAFTER PUT-IN TO RUCK-A-CHUCKY (TUNNEL CHUTE RUN)

PCWA conducted whitewater boating studies on this reach at two target flows, 600 and 800 cfs. A flow study at 1,000 cfs was scheduled but no boaters committed to participating in the study, asserting that the 1,000 cfs flow study is already well understood. As a result, the 1,000 cfs target flow was not evaluated by a boater study team. Instead, the flow conditions at 1,000 cfs were videotaped from each of the photo-documentation locations for comparison to the 600 and 800 cfs target flows.

600 cfs Target Flow

The 600 cfs flow study was conducted on Tuesday, September 16, 2008. As identified below, a total of 7 boaters participated in the study, all in self-bailing rafts. All but one boater rated the run Class IV. The remaining boater rated this run Class III.

Whitewater Boating Flow Study Team Members

Tunnel Chute Run (Indian Bar Rafter Access to Ruck-a-Chucky)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
600	Brandon Bloodsaw	Self-Bailing Raft	IV	8
	David Stratton	Self-Bailing Raft	V	6
	Thomas Bartos	Self-Bailing Raft	V	20
	Glenn Munshower	Self-Bailing Raft	I	3
	Nicole Doyle	Self-Bailing Raft	IV	24
	Jeremiah Copper	Self-Bailing Raft	V	7
	Robert Townsend	Self-Bailing Raft		10
	Dave Martinez*	Self-Bailing Raft	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

<u>Flow Preferences</u>

- All but two boaters on the study team indicated they would prefer a much higher flow than the target flow. Consistent with this preference, these boaters indicated they were highly unsatisfied with the target flow. The two remaining boaters indicated they would prefer a slightly higher flow. These two boaters indicated they were highly satisfied with the target flow.
- All but two boaters on the study team estimated the minimum acceptable flow to be between 800 and 1,000 cfs. The remaining two boaters identified the minimum acceptable flow to be 600 cfs.
- All but two of the boaters indicated the optimal flow ranged from 1,100 to 1,250 cfs. The remaining two boaters identified the optimal flow to be 800 and 900 cfs.
- All but one boater on the study team identified a maximum acceptable flow range of between 1,500 and 2,500 cfs. The remaining boater estimated the maximum acceptable flow to be 900 cfs. However, this response was considered invalid

because this run is regularly boated both commercially and privately at flows of 1,000 cfs or above.

Other Factors

At the target flow of 600 cfs, the study team rated the overall whitewater challenge, safety, and rate of travel as moderately to highly unacceptable. These concerns were amplified in the post-run group discussion. Most of the study team expressed a concern regarding safety and the potential for injury at this flow. They also indicated that the overall aesthetics were diminished.

800 cfs Target Flow

The 800 cfs flow study was conducted on Tuesday, September 9, 2008. As identified below, a total of 13 boaters participated in the study. All of the study team were in self-bailing rafts. The study leader, Dave Martinez, used a hard-shell kayak. Seven boaters rated the run Class IV and five boaters rated the run Class III. One boater did not provide a rating.

Whitewater Boating Flow Study Team Members

Tunnel Chute Run (Indian Bar Rafter Access to Ruck-a-Chucky)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
800	Stacey Cheu	Self-Bailing Raft		
	Erin Moore-Dempsey	Self-Bailing Raft	V	6
	Grubby	Self-Bailing Raft	V	9
	David Garcia	Self-Bailing Raft	IV	3
	Frank Root	Self-Bailing Raft	V	20
	Bill Deitchman	Self-Bailing Raft		
	Scott Armstrong	Self-Bailing Raft	V	30
	Nicole Doyle	Self-Bailing Raft	IV	24
	Chafic Khalil	Self-Bailing Raft		
	Scott Buckley	Self-Bailing Raft	V	19
	Sedale Turbovsky	Self-Bailing Raft	III	3
	David Lewis	Self-Bailing Raft	V	12
	Jeremiah Copper	Self-Bailing Raft	V	7
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- Most boaters indicated they would prefer a slightly higher flow, and some indicated they would prefer a much higher flow. Satisfaction with the target flow ranged from moderately unsatisfied to moderately satisfied. One boater indicated he/she was highly satisfied with the target flow.

- Nine boaters on the study team indicated 800 cfs would be the minimum acceptable flow. Two boaters indicated 900 cfs would be the minimum acceptable flow and one boater indicated 1,000 cfs would be the minimum acceptable flow. One boater did not provide identify a minimum acceptable flow.
- Estimates of the optimal flow ranged from 1,000 cfs to 1,400 cfs.
- The reported maximum acceptable flow ranged from 1,200 to 1,900 cfs, with one boater indicating that a flow of 4,000 cfs would be the maximum acceptable flow.

1,000 cfs Target Flow

Video footage showing the run at the 1,000 cfs target flow is included on the enclosed DVD. The video was reviewed and the conditions were compared to conditions at the 600 and 800 target flows. At 1,000 cfs, the hydraulics are better defined and more powerful. In addition, the wetted channel is wider and deeper, and prominent boulders are covered or nearly covered. As such, more and/or better routes through the rapids are available. This is particularly noticeable at Chunder Rapid.

Estimated Boatable Flow Ranges

The following table summarizes the boatable flow ranges identified for this reach as determined through PCWA's whitewater flow studies.

	Flow Range as Determined through PCWA Flow Studies
Minimum	800 - 900
Optimum	1,000 -1,250
Maximum	1,500 – 2,500

Minimum Acceptable Flow

The minimum acceptable flow range as determined through the flow study is 800– 900 cfs. Between these flows, the boatability, technical challenge, and overall whitewater challenge of the run was rated as moderately acceptable. The safety rating varied, ranging from moderately unacceptable to highly acceptable. The rate of travel rating also varied, with ratings ranging from highly unacceptable to highly acceptable.

Optimum Flow

The optimum flow was determined to be between 1,000 and 1,250 cfs. In this range, the rate of travel increases, particularly in the flat-water sections, and the overall "whitewater" experience improves. In addition, rocks are covered and safety concerns relative to swims are reduced.

Maximum Acceptable Flow

The maximum acceptable flow was determined to be between 1,500 to 2,500 cfs. This estimate is based primarily on the estimates provided on the flow evaluation form.

RUCK-A-CHUCKY TO MAMMOTH BAR (MAMMOTH BAR RUN)

PCWA conducted whitewater boating studies on this run at target flows of 600, 800, and 1,000 cfs. The boating study team included boaters with a wide variety of skill levels. The characteristics of this run are suited to the beginning (novice) hard-shell and inflatable kayaker. Accordingly, the flow assessment was made with primary consideration given to the novice boater.

600 cfs Target Flow

The 600 cfs flow study was conducted on Wednesday, September 17, 2008. As identified below, a total of 4 boaters participated in the study. Two boaters used inflatable kayaks and the other two used hard-shell kayaks. All of the study participants rated the run Class II.

Whitewater Boating Flow Study Team Members

Mammoth Bar Run (Ruck-a-Chucky to Mammoth Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
600	Patricia Gibbs	Inflatable Kayak	I	
	Lee Leishman	Inflatable Kayak		
	Tom Van Noord	Hard Shell Kayak	I	2
	Dominic Pugliese	Hard Shell Kayak	III	2
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- One boater indicated that the target flow was close to optimum, two preferred a slightly higher flow, and one preferred a much higher flow.
- The minimum acceptable flow was estimated to be between 500 and 600 cfs.
- One boater identified an optimal flow of 1,000 cfs. Another boater identified 1,000 cfs as the maximum acceptable flow.
- Satisfaction ratings were divided. Two boaters were highly satisfied with the study flow and two boaters were moderately unsatisfied with the flow.

800 cfs Target Flow

The 800 cfs flow study was conducted on Wednesday, September 10, 2008. As identified below, a total of 5 boaters participated in the study. Two boaters used inflatable kayaks and the other three were in hard-shell kayaks. Three boaters rated the run Class II and two boaters rated the run Class III.

Whitewater Boating Flow Study Team Members

Mammoth Bar Run (Ruck-a-Chucky to Mammoth Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
800	Steven Boutte	Hard Shell Kayak	IV	2
	Alex Wolfgram	Hard Shell Kayak	V	7
	Patricia Gibbs	Inflatable Kayak	I	
	Jeffrey Hartley	Hard Shell Kayak	V	4
	Lee Leishman	Inflatable Kayak		
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- Two boaters indicated that the study flow was close to optimum. The three other boaters indicated that they would prefer a much higher flow. Satisfaction with the study flow ranged from neutral to highly satisfied.
- The minimum acceptable flow was estimated to be between 400 and 600 cfs.
- The optimal flow ranged from 800 cfs to 2,500 cfs.
- The two boaters in inflatable kayaks, and one boater in a hard-shell kayak indicated that the maximum acceptable flow is between 1,200 cfs and 2,500 cfs, respectively. Two highly skilled boaters in hard-shell kayaks indicated that the maximum acceptable was 25,000 or 30,000 cfs. Flows of this magnitude would only occur during high run-off events and cannot be run safely by class II boaters. As such, the 25,000–30,000 cfs maximum flow estimates were considered invalid.

1,000 cfs Target Flow

The 1,000 cfs flow study was conducted on Thursday, July 31, 2008. As identified below, a total of 9 boaters participated in the study. Three boaters used inflatable kayaks, two boaters used hard hard-shell kayaks, two used catarafts, and two used a self-bailing raft. All of the boaters on the study team rated the run Class II.

Whitewater Boating Flow Study Team Members

Mammoth Bar Run (Ruck-a-Chucky to Mammoth Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
1000	Howard Penn	Hard Shell Kayak	V	20
	Clint Norrell	Inflatable Kayak	III	
	David Garcia	Self-Bailing Raft	IV	3
	Kathy Norrell	Inflatable Kayak		
	Patricia Gibbs	Inflatable Kayak	I	
	Sandra Perry	Hard Shell Kayak	III	10
	Jillian Aldrin	Cataraft	IV	5
	Jesse Carlson	Cataraft	I	
	Joshua Hill	Self-Bailing Raft	V	12
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- Six boaters indicated that the study flow was close to optimum, two preferred a slightly higher flow, and one preferred a much higher flow. All boaters were moderately to highly satisfied with the study flow.
- The minimum acceptable flow was estimated to be between 800 and 1,000 cfs.
- The optimal flow ranged from 1,000 cfs to 1,400 cfs.
- The maximum acceptable flow was estimated to be between 1,500 to 4,000 cfs.

Estimated Boatable Flow Ranges

The following table summarizes the boatable flow ranges identified for this reach as determined through PCWA's whitewater flow studies.

	Flow Range as Determined through PCWA Flow Studies
Minimum	500 - 600
Optimum	800 -1,200
Maximum	1,500 – 2,500

Minimum Acceptable Flow

The minimum acceptable flow range as determined through the flow study is 500 to 600 cfs. At a flow of 600 cfs there was variation in regard to how the boaters rated the boating characteristics, from highly acceptable to highly unacceptable. This indicates that a flow of 600 cfs could be below the minimum acceptable flow for some boaters.

The minimum acceptable flow on this run should be skewed to the lower end of the flow range to accommodate unskilled boaters. This run is primarily suited for relatively unskilled (novice) boaters. For the novice boater, a sense of safety and control is one of their highest concerns. As they progress in skill, other boating characteristics become more important, such as availability of powerful hydraulics or overall whitewater challenge. Until that point, they need a flow that does not create a sense of danger. A flow range between 500 and 600 cfs would accomplish this objective.

Optimum Flow

The optimum flow range was estimated to be between 800 and 1,200 cfs. At the 1,000 cfs target flow, the study participants rated most of the boating characteristics from neutral to highly acceptable.

The exception was in regard to the “whitewater” components such as availability of challenging technical boating and powerful hydraulics, and overall whitewater challenge. These characteristics were rated as moderately to highly unacceptable by the more skilled boaters on the study team. This run may not provide optimal boating conditions for skilled boaters, regardless of flow.

Maximum Acceptable Flow

The maximum acceptable flow range was estimated to be 1,500 to 2,500 cfs. A flow of 2,500 cfs is likely too high for the novice boaters who would utilize this run. Skilled boaters would not be constrained by high flows on this run.

CONFLUENCE RUN

PCWA conducted whitewater boating studies on this run at target flows of 368, 600, 800, 1,000 cfs. The Confluence run flow studies were conducted in conjunction with the Mammoth Bar run flow studies, and most often, utilized the same boating study team. The boating study team included boaters with a wide variety of skill levels. The characteristics of this run are suited to the beginning (novice) hard-shell and inflatable kayaker. Accordingly, the flow assessment was made with primary consideration given to the novice boater.

During the initial study on this run, the boating study team boated to the Oregon Bar Access to take-out. However, there is no vehicular access to the Oregon Bar take-out, which results in a relatively difficult take-out situation (e.g. a long hike with boats and gear to retrieve a vehicle). On the subsequent flow studies the boating study team elected not to continue to the Oregon Bar take-out and instead take-out at the Birdsall River Access, located upstream.

368 cfs Target Flow

The 368 cfs flow study was conducted on Saturday, July 26, 2008. As identified below, a total of 7 boaters participated in the study. Three boaters used inflatable kayaks, three used hard-shelled kayaks, and one used a self-bailing inflatable raft. All of the study participants rated the run Class II and Class III, with the Class III section being between Birdsall River Access and the Oregon Bar River Access.

Whitewater Boating Flow Study Team Members

Confluence Run (Confluence to Oregon Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
368	Lester Lubetkin	Inflatable Kayak	II	28
	Laird Thompson	Hard Shell Kayak	III	10
	Tom Van Noord	Hard Shell Kayak	I	2
	Patricia Gibbs	Inflatable Kayak	I	
	Sandra Perry	Hard Shell Kayak	III	10
	David Garcia	Self-Bailing Raft	IV	3
	Guy Cables	Inflatable Kayak	V	30
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- Two boaters indicated that the target flow was close to optimum, four preferred a slightly higher flow, and one indicated they would like a much higher flow. Four boaters indicated they were highly satisfied with the study flow, two respondents were moderately satisfied, and the remaining respondent was neutral.

- The minimum acceptable flow was estimated to be between 300 and 400 cfs.
- The optimal flow ranged from 700 to 1,200 cfs.
- The maximum acceptable flow ranged from 1,700 to 2,500 cfs.

600 cfs Target Flow

The 600 cfs flow study was conducted on Wednesday, September 17, 2008. As identified below, a total of 5 boaters participated in the study. Three boaters used inflatable kayaks and two used hard-shelled kayaks. The boaters elected to take out at the Birdsall Access instead of the Oregon Bar Access. All of the study participants rated the run Class II.

Whitewater Boating Flow Study Team Members

Confluence Run (Confluence to Oregon Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
600	John Hauschild	Inflatable Kayak	III	15
	Tom Van Noord	Hard Shell Kayak	I	2
	Patricia Gibbs	Inflatable Kayak	I	
	Lee Leishman	Inflatable Kayak		
	Dominic Pugliese	Hard Shell Kayak	III	2
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- Four boaters indicated that they would prefer a slightly higher flow, and one indicated they would prefer a much higher flow.
- Satisfaction with the study flow for divided. Three boaters were highly satisfied with the study flow, one boater was moderately satisfied, and the remaining boater was neutral.
- The minimum acceptable flow was estimated to be between 400 and 600 cfs.
- Two boaters identified an optimal flow of 1,000 cfs.
- Maximum acceptable flow was estimated by two boaters. One indicated a maximum acceptable flow of 1,000 cfs. The other indicated a maximum acceptable flow of 15,000 cfs, which is too high for the novice boaters that would use this run and was therefore considered invalid.

800 cfs Target Flow

The 800 cfs flow study was conducted on Wednesday, September 10, 2008. As identified below, a total of 5 boaters participated in the study. Two boaters used inflatable kayaks and three used hard-shelled kayaks. The boaters elected to take out at the Birdsall Access instead of the Oregon Bar Access. All of the study participants rated the run Class II.

Whitewater Boating Flow Study Team Members

Confluence Run (Confluence to Oregon Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
800	Steven Boutte	Hard Shell Kayak	IV	2
	Alex Wolfgram	Hard Shell Kayak	V	7
	Patricia Gibbs	Inflatable Kayak	I	
	Jeffrey Hartley	Hard Shell Kayak	V	4
	Lee Leishman	Inflatable Kayak		
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- The study participants indicated they would prefer slightly too much higher flow. Satisfaction with the study flow ranged from neutral to highly satisfied.
- Most of the study participants indicated that the minimum acceptable flow is between 400 and 600 cfs. One boater indicated that the minimum acceptable flow of 800 cfs.
- The optimal flow estimates ranged from 1,000 cfs to 2,500 cfs.
- Most of the study participants indicated that the maximum acceptable flow is between 1,000 to 5,000 cfs. One boater indicated that the maximum acceptable flow is 80,000 cfs, which is too high for the novice boaters that would use this run and was therefore considered invalid.

1,000 cfs Target Flow

The 1,000 cfs flow study was conducted on Thursday, July 31, 2008. As identified below, a total of 4 boaters participated in the study. One boater used an inflatable kayak, two used hard-shelled kayaks, and one used a self-bailing inflatable raft. The boaters elected to take out at the Birdsall Access instead of the Oregon Bar Access. All of the study participants rated the run Class II.

Whitewater Boating Flow Study Team Members

Confluence Run (Confluence to Oregon Bar)

Flow (cfs)	Name of Boater	Watercraft	Skill Level	# Years Experience
1000	Patricia Gibbs	Inflatable Kayak	I	
	Howard Penn	Hard Shell Kayak	V	20
	David Garcia	Self-Bailing Raft	IV	3
	Sandra Perry	Hard Shell Kayak	III	10
	Dave Martinez*	Hard Shell Kayak	IV	30

*Dave Martinez was the study leader and is not counted as a study participant.

Flow Preferences

- All boaters were moderately to highly satisfied with the target flow. The study participants indicated they would prefer slightly lower to much higher flow.
- The minimum acceptable flow was estimated to be between 400 and 425 cfs, with the exception of one high-skilled kayaker that rated the minimum acceptable flow at 1,000 cfs.
- Estimates of the optimal flow ranged from 800 cfs to 1,500 cfs.
- The maximum acceptable flow ranged from 1,121 to 3,500 cfs.

Estimated Boatable Flow Ranges

The following table summarizes the boatable flow ranges for this run as identified by the through PCWA's whitewater flow studies.

	Flow Range as Determined through PCWA Flow Studies
Minimum	350 - 600
Optimum	800 – 1,500
Maximum	1,700 – 2,500

Minimum Acceptable Flow

The minimum acceptable Flow range is estimated to be between 350 to 600 cfs. At the study flow of 368 cfs most of the boating characteristics were rated from highly acceptable to neutral and half of the boaters were highly satisfied with the study flow. The other half was moderately satisfied and neutral about the study flow. This run is primarily suited for relatively unskilled boaters and the minimum acceptable flow reflects the lower end of the boatable flow range to accommodate these boaters.

Optimum Flow

The optimum flow range is estimated to be between 800 and 1,500 cfs. At the 1,000 cfs target flow, most of the boating characteristics were rated from neutral to highly acceptable, with the majority of ratings being highly acceptable. Though most of the boaters at the 1,000 cfs were highly satisfied with the flow, two boaters indicated they would like a slightly higher to much higher flow. The two other boaters reported that the 1,000 cfs flow was close to optimum. The range was extended above 1,000 cfs to accommodate more skill boaters, and those progressing in skill level. The range was also extended to below 1,000 cfs to provide additional opportunities for beginning and novice boaters, typical boaters on this run.

Maximum Acceptable Flow

The maximum acceptable flow range was estimated to be 1,700 to 2,500 cfs. A flow of 2,500 cfs is most likely too high for most of the boaters who would use this run due to their skill levels. A flow of 1,700 is a more likely maximum acceptable flow threshold for the typical boater using this run. Skilled boaters have no high flow constraints on this run, and in fact, run this section of river at high flow when powerful hydraulics are present in the lower end of the run between Birdsall River Access and Oregon Bar River Access.