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Southern California Edison Company

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2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

July 28, 1994

C. E. MILLER
MANAGER OF HYDRO GENERATIONTELEPHONE
(818) 302-1564

ORIGINAL

Ms. Lois D. Cashell
Secretary
Federal Energy Regulatory Commission
825 N. Capitol Street, N.E.
Washington, DC 20426

Subject: Whitewater Evaluation - Additional Information
Kern River No. 3 Hydroelectric Project, FERC Project No. 2290 -006

Dear Ms. Cashell:

The Southern California Edison Company (Edison) is pleased to provide the enclosed subject additional information on whitewater boating on the North Fork Kern River. Edison's filing of July 6, 1994 provided the information requested in the Commissions April 4, 1994 letter request.

The enclosures include additional information on whitewater boating and a video presenting footage of the field evaluation. Enclosed are an original and eight (8) copies of the additional information package and three (3) copies of the video including an original and eight (8) copies of this cover letter, an affidavit, and certificate of service. Agencies and interested parties listed on the enclosed distribution list will receive a copy of the additional information package and the video.

If you have any questions, please call me or Mr. Ronald R. Schroeder at (818) 302-1603.

Sincerely,

C E Miller/ED

Enclosures

(3) VIDEO TAPES/HYDRO
cc: J. H. Clements, FERC, Washington, D.C.
N. Folsom, FERC, San Francisco
M. E. Spencer, FERC, Washington, D.C.

FERC DOCKETED
JUL 29 1994

ENCLOSURE

**Distribution List - Resource Agencies and Other Interested Parties:
Information Regarding Application for New License; Kern River no. 3 Hydroelectric
Project - FERC Project No. 2290, July 28, 1994**

Ms. Sandra Key
Forest Supervisor
U.S. Forest Service
Sequoia National Forest
900 West Grand Avenue
Porterville, CA 93257-2035

Mr. Joel A. Medlin
Field Supervisor
U.S. Fish and Wildlife Service
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, CA 95825

Mr. Stanley T. Albright
Regional Director
Western Regional Office
U.S. National Park Service
600 Harrison Street, 6th Floor
San Francisco, CA 94107

Mr. George D. Nokes
Regional Manager
California Department of Fish and Game
Region 4
1234 East Shaw Avenue
Fresno, CA 93710

Mr. Edward Anton
Chief
Division of Water Rights
State Water Resources Control Board
P.O. Box 2000, 901 P Street
Sacramento, CA 95812-2000

Mr. Chuck Richards
Kern River Outfitters
Box W.W. Whitewater
Lake Isabella, CA 93240

Mr. Richard Bowers
American Whitewater Affiliation
801 Pennsylvania Avenue
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Washington, D.C. 20003

Mr. James Testa
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1629 S Street
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Shedd Road
New Boston, NH 03070

**Southern California Edison Company**

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**Affidavit
July 12, 1994**

The "Kern River Flow Study" videotape was produced by Southern California Edison's, Corporate Communications Department. The program was produced and directed by Ross Landry (SCE, Video Services).

The script was written by Ross Landry. Bill Taggart (Taggart Engineering Associates Inc.), Sandy Perry (Entrix Inc.), and Geoffrey Rabone (SCE, Hydro Generation) reviewed and edited the draft script.

All shots of the Kern River used in the production were videotaped over a five day period from May 11, 1994 to May 15, 1994, at the map locations shown, with the exception of two shots at the Fairview Dam that were shot on 6/6/91 and 3/29/91 during the production of the project video for Kern River No. 3 Powerplant. The aerial of KR3 was also shot during that production. All of the boating shots were videotaped of survey participants boating within the Kern River #3 bypassed reach with the exception of the commercial rafting activities that were videotaped of the "Limestone Run" between the Johnsondale Bridge and Fairview dam, and the boaters putting in at the parking area below Kern River No. 3 Powerhouse for the "Kernville Run".

A Sony 70IS betacam camcorder was used to record all of the footage and no filters or modifications were used that would alter the images. Natural light was used throughout. The cameraman for this project was Steve Skinner, the tape-op was Gary Heimann (both vendors).

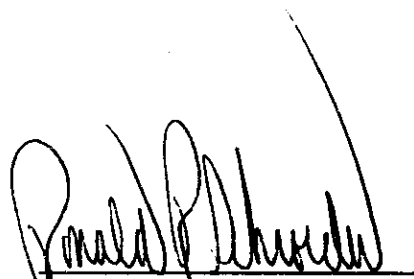
Graphics were created at SCE Video Services by Bill Dufus (vendor artist). The program was edited at SCE Video Services on 7/6/94. The editor was Rick Fenner (vendor). Special effects used with maps in editing were used only to clarify location of shots.

I verify that the above statements are true and accurate.

Ross Landry (SCE Video Services)

CERTIFICATE OF SERVICE

I hereby certify that I have this 28th day of July 1994, serviced the foregoing videotape upon each person that I understand is a party.



Ronald R. Schroeder

ADDITIONAL BACKGROUND INFORMATION, KERN RIVER NO. 3 HYDROELECTRIC PROJECT, FERC PROJECT NO. 2290.

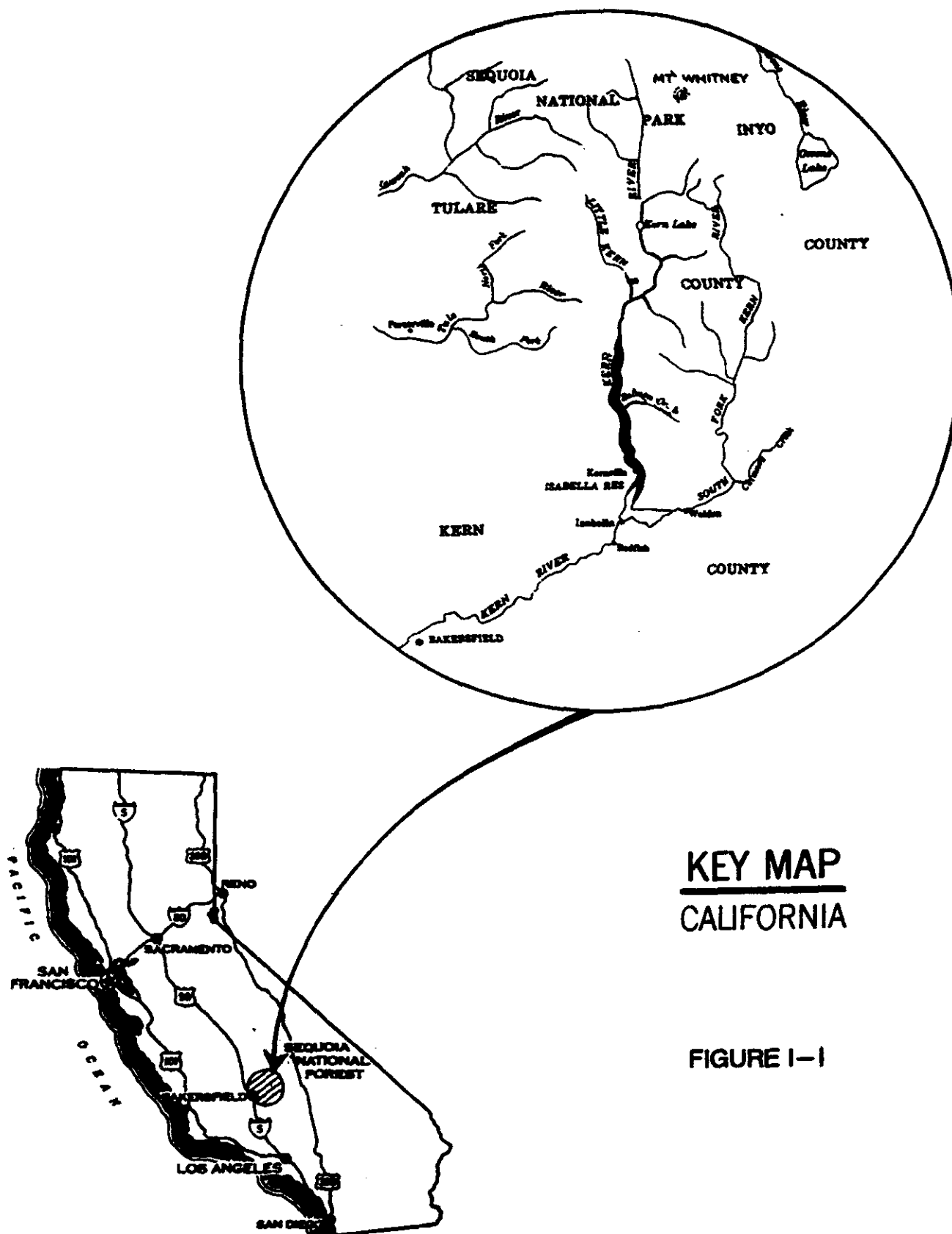
Southern California Edison conducted a study to determine the relationship between flow levels and the quality of whitewater boating in the Kern River No. 3 Project Reach in response to the FERC's letter dated April 4, 1994. The results of the study were transmitted to the Commission by letter dated July 6, 1994.

The following information supplements Southern California Edison's July 6, 1994 Response. The information is organized in two sections followed by nine attachments containing supporting documentation. Section I, Physical Characteristics, describes the runs and river segments evaluated in the study. Section II, Whitewater Suitability Background Information, describes the study methods used to determine whitewater suitability and includes various conclusions developed from the survey forms. Physical characteristics are presented first, as follows.

SECTION I - PHYSICAL CHARACTERISTICS

Figure I-1 depicts the location of the Kern River in Southern California. As indicated, the Kern River consists of three forks referred to as the South Fork of the Kern River, the North Fork of the Kern River, and the Lower Kern River. The Kern River No. 3 Project is located on the North Fork of the Kern River between Johnsondale Bridge and Kernville.

This report primarily deals with the bypass reach of the Kern River No. 3 Hydroelectric Project. However, there are important relationships between this bypassed reach and other runs on the North Fork of the Kern River and the Lower Kern River. Mountain runoff, particularly snowmelt, results in boatable spring flows in the North Fork of the Kern River. Two runs on the North Fork, The Forks of the Kern (a tightly permitted wilderness run) and the Limestone Run, are above the diversion. These runs have greater available flow than the bypassed reach, and thus are runnable earlier and later. At more extreme flows, portions of the bypassed reach may be more runnable than the Forks. The Powerhouse Run, downstream of the bypassed reach to Lake Isabella, has greater flows and is the easiest boating in the Upper Kern. Often the lower segments of the bypassed reach, referred herein as River Kern Beach,



Camp 3 and Cable/Camp 3, are combined with the Powerhouse Run as flows increase. This use pattern is the result of the users adapting to low flow conditions in the interest of a longer run. Once the snowmelt flows drop in the North Fork of the Kern River and irrigation releases begin to be made from Lake Isabella, usage shifts to the Lower Kern.

River Segments and Runs on the North Fork of the Kern River

Figure I-2 presents a schematic map of the North Fork of the Kern River illustrating commonly recognized homogenous segments, features and rapids, put-ins and take-outs. Note that at boatable flows the North Fork of the Kern River is essentially a continuous series of rapids, riffles and moving water. At low flows, it turns into a series of pools and hundreds of drops, many of which are significant and hazardous. The boaters combine segments into many combinations of runs.

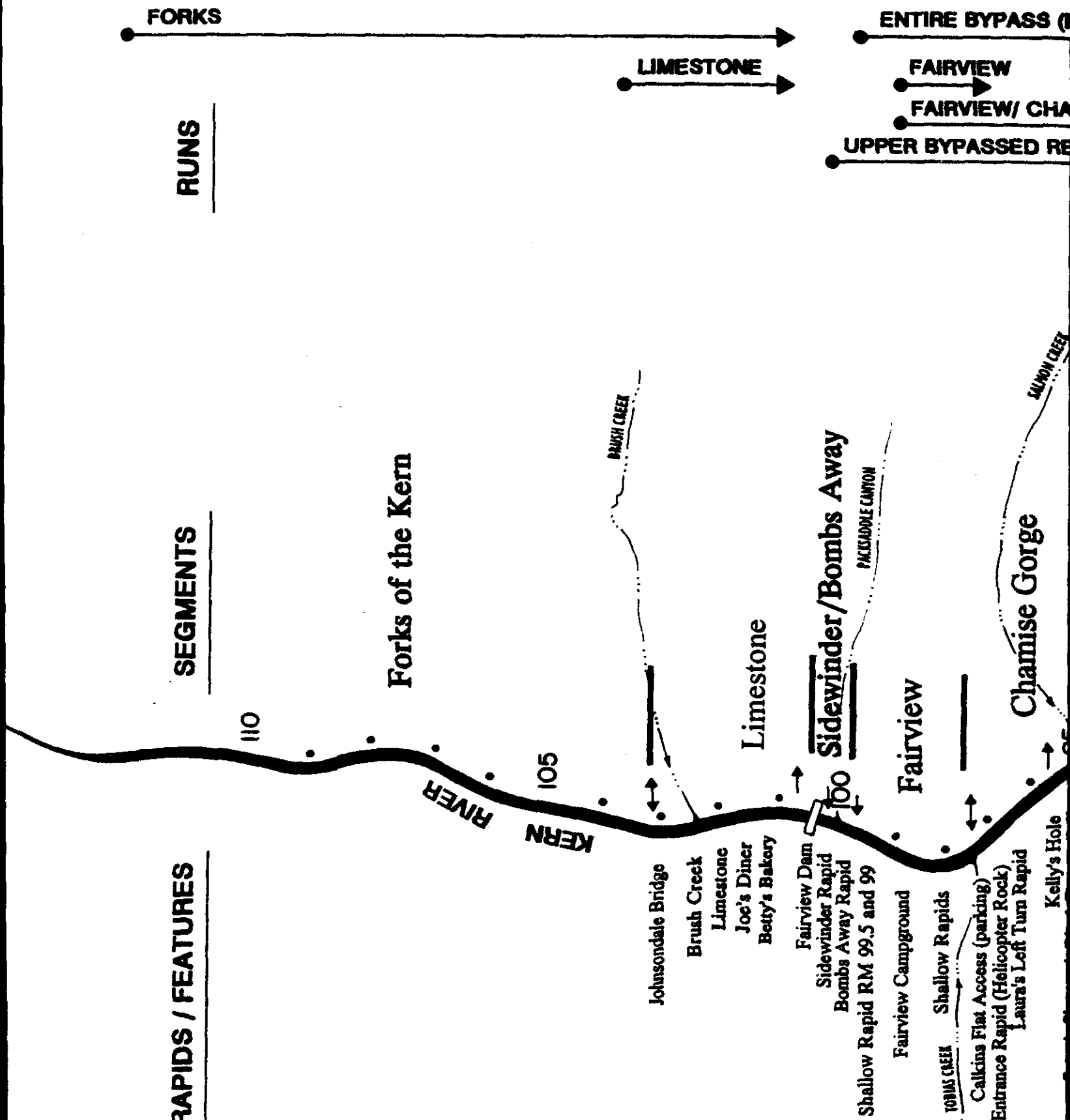
Figures I-3 and I-4 present a USGS topographic map with annotated river miles, features, segments, and runs. These maps were prepared based on historical river guides, the custom notations of Mr. Chuck Richards and Ms. Katharine Haines, field notes, and detailed review of a series of aerial photographs. They summarize many of the results of the study. Note that rapids, segments, and runs have different denotations by study participants and other boaters.

Segment and Feature Descriptions

Figures I-5 through I-11 are a series of photographs of features, flows, and problems in the Kern River No. 3 Project reach. Specific river segments and predominant features in the bypass reach are described in the following.

Sidewinder/Bombs Away

Photos I-5B, -5C, -5D, and I-6A present the Sidewinder Rapid which is immediately below Fairview Dam. Photo I-6B presents Bombs Away. Upper Sidewinder is a challenging but runnable American Whitewater Affiliation (AWA) Class IV rapid. However the rapid steepens and ends with a massive boulder that obstructs the majority of the stream flow. The bulk of the flow during the test travels through a chute on the right of the boulder, and crashes into the cliff creating a very strong shock wave. At



KERN RIVER NO. 3 POWERPLANT DIVERSION)

arely - few kayakers

IMISE

ACH

LOWER BYPASSED REACH

HISTORIC GOLD LEDGE

GOLD LEDGE

CAMP 3

THUNDER

CABLE

RIVER KERN BEACH

GOLD LEDGE CREEK

Gold Ledge

CORRAL CREEK

Salmon Falls

Thunder

Cable/ Camp 3

River Kern Beach

Power House

80

ISABELLA RESERVOIR

90

85

KERNVILLE

Salmon's Slot and Black Bottom Falls

Big (upper) Salmon Falls Rapid
Little Salmon Falls
Ant Canyon (parking)
Shallow Rapids above and Below RM 93.8

ANT CANYON

Screaming Right Turn Rapid and Golf Course

Corral Creek Picnic Area (parking)

Squashed Paddler Rapid
Sock'em-dawg Rapid

Hospital Flats

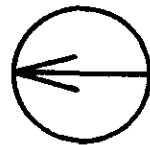
The Flume Rapid
Fender Bender Rapid
Thunderbird Access
Cable(Wrap Rock)Rapid

The Wall Rapid
Tombstone Rapid
Buzzard's Perch Rapid

Pepsi Challenge and Tequilla Chute Rapids

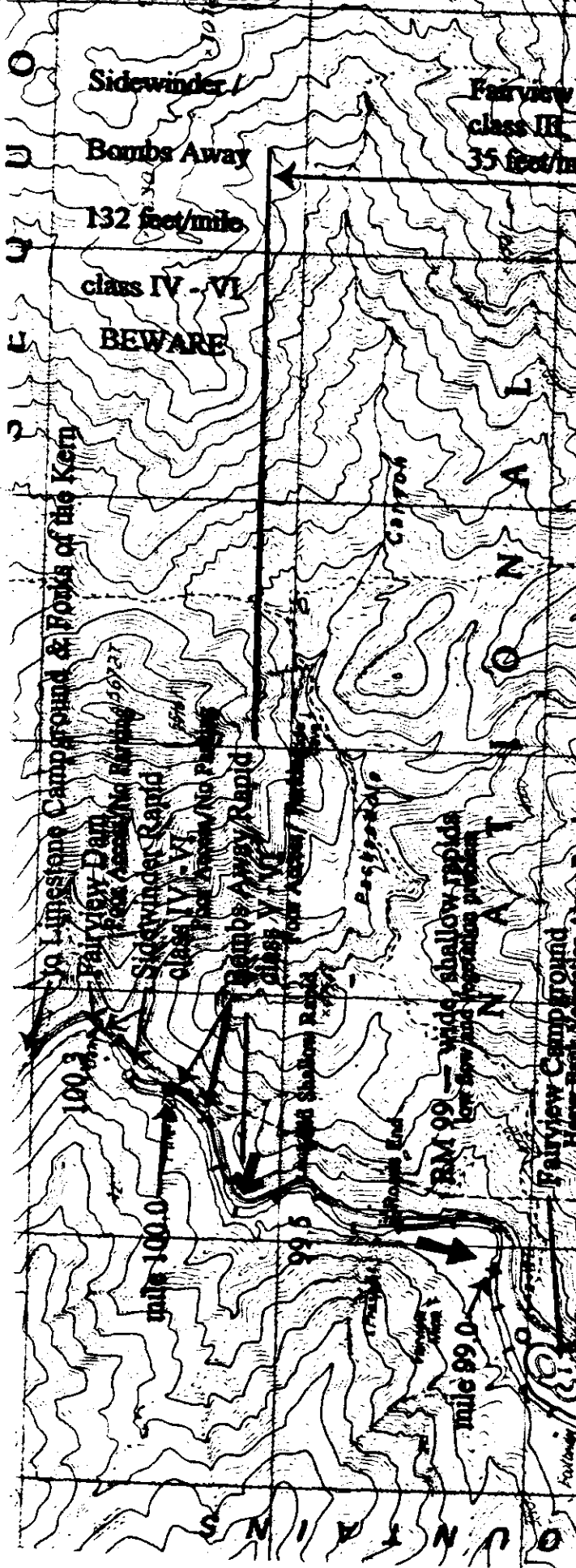
BULL RUN CREEK

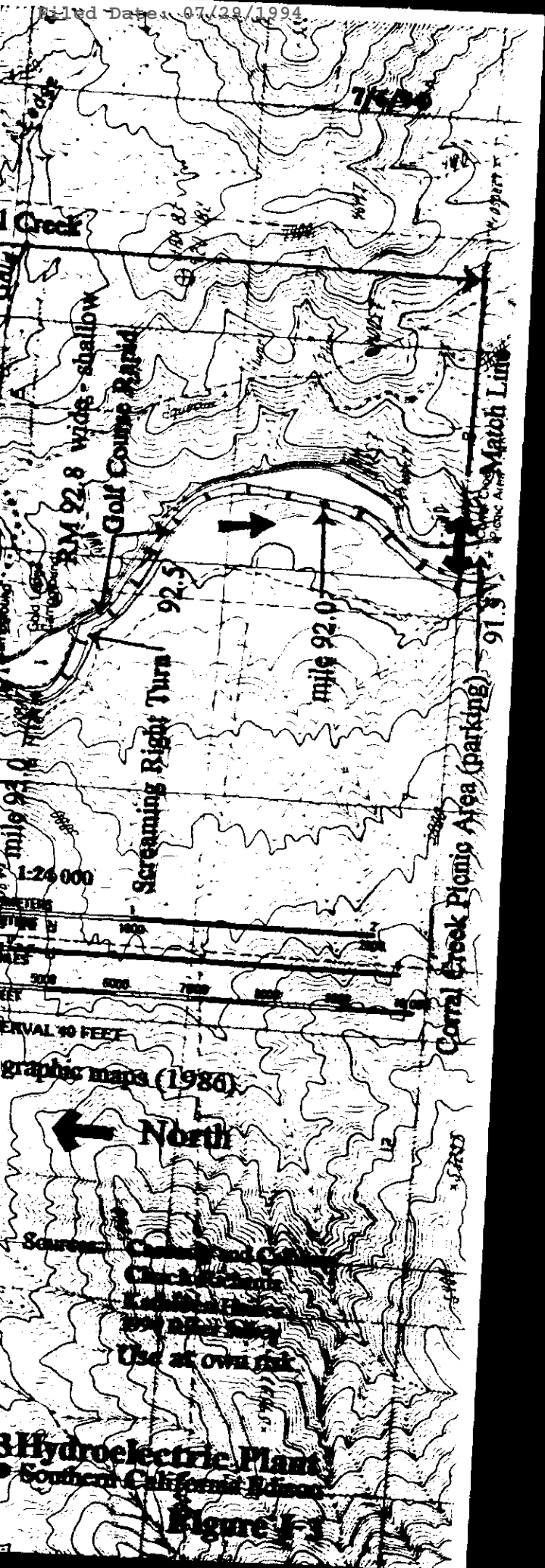
Power House Rapid
Power House

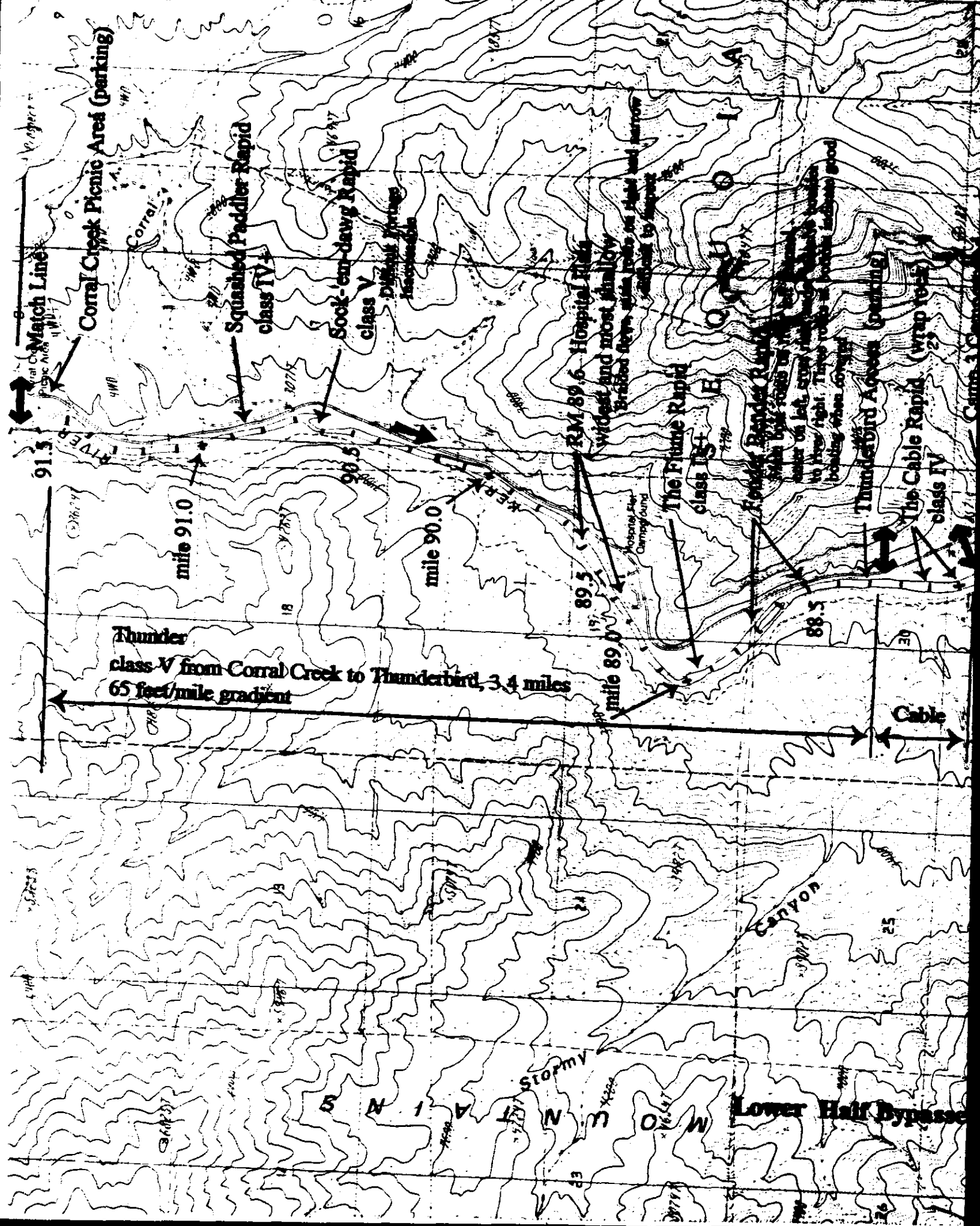


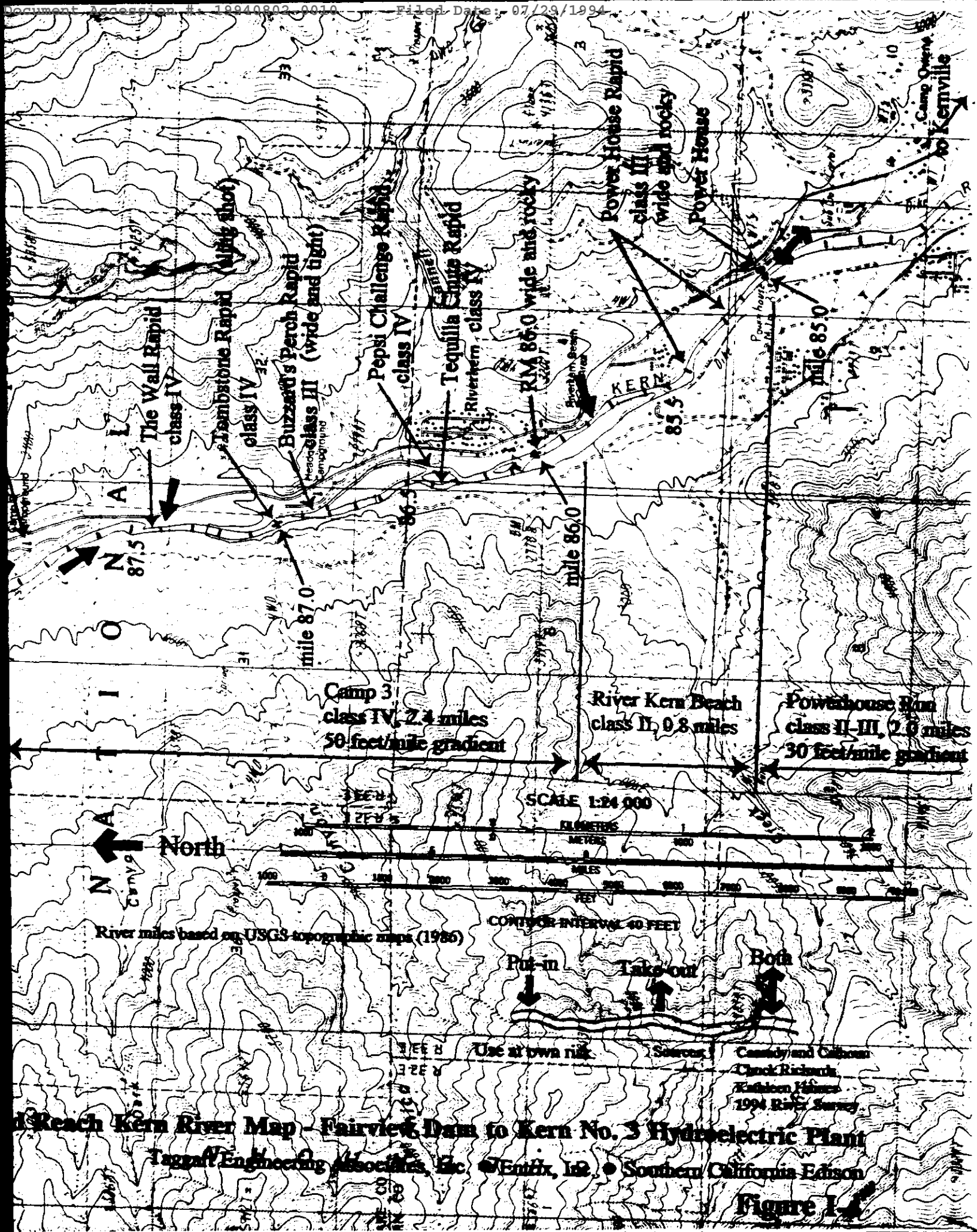
North

UPPER KERN SCHEMATIC MAP
FIGURE I-2











C. SIDEWINDER - kayaker rolled over by shock wave in Lower Sidewinder
5/14/94 - 1225 cfs

D. SIDEWINDER - rafters taking river right slot around massive boulder in Lower Sidewinder
5/13/94 - 1050 cfs



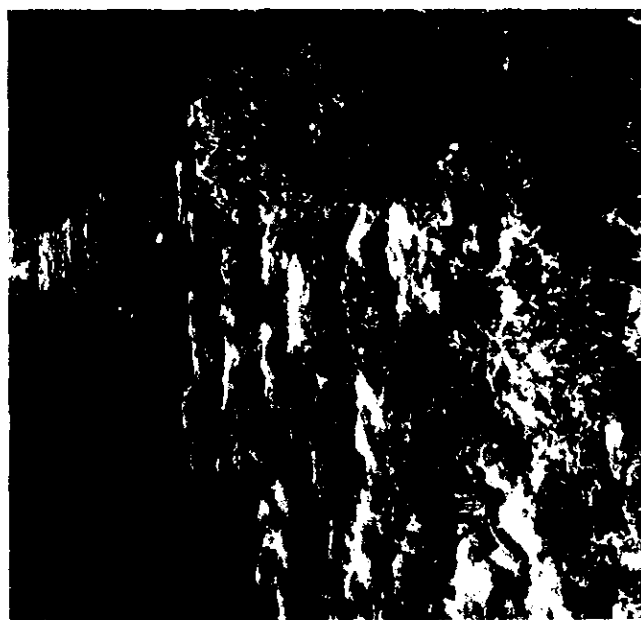
A. LIMESTONE - commercial raft in JOE'S DINER above Fairview Dam
5/15/94 - 1950 cfs (1350 cfs downstream of dam)

B. SIDEWINDER - kayaker in Upper Sidewinder
5/14/94 - 1225 cfs





C. FAIRVIEW - shallow rapid at RM 99
5/11/94 - 300 cfs



D. FAIRVIEW - shallow rapid and overgrown vegetation above Calkins Flat
5/11/94 - 300 cfs



A. SIDEWINDER - looking upstream at massive boulder in Lower Sidewinder
5/11/94 - 300 cfs



B. BOMBS AWAY - kayaker hitting rock on highway fill
5/14/94 - 1225 cfs



A. CHAMISE GORGE - Helicopter Rock in Entrance Rapid
5/12/94 - 675 cfs



C. CHAMISE GORGE - Black Bottom Falls, Satan's Slot left of photo
5/13/94 - 1075 cfs



B. CHAMISE GORGE - Laura's Left Turn
5/11/94 - 300 cfs



D. CHAMISE GORGE - Satan's Slot
5/13/94 - 1075 cfs

PART A

FIGURE I-7 WHITEWATER EVALUATION PHOTOGRAPHS



A. CHAMISE GORGE - kayaker over and being pulled upstream into hole
5/14/94 - 1225 cfs

B. CHAMISE GORGE - oar rig going through Satan's Slot
5/14/94 - 1225 cfs



C. GOLD LEDGE - rafts hanging up in braided rapid below RM 938
5/13/94 - 1075 cfs

D. GOLD LEDGE - kayakers above golf course
5/11/94 - 300 cfs



PART A

FIGURE 1-8 WHITEWATER EVALUATION PHOTOGRAPHS



C. THUNDER RUN - approach to Sock 'em Dawg (see photo next page)
5/11/94 - 300 cfs



D. THUNDER RUN - rapid at RM 90.2
5/11/94 - 300 cfs



A. THUNDER RUN - Squashed Paddler
5/11/94 - 300 cfs



B. THUNDER RUN - Squashed Paddler
5/13/94 - 1050 cfs

PART A

FIGURE 1-9 WHITEWATER EVALUATION PHOTOGRAPHS

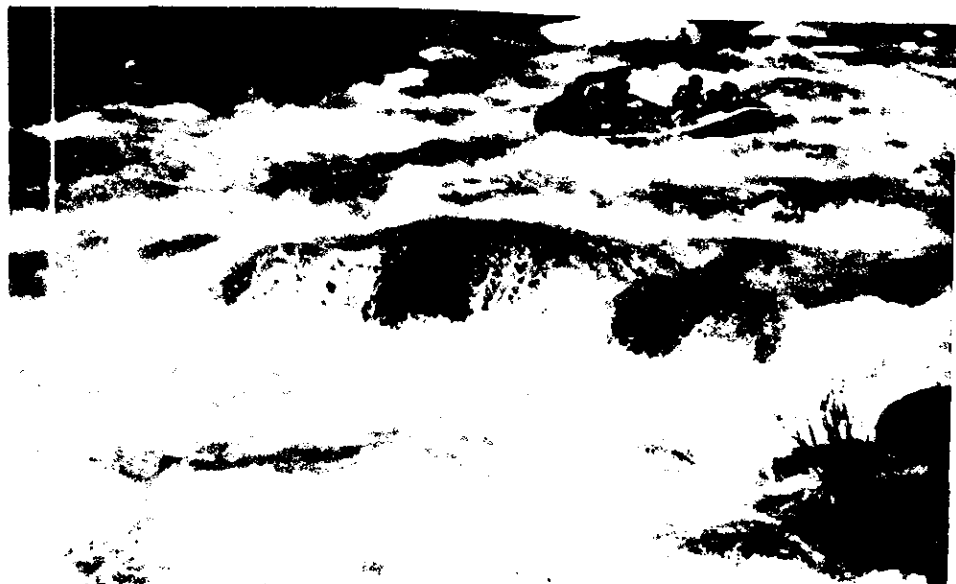


FIGURE 1-10

SOCK 'EM DAWG RAPID

(at higher water than study period)

WHITEWATER EVALUATION PHOTOGRAPH
Photo courtesy Chuck Richards

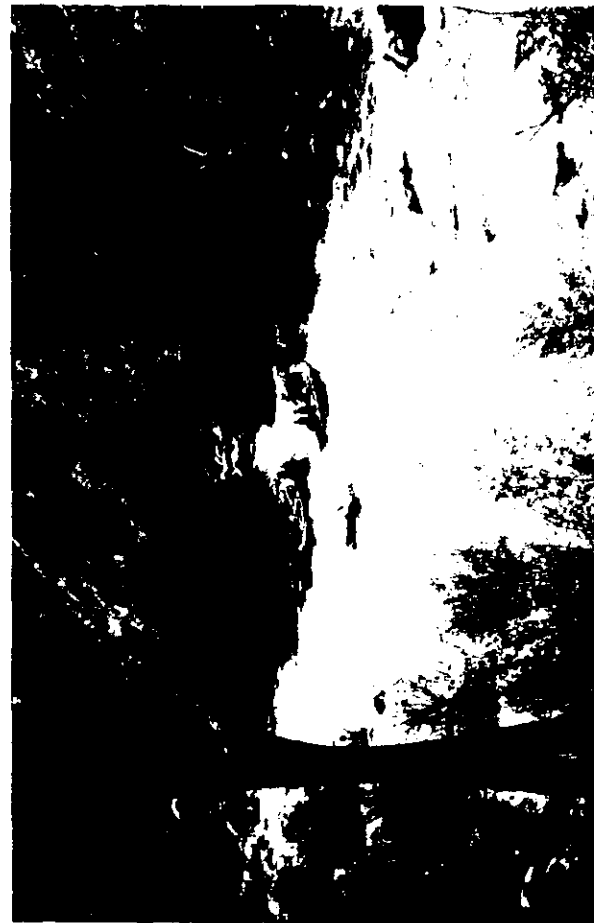


PART A



A THUNDER RUN - Hospital Flats, main route to right, this raft went left and caught on cobble bar
5/13/94 - 1050 cfs

B THUNDER RUN - Hospital Flats, our rig hung up at brand, cataraft had trouble also
5/14/94 - 1200 cfs



C THUNDER RUN - Fender Bender, one raft hung up, the other travelled the far side
5/13/94 - 1050 cfs

D THUNDER RUN - Fender Bender, raft okay, cataraft stuck in same spot (3 covered rocks to ri of lower raft indicate good boating)
5/14/94 - 1175 cfs



PART A

FIGURE 1-11 WILLOWATER EVALUATION PHOTOGRAPH

higher flows than during the test, water will overtop the boulder and create a hole (e.g., a submerged hydraulic jump). The shape of the boulder causes very strong hydraulics. The Limestone Joe's Diner rapid, rated Class IV, is presented in Photo I-5A to contrast the difficulties presented. Sidewinder and Bombs Away are far more difficult.

Bombs Away rapid has similar characteristics to Sidewinder, but has a worse drop sequence at the end, which is made more difficult and dangerous by the encroaching riprap of the highway fill. Note that while Sidewinder was boated all formal test days, Bombs Away was not run until the third day at a flow of 1,050 cfs. In the photo an expert kayaker hit the riprap. The same kayaker was able to do an "endo" in the more natural whitewater on the opposite bank below the big boulder. (An "endo" is when a kayaker, usually on purpose, enters a hole and maneuvers such that an end of the kayak is pulled down until the long axis of the boat is essentially vertical and then goes over.) Bombs Away is a Class VI at lower flows, and probably again at high flows. It is no less than Class V at all times.

Fairview

Fairview is a moderately difficult run. It has moving water at all locations, and a series of Class II and III rapids. It can be boated at lower flows than many other segments, but is very "bony" as illustrated in Photo I-6C. This clearly poses a hazard for intermediate boaters as they would have difficulty navigating safely in several locations. As the flows increase all rapids are fairly easy to navigate. However, at all flows overgrown vegetation presents hazards and makes emergency take-out difficult, as evidenced in Photo I-6D.

Chamise Gorge

Chamise Gorge is an almost continuous series of challenging but very boatable rapids. Generally it is regarded as Class IV water because of Entrance Rapid (and Helicopter Rock), Laura's Left Turn, Blackbottom Falls and Satan's Slot. Figure I-7 and photos I-8A and -8B present these features. The rapids were run by kayaks and an open deck canoe at 300 cfs. Rafts and inflatable kayaks ran at 675 cfs. The hydraulics at Satan's Slot are the most powerful. The author found Chamise very enjoyable whitewater.

Salmon Falls

This segment contains two Class VI falls which are to be avoided. They were not tested by the participants.

Gold Ledge (or Upper Gold Ledge)

This segment is from Ant Canyon to Corral Creek and is generally regarded as Class IV water. The nature of the stream bed changes remarkably from here to Powerhouse. It becomes a braided stream where the bed is much wider, especially at rapids, and tends to form several streams. At the rapids there can be a large number of moderate size boulders which are difficult to navigate. Boaters can end up on a route that dead ends or narrows to the point that passing requires a "tube stand" for a raft (all passengers shift to one side of the boat to allow the opposite to clear obstructions), or multiple pushups for a kayaker. This problem is worsened by overgrown vegetation. Photos I-8C and -8D illustrate some of the situations. Greater flow lessens the problems, but they still occur because boaters tend to attempt other routes. Screaming Right Turn and Golf Course (named for nine holes) are adjacent Class IV rapids at River Mile 92.8 to 92.4.

Thunder

The Thunder segment starts at the Corral Creek and ends at take-outs of the Thunderbird Access or Camp 3. It is generally regarded as Class V water. It has difficult Class V rapids and the worst in braided flows and overgrown vegetation problems. When flows are runnable this segment is included in a long run to town or the Powerhouse as a first priority to the expert boaters.

Photos I-9A and -9B presents Squashed Paddler at contrasting flows. It has a series of holes which typically swamped rafts before the advent of self bailing floors.

Photo I-9C shows the approach to Sock 'em Dawg. Figure I-10 is a photo of the rapid at much higher flows. At the flows tested there are two adjacent major drops with dangerous rock formations, holes, and a run out into a cliff with a very sharp rock. Photo I-9D illustrates a typical unnamed rapid, among the many in this segment.

Photos I-11A and -11B illustrate the severe braiding and vegetation hazards at the rapid at Hospital Flats. Problems here were experienced at all flow levels tested. Boaters generally perceive the situation as a given and a risk of the run. This situation will invariably result in some serious injuries.

Fender Bender is the last major rapid in this segment. Its character is illustrated in Photos I-11C and -11D. The second braid reportedly is boatable until 4,000 cfs. It takes flow at all levels, making conditions more severe. There are three large boulders located mid channel at the lower end of the main channel at the confluence with the second stream. When flow covers the boulders, rafters generally regard conditions as good for rafting. Note that running this rapid is very tricky for rafts. Boats must pass from river left to right immediately below a massive boulder in the middle of the rapid about a third of the way down. If the raft is slightly farther downstream, it will be pushed back left and be trapped in a boulder garden, as depicted in both photos.

Cable/Camp 3

The only difference in this segment is the entry point and whether Cable Rapid is run. This is a Class IV run with several notable rapids: The Wall, Tombstone, Buzzards Perch (easier Class III), and Pepsi Challenge/Tequilla Chute Rapids (which are on different braided streams at the same location along the river). This is a very popular segment when flows are available, and usually combined with downstream River Kern Beach (Powerhouse Rapid), and the Powerhouse segment for a run into Kernville.

River Kern Beach

This is a mild segment with Powerhouse Rapid. Flow tends to be very wide, but with the flatter slopes is one of the first to be boated with increasing flow.

SECTION II - WHITEWATER SUITABILITY BACKGROUND INFORMATION

This section first discusses criteria for flow suitability. American Whitewater Association (AWA) Class I to VI difficulty ratings were used as a standard. An increasing range of flows on the Kern River means greater fun and challenge, until hazardous high flows occur. However, since flows in the bypassed reach never exceeded 1,500 cfs during the test, neither the optimum range upper limits nor flood flows were experienced. Flow that did occur during the study resulted in the three levels of flow that are summarized in Table II-1.

Table II-1 Flow Level Descriptors		
Level	Quality	Comment
Minimum	Low	No boat dragging per FERC, referred to as marginal in TEA report of December 23, 1993. Where "boats could make it through with some contact on shallow and edge rocks."
Minimum Enjoyable Flow	Moderate	A flow that is enjoyable, has clearer passage, is safer, and for which the boater would return.
Lower End of Optimum	High	A more enjoyable and safer flow because of clearance over rocks and clearer routes in the rapids, but which is also more challenging because of greater power with attendant risks. Boaters of appropriate skill return numerous times for this flow level.

Two methods were used to determine and evaluate the suitability of these three flow levels in an independent manner. The first method, referred to herein by the acronym VFH for Video Survey, Field Observations, and Hydraulic Analysis Method, relies on a detailed evaluation of all video tape, field observations of a hydraulic engineer and an environmental expert that boated the entire reach during several flows, and hydraulic engineering estimates to interpolate flows matching the criteria when the actual flows boated and filmed were higher or lower than the criteria. This method was more focused on clearance, navigability, hydraulic parameters, related safety, and whether the water

had characteristics that are fun for a given boat type. This method is presented first. The second method is referred to herein as PSA, for Participant Survey Analysis. This method uses the boater survey evaluation forms as the primary data source. It focuses upon the local boaters, and presents valuable data and perspective on difficulty ratings, human experience and desires. The evaluation forms were collected from each participant during the boating study. The evaluation forms are not included in this package but are available from Edison, upon request.

Flow Suitability Criteria

The following presents a discussion of the criteria for minimum, minimum enjoyable, and lower end of optimum flow levels.

Minimum Flows

Table II-2 presents criteria used to interpret minimum flow. The minimum flow level produced marginal or low quality boating, because although a given boat type could achieve passage, numerous unavoidable scrapes and incidents would occur and the term "fun" would probably not be used by most expert participants to describe the boating experience.

Minimum Enjoyable Flows

There is a flow level above minimum where the boating experience is enjoyable, safer, and poses far less potential damage to equipment. At this level the boater has fun and would return another day. FERC has used the term optimum to describe the flow where boating becomes more enjoyable and safer, a desirable flow for which people would return to boat. We have chosen to refer to this flow level as Minimum Enjoyable. This quality of boating could also be referred to as moderate.

The Kern River is boated at minimum flows, but there is a large incidence of collisions with exposed boulders, and getting "stuck" in "boulder gardens". In some cases, painful escapes and portages are necessary. As the flow increases above minimum, the number of these incidents drops rapidly, but are not entirely eliminated for three reasons. First, the major rapids and heavy boulder shallows/riffle have limited clear routes. Due to the hydraulic characteristics among these rapids, flow surges cause rapid water level and

Table II-2
Minimum Flow Criteria

		Rafts/Catacraft	Kayaks and Canoes
1.	Bottom scrapes in riffles	Frequent but not requiring more than 1/3 of paddlers getting out of the boat briefly to restore passage.	Frequent but not requiring extensive pushups; or actually portaging more than once.
2.	Equipment damage	Minor scuffs occur, but no appreciable damage	Minor scuffs occur, but no appreciable damage.
3.	Rapid obstruction, or broaching.	Does not normally occur. However, if it does occur rafters must be able to easily dislodge themselves.	Does not occur with a normal level of observance. If careless allowed a few times per run. If boater can get off with brace or ordinary manpower, acceptable.
4a.	Long/Difficult Portage ((e.g., boat dragging per FERC order)	Does not occur.	Does not occur.
4b.	Short Portage in reach.	A maximum of two short portages in an otherwise boatable reach are acceptable.	A maximum of two short portages in an otherwise boatable reach are acceptable.
5.	General Flotation and movement. (navigability)	Can move easily for 90% of reach. Paddle frequently hits rocks but must be able to paddle in most cases. Continuous pushing off bottom not acceptable.	Can move easily for 90% of reach. Paddle frequently hits rocks but can reasonably paddle stroke, and low brace anywhere. Sufficient depth exists for high brace in eddies.
6.	Drops	Not greater than 3 to 4 feet with escapable approach. Any hole or keeper must be runnable and have a reasonable outlet/recovery situation. Hazards must be avoidable with appropriate skill level.	Not greater than 3 to 5 feet with escapable approach. Any hole or keeper must be runnable and have a reasonable outlet/recovery situation. Hazards must be avoidable with appropriate skill level.
7.	Safety	Must be safe; no reasonable anticipation of loss of life situation.	Must be safe; no reasonable anticipation of loss of life situation.

flow direction changes, so any given boater may be pushed into a different route that encounters more boulders and may end up breached or otherwise caught among boulders. In boaters terms, the Kern is "bony." Second, current patterns and obstructions are not "read" perfectly and many skilled boaters end up bumping or going into the less open path. Third, boaters frequently try harder reaches to test and improve their skills and experience. During this situation, a lesser skilled boater is likely to encounter difficulties.

Table II-3 presents minimum enjoyable flow criteria. The criteria in Table II-3 generally applies to all watercraft.

Table II-3
Minimum Enjoyable Flow Criteria

1.	Bottom scrapes	Generally does not occur, but when it does occur can manage to pass reasonably easy.
2.	Damage	Minor scuffs allowed. No significant damage unless major boating error.
3.	Rapid obstruction, or broaching.	Generally does not occur, but may result from route or other boating mistake--while others have no trouble. Once trouble occurs, boater(s) can manage to correct and escape.
4a.	Long Portage (boat dragging per FERC order)	Does not occur.
4b.	Short Portage.	May occur at one or two discrete locations.
5.	Flotation and Movement (navigability)	Generally not a problem, and can use most paddling strokes. Some minor problems at riffles or braids acceptable.
6.	Drops	Same as minimum. Holes should flush out.
7.	Safety	If out of boat in a rapid can reasonably float with feet up without making extensive contact with rocks and boulders. Multiple hard bumps to head, legs, or arms are not acceptable nor are strainer or entrapment situations.
8.	Willingness to return to boat flow again.	Majority of boaters would be willing to return one or more days per year to boat. Appropriately skilled commercial customers are willing to boat.

Lower End of Optimum Flow

The lower end of optimum flow is defined as the flow where a given type of boat is enjoyable by the majority of boaters, is safer than the previous criteria because there are clearer routes and more coverage of the boulders in the main body of the river, and is at a level where participants would return to boat numerous times during the season. Generally, the velocity and power of flow is far greater than at minimum levels, and while providing much more fun and challenge, this flow poses more risk and hazard. Table II-4 presents the lower end of optimum flow criteria.

Table II-4
Level End of Optimum Flow Criteria

1.	Bottom scrapes	Generally only occurs because of boater errors or at wide braided rapids.
2.	Damage	No significant damage unless boater error.
3.	Rapid obstruction, or broaching.	No significant problem unless boater error.
4a.	Long Portage	Does not occur.
4b.	Short Portage	Only because of boater choice related to skill level.
5.	Flotation and movement. (navigability)	No problems.
6.	Drops	Same as minimum. Hydraulic power is clearly significantly greater and a major challenge to boat type, rather than clearance problems.
7.	Safety	Safety in terms of clearance over boulders and general room to maneuver is improved over minimum enjoyable criteria, but may be reduced considering velocity and power of flow and encounters with bank obstructions.
8.	Willingness to return to boat flow again	Clearly majority of boaters using a given craft would return to boat numerous times per year. Heavy commercial traffic would occur.

VFH (Video Survey, Field Observations and Hydraulic) Analysis

Edison conducted extensive video taping as listed in Table II-5 at 13 to 14 sites during the first four days. On the fourth and fifth days some taping of events on adjoining reaches was provided.

Table II-5 Video Coverage Days			
Day	Date	Boating Flow (cfs)	Coverage
1	May 11	300	13 bypassed reach sites, Bombs Away portaged
2	May 12	675	13 bypassed reach sites, Bombs Away portaged
3	May 13	1025 - 1075	14 sites
4	May 14	1175 - 1225	14 project bypassed reach sites and sites at Powerhouse and in Kernville
5	May 15	1325 (1925 above dam in Limestone)	Limestone run (2 boating sites), 3 project bypassed reach sites

During the first day Mr. Chuck Richards suggested good locations for video which would illustrate the range of boating experiences and difficulties and allow a maximum practical daily number of coverage points considering accessibility, proximity to the highway and safety. Sidewinder and Bombs Away rapids were filmed because of their location immediately below the Fairview Dam and reported low use.

Mr. Bill Taggart, a hydraulic engineer specializing in whitewater studies, and Ms. Sandra Walter-Perry, an experienced boater and environmental observer, kept field notes. On the first and last day, this consisted of bank observations of boating and participant comments. On the second, third, and fourth days they participated in kayaking and rafting, and observed the entire river. Once the complete record of video tapes was available, Mr. Taggart conducted a thorough review of the tapes on boating quality, incidents, and hydraulic features. The notes included specific times and places on the video.

Knowledge of the bi-hourly flow data below the dam and at the Kernville gages allowed a good approximation of the flow at any place or time. With knowledge of the flow, each videotape of a segment could be evaluated based on the observed incidents and quality of boating, flow and boat type against the flow evaluation criteria.

When a given event was below or above a criteria, then engineering experience and judgment was used to estimate the flow representative of the criteria. For example, kayakers participated on the second and fourth day, but missed reporting on the third. The third day was clearly in the optimal range for kayakers for most segments.

Estimates of flows between observed tests that would most likely satisfy the criteria were interpolated based on engineering principles and whitewater boating experience. Thus, using the same third day example, we judged the 1,050 cfs flow to be at the lower end of optimal for Bombs Away, determined a lesser flow than 1,050 cfs for Sidewinder and most downstream segments, and a greater flow (than 1,050 cfs) for the Thunder segment.

Table II-6 presents a summary of the VFH method results. Also, the recommended class rating for each segment is given as a hydraulic opinion.

PSA (Participant Survey) Analysis

A total of 78 boaters completed "Whitewater Study Reach Evaluation Forms" for various boating runs along the Kern River throughout the study period. The following section presents analysis of the evaluation forms regarding flow suitability, segment AWA rating, rapid evaluation, common runs, and other aspects.

Flow Suitability

Responses to three questions on the evaluation form were tabulated, graphed, and analyzed to determine "minimum flows", "minimum enjoyable flows", and "lower end of optimum flows". These questions were chosen because they seemed directly related to flow suitability, and because they were answered more frequently than some of the other questions. Limitations in the data exist for the following reasons:

- The same boaters did not boat all of the flows.

Table II-6 - VFH Methodology

SIDEWINDER RIVER SEGMENT RM <u>100.0</u> TO <u>100.9</u>			
CLASS V (may be Class VI at higher flows)	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	300	600	800
open deck whitewater canoe or inflatable kayak	400 ***	650 ***	850 ***
paddle raft	600	700	1000
oar rig raft or cataraft	800 *	900 *	1200 *

BOMBS AWAY RIVER SEGMENT RM <u>99.7</u> TO <u>100.0</u>			
CLASS V (Class VI at lower flows and possibly Class VI at much higher flows)	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	700 *	900 *	1050
open deck whitewater canoe or inflatable kayak	NR	NR	NR
paddle raft	900 *	1000	1200
oar rig raft or cataraft	900 *	1100 *	1200 *

FAIRVIEW RIVER SEGMENT RM <u>97.4</u> TO <u>99.7</u>			
CLASS III	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	250	550	750
open deck whitewater canoe or inflatable kayak	300	600	800 *
paddle raft	500	700	950
oar rig raft or cataraft	650	750	1000

CHAMISE GORGE RIVER SEGMENT RM <u>95.0</u> TO <u>97.4</u>			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	250	600	800
open deck whitewater canoe or inflatable kayak	300	650 **	800 **
paddle raft	550	700	900
oar rig raft or cataraft	700 *	800 *	1100

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

Denotes recommended minimum enjoyable flow for majority of boats.

Table II-6 - VFH Methodology (continued)

GOLD LEDGE RIVER SEGMENT RM 91.5 TO 94.0			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	400	600	900
open deck whitewater canoe or inflatable kayak	500	700	1000
paddle raft	700	900	1200
oar rig raft or cataraft	900 *	1100 *	1300

THUNDER RUN RIVER SEGMENT RM 87.9 TO 91.5			
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	500	800	1100
open deck whitewater canoe or inflatable kayak	600 ***	850 ***	1150 ***
paddle raft	1000	1100	1200
oar rig raft or cataraft	1100	1300	1400

CABLE/CAMP 3 RIVER SEGMENT RM 85.8 TO 87.9			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	400	700	900
open deck whitewater canoe or inflatable kayak	500	750 ***	950 ***
paddle raft	800	900	1050
oar rig raft or cataraft	900 *	1100	1300

RIVER KERN BEACH (flows approximate) RIVER SEGMENT RM 85 TO 85.8			
CLASS II	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
closed deck kayak or canoe	200	400	500
open deck whitewater canoe or inflatable kayak	200	400	500
paddle raft	400	500	600
oar rig raft or cataraft	500	600	700

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

 Denotes recommended minimum enjoyable flow for majority of boats.

- Some boaters did not answer all of the questions (a few did not answer any).
- Boaters did not raft or splashyak the first day (300 cfs) because the flows were regarded as below minimal. Observations are included in the analysis.
- One raft and splashyak boated the upper half at 700 cfs. Only splashyaks boated the lower reach at this flow. Later, Group 2 boaters tried to raft the upper Fairview and Chamise at 200 cfs, but were dragging bottom.
- Missing forms for rafts on the lower reach during the third day (1,100 cfs) - Rafters were observed boating that reach and had fun and a good experience generally, with a few broaches and many contacts on rocks in the lower portion.
- No kayaking occurred on the third day (1,100 cfs) but conditions obviously were very good based on the previous day's boating.

Since the numbers of participants for canoes, splashyaks, and oar rigs were small, their forms were combined with kayaks or rafts as appropriate to size.

The first flow suitability question, "Quality of whitewater experience", appeared in the middle of the first page. Responses were scaled from 1 "Risky, low water" to 10 "Extreme Hazard". The scale used to graph and analyze this question is as follows:

1	Risky, low water	7	Fun
2	Tiresome	8	Fun, but Scary
3	Boring	9	Risky, high water
4	Pleasurable	10	Extreme Hazard
5	Good Training/Warm Up	11	Other
6	Enjoyable		

Note that this scale is slightly different than the form, where "Risky, low water" appears as number 8. The graphs presenting the responses to this question are presented in Figures II-1 through II-3.

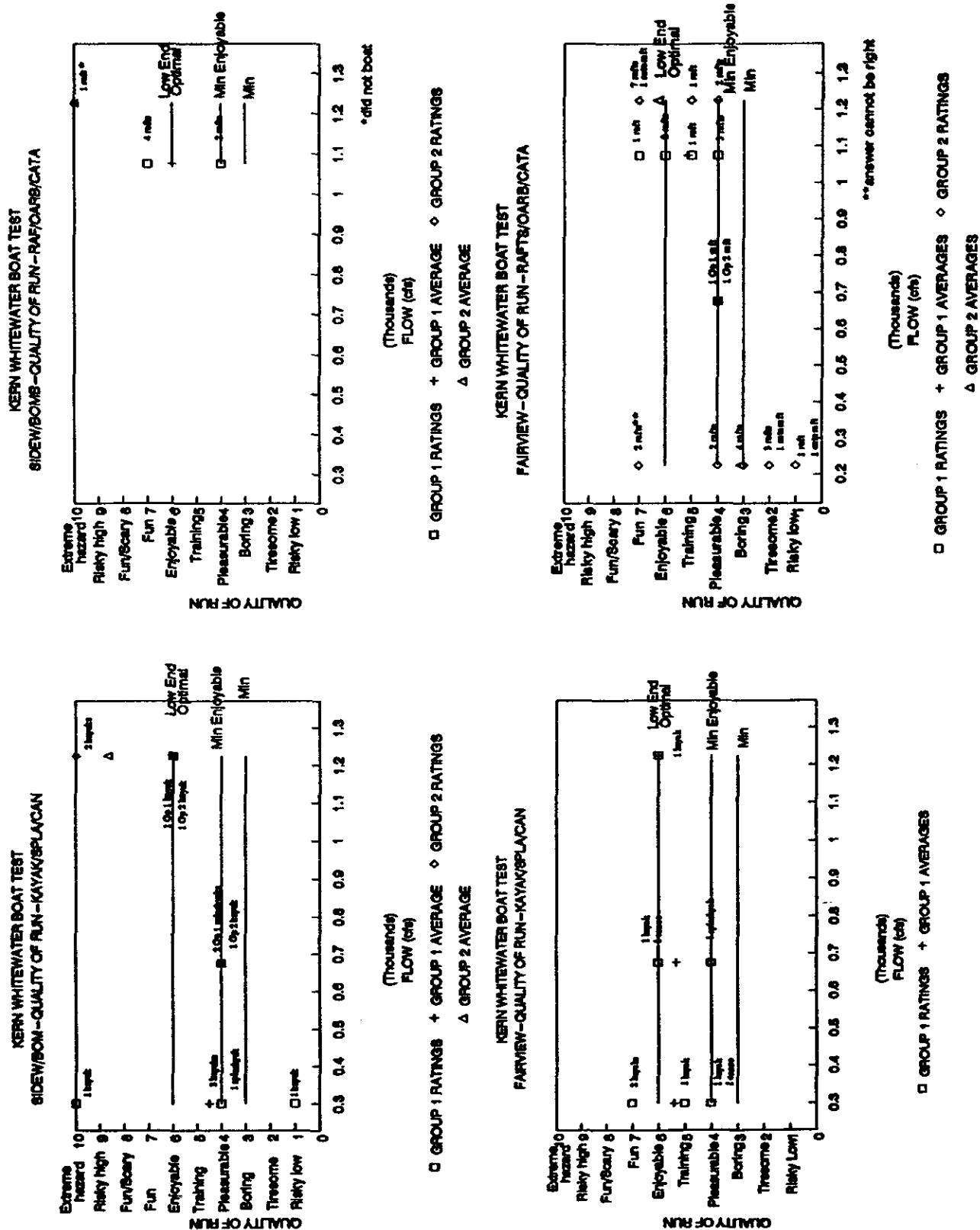


FIGURE II-1

QUALITY OF WHITEWATER EXPERIENCE

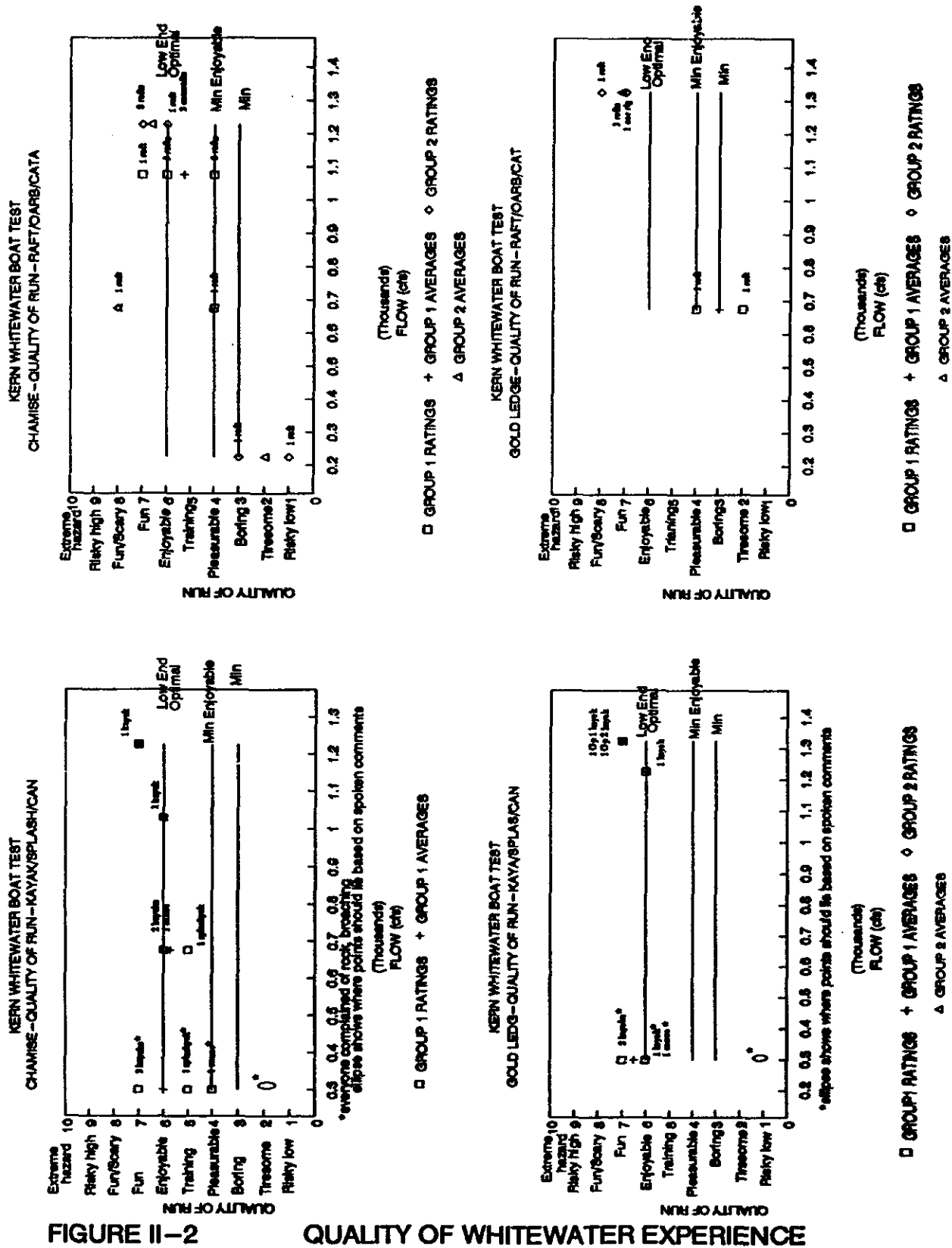


FIGURE II-2 QUALITY OF WHITEWATER EXPERIENCE

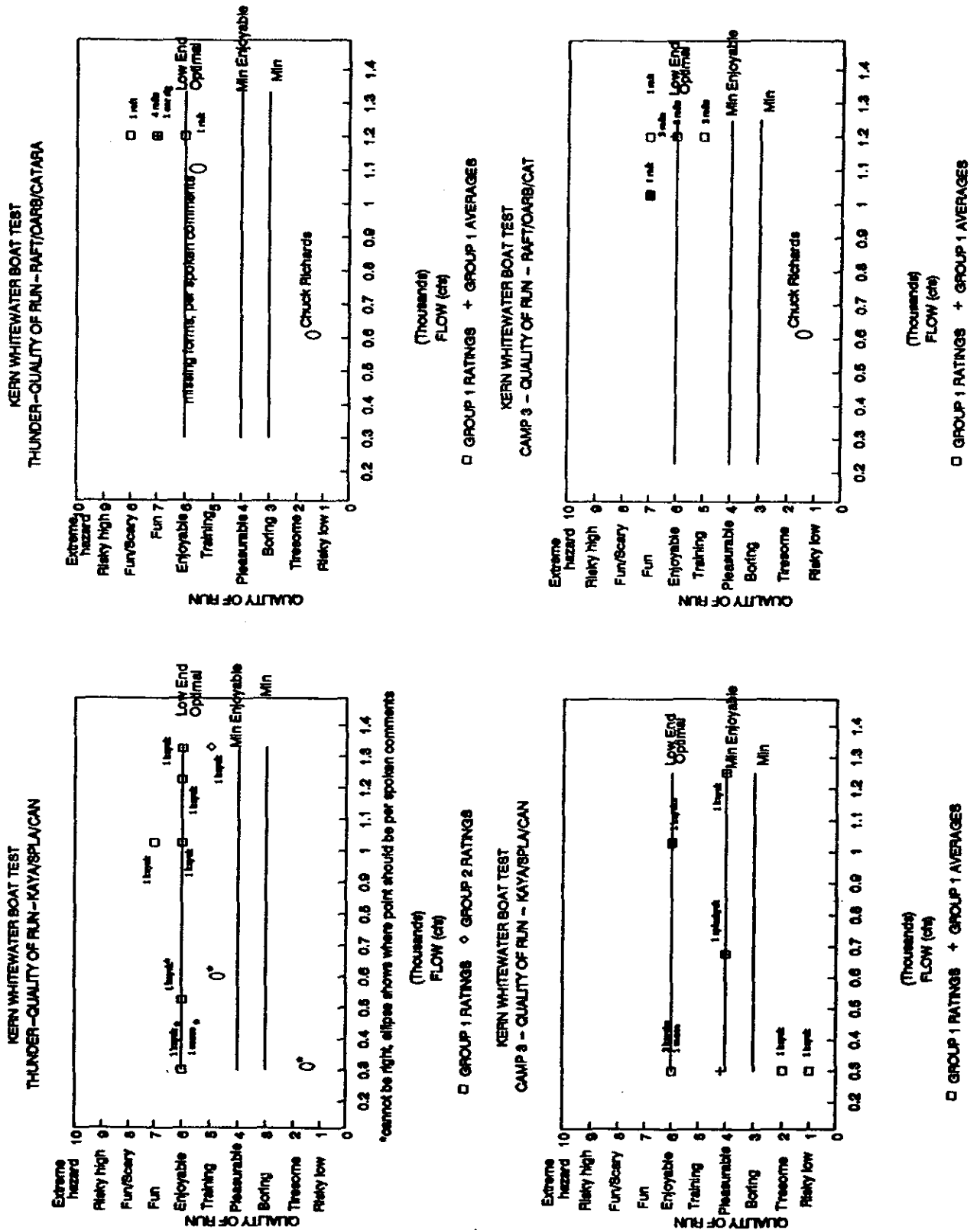


FIGURE II-3

QUALITY OF WHITEWATER EXPERIENCE

Note that a straightforward relationship between flow and quality of run is not apparent. This can be expected, given the data problems discussed above, the sample size, and inconsistencies inherent in such a limited study (different boaters boated various flows and runs; one boater's "pleasurable" flow might be "fun" for another). However, a trend can be estimated for each run, once the graph is examined together with knowledge of that particular run's physical characteristics and the boaters that boated (or did not boat) each flow. Minimum flow was determined to be a rating of 3 ("Boring"). Minimum enjoyable flow was determined to be at a rating of 4 ("Pleasurable"), and the lower end of optimum flow at a rating of 6 ("Enjoyable"). Note that there was some confusion in the field between pleasurable and enjoyable. Also, it is not clear why the kayakers were not marking "Risky, low water" when they were complaining about the high incidents of hitting rocks. The summary values determined for each segment based on the data for each is presented in Table II-7.

The second question analyzed was "Is the general character?", toward the bottom of page 1 of the form. Graphs of responses, scaled from a rating of 2 ("Below Minimal") to a rating of 11 ("Hazardous High Water") are presented in Figures II-4 through II-6. The possible responses were scaled as follows:

Minimum was evaluated as being a rating of 4 ("Minimal"), the minimum enjoyable flow was evaluated as being between a rating of 6 ("Above Minimal") and 8 ("Reasonable"), and the lower end of optimal flow was evaluated at a rating between 8 ("Reasonable") and 10 ("Optimal"). The summary flow values were estimated from the graphs, and are tabulated in Table II-8.

The third question used was, "Would you return for this flow level?". Responses, scaled from 1 ("No, too little") to 12 ("Yes, I would return several times over the season"), are presented in Figures II-7 to II-9. Possible responses were:

- 1 No, too little
- 2 No, too many problems
- 3 No, too much or too scary
- 4 Maybe, if in the area anyway
- 5 Maybe yes, because I could boat with some other reaches
- 6 Yes, but only if it was clear that the season wasn't going to get better
- 7 Yes I boat at this flow and in similar conditions

Table II-7

WHITEWATER FLOW SUITABILITY
Based on "Quality of Run"

SIDEWINDER/BOMBS AWAY		RIVER SEGMENT RM <u>100.0</u> TO <u>100.3</u>	
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300 v	700	1000 a
rafts/cataracts/oar rigs	-----	-----	1000

FAIRVIEW		RIVER SEGMENT RM <u>97.4</u> TO <u>99.7</u>	
CLASS III	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	225 a	300 v	800
rafts/cataracts/oar rigs	300	700	1200

CHAMISE GORGE		RIVER SEGMENT RM <u>95.0</u> TO <u>97.4</u>	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	700	900
rafts/cataracts/oar rigs	500	1000	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

 Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

----- no data

Table II-7 (continued)

WHITEWATER FLOW SUITABILITY
Based on "Quality of Run"

GOLD LEDGE RIVER SEGMENT RM <u>91.5</u> TO <u>94.0</u>			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300 v	700	1100
rafts/cataracts/oar rigs	500	<u>1000</u>	1200

THUNDER RUN RIVER SEGMENT RM <u>87.9</u> TO <u>91.5</u>			
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	400	700	1200
rafts/cataracts/oar rigs	750	<u>1000</u>	1200

CABLE/CAMP 3 RIVER SEGMENT RM <u>85.8</u> TO <u>87.9</u>			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	-----	1000
rafts/cataracts/oar rigs	-----	<u>-----</u>	1000

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

 Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

----- no data

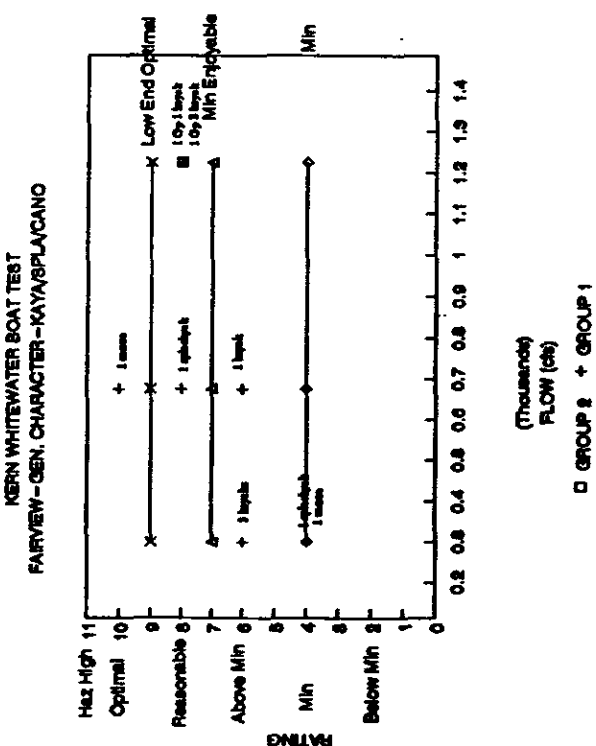
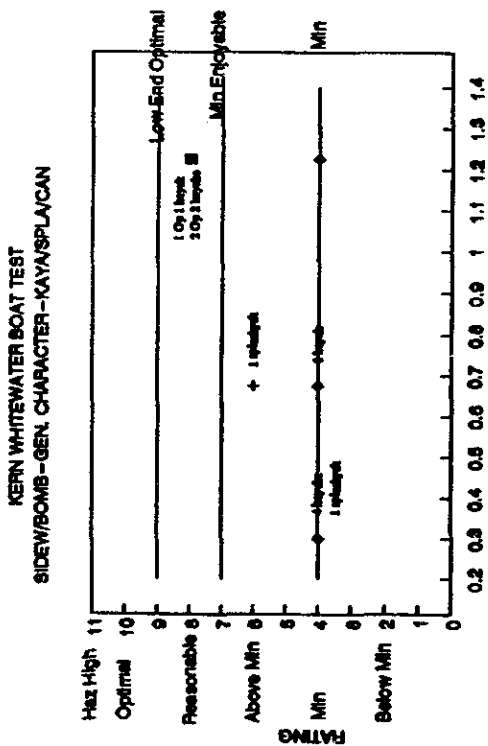
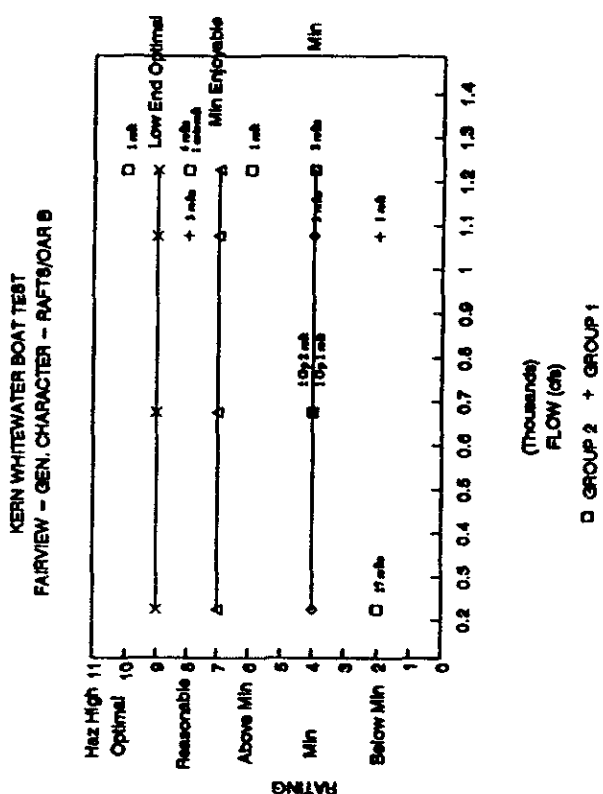
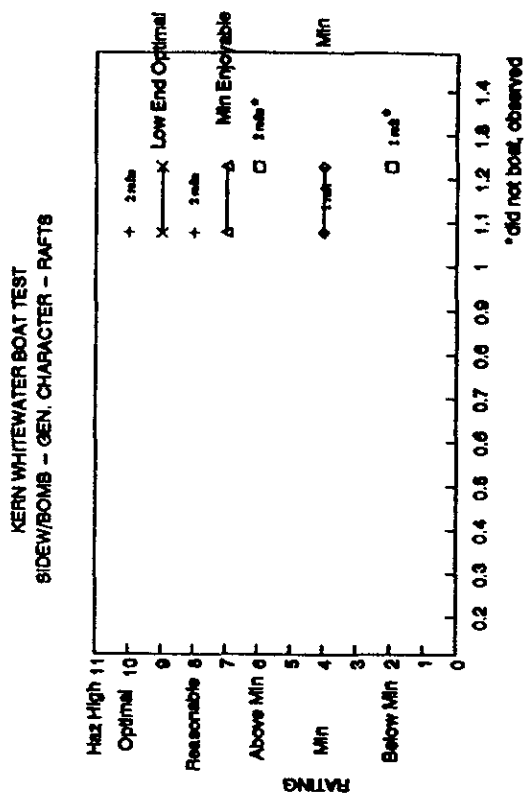


FIGURE II-4

WHAT IS THE GENERAL CHARACTER?

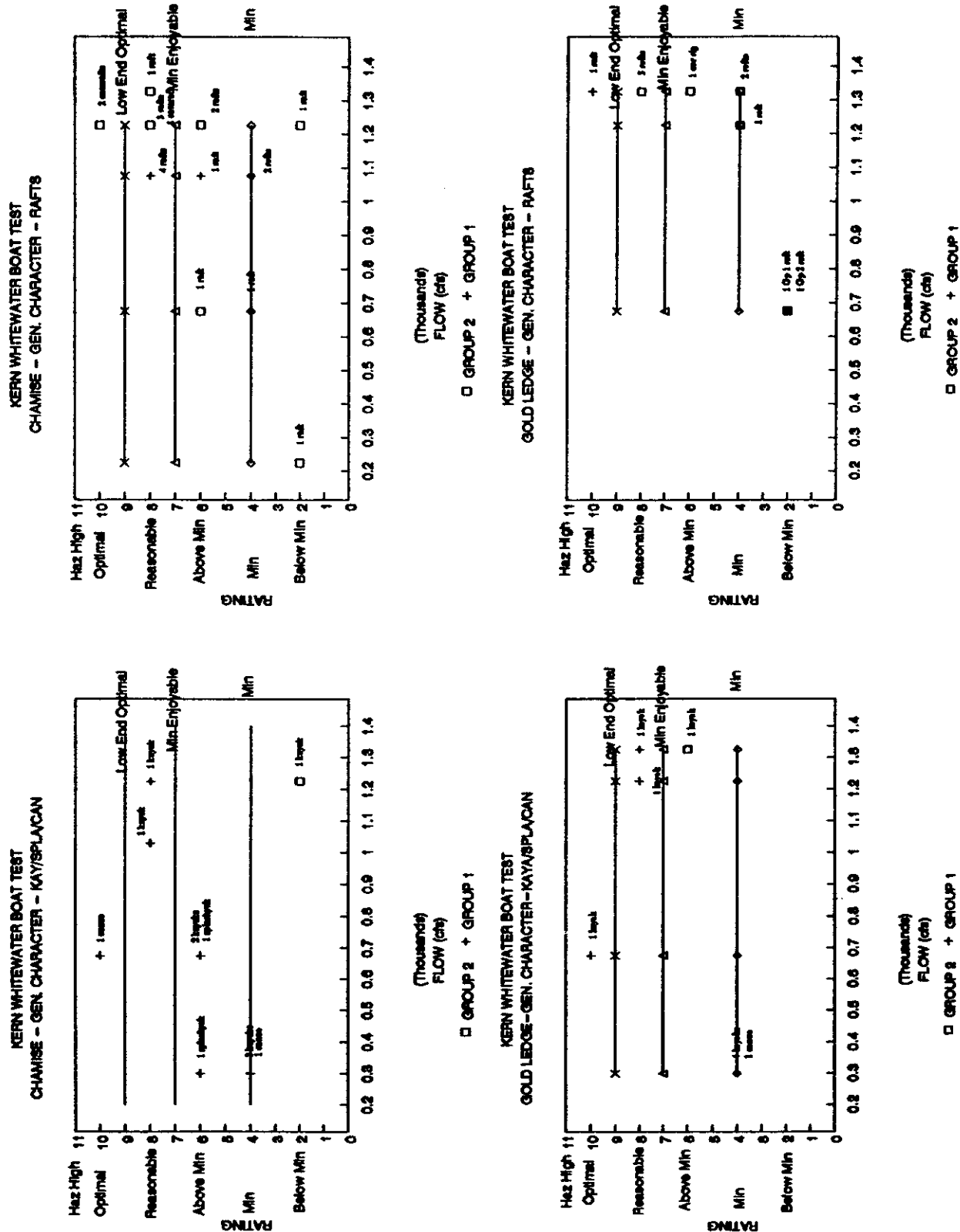


FIGURE II-5 WHAT IS THE GENERAL CHARACTER?

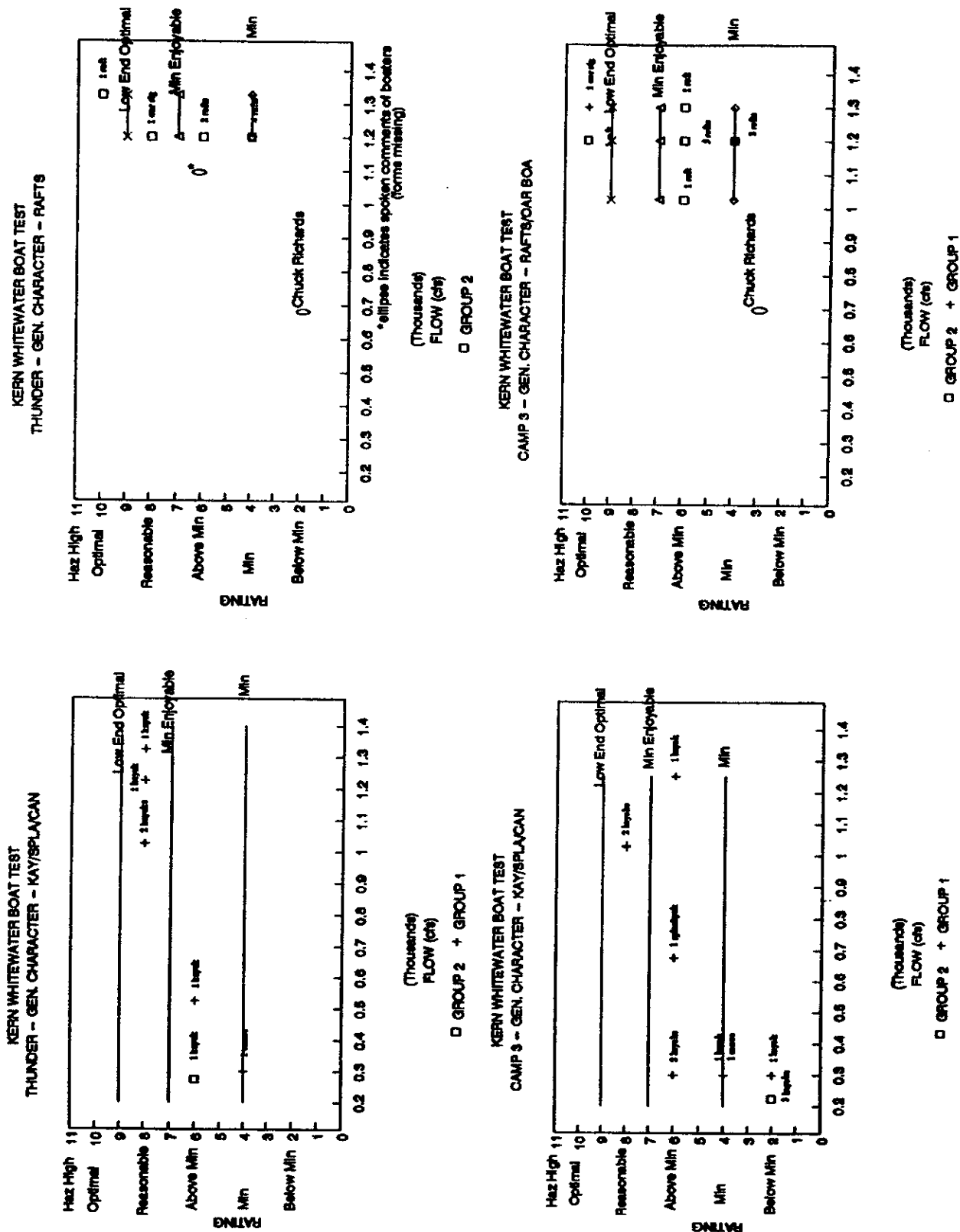


FIGURE II-6 WHAT IS THE GENERAL CHARACTER?

Table II-8

WHITEWATER FLOW SUITABILITY
Based on "General Character"

SIDEWINDER/BOMBS AWAY		RIVER SEGMENT RM <u>100.0</u> TO <u>100.3</u>	
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	1000	1300
rafts/cataracts/oar rigs	-----	-----	1000

FAIRVIEW		RIVER SEGMENT RM <u>97.4</u> TO <u>99.7</u>	
CLASS III	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	250	700	1000
rafts/cataracts/oar rigs	700	1000	1200

CHAMISE GORGE		RIVER SEGMENT RM <u>95.0</u> TO <u>97.4</u>	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	700	1300
rafts/cataracts/oar rigs	500	1000	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

☐ Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

----- no data

Table II-8 (continued)

WHITEWATER FLOW SUITABILITY
Based on "General Character"

GOLD LEDGE RIVER SEGMENT RM <u>91.5</u> TO <u>94.0</u>			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	1100	1300
rafts/cataracts/oar rigs	800	1000	1400

THUNDER RUN RIVER SEGMENT RM <u>87.9</u> TO <u>91.5</u>			
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	900	1300
rafts/cataracts/oar rigs	800	1100	1300

CABLE/CAMP 3 RIVER SEGMENT RM <u>85.8</u> TO <u>87.9</u>			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	700	1200
rafts/cataracts/oar rigs	700	900	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

☐ Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

---- no data

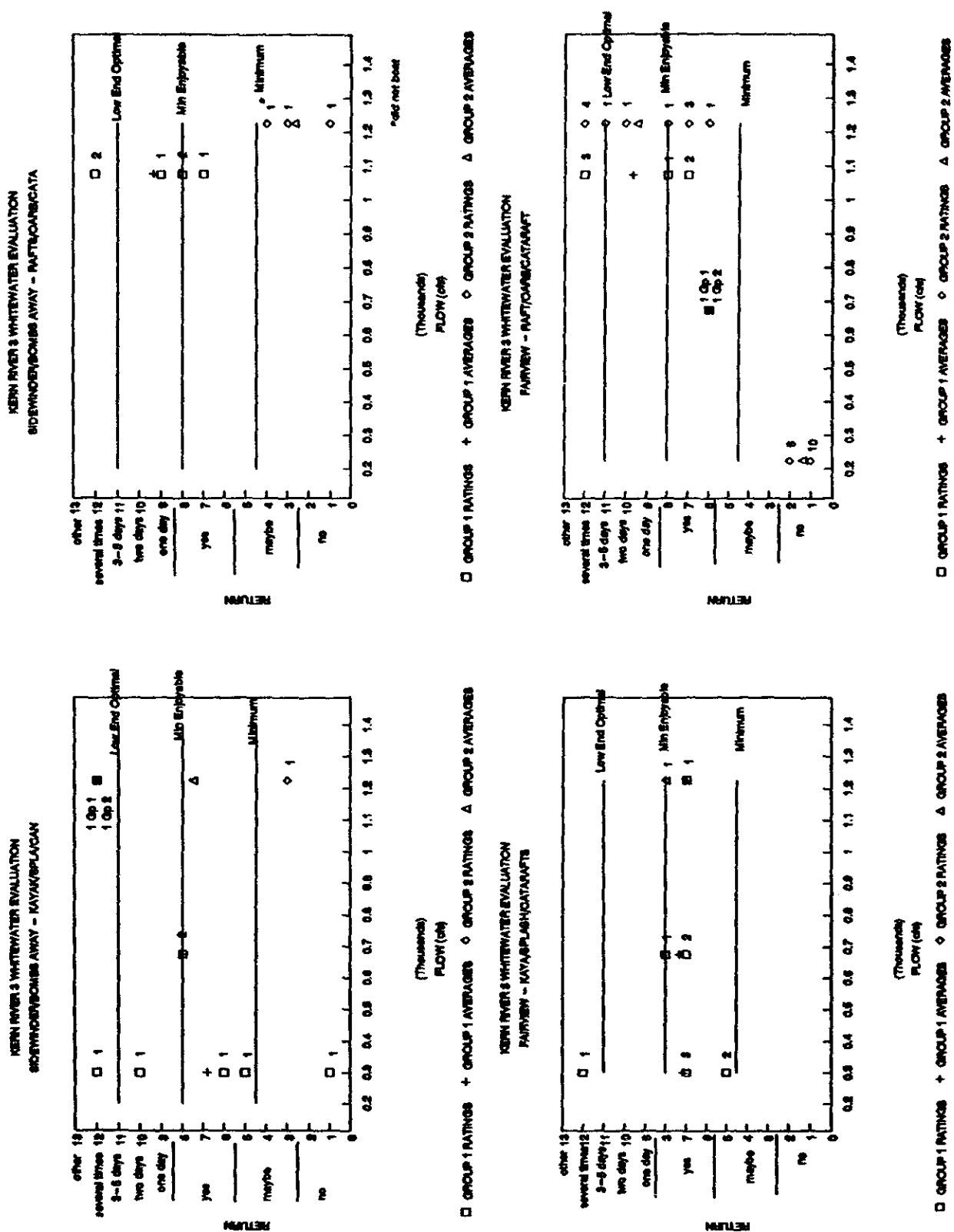


FIGURE II-7 WOULD YOU RETURN FOR THIS FLOW LEVEL?

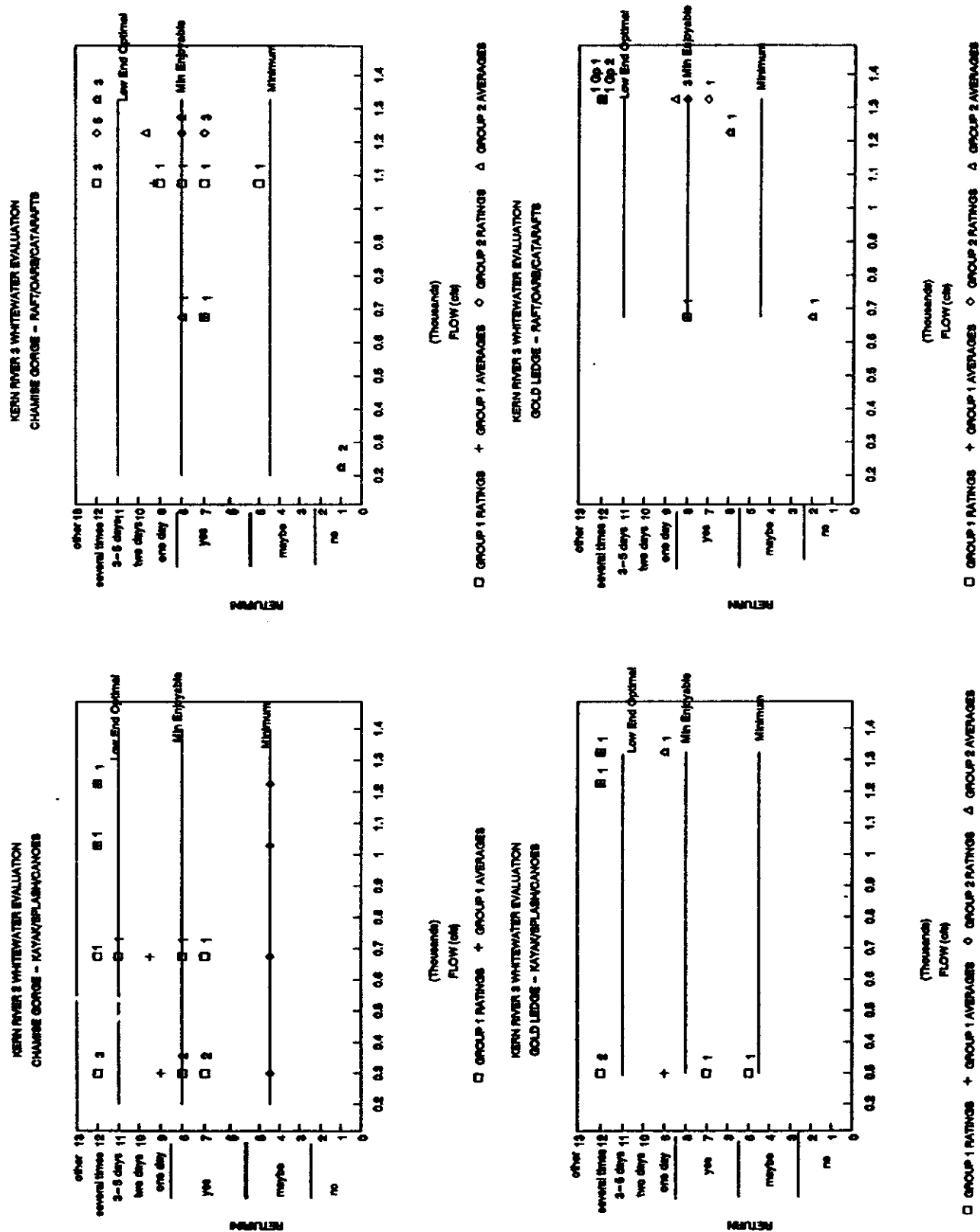


FIGURE II-8 WOULD YOU RETURN FOR THIS FLOW LEVEL?

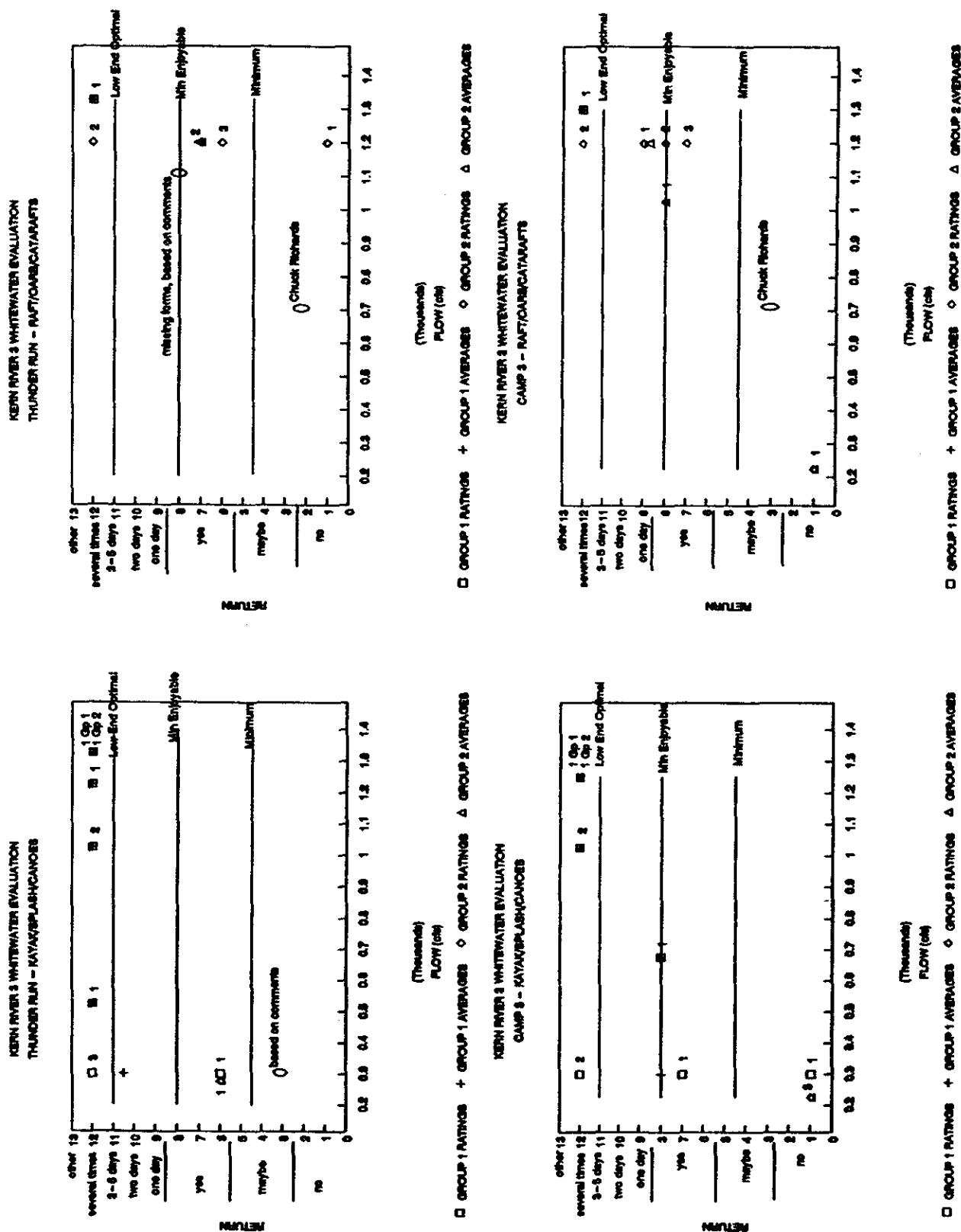


FIGURE II-9 WOULD YOU RETURN FOR THIS FLOW LEVEL?

- 8 Yes, this was enjoyable
- 9 Yes, I would come for one day
- 10 Yes, I would come for two days or a weekend
- 11 Yes, I would come for a 3-5 day trip
- 12 Yes, I would return several times over the season
- 13 Other

Analysis results are presented in Table II-9, where minimum flow was evaluated as being between a rating of 4 ("Maybe, if in the area anyway") and a rating of 5 ("Maybe yes, because I could boat with some other reaches"); minimum enjoyable flow was evaluated at a rating of 8 ("Yes, this was enjoyable"), and the lower end of optimal flow was evaluated to be at a rating of 11 ("Yes, I would come for a 3-5 day trip").

Conclusions for flow suitability for the PSA method (form analysis) for the minimal, minimum enjoyable, and lower end of optimal flows for each segment are presented in Table II-10. Analysis of the three questions discussed above, as presented in Tables II-7 through II-9, was used to arrive at these conclusions. Conclusions were tempered with knowledge of the river's physical characteristics and the boaters that boated (or did not boat) each flow.

AWA Rating For Runs

Participants were asked to rate each run (toward the bottom of page 1 of the evaluation form) for the general and maximum AWA Class. Responses are tabulated in Table II-11. The number of responses for each class (general or maximum), at each flow, for kayaks or rafts, at each run are presented in Table II-11. For instance, from the first page of Table II-11, the Sidewinder/Bombs Away run at 1,200 cfs was generally rated as a AWA Class V by 4 kayakers (1 Group 1 kayaker and 3 Group 2 kayakers), and also as a AWA Class V by 3 rafters. The maximum rating (rating of the most difficult rapid in the run) for the Sidewinder/Bombs Away run was an AWA Class V by 2 of the kayakers, VI per 1 kayaker, V per 1 rafter, and VI according to 1 rafter. Please note that the class ratings in Table II-11 are opinions from a wide variety of boaters, not recommendations by Edison.

Table II-9

WHITEWATER FLOW SUITABILITY
Based on "Would you Return?"

SIDEWINDER/BOMBS AWAY		RIVER SEGMENT RM <u>100.0</u> TO <u>100.3</u>	
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	< 300	700	1100
rafts/cataracts/oar rigs	-----	1100	-----

FAIRVIEW		RIVER SEGMENT RM <u>97.4</u> TO <u>99.7</u>	
CLASS III	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	200	700	1300
rafts/cataracts/oar rigs	400	1000	1200

CHAMISE GORGE		RIVER SEGMENT RM <u>95.0</u> TO <u>97.4</u>	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	200	300	900
rafts/cataracts/oar rigs	500	800	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

 Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

----- no data

Table II-9 (continued)

WHITEWATER FLOW SUITABILITY
Based on "Would you Return?"

GOLD LEDGE		RIVER SEGMENT RM <u>91.5</u> TO <u>94.0</u>	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	250	400	1000
rafts/cataracts/oar rigs	700	1000	1300

THUNDER RUN		RIVER SEGMENT RM <u>87.9</u> TO <u>91.5</u>	
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	350	500	1000
rafts/cataracts/oar rigs	900	1100	1300

CABLE/CAMP 3		RIVER SEGMENT RM <u>85.8</u> TO <u>87.9</u>	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	----	300	1000
rafts/cataracts/oar rigs	700	1000	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

☐ Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

---- no data

Table II-10

**Whitewater Flow Suitability Summary
PSA Method**

SIDEWINDER/BOMBS AWAY RIVER SEGMENT RM <u>100.0</u> TO <u>100.3</u>			
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/slashyaks	300*	700	1000
rafts/cataracts/oar rigs	-----	900	1000

*Bombs Away not boated at 300 cfs and 675 cfs, portaged kayaks and rafts

FAIRVIEW RIVER SEGMENT RM <u>97.4</u> TO <u>99.7</u>			
CLASS III	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/slashyaks	250	500	1000
rafts/cataracts/oar rigs	500	800	1200

CHAMISE GORGE RIVER SEGMENT RM <u>95.0</u> TO <u>97.4</u>			
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/slashyaks	250	550	1000
rafts/cataracts/oar rigs	500	900	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

☐ Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

----- no data

Table II-10

**Whitewater Flow Suitability Summary
PSA Method (continued)**

GOLD LEDGE		RIVER SEGMENT RM 91.5 TO 94.0	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	300	700	1100
rafts/cataracts/oar rigs	700	1000	1300

THUNDER RUN		RIVER SEGMENT RM 87.9 TO 91.5	
CLASS V	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	350	700	1100
rafts/cataracts/oar rigs	800	1000	1200

CABLE/CAMP 3		RIVER SEGMENT RM 85.8 TO 87.9	
CLASS IV	MINIMUM (MARGINAL)	MINIMUM ENJOYABLE	LOWER END OF OPTIMAL
kayaks/canoes/splashyaks	800	700	1000
rafts/cataracts/oar rigs	700	900	1200

* Rapid was not run in this type of boat at this flow magnitude.

** Running Satan's Slot in an open deck whitewater canoe is questionable, and potentially hazardous.

*** Wasn't boated in a whitewater open deck canoe as it would be questionable, hazardous.

NR Probably not runnable by this type of craft.

☐ Denotes recommended minimum enjoyable flow for majority of boats.

a has to be at or lower than rafting

v based on forms and watching boaters on video

---- no data

Table II-11
Segment Difficulty Rating by Participants

KERN RIVER NO. 3 WHITEWATER EVALUATION
SIDEWINDER/BOMBS AWAY

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V			2		2				1			
Class VI			* 3		1					3		

* Sidewinder Classified as IV

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V			3		1				1		1	
Class VI					1					1		

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V							7			3		
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V							6			1		
Class VI										1		

Table II-11
Segment Difficulty Rating by Participants (Cont.)

KERN RIVER NO. 3 WHITEWATER EVALUATION
FAIRVIEW

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II			3									
Class III			3		3				1			1
Class IV												
Class V												
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV									1			1
Class V			5		1							
Class VI												

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III		12									1	
Class IV		5					7				5	
Class V					1						2	
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III		6										
Class IV		6					5				3	
Class V					1		2				2	
Class VI											1	

Table II-11
Segment Difficulty Rating by Participants (Cont.)

KERN RIVER NO. 3 WHITEWATER EVALUATION
CHAMISE GORGE

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V				5		4		1				1
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV				3		1		1				1
Class V				1		1						
Class VI												

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V												
Class VI				1		1		1				1

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V				1		1		1				4
Class VI												2

Table II-11
Segment Difficulty Rating by Participants (Cont.)

KERN RIVER NO. 3 WHITEWATER EVALUATION
GOLD LEDGE RUN

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV			3								1	
Class V			2		1				1			1
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV			1									1
Class V			2		1				1		1	
Class VI												

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V						1				1		5
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												1
Class III												3
Class IV						1						1
Class V											1	
Class VI									1			

Table II-11
Segment Difficulty Rating by Participants (Cont.)

KERN RIVER NO. 3 WHITEWATER EVALUATION
THUNDER RUN

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV			2				1					
Class V			2		1		1		1		1	1
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V			3		1		1		1		1	
Class VI												

* 1 kayaker chose Class V in both General and Maximum categories for 525 cfs flow.

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V									1	6	1	
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V										5	1	
Class VI										1		

Table II-11
Segment Difficulty Rating by Participants (Cont.)

KERN RIVER NO. 3 WHITEWATER EVALUATION
CABLE

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V												
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V												
Class VI												

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V												
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV												
Class V												
Class VI												

KERN RIVER NO. 3 WHITEWATER EVALUATION
CAMP 3

KAYAKS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II					1							
Class III			2				2		1			
Class IV		3	3									
Class V												
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II					1							
Class III												
Class IV		2	3						1			
Class V												
Class VI												

RAFTS

General Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV							1					1
Class V											1	
Class VI												

Maximum Classification	Flow 200 cfs		Flow 300 cfs		Flow 700 cfs		Flow 1100 cfs		Flow 1200 cfs		Flow 1300 cfs	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Class I												
Class II												
Class III												
Class IV							1					
Class V										7		
Class VI											1	

On page 3 of the evaluation forms, participants were asked about the "safety/navigability/enjoyment" of each run.

Generally, runs were rated as the same class as the rapid or at one class less. Each run was considered unsafe for boaters if it was two or more classes below the rapid class. Extreme caution should be used by boaters of less skill than the rapid ratings.

Rapid Evaluations

Page 2 of the evaluation form was a "Rapid or Feature Evaluation", in the form of a matrix. Participants were asked for the name/river mile of features in each run. For each feature, they were asked about the feature type; i.e. the AWA Classification; the water drop, minimum depth, typical depth, and maximum depth; navigability; safety; and problems. Table II-12 summarizes the responses.

Boated Segments

As part of the personal data form, boaters were asked: "Which reaches of the Upper Kern do you boat? If you run during the same day, please indicate with bracket." Indicated segments were checked under headings of Wet, Average and Dry Years. Thirty-two respondents answered. Others did not respond at all.

Use by Boat User Type

The results are summarized under 3 boat categories in Table II-13.

Several observations can be made about the raw data and the table. The number of respondents in this category was actually less than 32, because some respondents do not boat in various conditions and, therefore, did not fill out this section. Some participants will boat in average conditions, but do not boat in dry and sometimes not wet conditions.

Table II-12

Participant Rapid or Feature Evaluation *

NAME/MI	TYPE	AWA **	MAX DROP	MIN DEP	TYP DEP	MAX DEP	NAV	SAFE	PROBLEMS
Side-winder	rapid	IV-V	2-6ft	0-3ft	2-6ft	6-10ft	ave	good	difficult/hazardous swim, brush, complex water, mult. hazards, impact, pinning/broaching, constrictions, holes, downfall, trick eddies
Bomba Away	rapid	V-VI	5-10ft	0-2ft	2-6ft	6-10ft	poor-ave	poor-ave	difficult/hazardous swim, brush, complex water, mult. hazards, impact, pinning/broaching, constrictions, holes, keepers, downfall, trick eddies, mult. drops, no bypass, blind
Fairview	rapid, rifle, braid, hazard	II-III	1-2ft	0-2ft	2-4ft	3-8ft	ave-good	ave-very good	pinning/broaching, constrictions, diff./haz. swim, brush, impact, complex water, diff. flow patterns, shallow, blind rocks
Entrance Rapid	rapid	IV	3-4ft	0 ft	2 ft	-----	fair-ave	ave-good	complex water, mult. hazards
Laura's Left	rapid	III-IV	2-5ft	0-2ft	1-3ft	4-7ft	fair-good	ave-good	diff. approach, complex water, holes, keepers, impact, pinning/broaching, haz. swim
Kelly's Hole	rapid	II-IV	1-2ft	0 ft	2 ft	-----	fair-ave	ave-good	
Satan's Slot	rapid	IV	5-6ft	0-2ft	4 ft	5-7ft	fair-good	ave-good	blind, holes, complex water, diff. swim
Gold Ledge	braid/rapid	IV	-----	-----	-----	-----	impossible-fair	ave	brush, pinning/broaching, diff. swim, impact, constrictions
Squashed Paddler	rapid	IV	3	-----	-----	-----	ave-good	ave-good	diff. approach, complex water, mult. hazards, holes, constrictions, diff./haz. swim, no escape, no bypass

Table II-12

Participant Rapid or Feature Evaluation * (continued)

NAME/MI	TYPE	AWA **	MAX DROP	MIN DEP	TYP DEP	MAX DEP	NAV	SAFE	PROBLEMS
Sock-em Dog	rapid	V	_____	_____	_____	_____	ave- good	ave- good	complex water, diff./haz. swim, blind, diff. approach, complex water, mult. hazards, holes, keepers, impact, pinning/broaching, constrictions, no escape, no bypass
Flume	rapid	IV-V	_____	_____	_____	_____	ave- very good	ave- very good	mult. hazards, diff./haz. swim, diff. approach, mult. hazards, holes, no escape, no bypass, constrictions
Fender Bender	rapid	IV-V	_____	_____	_____	_____	ave- very good	ave- very good	complex water, diff. approach, mult. hazards, holes, keepers, impact, constrictions, haz. swim, pinning/broaching
Cable	rapid	IV	_____	_____	_____	_____	ave	ave	blind
The Wall	rapid	IV	_____	_____	_____	_____	ave	ave	diff. approach, complex water, mult. hazards, impact, diff. swim
Tombstone	rapid	IV	_____	_____	_____	_____	ave	ave	_____
Buzzard	rapid	II-III	_____	_____	_____	_____	fair-ave	ave- good	constrictions, diff. swim
Pepsi	rapid	III-IV	_____	_____	_____	_____	fair-ave	ave- good	pinning/broaching, impact, diff. swim
Tequila	rapid	III-IV	_____	_____	_____	_____	ave	ave	mult. hazards, impact, pinning/broaching, constrictions, diff. swim

*Table entries vary with flow, do not have responses for each flow at each feature.

**AWA ratings reflect participant responses, not TEA or ENTRIX recommendations.

Table II-13

Historical Boat Segment Utilization Percentage of Participants by Boat Type									
	WET			AVERAGE			DRY		
SEGMENT	S	B	M	S	B	M	S	B	M
Forks	40	26	60	40	36	66	20	25	54
Limestone	80	100	100	80	82	100	60	75	92
Sidewinder/Bombs Away	0	26	47	0	0	33	0	0	8
Fairview	40	50	80	20	36	92	0	13	15
Chamise Gorge	40	50	73	40	36	66	0	13	23
Salmon Falls	20	13	20	0	0	8	0	0	0
Upper Gold Ledge	40	50	73	40	27	42	0	25	15
Gold Ledge (includes Thunder)	40	26	73	40	18	42	0	13	15
Thunder	40	50	80	60	55	50	0	13	23
Camp 3	100	88	93	80	73	75	40	63	54*
Powerhouse	100	100	100	100	73	92	60	75	85
Lower Kern	100	100	100	100	73	100	80	63	85
No. of Respondents	5	8	15	5	11	12	5	8	13
% of Respondents Participating in Type of Water Year	- 88% -			- 88% -			- 81% -		
S - Small Boats, B - Big Boats, M - Multiple Boat Types									
* Two respondents noted that they would specifically check flow before boating.									

During average and dry years, boating of the bypassed reach decreases. Small craft users reportedly do not use the bypassed reach, except the last Camp 3 segment, while the big and multiple craft users indicate some use in all reaches for all water years. The heaviest use in the bypassed reach is in the Camp 3 segment.

The results of the boating evaluations indicate that the Fairview and Chamise Gorge runs are more runnable in a dry year. In a dry year the heaviest use is upstream in the Limestone run and downstream in the Powerhouse run, and later in the season in the lower Kern River.

The Thunder segment appears to challenge the "small" and "big" craft users in a wetter year as reported use drops slightly. The multiple boat users indicate increasing use with wetter years, which may reflect their ability to adapt by using different craft.

Several of the Group I expert boaters reported that they never ran Salmon Falls. People that do run Salmon Falls run only portions and portage past the two falls.

The majority of the Group I experts are included in the M, or Multiple, category of participants who typically kayak and raft. Also many of the Group II rafters, who are intermediate to expert, are beginner to intermediate kayakers.

The lack of access to the Sidewinder/Bombs Away is reported as a limiting factor to boating. Also, it is more difficult than most other segments.

Use by Participants

Table II-14 summarizes historical boating of segments by all craft, for various water years, in terms of percentage of all participants.

Usage in most average, wet and dry years is less in the bypassed reach, compared to adjacent runs up and downstream, which probably is due to the increased difficulty. Two participants indicated the need to check flows on the Camp 3 run. However, this does not explain the much lower usage percentages of Fairview and in particular Chamise Gorge, a run of similar difficulty. Better current information on flows in the bypassed reach and guide information on flow suitability might increase usage of these reaches in both dry and average years.

Table II-14 Historically Boated Segments - Percentage of Participants			
	WET	AVERAGE	DRY
SEGMENT			
Forks	63	44	31
Limestone	84	78	66
Sidewinder/Bombs Away	31	13	3
Fairview	56	50	9
Chamise Gorge	53	44	13
Salmon Falls	16	3	0
Upper Gold Ledge	53	31	13
Gold Ledge (includes Thunder)	50	28	9
Thunder	56	47	13
Camp 3	81	69	44
Powerhouse	88	75	63
Lower Kern	88	78	63

Boated Runs

The same form asked participants to bracket the segments (or reaches) to indicate runs which were commonly taken. Six participants provided this information and some information was obtained during follow up interviews. Table II-15 identifies the historically boated runs. Numerous combinations of these runs and other segments are used as a function of flow, skill, equipment and time available.

Table II-15

Historically Boated Runs

SEGMENTS	RUNS								
	Forks	Fairview/ Chamise	Lickety Split	Camp 3	Cable	Thunder	Gold Ledge	Upper Bypass	Lower Bypass
Forks	*								
Limestone									
Sidewinder/Bombs Away								*	
Fairview		*							
Chamise Gorge									
Salmon Falls									
Upper Gold Ledge									*
Thunder									
Cable									
Camp 3				*					
River Kern Beach									
Powerhouse									

* runs specifically denoted on forms.

Other Comments From Evaluation Forms

Other comments and replies to questions throughout the evaluation form dealt mostly with the boater's experience (i.e. "low flow but enthusiastic group made it worthwhile"), dissatisfaction with the evaluation forms ("this must be a government form"), and opinions about leaving flow in the river. The participants were also asked the following two questions relevant to information utilized to make decisions on boating, as follow.

1. Is there Adequate Information to Understand the Current Flow Situation on the Bypassed Reach of the Kern?

Of those that responded, 69% answered no.

2. On What Information Do You Base Your Decision to Boat?

The respondents were provided the multiple choices summarized in Table II-16.

Boater Information

The mean income of the 14 boaters that completed personal data forms was \$48,000 (standard deviation was \$38,400). In the Kernville area, non-commercial participants spent an average of \$730 per season on equipment and \$1,060 per season on food, lodging, etc. Average seasonal spending of non-locals is \$700 and \$1,010 for equipment and miscellaneous, respectively. Spending for equipment and miscellaneous is \$700 and \$880, respectively.

Non-local boaters spend an average of 32 days per season in Kernville during an "average" year, with an increase to 37 days during "wet" years, and a decrease to 23 days during "dry" years.

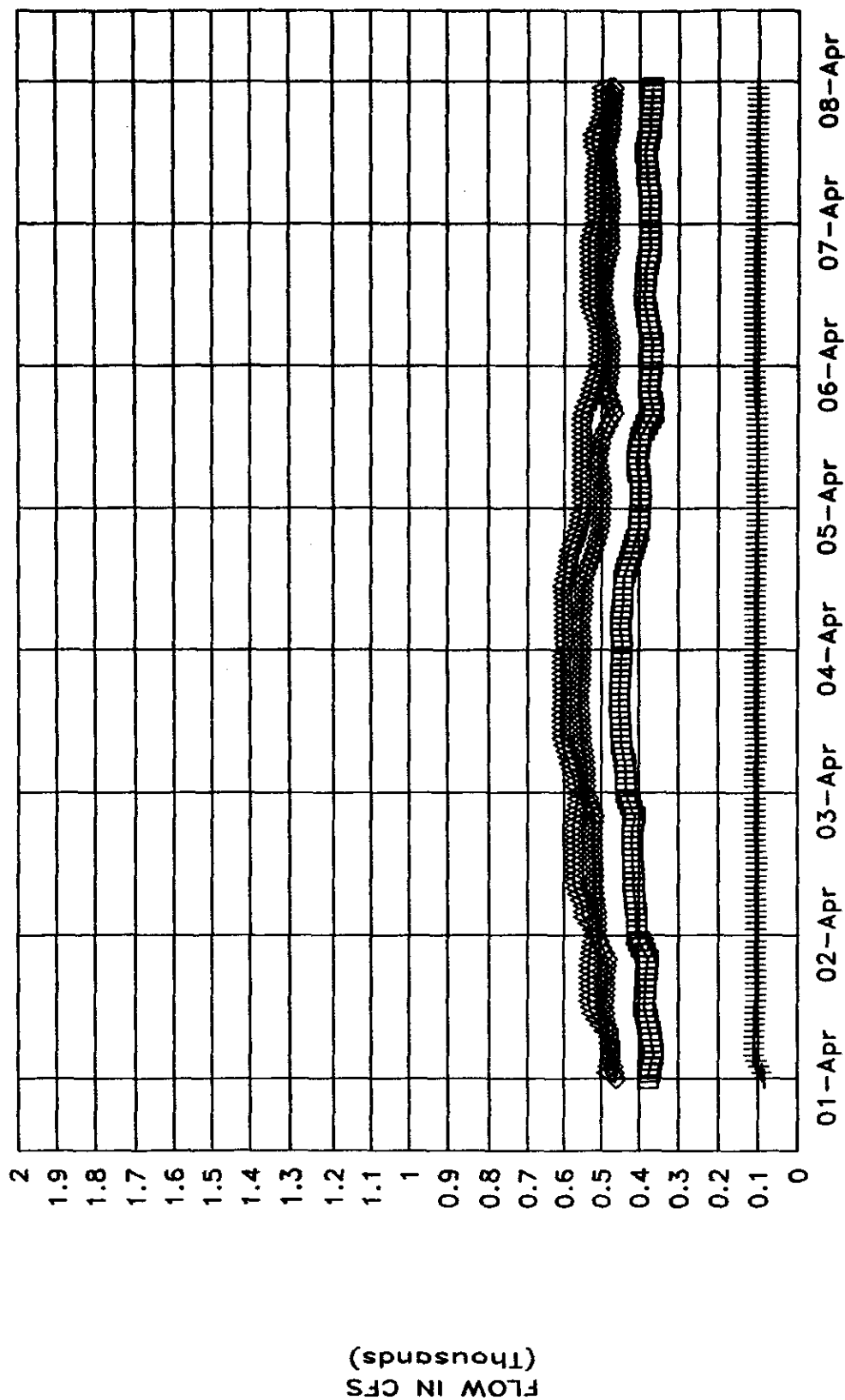
Table II-16		
Information Used for Decision to Boat		
a.	Word of mouth	53%
b.	Flow Phone	41%
c.	Look at the River (I'm Local) or Look at the Kernville Gage	38%
d.	Friends of the River	28%
e.	Sports Store	19%
f.	Local Resident	9%
g.	Schedule with Friend (added by Participant)	3%
h.	Media Weather Report	0%
i.	Media Sports/Recreation Report	0%
j.	General Media Information	0%

ATTACHMENT A

**SPRING 1994 FLOW GRAPHS THROUGH TEST PERIOD AND
SPRING DAILY AVERAGE FLOWS 1963 - 1992
(Raw Flow Data Tabulation Available Upon Request)**

KERN RIVER FLOW - SPRING 1994

APRIL 1 - APRIL 7

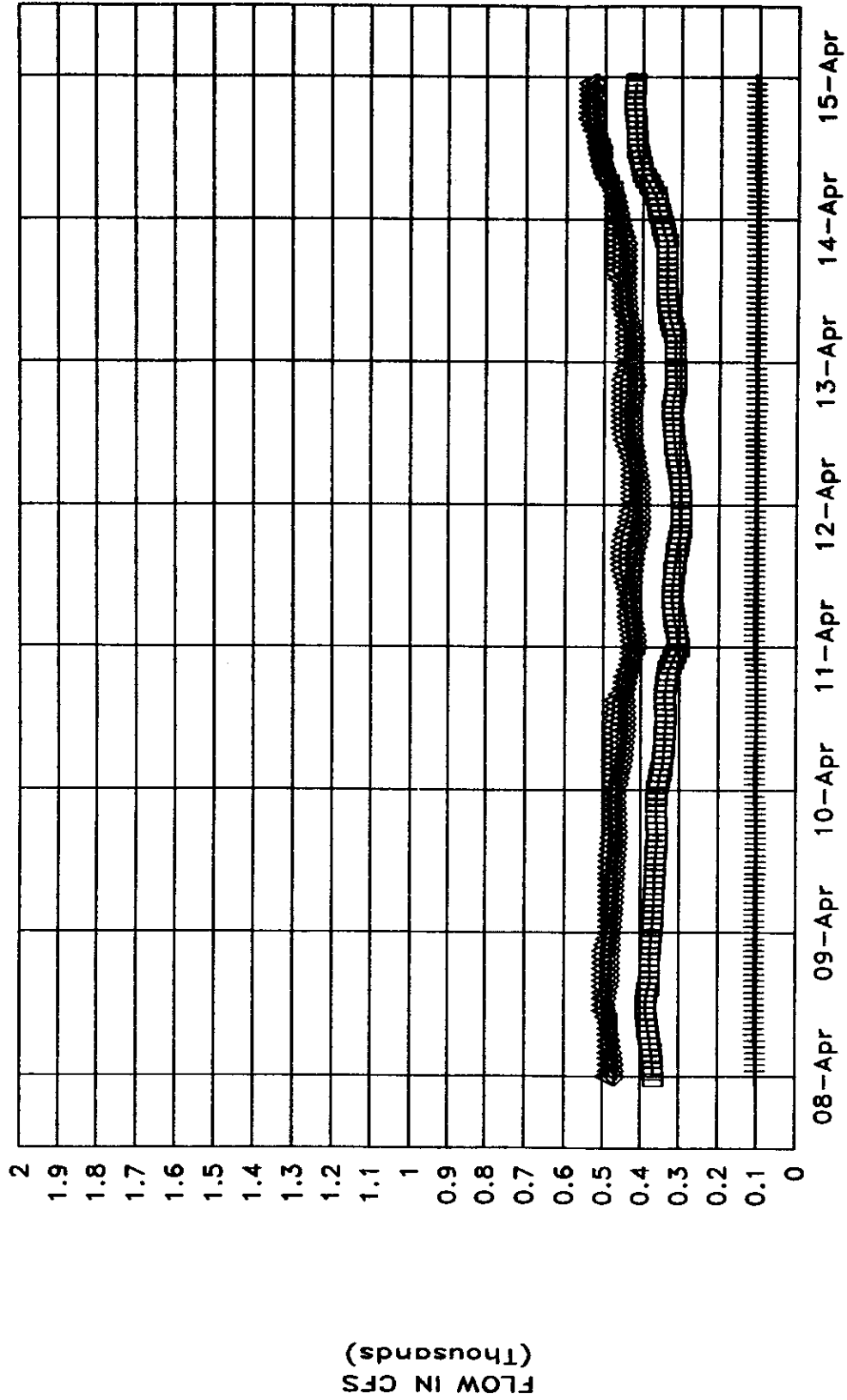


DATE

□ FLUME + RIVER ONLY ◇ FLUME + RIVER △ KERNVILLE

KERN RIVER FLOW - SPRING 1994

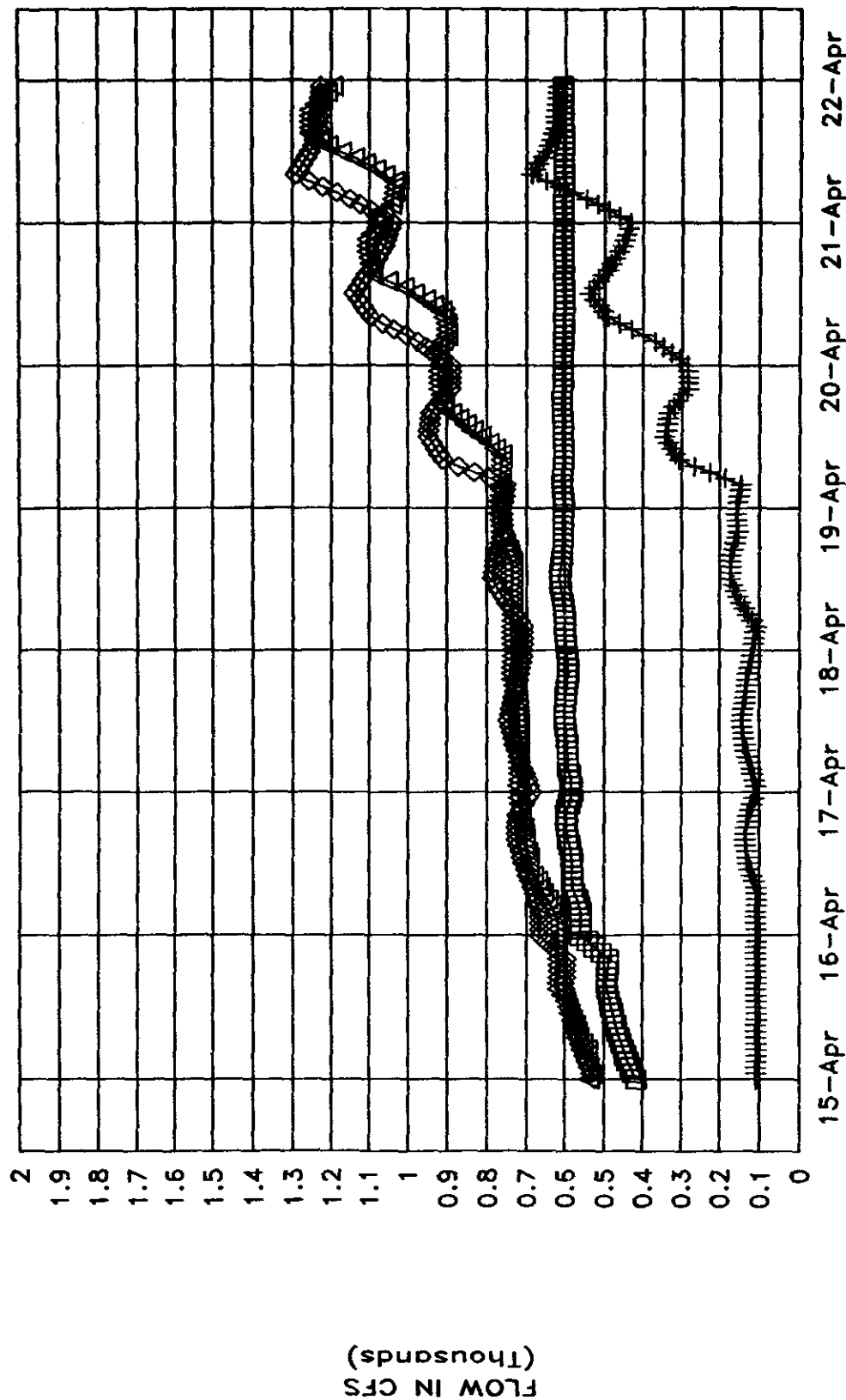
APRIL 7 - APRIL 14



DATE
 □ FLUME + RIVER ONLY ◇ FLUME + RIVER △ KERNVILLE

KERN RIVER FLOW - SPRING 1994

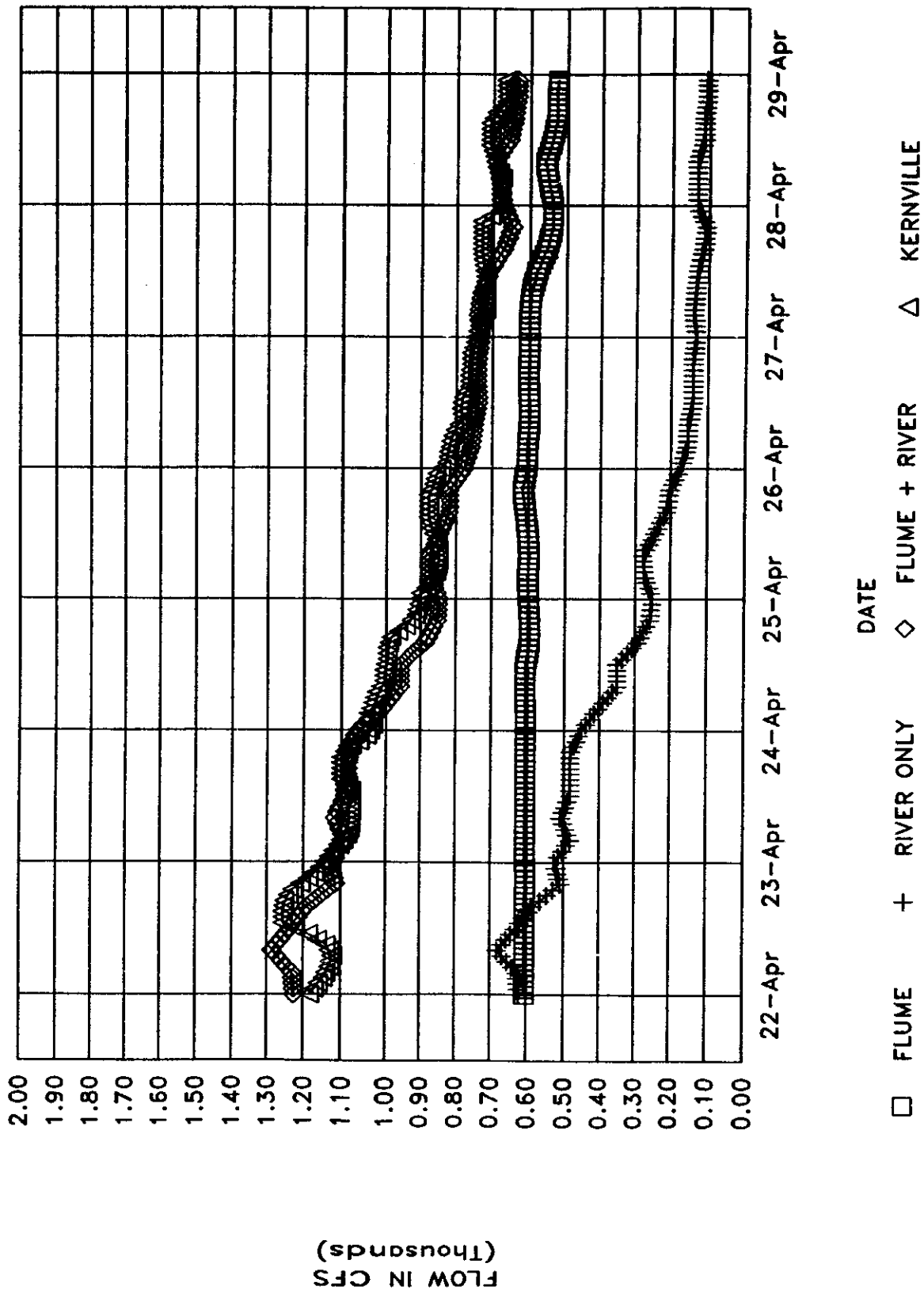
APRIL 15 - APRIL 21



□ FLUME + RIVER ONLY ◇ FLUME + RIVER △ KERNVILLE

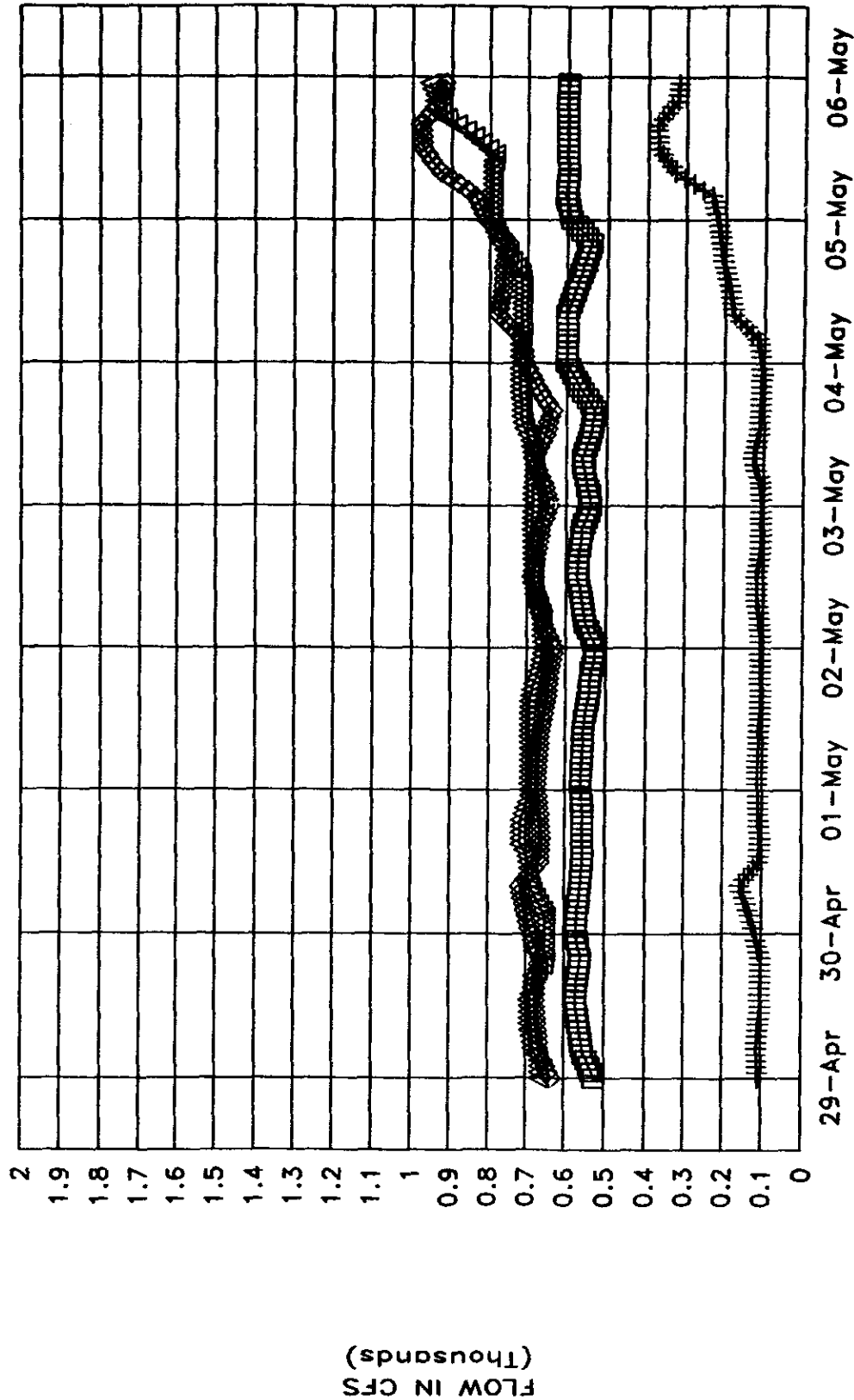
KERN RIVER FLOW - SPRING 1994

APRIL 22 - APRIL 28



KERN RIVER FLOW - SPRING 1994

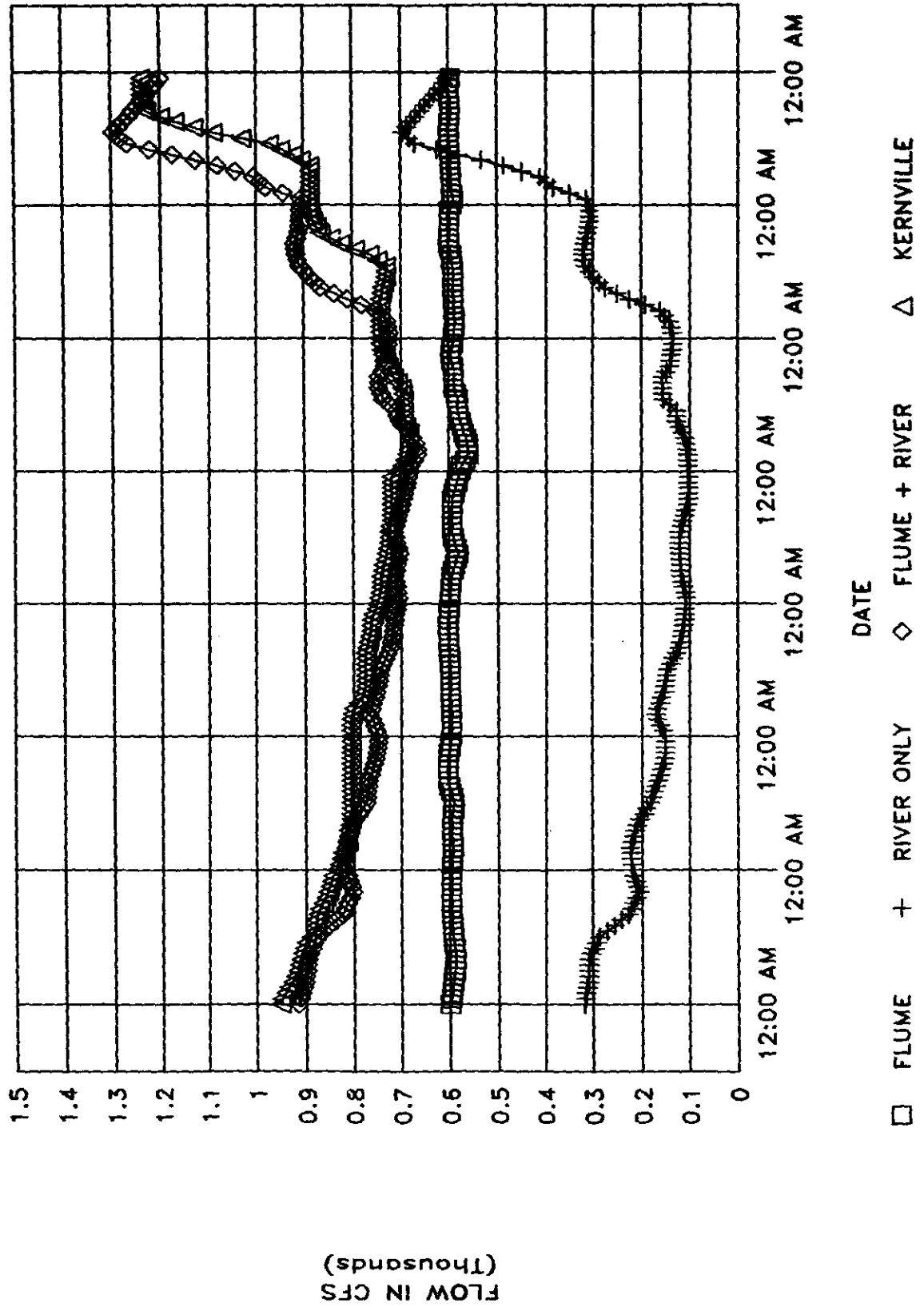
APRIL 29 - MAY 5



DATE
 □ FLUME + RIVER ONLY ◇ FLUME + RIVER △ KERNVILLE

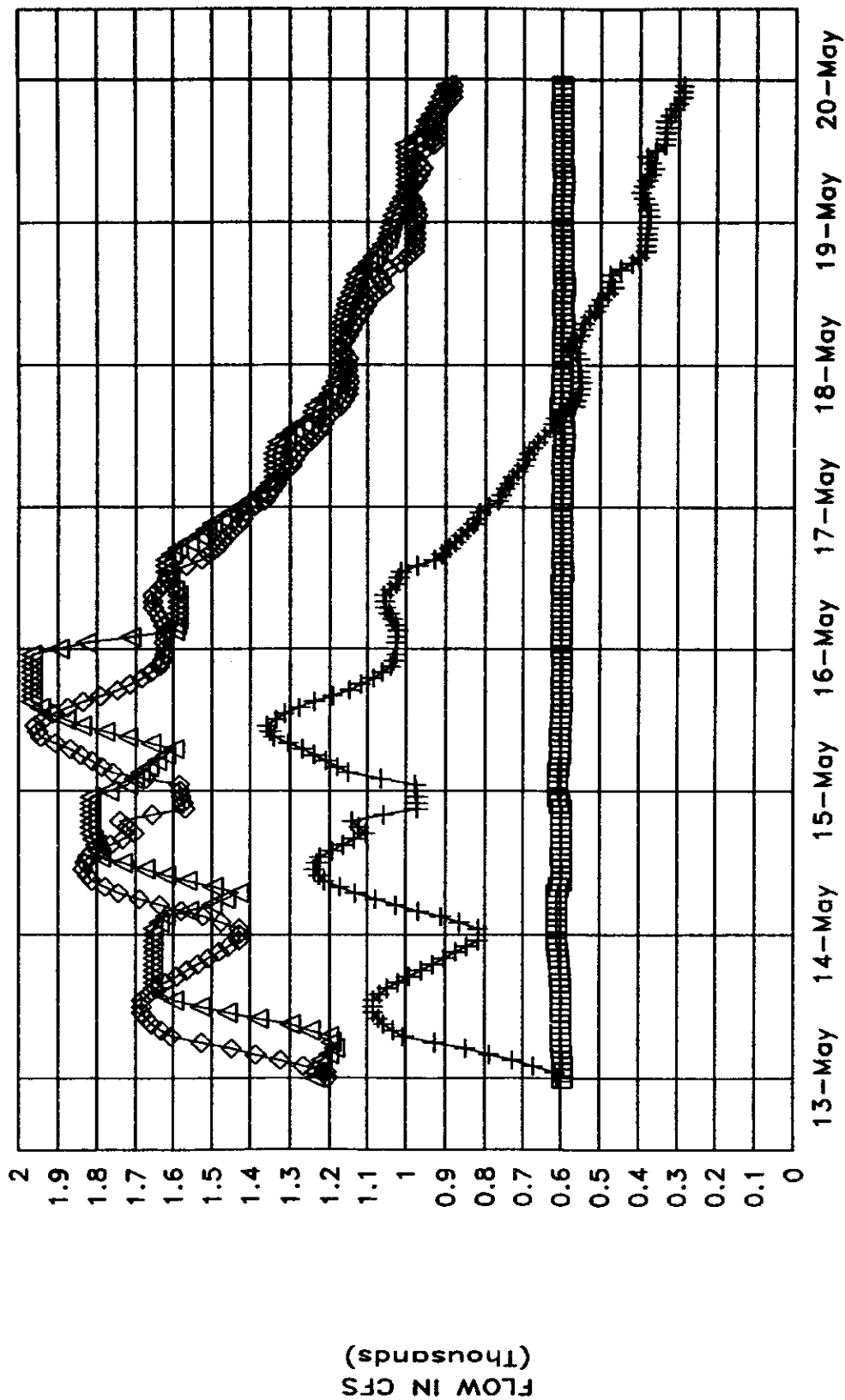
KERN RIVER FLOW -- SPRING 1994

MAY 6 - MAY 12



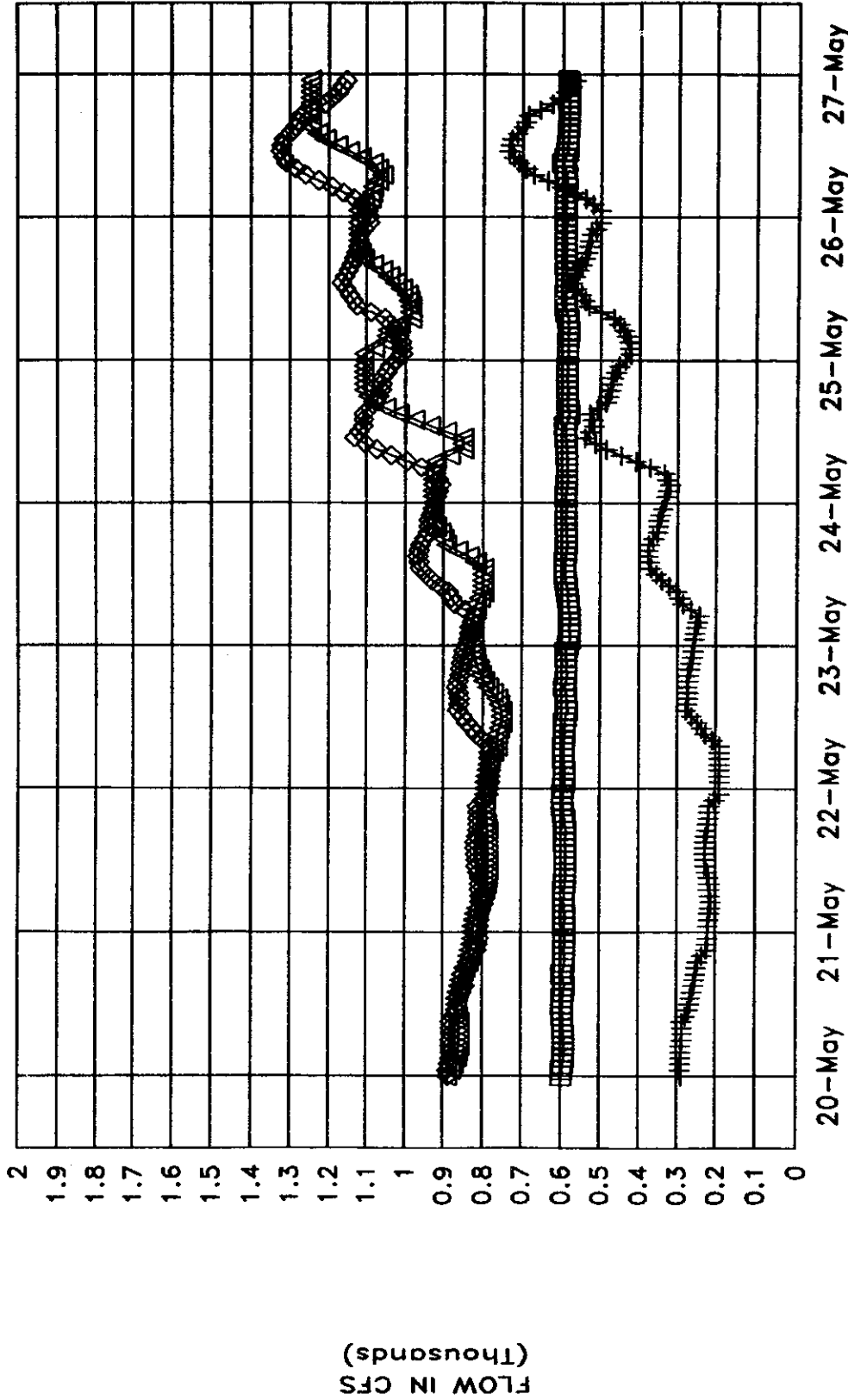
KERN RIVER FLOW - SPRING 1994

MAY 13 - MAY 19



KERN RIVER FLOW - SPRING 1994

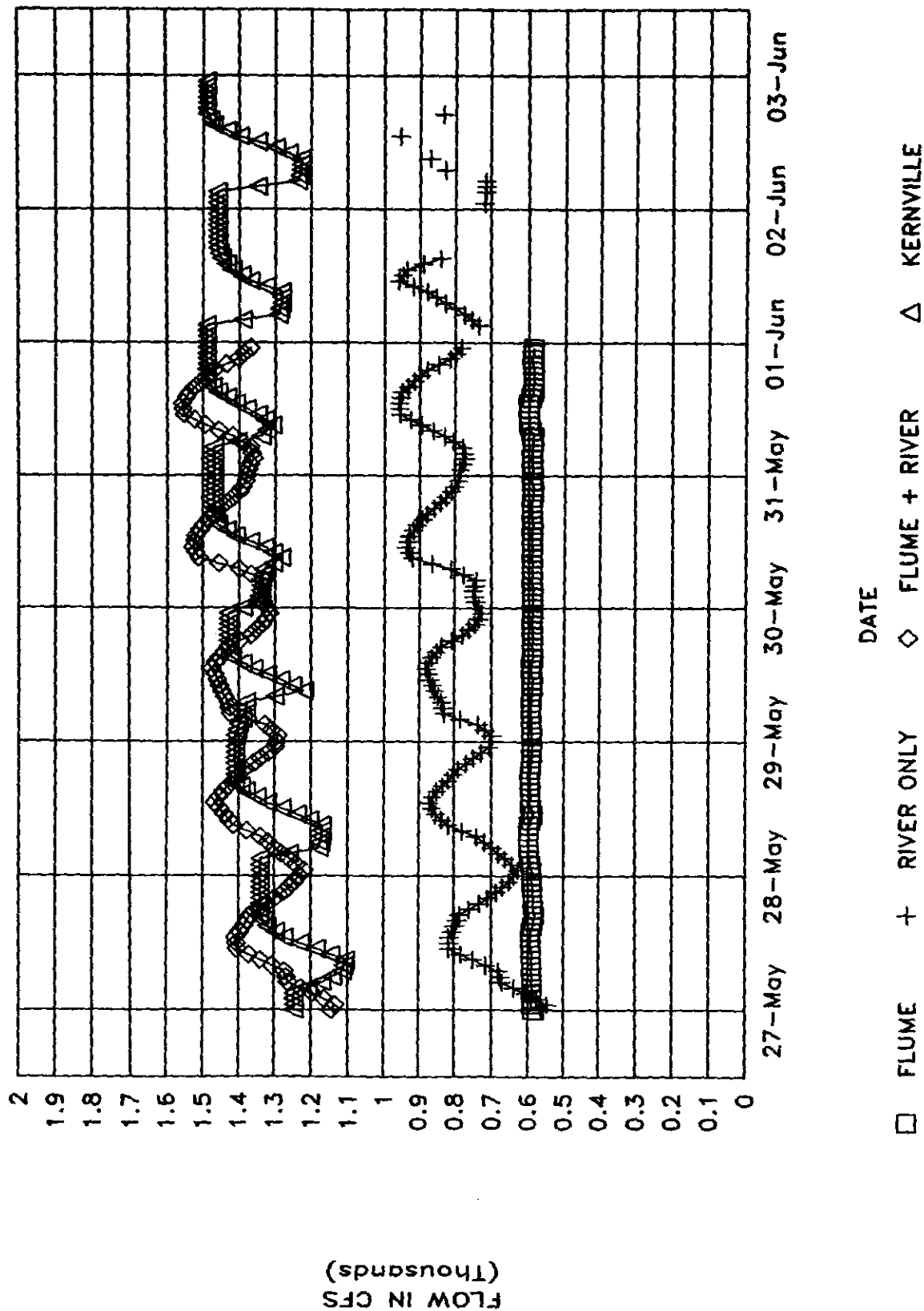
MAY 20 - MAY 26



□ FLUME + RIVER ONLY ◇ FLUME + RIVER △ KERNVILLE

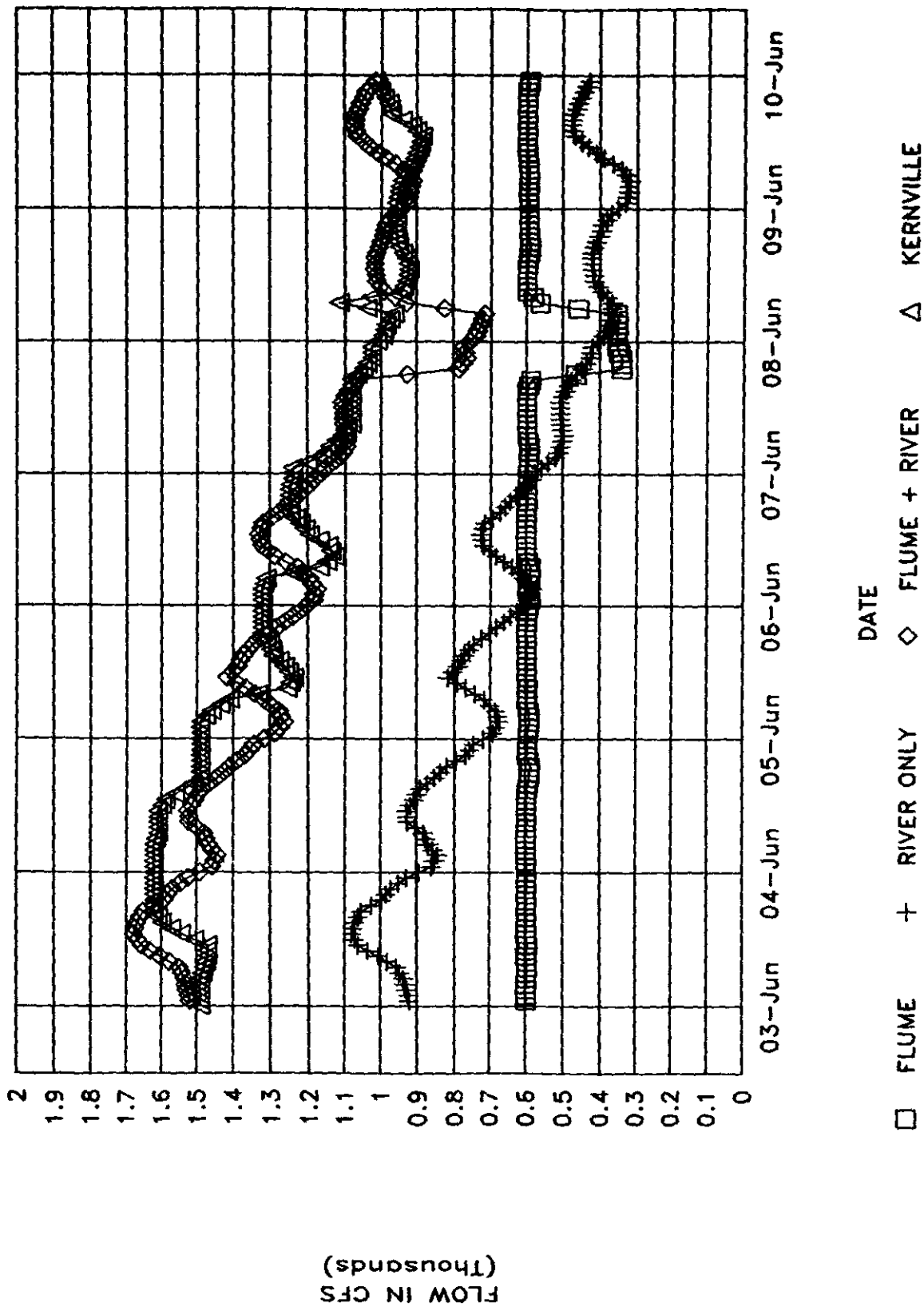
KERN RIVER FLOW - SPRING 1994

MAY 27 - JUNE 2



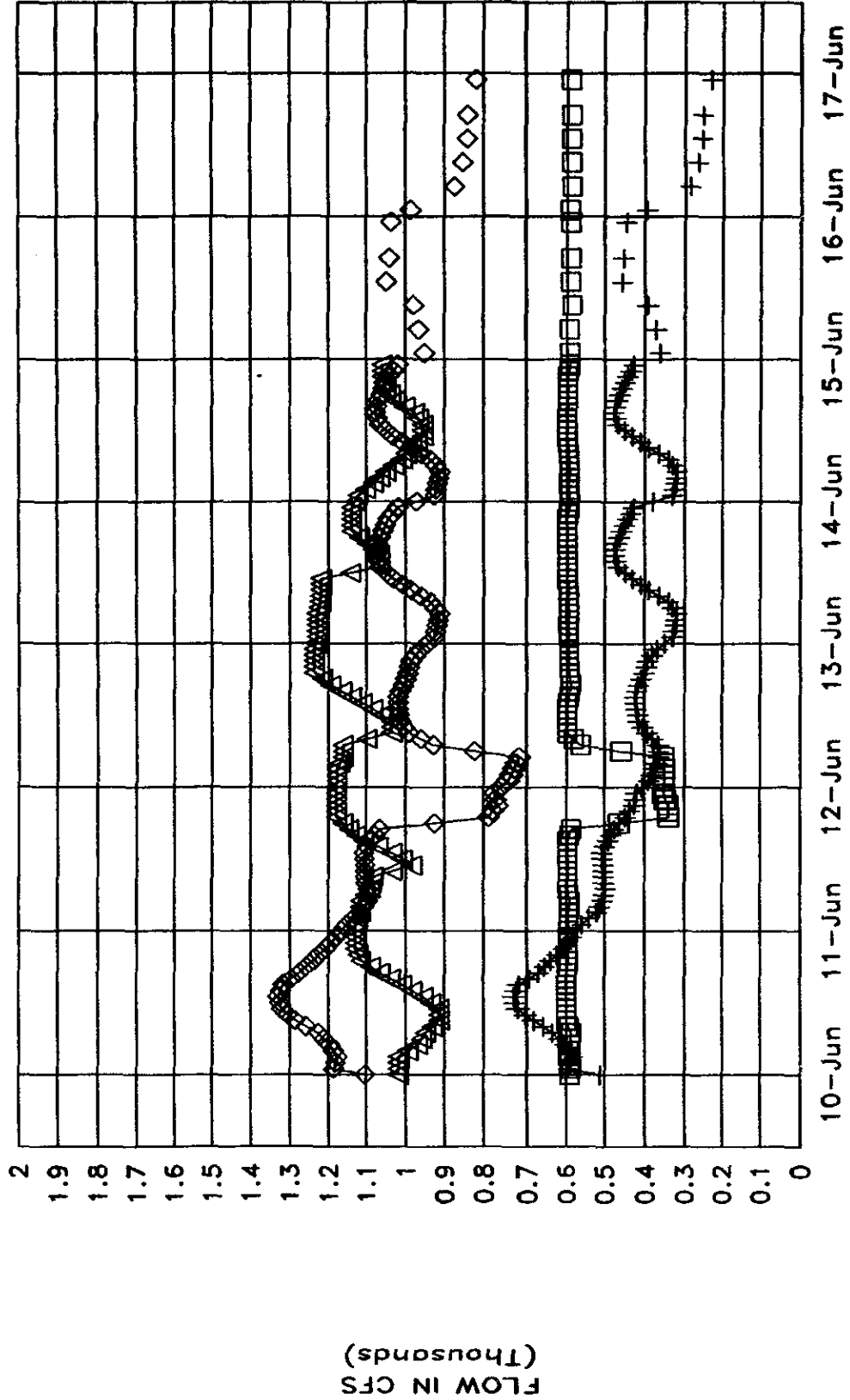
KERN RIVER FLOW - SPRING 1994

JUNE 3 - JUNE 9



KERN RIVER FLOW - SPRING 1994

JUNE 10 - JUNE 17

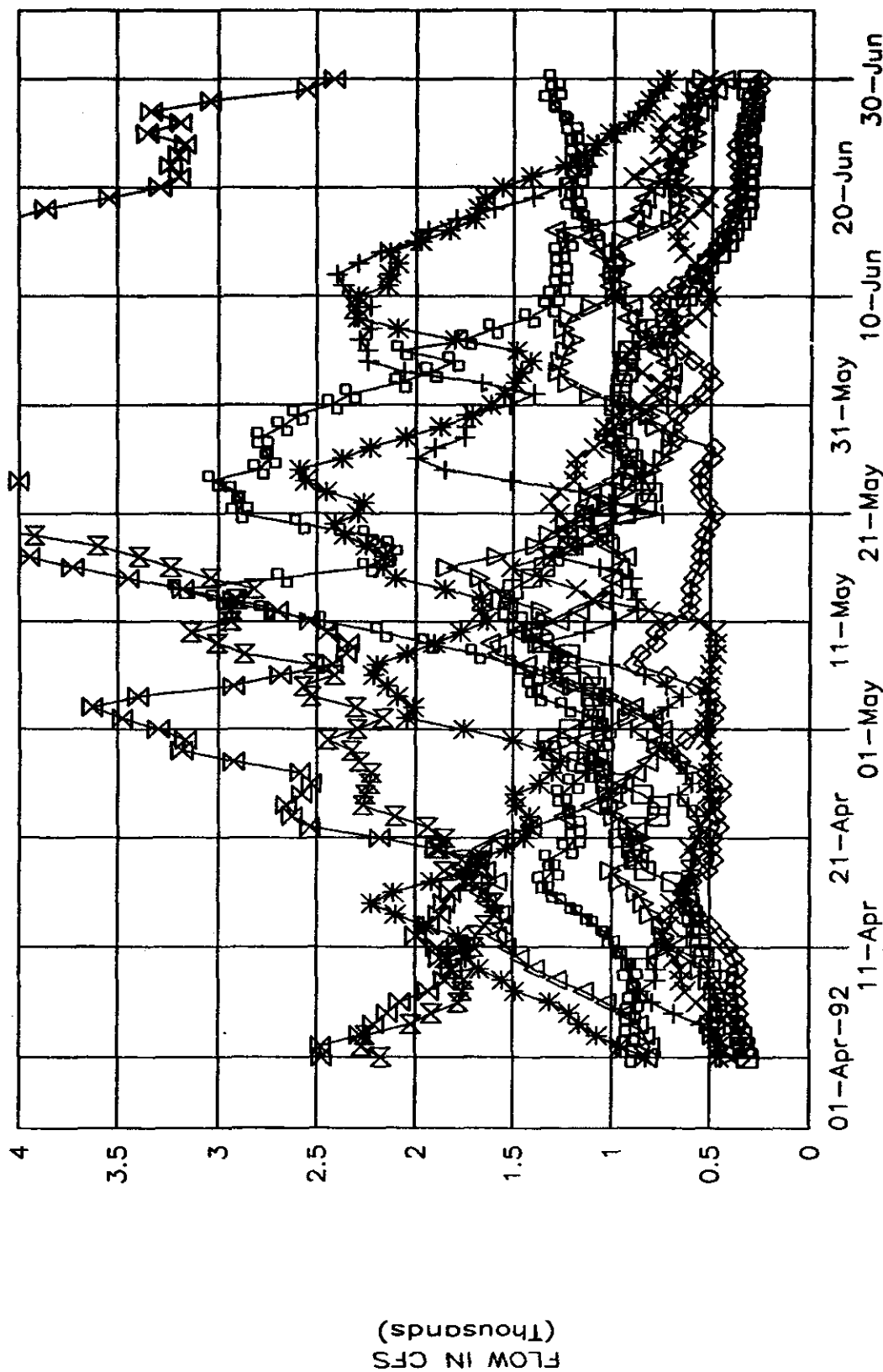


DATE

□ FLUME + RIVER ONLY ◇ FLUME + RIVER △ KERNVILLE

4EAPUTQ1

KERN RIVER SPRING FLOW 1983-1992

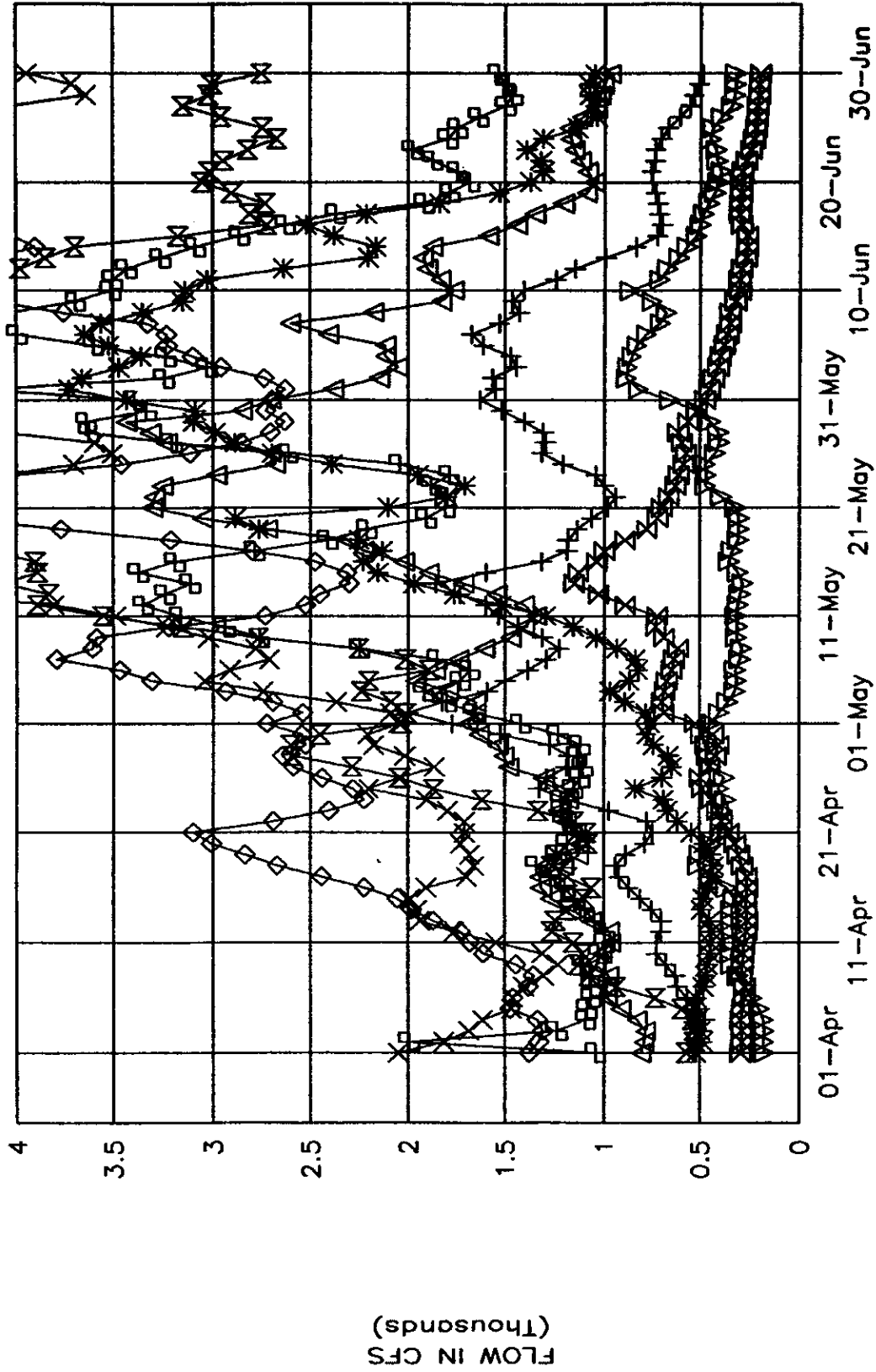


□ 1992 + 1991 ◇ 1990 * 1985 △ 1988 ▽ 1987 × 1986
 TIME IN DAYS
 01-Apr-92 11-Apr 21-Apr 01-May 11-May 21-May 31-May 10-Jun 20-Jun 30-Jun

1992 (1991) 1992
 1992 (1991) 1992
 1992 (1991) 1992

KERNRIVER

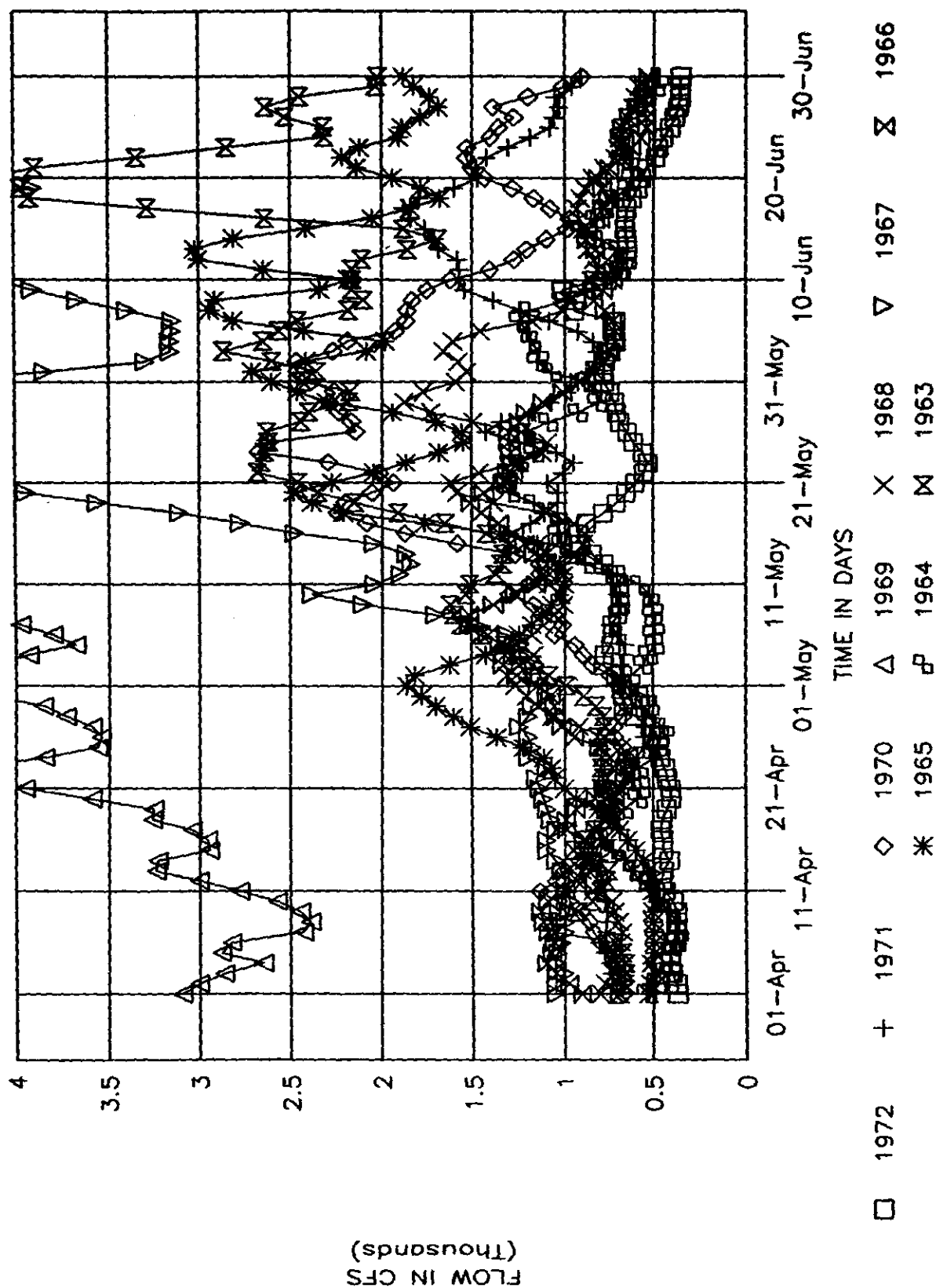
KERN RIVER SPRING FLOW 1973-1982



□ 1982 + 1981 ◇ 1980 △ 1979 × 1978 ▽ 1977 ⋈ 1976
 * 1975 ♂ 1974 ♂ 1973

KERN TA3

KERN RIVER SPRING FLOW 1963-1972



ATTACHMENT B

ADJUSTING DISCHARGES FOR LOCATION AND TIME

ADJUSTING DISCHARGES FOR LOCATION AND TIME

Determining the discharge for various times and locations along the bypassed reach of the Kern was essential to the study. The method for estimating both the time lag from the dam to a point on the river, and the attenuation in peak flow between the dam and a point along the river, are discussed in the following sections.

TIME LAG

Flows (generally bi-hourly) at the gage below the Kernville Dam (downstream of the diversion), in the flume, and downstream near Kernville were tabulated for the study period. The travel time of the peak flow from the dam to Kernville was plotted as a function of flow for several different flows (see "Kern River Flow Time Lags", included in this appendix). Equations for the time lag from the dam to Kernville were approximated from this graph. Then, the time lag was adjusted according to distance and slope for each of the study reaches. The distance/slope adjustment equation is included in the hand-written calculations in this appendix.

PEAK FLOW ATTENUATION

Percent reduction in peak flow between the dam and Kernville was plotted versus peak flow for several flows during the study period (see "Kern River Flow Peak Attenuation", included in this appendix). From this plot, the flow attenuation for most study period flows was estimated to be approximately 4%. This attenuation was adjusted for distance to estimate attenuation between the dam and each of the study reaches.

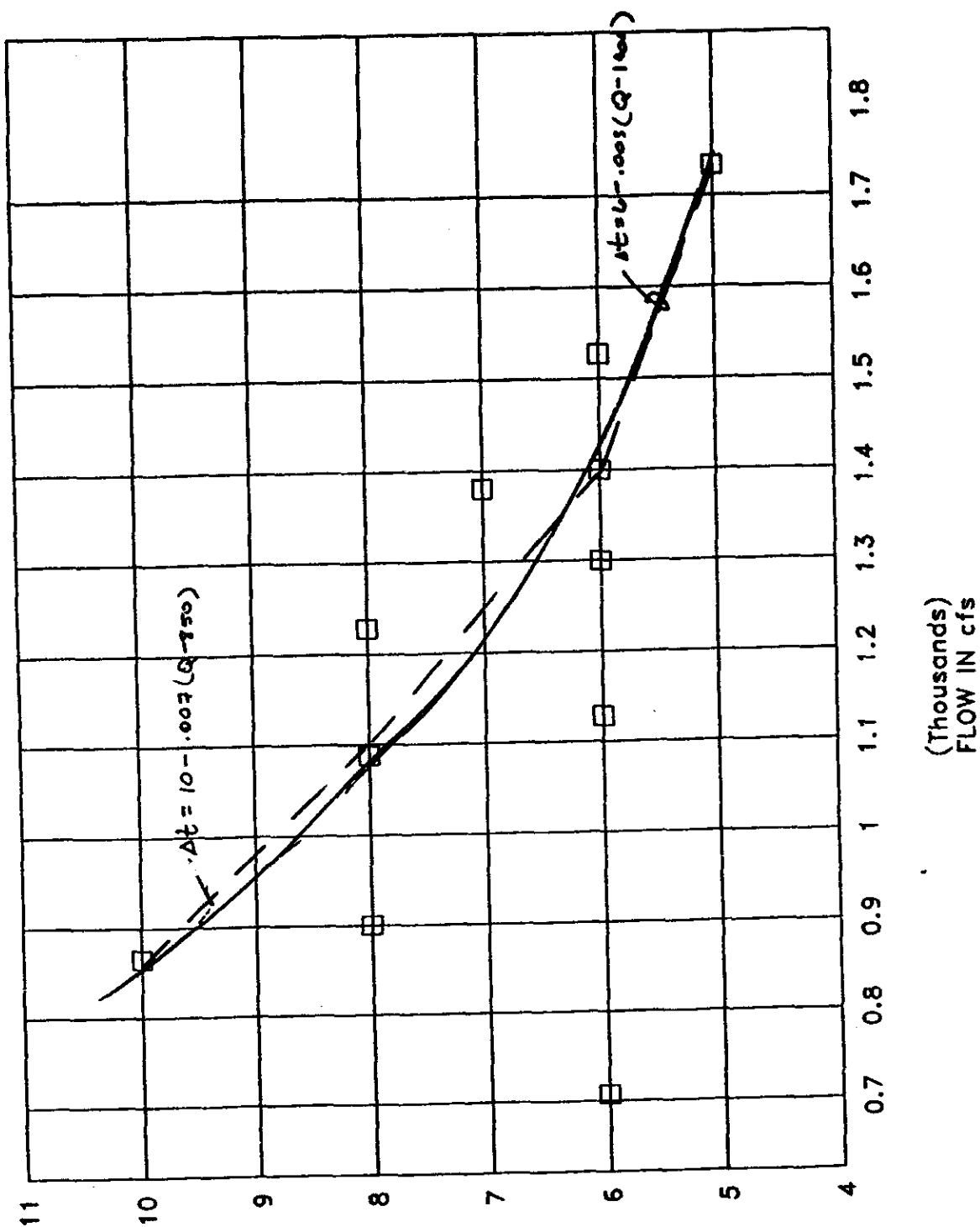
TABULATION OF TIMES AND FLOWS AT STUDY REACHES

Adjusted times and flows were calculated in the (included) spreadsheet for each of the study reaches. Please note that calculations were based on peak flows; flows preceding and especially following the peak behave differently. The calculations are appropriate to the study because the boaters generally boated the peak flow down the river.

Kern 4.2
6/13/94

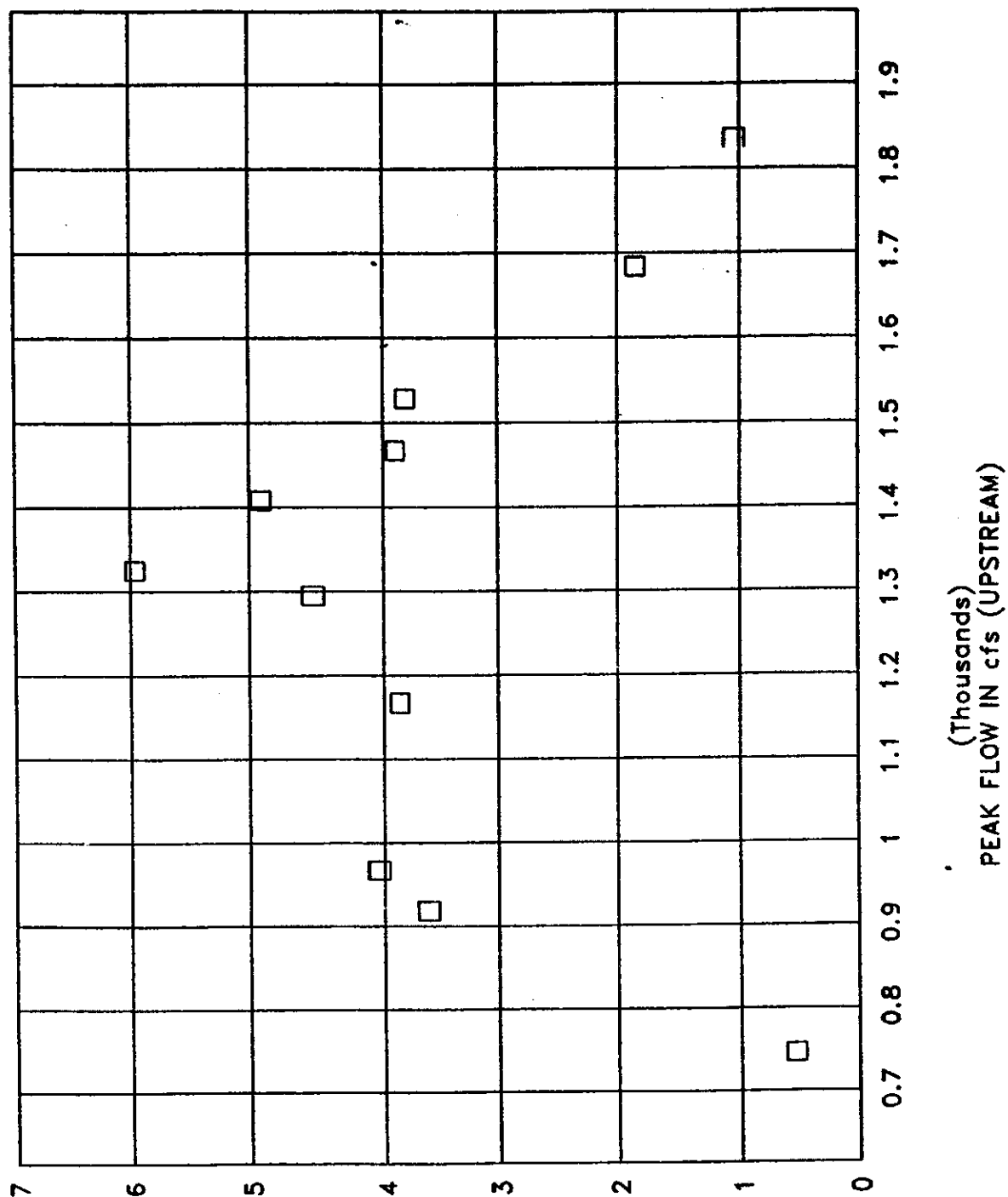
KERN RIVER FLOW TIME LAGS

SPRING 1994 - MAY



KERN RIVER FLOW PEAK ATTENUATION

SPRING 1994 - MAY



DEERN RIVER DISCHARGE (cfs)

1994

[illegible]

SIDINGWATER										CHAMBER GORGE										GOLD LEDGE										THUNDER RUN										CAMP 3										POWER HOUSE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Year	Month	Day	Time	Q	Q	Q	Q	Q	Q	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time	ft	Time

33 12 000

EASTERN RIVER DISCHARGE

[illegible]

JOHN RIVER DISCHARGE dmsg
11 484

[illegible]

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33 16 0000

ATTACHMENT C

**TABULATION OF RESPONSES FOR RAPID OR WHITEWATER
FEATURE EVALUATION**

KEVIN WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
rapid 6/30/94

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	RM	FEATURE TYPE	AWA CLAS	MAX DROP	MIN	DEPTH TYP	MAX	NAVIGABIL	SAFETY	PROBLEMS
kayak	87	300	BOMB/SID	SEDEWIND BOMBS		RAPID RAPID	IV V					AVE FAIR	GOOD AVE	DIFF. SWIM IMPACT, CONSTRUCTIONS
kayak	42	300	BOMB/SID	SEDEWIND BOMBS	100.2 100	RAPID RAPID	IV V					AVE FAIR	GOOD AVE	DIFF. SWIM IMPACT, CONSTRUCTIONS
kayak	16	300	BOMB/SID	SEDEWIND BOMBS	100.2 100.3	RAPID RAPID	IV V					FAIR POOR	FAIR POOR	BRUSH DIFF. EDDIES NO BYPASS PINNING/BROACH
kayak	17	300	BOMB/SID	SEDEWIND		RAPID	IV	2	0	2	0	FAIR	AVE	COMPLEX WATER BRUSH MULT. HAZARDS IMPACT PINNING/BROACH CONSTRUCTIONS DIFF. SWIM
				BOMBS		RAPID	VI	5	0	2	0	POOR	POOR	COMPLEX WATER HOLES IMPACT PINNING/BROACH CONSTRUCTIONS HAZ. SWIM
splashyrek	20	300	BOMB/SID	SEDEWIND		RAPID	IV	2	0	2	0	FAIR	AVE	COMPLEX WATER BRUSH MULT. HAZARDS PINNING/BROACH CONSTRUCTIONS DIFF. SWIM
				BOMBS		RAPID	VI	5	0	2	0	POOR	POOR	COMPLEX WATER MULT. DROPS HOLES KEEPERS NO BYPASS IMPACT PINNING/BROACH CONSTRUCTIONS HAZ. SWIM
splashyrek	20	675	BOMB/SID	SEDEWIND		RAPID	IV	2.5	0	6	6+	AVE	AVE	COMPLEX WATER BRUSH HOLES DIFF. SWIM
				BOMBS		RAPID	VI	5	0	3		POOR	FAIR	COMPLEX WATER MULT. HAZARDS KEEPERS PINNING/BROACH HAZ. SWIM
kayak	14	675	BOMB/SID	SEDEWIND BOMBS		RAPID RAPID	IV V					AVE AVE	AVE AVE	DOWNFALL PORTAGED
kayak/spln	24	675	BOMB/SID	SEDEWIND		RAPID	V	6	0	4	8	GOOD	GOOD	COMPLEX WATER MULT. HAZARDS DIFF. SWIM HAZ. SWIM
				BOMBS		RAPID	V	6	0	4	8	POOR	POOR	COMPLEX WATER MULT. HAZARDS KEEPERS FLOW PATTERNS PINNING/BROACH DIFF. SWIM HAZ. SWIM
kayak	6	1225	BOMB/SID	SEDEWIND BOMBS		RAPID RAPID	IV V					GOOD GOOD	GOOD GOOD	
kayak	13	1225	BOMB/SID	SEDEWIND	100.2	RAPID-HAZ	V					AVE	AVE	COMPLEX WATER TRICK EDDIES

KERN WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
rapid 080/04

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	RM	FEATURE TYPE	AWA CLASS	MAX DROP	DEPTH MIN	TYP	MAX	NAVIGABLE	SAFETY	PROBLEMS
				BOMBS	100	RAPID-HAZ	V					AVE	AVE	MULT. HAZARDS CONSTRICTIONS HAZ. SWIM EGRESS SWIM COMPLEX WATER TRICK EDDIES MULT. HAZARDS KEEPERS CONSTRICTIONS HAZ. SWIM EGRESS SWIM
kayak	40	1225	BOMB/SID	SEWIND		RAPID	IV					GOOD	GOOD	COMPLEX WATER HOLES BLIND DIFF EDDIES TRICK EDDIES MULT. HAZARDS HOLES DIFF. SWIM HAZ. SWIM
				BOMBS		RAPID	V					AVE	AVE	
raft	22	1075	BOMB/SID	SEWIND		RAPID	IV	2	2	4	10	GOOD	GOOD	COMPLEX WATER HOLES
				BOMBS		RAPID	V	10	2	6	10	GOOD	GOOD	
raft	16	1075	BOMB/SID	SEWIND		RAPID	IV					GOOD	GOOD	COMPLEX WATER
				BOMBS		RAPID	V					GOOD	GOOD	COMPLEX WATER
raft	18	1075	BOMB/SID	SEWIND		RAPID	V					GOOD	GOOD	COMPLEX WATER HOLES
				BOMBS		RAPID	V					GOOD	GOOD	MULT. HAZARDS HOLES
raft	19	1075	BOMB/SID	SEWIND		RAPID	IV	4	3	4	8	AVE	FAIR	DIFF. EDDIES FLOW PATTERNS CONSTRICTIONS DIFF. SWIM
				BOMBS		RAPID	V	6	2	3	4	AVE	FAIR	DIFF. APPROACH COMPLEX WATER DOWNFALL MULT. HAZARDS HOLES KEEPERS FLOW PATTERNS CONSTRICTIONS DIFF. SWIM HAZ. SWIM
raft	17	1075	BOMB/SID	SEWIND		RAPID	IV		2	5	6	GOOD	GOOD	HOLES
				BOMBS		RAPID	V		3	6	8	AVE	AVE	COMPLEX WATER HOLES
raft	14	1075	BOMB/SID	SEWIND		RAPID	IV		1			GOOD	GOOD	FLOW PATTERNS HOLES
				BOMBS		RAPID	V		1			GOOD	GOOD	FLOW PATTERNS
raft	15	1075	BOMB/SID	SEWIND		RAPID	IV					GOOD	GOOD	
				BOMBS		RAPID	V					GOOD	GOOD	
raft	4	1225	BOMB/SID	SEWIND			IV							COMPLEX WATER HOLES DIFF. SWIM HAZ. SWIM
				BOMBS			V							COMPLEX WATER HOLES DIFF. SWIM HAZ. SWIM
raft	1	1225	BOMB/SID	SEWIND		RAPID	V						FAIR	
				BOMBS		RAPID	V						FAIR	
raft	27	1225	BOMB/SID	SEWIND		RAPID	IV					POOR	FAIR	
				BOMBS		RAPID	V					POOR	POOR	

KERN WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
8/30/94

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	RM	FEATURE TYPE	AWA CLAS	MAX DROP	MIN	DEPTH TYP	MAX	NAVIGABLE	SAFETY	PROBLEMS
raft	27	1225	BOMB/BSD	SEWIND BOMBS		RAPID RAPID	IV V					GOOD AVE	GOOD POOR	COMPLEX WATER MULT. HAZARDS HOLES KEEPERS NO BYPASS
canoe	3	300	FAIRVIEW			RAPID/POIRIF	III					VERY GOOD	VERY GOOD	
kayak	37	300	FAIRVIEW				II					AVE	VERY GOOD	
kayak	42	300	FAIRVIEW				II					AVE	VERY GOOD	
kayak	28	300	FAIRVIEW				III					AVE	AVE	
splash	30	675	FAIRVIEW		90	RIFFLE	III	2	0	4	8	AVE	GOOD	PINNING/BROACH CONSTRUCTIONS HAZ. SWIM BRUSH DIFF. SWIM MULT. HAZARDS IMPACT DIFF. SWIM
					96.3	BRAD/HAZ	III					FAIR	FAIR	
					97.0		III	1	0	2	3	FAIR	AVE	
canoe	3	675	FAIRVIEW			RAPID	I, II, III	1				VERY GOOD	VERY GOOD	
kayak	6	1225	FAIRVIEW			RAPID	III					GOOD	GOOD	
raft	14	675	FAIRVIEW		90 90	RIFFLE RIFFLE	III II	2	0	4	8	FAIR FAIR	AVE	PINNING/BROACH BRUSH
raft	17	1075	FAIRVIEW	ROADS EN	90.5	RIFFLE	II	1	1	2	3	GOOD	GOOD	
					90.5	RIFFLE	III	1	1	3	3	GOOD	GOOD	
					90	RIFFLE	II	1	1	3	4	GOOD	AVE	
					96.5	RIFFLE	II	1	1	2	3	GOOD	GOOD	
					96	RIFFLE	II	2	1	2	3	GOOD	GOOD	
					97.6	RIFFLE	III	2	1	3	4	GOOD	GOOD	
					97.5	RIFFLE	III	2	1	3	3	GOOD	GOOD	
				CALK FL		RIFFLE	III	2	1	3	3	GOOD	GOOD	
raft	15	1075	FAIRVIEW	ROADS EN	90.5	RIFFLE	II	2	2	3	3	GOOD	VERY GOOD	
					90.3	RIFFLE	III	2	2	3	3	GOOD	VERY GOOD	
					90	RIFFLE	II	2	2	3	3	GOOD	VERY GOOD	
					96.5	RIFFLE	II	2	2	3	3	GOOD	VERY GOOD	BRUSH
					97.6	RIFFLE	III	2	2	3	3	GOOD	VERY GOOD	
					97.5	RIFFLE	III	2	2	3	3	GOOD	VERY GOOD	
				CALK FL		RIFFLE	III	2	2	3	3	GOOD	VERY GOOD	
raft	22	1075	FAIRVIEW		90	RAPID	III					AVE	AVE	BRUSH
raft	18	1075	FAIRVIEW			RIFFLE	III					AVE	AVE	BRUSH
raft	19	1075	FAIRVIEW			RAPID	II					FAIR	AVE	DIFF. APPROACH COMPLEX WATER FLOW PATTERNS DIFF. SWIM
raft	16	1075	FAIRVIEW			RAPID/BRAD	III					FAIR	AVE	
raft	27	225	FAIRVIEW				II					POOR	FAIR	BLIND ROCKS
kayak	36	300	CHAMISE	ENT RAPID LAURA'S L KELLY'S H SATAN'S S		RAPID RAPID RAPID	IV III IV IV					FAIR FAIR FAIR	GOOD GOOD GOOD	BLIND HOLES
kayak	37	300	CHAMISE	SATAN'S S		RAPID	IV					GOOD	VERY GOOD	COMPLEX WATER
kayak	42	300	CHAMISE	ENT RAPID SATAN'S S		RAPID RAPID	IV IV					FAIR GOOD	VERY GOOD	SHALLOW COMPLEX WATER
kayak	23	300	CHAMISE	ENT RAPID		RAPID	IV					AVE	AVE	

KEPNI WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
rapid 080/04

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	RM	FEATURE TYPE	AWA CLASS	MAX DROP	DEPTH MIN	TYP	MAX	NAVIGABLE	SAFETY	PROBLEMS
canoe	8	800	CHAMISE	LAURA'S L SATAN'S S		RAPID RAPID	IV IV					AVE AVE	AVE AVE	
				ENT RAPID LAURA'S L		RAPID	IV	4				AVE	AVE	
				KELLY'S H		RAPID	II	2				AVE	AVE	
				SATAN'S S		RAPID	IV	1				AVE	AVE	
splashyak	20	675	CHAMISE	HELE ROC		RAPID	IV	6				GOOD	AVE	DIFF. APPROACH COMPLEX WATER IMPACT PINNING/BROACH CONSTRUCTIONS HAZ. SWIM
				LAURA'S L		RAPID	IV					AVE	AVE	DIFF. APPROACH COMPLEX WATER HOLES KEEPERS IMPACT PINNING/BROACH HAZ. SWIM
				BLACK BO		RAPID	IV					GOOD	AVE	DIFF. APPROACH MULT. HAZARDS HOLES CONSTRUCTIONS HAZ. SWIM
canoe	3	675	CHAMISE	ENT RAPID LAURA'S L SATAN'S S		RAPID RAPID RAPID	IV IV IV					AVE AVE AVE	AVE AVE AVE	
kayak	38	675	CHAMISE	ENT RAPID LAURA'S L KELLY'S H SATAN'S S		RAPID RAPID RAPID RAPID	IV II IV IV					FAIR FAIR FAIR FAIR	GOOD GOOD GOOD GOOD	BLIND HOLES
kayak	6	1225	CHAMISE			RAPID, POOL BRAID, RIF OBSTRUCT	II					AVE	AVE	
raft	14	675	CHAMISE			RAPID	II		9	1		POOR	FAIR	BRUSH PINNING/BROACH
raft	15	1075	CHAMISE	INLA RAPID		RAPID	IV					GOOD	VERY GOC	COMPLEX WATER MULT. HAZARDS
					96.5	RAPID	II					GOOD	VERY GOC	
					96	RAPID	II					GOOD	VERY GOC	
				KELLY'S H		RAPID	II					GOOD	VERY GOC	
					95.5	RAPID	II					GOOD	VERY GOC	
				BLACK B		RAPID	IV					GOOD	VERY GOC	COMPLEX WATER MULT. HAZARDS COMPLEX WATER MULT. HAZARDS
raft	22	1075	CHAMISE		95	RAPID	IV					GOOD	VERY GOC	
						RAPID	II	4	2	5	10	AVE	VERY GOC	COMPLEX WATER
						RAPID	IV	4	2	3	4	FAIR	AVE	DIFF. APPROACH DIFF. EDDIES MULT. HAZARDS HOLES
raft	19	1075	CHAMISE		96.5	RAPID	IV	5	2	3	4	FAIR	AVE	DIFF. SWIM DIFF. APPROACH TRICK EDDIES DOWNFALL MULT. HAZARDS HAZ. SWIM
					95.5	RAPID	IV	5	2	4	5	AVE	AVE	DIFF. APPROACH DOWNFALL
						RAPID	IV					GOOD	AVE	DOWNFALL HAZ. SWIM HOLES
raft	16	1075	CHAMISE	HELE ROC	97	RAPID	IV					GOOD	AVE	
				LAURA'S L	96.5	RAPID	IV					GOOD	AVE	
				KELLY'S H	95.7	RAPID	II					AVE	AVE	
				SATAN'S S	95.5	RAPID	IV					GOOD	AVE	HOLES DIFF. SWIM

KERN WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
rapd 030904

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	FM	FEATURE TYPE	AWA CLASS	MAX DEPTH	MIN	TYP	MAX	NAVIGABLE	SAFETY	PROBLEMS
raft	16	1075	CHAMBER	HELE ROCK LAURA'S L KELLY'S H SATAN'S H UNNAMED	97 98.5 98 95.5 92.3	RAPID RAPID RAPID RAPID RAPID	IV IV IV IV III					FAIR FAIR FAIR GOOD FAIR	FAIR GOOD GOOD GOOD GOOD	
raft	17	1075	CHAMBER	ENTRANCE KELLY'S H BLACK BO	97 98.5 98 95.5 95	RAPID RAPID RAPID RAPID RAPID	IV III III III IV III	3 3 2 2 5 3	0 0 0 0 0 0	2 2 1 2		AVE AVE AVE AVE AVE AVE	GOOD GOOD GOOD GOOD FAIR FAIR	
raft	14	1075	CHAMBER	LAURA'S L BLACK BO		RAPID RAPID	III IV		0 0	2 3		AVE/GOOD GOOD	AVE AVE	PINNING/BROACH
raft	20	675	GOLD LED		93.8	BRAID	IV					IMPOSSIBLE	AVE	BRUSH PINNING/BROACH DIFF. SWIM
raft	20	1325	GOLD LED		93.8	BRAID/RAPID	IV					FAIR		BRUSH PINNING/BROACH IMPACT CONSTRICTIONS
splashyak	20	675	THUNDER		92.8	RAPID	IV					AVE	AVE	COMPLEX WATER MULT. HAZARDS HOLES DIFF. SWIM
kayak	23	300	THUNDER	SQUAS P SOCK-EM FLUME FENDER CABLE		RAPID RAPID RAPID RAPID RAPID	IV V IV V IV					AVE AVE AVE AVE AVE	AVE AVE AVE AVE AVE	
kayak	37	300	THUNDER	SQUAS P SOCK-EM FLUME FENDER		RAPID RAPID RAPID RAPID	IV V IV V					GOOD GOOD VERY GOOD VERY GOOD	VERY GOOD VERY GOOD VERY GOOD VERY GOOD	DIFF. APPROACH COMPLEX WATER DIFF. SWIM COMPLEX WATER
kayak	42	300	THUNDER	SQUAS P SOCK-EM FLUME FENDER		RAPID RAPID RAPID RAPID	IV V IV V					GOOD GOOD VERY GOOD VERY GOOD	VERY GOOD VERY GOOD VERY GOOD VERY GOOD	DIFF. APPROACH COMPLEX WATER DIFF. SWIM COMPLEX WATER
canoe	3	300	THUNDER	SQUAS P SOCK-EM FLUME FENDER CABLE		RAPID RAPID RAPID RAPID RAPID	IV V IV V IV	3 5 3 3 3				AVE AVE AVE AVE AVE	AVE AVE AVE AVE AVE	
splashyak	20	675	THUNDER	SQUAS P SOCK-EM		RAPID RAPID	IV V					GOOD AVE	GOOD FAIR	DIFF. APPROACH COMPLEX WATER MULT. HAZARDS HOLES CONSTRICTIONS DIFF. SWIM BLIND DIFF. APPROACH COMPLEX WATER MULT. HAZARDS HOLES KEEPERS IMPACT PINNING/BROACH CONSTRICTIONS HAZ. SWIM DIFF. APPROACH BRUSH MULT. HAZARDS
					93.5	BRAID	III					FAIR	AVE	

KERN WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
rapid 6/80/84

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	RM	FEATURE TYPE	AWA CLASS	MAX DROP	MIN	DEPTH TYP	MAX	NAVIGABLE	SAFETY	PROBLEMS
				FLUME		RAPID	IV					GOOD	GOOD	IMPACT CONSTRICTIONS DIFF. SWIM MULT. HAZARDS
				FENDER		RAPID	V					FAIR	FAIR	HAZ. SWIM DIFF. APPROACH COMPLEX WATER MULT. HAZARDS HOLES KEEPERS IMPACT CONSTRICTIONS HAZ. SWIM
				CABLE		RAPID	IV					AVE	AVE	BLIND DIFF. APPROACH COMPLEX WATER MULT. HAZARDS HOLES IMPACT CONSTRICTIONS HAZ. SWIM
raft	20	1325	THUNDER		88.6	BRAID	III							DIFF. APPROACH BRUSH IMPACT CONSTRICTIONS COMPLEX WATER MULT. HAZARDS HOLES PINNING/PROACH CONSTRICTIONS HAZ. SWIM
				FENDER		RAPID	V							
oar boat	27	1200	THUNDER	SQUASHE	80.7	RAPID	IV					AVE	AVE	DIFF. APPROACH MULT. HAZARDS HOLES NO ESCAPE NO BYPASS CONSTRICTIONS DIFF. SWIM HAZ. SWIM
				SOCK-EM	80.5	RAPID	V					AVE	AVE	DIFF. APPROACH MULT. HAZARDS HOLES NO ESCAPE NO BYPASS CONSTRICTIONS DIFF. SWIM HAZ. SWIM
				HOSP FLA	88.5	RA/OB/HAZ	IV					AVE	AVE	DIFF. APPROACH DEBRIS BRUSH NO ESCAPE NO BYPASS CONSTRICTIONS DIFF. SWIM HAZ. SWIM
				FLUME	88.9	RAPID	V					AVE	AVE	DIFF. APPROACH MULT. HAZARDS HOLES NO ESCAPE NO BYPASS CONSTRICTIONS DIFF. SWIM HAZ. SWIM
				FENDER	88.5	RAPID	IV					FAIR	AVE	DIFF. APPROACH MULT. HAZARDS HOLES KEEPERS NO ESCAPE NO BYPASS CONSTRICTIONS DIFF. SWIM HAZ. SWIM

KERN WHITEWATER BOAT SURVEY
RAPID OR FEATURE EVALUATION
rapid 6/30/94

CRAFT	BOAT NO	FLOW	SEGMENT	RAPID	RM	FEATURE TYPE	AWA CLASS	MAX DROF	DEPTH MIN	TYP	MAX	NAVIGABLE	SAFETY	PROBLEMS
kayak	28	500	CAMP 3	WALL		RAPID	IV					AVE	AVE	
				TOMBSTO		RAPID	IV					AVE	AVE	
				BUZZARD		RAPID	III					AVE	AVE	
				PEPSI		RAPID								
				TEQUILLA		RAPID	IV					AVE	AVE	
cano	3	300	CAMP 3	WALL		RAPID	IV					AVE	AVE	
				TOMBSTO		RAPID	IV					AVE	AVE	
				BUZZARD		RAPID	III					AVE	AVE	
				TEQUILLA		RAPID	IV					AVE	AVE	
				POWER H		RAPID	III					AVE	AVE	
kayak	37	300	CAMP 3	PEPSI		RAPID	III					POOR	GOOD	PINNING/BROACH
splashyak	20	675	CAMP 3	WALL		RAPID	IV					AVE	AVE	DIFF. APPROACH
														COMPLEX WATER
														MULT. HAZARDS
														HOLES
														IMPACT
														DIFF. SWIM
				BLING SH		RAPID	IV					AVE	AVE	BLIND
														COMPLEX WATER
														HOLES
														CONSTRUCTIONS
														DIFF. SWIM
				BUZZARD		RAPID	II					FAIR	AVE	CONSTRUCTIONS
				PEPSI		RAPID	IV					FAIR	AVE	DIFF. SWIM
														IMPACT
														DIFF. SWIM
				POWER H	86	RIFLE	II					GOOD	AVE	
						RAPID	III					GOOD	AVE	
kayak	6	1025	CAMP 3				III-IV							
raft	27	1200	CAMP 3	CABLE	86	RAPID	IV					AVE	GOOD	
				WALL	87.5	RAPID	IV					AVE	GOOD	
				TOMBSTO	87	RAPID	IV					AVE	GOOD	
				BUZZARD	86.7	RAPID	III					FAIR	GOOD	
				PEPSI	86.4	RAPID	III					FAIR	GOOD	
				POWER H	85.4	RAPID	III					GOOD	GOOD	
raft	20	1300	CAMP 3	FENDER		RAPID	V							COMPLEX WATER
														MULT. HAZARDS
														HOLES
														PINNING/BROACH
														CONSTRUCTIONS
														HAZ. SWIM
														MULT. HAZARDS
														IMPACT
														PINNING/BROACH
														CONSTRUCTIONS
														DIFF. SWIM
				TEQUILLA		RAPID	IV							

ATTACHMENT D

**LIST OF NOTEBOOKS CONTAINING PERSONAL DATA
QUESTIONNAIRES, RIVER EVALUATION FORMS, AND RAW
FLOW DATA**

**KERN RIVER NO. 3
WHITewater RIVER EVALUATION**

**LIST OF NOTEBOOKS CONTAINING PERSONAL DATA QUESTIONNAIRES,
RIVER EVALUATION FORMS, AND RAW FLOW DATA**

VOLUME I	WHITewater STUDY PERSONAL DATA QUESTIONNAIRES
VOLUME II	WHITewater STUDY RIVER EVALUATION FORMS - SIDEWINDER/ BOMBS AWAY
VOLUME III	WHITewater STUDY RIVER EVALUATION FORMS -FAIRVIEW
VOLUME IV	WHITewater STUDY RIVER EVALUATION FORMS -CHAMISE GORGE
VOLUME V	WHITewater STUDY RIVER EVALUATION FORMS -GOLD LEDGE
VOLUME VI	WHITewater STUDY RIVER EVALUATION FORMS -THUNDER
VOLUME VII	WHITewater STUDY RIVER EVALUATION FORMS -CAMP 3
VOLUME VIII	WHITewater STUDY RIVER EVALUATION FORMS -MISCELLANEOUS REACHES
VOLUME IX	RAW FLOW DATA

ATTACHMENT E

LIST OF BOATERS AND INVOLVED PARTIES

BOATERS**COORDINATORS**

Katharine Haines
Don Jackson
Chuck Richards
John Seals

PARTICIPANTS

Lawrence M. Addleson
Van B. Ballew
Brandon C. Bellrose
Renee M. Bosmans
Tom L. Bosmans
Andy Bradfield
William A. Brown
George Butler
Douglas W. Carson
Joseph T. Chesney
James A. Clark
Marc E. Cope
Brian W. Cosgrove
John Cosgrove
Richard Dancing
Mike A. Dorey
Kenneth Ferguson
Richard D. Haines
Michael K. Horne
Gwen D. Jackson
Pamela R. Jackson
Tom Johnson
Greg Kessler
Thomas G. Lockhart
Robert D. May
Susan L. Mesec
Bob A. Mitas

Tom Moore
Karl Mueggler
Dale Murphy
Chris J. Nuthall
Marvin S. Panzer
Angela L. Paolone
Diana Paolone
David W. Patterson
Gary E. Peebles
Karlana A. Peebles
Barbara Polson
Carol E. Riccio
Ronald Riccio
Mark Ritchie
R. M. Ryburn
G. A. Rooffener
Rhea M. Sax
Nicole Seals
Keith A. Stephens
Kimberly Taylor
Scott B. Tilton
Robert A. Van Hoy
Brad Willoaghby
John P. Wilson
Eric E. Wiscavage
Patricia L. Worsham
Joe J. Zarnoch

GROUP III FIELD INTERVIEW PARTICIPANTS

E. Baden
Daniel W. Belden
Terry C. Davis
Michele M. Disney
Robert A. Dunncliff

Gudrun O. Dybdal
Richard A. Ferreras
Chloe T. Gelder
Tom Gelder
Jon R. Gresley

GROUP III FIELD INTERVIEW PARTICIPANTS (Cont.)

David J. Hura
Tobin W. Josif
Gary P. Kast
Terry D. Meyer

Eric J. Sandifer
Toby D. Sprunk
D. J. Tansley
James G. Wassink

Doug M. Nickerson

CONSULTANTS

Sandra Walter-Perry

Bill Taggart

OTHER INVOLVED PARTIES

SOUTHERN CALIFORNIA EDISON

Geoff Rabone

Gary Dudley

SOUTHERN CALIFORNIA EDISON KERN RIVER NO. 3 PLANT

Carl Fessler

Jim Wilber

John Downer

Mike Fitzgerald

Fabian Holquin

Richard Hues

John Stivers

Dan Walstrom

John Kennedy

ENTRIX, INC.

Sandra Walter-Perry

Roy McDonald

Susan Swift

TAGGART ENGINEERING ASSOCIATES, INC.

Bill Taggart

Kathy Chase

Mary Guse

AMERICAN WHITEWATER AFFILIATION

Richard Bowers

CORPS OF ENGINEERS

John Pike

**CALIFORNIA STATE PARKS AND RECREATION
DEPT OF BOATING AND WATERWAYS**

Jim Testa

CALIFORNIA DEPARTMENT OF FISH AND GAME

Dean Marston

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Matt Colwell

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

Kathleen Sherman

STONE & WEBSTER (Consultant to FERC)

**Hal Copland
Steve Nachtman**

SHERIFF'S OFFICE

Allan Montgomery

NORTH KERN WATER STORAGE DISTRICT

Chuck Williams

U.S. FISH AND WILDLIFE

Dale Pierce

U.S. FOREST SERVICE

Cheryl Bauer

SIERRA SOUTH

Tom Moore

CHUCK RICHARDS' WHITEWATER, INC.

Chuck Richards

RIVERVIEW INN LODGE

Sherry Patterson

ATTACHMENT F

CORRESPONDENCE DURING TESTING AND EVALUATION PERIOD

Don Jackson Letter Dated May 18, 1994

Don Jackson Letter Dated May 23, 1994

TEA Letter to Participants Dated June 6, 1994

Don Jackson Response Dated June 10, 1994

Taggart Phone Log, Call to Don Jackson on June 12, 1994

Taggart Phone Log, Call to Chuck Richards on June 30, 1994

Taggart Phone Log, Call to Katharine Haines on July 6, 1994

Taggart Phone Log, Call to Tom Moore on July 15, 1994

FOX SECURITY

1517 EAST FOURTH STREET
LONG BEACH, CALIFORNIA 90802-1886
Telephone (310) 437-1218



May 18, 1994

Bill Taggart
TAGGART ENGINEERING ASSOCIATES, INC.
2525 16th St., Suite 210
Denver, Colorado 80211

RE: Kern River # 3

Dear Bill,

Per our conversation on May 15, 1994, the following information is a miscellaneous assortment of ideas, etc.

Prior to meeting you and starting the flow study, I wrote down what I felt was the necessary CFS flow in various sections of the river. I did this away from the river basing it on recollections of past experience since 1981. The CFS listed are for those reaches of the river.

Sidewinder-Bombs A Way	No experience
Calkins Flat	700 CFS
Chamise Gorge	700 "
Ant Canyon to Coral Creek	1200 "
Coral Creek to Cable	1400 "
Cable to River Kern Beach	900 "
River Kern Beach to Powerhouse	400 "

After our initial study weekend and with some discussions with other boaters, possibly lower flows could be utilized if there were adjustments made at various tight spots or constrictions. Those tight spots include (but may not be limited to) the top of "Screaming Right Turn" Rapid (R.M. 93.8), the brushy area at Hospital Flat (R.M. 89.5). "Fender Bender" Rapid (R.M. 88.5) has a side flow on river right that probably has 300 or so CFS. I do not know if blocking the side channel is even possible but if it were, then flows of 1000 CFS may allow runs down this stretch.

The river diverging into two separate channels at "Tequila Chute"/Pepsi Challenge" (R.M. 86.5) is the constriction most noticeable in the Cable to River Kern Beach section.

I frankly have no clue as to how or even if the rapids can be "adjusted". Obviously the one time cost may be more appealing to SCE rather than utilization of regular by pass flows but it tends to open up a potential "Pandora's Box". I'm sure the boating community would be split on this issue from a philosophical standpoint and the public relations aspect may be the biggest hurdle.

There have been at least 4 separate occasions that I am aware of where there have been alterations made to the rapids or riverbed.

1. Tom Johnson's Riverside Park alteration.
2. Rock removal below the Powerhouse in a rapid called "Little Mama" by persons unknown.
3. Tree cutting in Hospital Flat in 1987, 1988 by persons unknown.
4. Rock Diversions above "Big Daddy" Rapid and below the Powerhouse, improved approximately in 1988.

There probably have been other examples of "improvements" but other than Tom Johnson's alterations, the bulk of them have been unofficial actions.

On May 15th, Sandy asked me what improvements could be made to the "Royal Flush" portage on the Lower Kern. I mentioned that input from the commercial groups would be most helpful. From my point of view though, the trail needs work. The center section needs to be filled in and smoothed out. The addition of more cement bags should do the trick. Additional supports for the bridge at the bottom of the "Flush" may increase the safety but it is a bottle neck on the Lower Kern which requires attention and care for all those who utilize the Portage Trail.

If I think of anything further, I will jot it down and let you know. I hope you had a satisfactory visit to the Kernville area and enjoyed seeing the river again.

Yours truly,


Don Jackson

RECEIVED MAY 26 1994

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1517 EAST FOURTH STREET
LONG BEACH, CALIFORNIA 90802-1886
Telephone (310) 437-1218



May 23, 1994

Bill Taggart
TAGGART ENGINEERING ASSOCIATES, INC.
2525 16th St. Suite 210
Denver, Colorado

Dear Bill,

I gave all of the completed Kern River survey forms to Chuck Richards on Sunday 5/22/94.

On Saturday, 5/21/94 Group II made a low (very low) water run on Calkins Flat section with the intent on continuing through Chamise Gorge if there was sufficient water and lack of problems.

The forms will indicate the low water problems but they may not necessarily indicate all information regarding the day. Starting at 11:00 A.M., the group consisted of these various craft:

- 1 14 ft. self bailing paddle boat with 6 paddlers
- 1 12 ft. conventional raft with 4 paddlers
- 1 11 1/2 ft. conventional oar boat with 2 people
- 1 14 ft. cataraft oar boat with 1 person
- 1 13 ft. self bailing raft with 5 paddlers
- 1 8 ft. Russian cataraft oar boat with 1 person.

All guides were familiar with various reaches at various levels. There were multiple "get out and shoves" and several "get out, pick up and shoves" by all hands in the paddle boats. The difficulty in the stretch was consistent with the size of the boat and number of occupants per boat. The 14 ft. with 6 paddlers had the most difficulty. The 13 ft. with 5 paddlers was next, the 12 ft. with 4 paddlers was next, the 14 ft. oar cataraft was next and the 11 1/2 ft. oar boat and 8 ft. Russian cataraft had the least problems.

All of the participants did not want to continue past the Calkins Flat Take out and opted to boat above Fairview Dam on the Class 4 Limestone run even with all the boating congestion: 4 commercial trips and lots of other private boaters in rafts and kayaks. The take out was further congested by tent campers and fishermen at the sandy beach. The off road parking availability was maxxed out at the take out due to all the various river users.

I doubt that most commercial companies would have attempted the Calkins Flat section at the flow we boated it. Possibly inflatable kayaks would have been able to negotiate this reach at the flow we had. In any case, I thought it was a good study. I know I won't try it again, so for a one time experience it was OK.

Thanks again for including us in the study.

Yours truly,


Don Jackson



2525 16th Street • Suite 210 • Denver, Colorado 80211 • (303) 455-3600 • FAX (303) 455-9929

June 6, 1994

Dear Participants:

We want to thank you for participating in the North Fork of the Kern River No. 3 Whitewater Evaluation requested by the Federal Energy Regulatory Commission (FERC), update you on current status, and request some additional assistance.

We have received 174 boater evaluation forms to date, which encompass 11 different boating days. Most of these are for the period below. During the first five days we experienced the following approximate flows (cfs).

	Approximate Peak Flow Below Dam	Probable Flow During Boating	Average Daily Flow Below Dam
May 11	322	298 - 322	261
May 12	696	670 - 696	560
May 13	1085	1048 - 1085	919
May 14	1239	1165 - 1239	1065
May 15	1357	1315 - 1357	1180

Boating and video was extensive during the first four days. It covered the range from (or slightly below) kayak minimums to runnable/enjoyable. Thus the good news was that the initial flows covered the desired range requested by the FERC. The consensus identified at the progress meeting held Saturday evening the 14th of May was that the flows tested didn't necessarily identify the "breakover" flows where conditions moved from below to above minimum, and from minimum to minimum enjoyable. Therefore, it was agreed that further boat tests by the participants were desirable to fill in data gaps. Taggart Engineering Associates, Inc. (TEA)/Entrix encouraged the local coordinators to continue tests when flows were sufficient.

During the subsequent week bad weather occurred and the flows below the dam dropped back to below minimum levels. During the following weeks flows rose back to the 1000 cfs level over the Memorial Day weekend and have been dropping since.

We have only received a few forms from this second period. We would appreciate receiving more forms for this period. Also, there may be a few participants who have not filled out and returned forms for the first formal test period, and for the first few days of the boating season, (prior to when forms were available).

Please forward your forms to TEA at the above address by June 15, 1994. The FERC requested that Edison file their report with the FERC by July 7, 1994 in

order to keep the FERC EIS on schedule. Thus, it becomes very difficult to analyze forms which are received past the 15th. Recent gage readings indicate that this weekend is likely to be the last of the realistic boatable flow range, (but valuable in terms of better defining minimum). We would appreciate your prompt response. These forms and your efforts are important to the study and future efforts to improve boating. Sierra South, Chuck Richards, and the local coordinators should be able to provide forms and mailers.

The next point, as discussed during the meeting of May 14, was that better definition of minimum and minimum enjoyable is needed. Some of the criteria suggested was developed for other rivers, and does not consider the concerns of North Fork of the Kern boating. The North Fork of the Kern is an inherently steep river with extensive rapids, shallows, and a "rough" or "bony" river bottom. Some of the criteria could lead to conclusions that the river is not boatable, which is not the case. We need your help to establish this criteria. In your original handout we gave a suggestion for "minimum." Attached you will find a marked up "revised" version of "minimum" and a draft for "minimum enjoyable." We would appreciate your marking both of these (or providing your own version), either as an individual or as a group (the best way) so that we might compare the collected data against these "definitions". Please provide a contact name and phone number on the draft.

Our last request is for individuals or groups to mark up our maps to indicate the boating runs and other key rapids/shallows/features (put ins - take outs [ingress-egress]). For example many boaters often refer to a section called the "Cable" run. Similarly, others refer to another section as "Golfcourse". Please indicate your usual take-out and put-in locations for these runs on the enclosed maps or the maps available from the local coordinators.

Thanks for your help.

Sincerely,

TAGGART ENGINEERING ASSOCIATES, INC.


Bill Taggart


TAGGART
 ENGINEERING ASSOCIATES, INC.

2525 16th Street • Suite 210 • Denver, Colorado 80211 • (303) 455-3800 • FAX (303) 455-8029

DISCUSSION OF MINIMUM FLOW CRITERIA

CRITERIA REFINEMENT AND INTERPRETATION

The following summary gives minimum criteria which will be used to clarify the interpretation of minimum flow. ~~Criteria-for-enjoyable-boating-is-contained-on-the-form.~~

Table 1. Minimum Flow Criteria

	Rafts/Catacraft	Kayaks and Closed-Deck Canoes
1. Bottom scrapes in riffles.	Not-more-than-2-to-4 times-per-reach-and <i>Frequent</i> but not requiring more than 1/3 of paddlers getting out of the boat briefly to restore passage.	Not-more-than-2-to-4 times-per-reach-and <i>Frequent</i> but not requiring extensive pushups; or actually portaging more than once.
2. Bumps-or-lateral contact; <i>Equipment</i> damage	Not-more-than-6-to-12 per-reach: Minor scuffs allowed occur, but no appreciable damage. (e.g., -6x6-patch-okay; tears; -rips; -sewing-not acceptable;)	Not-more-than-6-to-12 per-reach: Minor scuffs allowed occur, but no appreciable damage. Serapes-and-scuffs-okay; but-no-penetrations; plastic-or-fiberglass repairs.
3. Rapid obstruction, or broaching.	Does not <i>normally</i> occur. with-a-normal-level-of observance.--If-careless allowed-once. <i>However, if it does occur</i> rafters must be able to easily dislodge themselves.	Does not occur with a normal level of observance. If careless allowed once; a few times per run. If boater can get off with brace or ordinary manpower, acceptable.
4a. Long/Difficult Portage.	Does not occur.	Does not occur.
4b. Short Portage in reach.	However,-if A maximum of two short portages needed in an otherwise boatable reach so-note as are acceptable.	However,-if A maximum of two short portages needed in an otherwise boatable reach so-note as are acceptable.

Table I. Minimum Flow Criteria (Continued)

	Rafts/Cataraft	Kayaks and Closed-Deck Canoes
5. General flotation and movement.	can move easily for 90% of reach. albeit-slowly and-having-to-pick-way through-streambed. <i>Paddle frequently hits rocks but must be able to paddle in most cases. Continuous pushing off bottom not acceptable.</i>	can move easily for 90% of reach. albeit-slowly and-having-to-pick-way through-streambed. <i>Paddle frequently hits rocks but can reasonably paddle stroke, to and low brace anywhere. Sufficient depth exists for high brace in eddy eddies.</i>
6. Drops	Not greater than 2-feet 3 to 4 feet with escapable approach. Any hole or keeper must be runnable and have a reasonable outlet/recovery situation. Rocks-which would-impale-from-below or-other-safety-hazards must-not-exist. Hazards must be avoidable with appropriate skill level.	Not greater than 3-feet 3 to 5 feet with escapable approach. Any hole or keeper must be runnable and have a reasonable outlet/recovery situation. Rocks-which would-impale-from-below or-other-safety-hazards must-not-exist. Hazards must be avoidable with appropriate skill level.
7. Safety	Must be safe; no reasonable anticipation of loss of life situation.	Must be safe; no reasonable anticipation of loss of life situation.

Minimum Enjoyable Flows

The Kern River becomes better once minimum flows are exceeded--until some extreme flood stage. Truly optimal flows encompass a broad range that probably starts at or above the range tested. FERC has used the term optimum loosely to describe the flow where boating becomes more enjoyable and safer; a desirable flow which people would return to boat. We have chosen to refer to this flow level as Minimum Enjoyable.

The Kern is boated at minimum flows to some degree, but there is a large incidence of collisions with exposed boulders, and getting "stuck" in "boulder gardens". In some cases, painful escapes and portages are necessary. As the flow increases above minimum, the number of these incidents drops greatly, but may never be entirely eliminated for three reasons. First, the major rapids and heavy boulder shallows/riffle have limited clear routes. Due to the hydraulic characteristics among these rapids, flow surges cause rapid water level and flow

RECEIVED JUN 13 1994

FOX SECURITY

1517 EAST FOURTH STREET
LONG BEACH, CALIFORNIA 90802-1886
Telephone (310) 437-1210



Bill

6/10

PLEASE EXCUSE NOW TYPED NOTE!
WE ARE GETTING READY TO HEAD OFF
TO IDAHO & MY SEC IS BUSY WITH
PAYROLL - ETC - I HAVE MARKED MAP
ON PONS THAT I NORMALLY RUN TOGETHER
I HAVE NOT BEEN ABLE TO GET BACK ON
THE DAM & BELOW SINCE 5/21
AS I DIDNT GO UP MEMORIAL DAY
DUE TO THE CROWD & I WAS ON
THE FORKS 6/4 6/5 - I HAVE BEEN
REQUESTING ADDL SHEETS FROM PRIVATE
BOATERS THAT DO BOAT DURING
SECOND PERIOD - HOPEFULLY THEY
WILL COMPLY -

FOX SECURITY

1517 EAST FOURTH STREET
LONG BEACH, CALIFORNIA 90802-1006
Telephone (310) 437-1218



I DO HAVE SOME PROBLEMS
WITH CHANGING THE CRITERIA & REFINEMENT
& INTERPRETATION AT THIS POINT -
CHANGING HORSES IN MID STREAM.

AS I HAVE ALREADY SENT YOU
MY GUESS (PRIOR TO STUDY) AS TO CFS
NESS — YOU WILL FIND THAT PROBABLY

DARN CLOSE —
FOR EXAMPLE 5/14 THUNDERON
WAS ON THE VERY EDGE OF RUNNABLE
& 5/15 WAS BETTER & SAFER
WITH JUST 120 CFS MORE —
SO WITH THE PEAK OF 1357 THROUGH
REACH IT EVENTUALLY WOULD SHOW
2000 IN THE PARK & THAT'S WHAT
I FIGURE ON TO RUN

[Signature]

TELEPHONE LOG

DATE: June 12, 1994 ±

WHOM: Bill Taggart and Don Jackson

- I. Called to express thanks for help.
2. Discussed that we weren't changing horses on criteria, that we wanted realistic evaluation criteria. Referred him to original instructions which had DRAFT minimum criteria, to which nobody had responded. Clearly after our field test period it was evident that several points in criteria were incorrect and inappropriate for the Kern. What was important was to clearly present final criteria that was used to evaluate forms, etc.
3. Discussed location of features, runs.

TELEPHONE LOG

DATE: June 30, 1994

WHOM: Bill Taggart and Chuck Richards

1. Called to express thanks for help.
2. Reviewed some feature locations and runs, including typical uses.
3. Talked about whether flow data transmitted by operators was helpful. Chuck indicated it was especially helpful for daily logistics and general planning. When asked if he felt it added boating days, Chuck was reluctant to agree. We discussed the Saturday May 14th where we saw little boating but available flows. Chuck agrees this was an instance where better information/predictions could add a boating day.

Also called Tom Moore and Katharine Haines to review similar points, but they haven't called back.

TELEPHONE LOG

DATE: July 6, 1994

WHOM: Bill Taggart and Katharine Haines

1. Thanked her for help.
2. Reviewed locations of a few features. Discussed common runs. Appears kayakers prefer the Cable Run including Camp 3 and then into town as flows become boatable in the bypassed reach. Once flows are higher, expert kayakers go to Thunder but often use Chamise Gorge and/or Gold Ledge as a warm up. At lowest flows kayakers prefer Limestone. Maybe increased usage of Fairview/Chamise will occur as information on its runnability becomes known.

Rafters are similar, but they don't always run Cable rapid because of poor put in conditions and potential for trouble at Wrap Rock.
3. We discussed that we appear to be missing some forms. She'll check her records there and we will mail a copy of our matrix of forms received. She mentioned that Chuck Richards was sending a letter.

TELEPHONE LOG

DATE: July 15, 1994

WHOM: Bill Taggart and Tom Moore

1. Asked Tom about boating usage in April and generally. He quoted Chuck Richards "sunup" answer (e.g., year round when there is water). But really March through August when water. There is a big race in April which is Powerhouse to Kernville, but might use other bypassed segments if there was water.
2. He offered that he thinks bypassed reaches boatable 300 to 1100 cfs - kayaks to rafts.
3. Further his flow augmentation proposal is to return flow to river from March through August whenever the available flow is 300 to 1100 cfs, otherwise the available flow up to 600 cfs could go to the plant. He felt that this would make a much more "enjoyable river experience and usage," that dollars of economics is not the entire justification. I pointed out that this would gut the heart of generation capacity, and that a much more narrow upper band that provided for the greatest number and type of boaters would have better economic justification potential. Also I asked if he was talking weekends or all the time. He answered all the time. I indicated that this was unrealistic.
4. Also discussed ideas on flow information system. He appreciated getting the data this year, but would like to see improvements in the future. Agreed that knowing the river flows below the dam for previous and current day was valuable.
5. He would be willing to receive data and give general boating advisories, but not specific flow predictions.
6. If there is water they (the boaters) come.
7. Tom doesn't run commercial rafts in upper reach.

ATTACHMENT G
PARTIAL HANDOUTS TO BOATERS

Memo (Instructions) dated May 7, 1994

AWA River Classifications

ENTRIX, Inc.
3416 American River Drive, Suite A
Sacramento, CA 95864



5-1-94

KERN RIVER NO. 3
WHITewater FIELD EVALUATION

RE: Thanks and instructions/suggestions.

Dear Participant:

On behalf of Southern California Edison (SCE), Entrix, Inc., and Taggart Engineering Associates, Inc. (TEA) we want to thank you for your participation. SCE was directed by the Federal Energy Regulatory Commission (FERC) on April 4, 1994 to conduct a field evaluation for minimum and optimal boating conditions during the 1994 season using experienced boaters.

There are many details involved and considerations which have to be addressed. TEA has developed an Action Plan which reviews these factors and provides a beginning point for the field evaluation. FERC, Entrix, and TEA have and will cooperate and coordinate with all parties in the interest of conducting this study and developing a better understanding of whitewater recreation on the bypassed reach of the Kern.

Consultation has occurred with:

- Kathleen Sherman, FERC
- Steve Natchman and Hal Copland, Stone & Webster (consultant to FERC)
- Richard Bowers, American Whitewater Affiliation
- Sandra Walter-Perry, Susan Swift, Roy McDonald, Entrix, Inc.
- Chuck Richards, Local Boating (Commercial) Representative and Local Field Evaluation Coordinator
- Katherine Haines, Local Boating (Private) Representative and Field Evaluation Coordinator
- Don Jackson, LA Basin Boating Representative and Assisting Coordinator to Chuck Richards
- John Seals, Local Boating Representative and Assisting Coordinator to Katherine Haines
- Cheryl Bauer, National Forest Service
- Dean Marston, State Fish and Game
- Chuck Williams, Water Master
- Matt Coleman, State Water Resource, Snowpack
- Geoff Rabone, SCE, FERC Application Manager
- Jim Wilber, SCE Plant Operator
- Alan Montgomery, Sheriff's Office
- John Pike, U.S. Army Corps of Engineers (COE)

We have been attempting to contact State Recreation (Jim Testa) and U.S. Fish and Wildlife. We will make contact. With this consultation a detailed action plan has been developed. This Action Plan is available for review locally with the local coordinators and at the SCE local offices for the plant. We want to thank each of these people and agencies, especially Chuck Richards, Katherine Haines, Don Jackson, and John Seals who have already put in much volunteer effort and have agreed to continue their efforts.

Groups

Each participant will be in one (and only one) of the following three groups, all of whom will have valuable input:

- Group I Designated Experts (Class V) who have been approved and coordinated with Chuck Richards and Katherine Haines, local coordinators. The people must attend the majority of test days as designated by Chuck and Katherine.
- Group II Solicited Experienced Boaters who have been contacted by one of the four local coordinators and will generally boat on the weekend in organized groups (e.g., 5 to 15).
- Group III Random Field Survey Participants who are contacted in the field by Entrix or one of the local coordinators. These could be kayakers, rafters, tubers, commercial passengers.

Group I participant results will heavily weigh on technical boating issues, while Group III will bring in more recreational experience and socio/economic - enjoyability issues with the "general population." Group II will reflect data on both ends of the technical boating to subjective and socio/economic data.

Schedule

The FERC letter allows for normal operation of the plant (e.g, SCE does not have to shut off flow to the plant). This coupled with a) the need to survey during the whitewater season, b) schedules of the various participants, and c) natural flow patterns, means that we need to sample through the season. The attached schedule indicates one scenario. Most parties consulted, past stream flow records and snowmelt data, and state runoff predict minimum to maximum flows (that will occur) during the second and third weeks of May. However, the real flow pattern will undoubtedly vary, and thus the program and the participants need to adapt. It is important for Groups I and II participants to stay in contact with their coordinators, to boat as much as possible, and to boat in organized groups of 5 to 15 so that scientific, consistent information, and sufficient sampling for the same flow condition is obtained.

Generally we perceive that the following general boating schedule concept could work within individual schedule practicalities. It should be representative and sample the desired range of flows.

- Group I rafters (largely professional guides) Mon, Tue, Wed, Thu, and/or Fri when flows are available - 4 days minimum, 6 or more days desired.
- Group I kayakers Sat, Sun, Wed. On Wednesdays hopefully Group I rafters and kayakers would be on the river at the same time in the same run - 4 days minimum, 6 or more desired.
- Group II rafters and kayakers - Weekends. Group I raft experts should also fill out evaluations and have their passengers fill out Group II forms during the peak 2 weeks. 2 days minimum, 4 or more days desirable.
- Group III will start at the end of the peak test period. Group I raft guides should have their commercial passengers fill out the forms as a

participant of Group III, while the guides continue to represent Group I. Random sampling.

REQUIREMENTS OF PARTICIPANTS

There is only one requirement, you must sign the release to participate. We are requesting that, if you are an experienced boater that you visit the reaches, inspect them, decide if you want to boat them, and please fill out a river run evaluation form (Form B) for each run, whether you boat or not.

Do not put yourself or others at risk in order to complete this field evaluation. Do not attempt runs that are above your skills or normal practices, with the one exception being minimum flow conditions. If you are willing to take the risk and believe conditions are safe, we are requesting that people test the minimums (which FERC has required of SCE). We, Entrix, or SCE cannot, however, compensate the participants for equipment damages or other harm which might occur.

Personal Form and Release

Form A is a very important form which is to be filled out once at the start of participation. It contains general questions pertaining to typical statistics, boating habits, and equipment, and other data which we hope Stone & Webster can use in their evaluations for FERC. The next to last sheet contains income and personal data which we will handle in a secure manner. When you fill this sheet out, put it in the attached envelop and seal it. The sealed envelop will be given to a single person in Denver who will enter it with a boater number and be the only person with the key between person identification and person secured data. No other agency or person will have access to this link. The data will be analyzed for general statistical summaries. If this is not satisfactory, don't fill out such data requested. Realize however, that economic data is probably relevant to the issues. Please turn in Form A immediately to Entrix or TEA, and if we are unavailable, to your local coordinator.

Daily Suggested Practices, Form B

On the day you boat, we would request that boating be done in groups so that multiple observations of the same event occur. We suggest you start at the top (below the dam) and inspect every run. Again, only boat if you feel conditions are safe and within your skill.

The Sidewinder and Bombs Away Rapids have extremely difficult access. If you have observed before and know that you don't wish to boat or don't ever boat, so note on Form B at least once, then from there on start at the Fairview put in downstream. See your local coordinator for access instructions to Sidewinder and Bombs Away.

Please fill out a Form B for each run you inspect or run. If you feel a run is better analyzed in smaller pieces (e.g., Upper Gold Ledge v. Lower Gold Ledge or Thunder) then use a form for each. Thus it will take at least 4 to 6 Form B's to complete each day. Note that FERC requires us to obtain information on each rapid. Form B has a quick form to evaluate the rapids and

features. We suggest you complete this early in your analysis, then the others. Besides technical data there are more subjective/judgmental queries relative to FERC's requirement related to desirable and quality boating preferences. Also near the end of the form there is a section on ingress and egress. Unless the flow changes, you only need to fill ingress/egress questions once for each run. For Group I and II, arrangements should be made with TEA, Entrix, the local coordinators and/or your "leader" that day to fill out the forms at lunch and the end of the day. A group debriefing should be held at the end of the day, to summarize a consensus opinion of key conclusions regarding boating in that day's flow. Group leaders will be provided with Form C, a group summary.

During the day, after first inspecting all runs, if you return to boat a run again, fill out a Form B for each repeat inspection or boat trip. Flow varies significantly during the day due to snowmelt. We believe it is important to sense this phenomena. It has been indicated to us that peak snowmelt runoff arrives at the dam at 4:00 a.m. and falls off significantly at 1:00 p.m. Peak flows appear in Kernville in the afternoon. We wish to sense how valid average daily flows are as an indicator of minimum, passable, and desirable conditions; and what the patterns are and how they affect boating. Accurate completion of Form B is critical to a meaningful study. We appreciate your efforts and patience.

There are two copies of the river guide map available. One is sealed and the other is on regular paper. Please return a marked paper copy when you detect the need for corrections or have recognized other features which should be added.

Support Facilities

Arrangements are being made to provide lunch each day you boat and complete the forms. Each boating party should make sure they have adequate provisions, including safety. Some transportation may be available. Please see your local coordinator.

Emergency Telephone Numbers:

- | | |
|---------------------------|---------------|
| • Sheriff | 209-784-4673 |
| • Fire/Emergency | Check Locally |
| • Forest Service Dispatch | 209-781-5780 |

Please see me or local coordinators or local SCE for additional Form B's. Boating party leaders are to return Form B's and the Summary Form C within a day to TEA, Entrix, or a local coordinator.

Video and Study Results

SCE will probably video during the week of Wednesday the 11th and on. A copy of this video, along with the study report will be available with the local coordinators, SCE local office, and the library or school.

Permits

Basically evaluations after the 15th of May will need to be under private boating permits. Please get your private permit and comply with manifest filing requirements. Only 15 people can enter the river as a party. One party must be out of sight before the next enters (follow the National Forest Service rules). Commercial rafters without paying customers are treated as private boaters and must have a private permit for each raft.

Sincerely,

TAGGART ENGINEERING ASSOCIATES, INC.



William C. Taggart, P.E., President

P.S. If you have questions ask your local coordinators, and if you need, call me. I will probably be staying at the Pine Cone starting the 11th for about a week. You can also leave a message at my office number.

Package contents:

- Map (paper for all, laminate for leaders, etc.)
- Thanks and Instructions/suggestions letter
- Form A with separate "secure" data sheet and release sheet
- Addressed secure envelop
- 10 sets (minimum) of Form B
- Schedule
- AWA Classification Sheet

Kern River No. 3 SCHEDULE BASED ON FLOW RISING 2ND WEEK OF MAY*
AND GROUP 1 KAYAKERS AVAILABLE ON WEDNESDAYS AND WEEKEND

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
May 1	May 2	May 3	May 4	May 5	May 6	May 7 Possible Group I Kayakers Trial - No Supervision - Use forms on their own
May 8 Possible Group I Kayakers Trial - No Supervision - Use forms on their own	May 9	May 10 8:00 p.m. Kickoff Meeting by TEA/Entrix AWA, SCE, Agencies?, State Rec. All Group I Participants	May 11 Possible Group I Kayak Likely Group I Raft TEA-Entrix Supervised	May 12 Likely Group I Raft TEA-Entrix Supervised	May 13 Likely Group I Raft TEA-Entrix Supervised	May 14 Definite Group I Kayak Possible Group II Raft and Kayak TEA-Entrix Supervised
May 15* (200 more than Sat. ± 700) Definite Group I Kayak Possible Group II Raft and Kayak TEA-Entrix Supervised	May 16 Regroup Group I Raft TEA Supervised	May 17 Group III Backup Group I Raft Meeting Coordination/ Assessment so far TEA	May 18* (200 to 400 more + min. in raft 800 to 1000) Possible Group I Kayak and Raft Debrief/summary TEA Supervised	May 19 Possible Group I Raft	May 20 Possible Group I Raft	May 21 Definite Group I Kayak Possible Group II Raft and Kayak Entrix Supervised
May 22 Definite Group I Kayak Possible Group II Raft and Kayak Entrix Supervised	May 23 Group III Entrix Supervised	May 24 Entrix Supervised	May 25 Entrix Supervised	May 26 Entrix Supervised	May 27 Entrix Supervised	May 28 Group III Entrix Supervised Group I Kayak and Group II Informal
May 29 Group III Entrix Supervised Group I Kayak and Group II Informal	May 30 Group III Entrix Supervised	May 31 Entrix Supervised	June 1 Entrix Supervised	June 2 Entrix Supervised	June 3 Group III Entrix Supervised	June 4 Group III Entrix Supervised

* More likely days to consider augmenting flow (desired flow noted).

** May 10 to June 4 shifts by a week later if flows are down May 7, 8 and are likely to come up later.

AWA RIVER CLASSIFICATIONS

Class I: Easy. Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self rescue is easy.

Class II: Novice. Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium sized waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed.

Class III: Intermediate. Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims.

Class IV: Advanced. Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large unavoidable waves and holes or constructed passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require "must" moves above dangerous hazards. Scouting is necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong eskimo roll is highly recommended.

Class V: Expert. Extremely long, obstructed, or very violent rapids which expose a paddler to above average endangerment. Drops may contain large, unavoidable waves and holes, or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of skill. What eddies exist may be small, turbulent, or difficult to breach. At the high end of the scale several of these factors may be combined. Scouting is mandatory but often difficult. Swims are dangerous, and rescue is difficult even for experts. A very reliable eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential for survival.

Class VI: Extreme. One grade more difficult than Class V. These runs often exemplify the extremes of difficulty, unpredictability and danger. The consequences of errors are very severe, and rescue may be impossible. For team of experts only on favorable water levels, after close personal inspection and taking all precautions. This class does not represent drops though to be unrunnable, but may include rapids which are only occasionally run.

ATTACHMENT H

CORRESPONDENCE AT ISSUANCE OF WORK PLAN

May 5 AWA Letter

May 7 AWA Letter

May 7 TEA Letter

Note: A tape of a teleconference conducted on May 9, 1994 is on file at TEA, SCE, ENTRIX, and FERC



american whitewater affiliation

May 5, 1994

Richard J. Bowers
1609 Northcrest Drive
Silver Spring, MD 209
(301) 236-0436

BY FAX TRANSMISSION

Geoff Rabone
Southern California Edison
Room 162 - G.O.4
2244 Walnut Grove Avenue
Rosemead, CA 91770

Dear Geoff:

I am writing to request that Southern California Edison (SCE) review two issues which I believe will affect the quickly approaching Whitewater tests at the Kern #3 project - controlled flow releases and travel expenses for the AWA.

1) I understand that the FERC letter of April 4th to Mr. Barry does not require SCE to provide enhanced flows for this test; however, such a flow could make these tests much more productive, and expedite their completion. I believe that some assistance from SCE could dramatically improve the quality of testing and prove to be in everyone's best interest.

This cooperation would allow us to conduct tests when water levels were lower. With SCE providing flows through the river rather than the chute, we could complete the tests at the higher levels (1000 to 1200 cfs.), during the same time period. If coordinated, this should take no more than 2 days of releases, possibly only 1 day.

The advantage is that the tests could be completed in a relatively short time, rather than the current scenario where the tests may, depending on nature, take several weeks to complete. This would reduce time and labor for all participants, especially those who need to set schedules in advance, take time off from work, or coordinate participants so that we can receive consistent survey results.

I understand that SCE may be looking at reimbursing participants for their time, this cost too would be reduced, along with consultant fees, travel costs, etc.

In our last communication I outlined the AWA's request to document travel time for flows on the Kern. I feel this is important to both determine the optimum use of all sections of the river below Fairview Dam, and how to use as little as possible of SCE's flows for generation. I am unaware of any economic method to complete this.

Executive Office: P.O. Box 85, Ploencia, NY 12464
(914) 688-5569



RECYCLED PAPER

without controlled and possibly augmented flows.

2) The other day I asked if SCE could provide travel expenses for my participation in this test. I am again requesting that SCE consider this request for the following reasons:

- While this test is a cooperative effort between SCE, AWA, and Kern River outfitters - this is a FERC required AIR for any relicense. Since boaters have offered to provide boats, boaters, some video equipment etc. (not fully determined since the draft plan has not been completed), expenses should fall far below most studies, even with flow augmentation.

- The AWA has been requesting these flows for over two years. Tests now seem to be on a "fast-track" to complete within the next two weeks or less. AWA will do everything within its power to work within this time frame, but should not be forced to exhaust our small travel budget flying to CA on very short notice. Especially if several trips are required to complete these tests due to natural flow schedules.

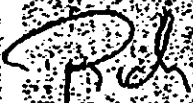
- I am sure my experience regarding recreational studies will make this expense worthwhile to SCE. Please remember that it is my role to correspond with FERC regarding boater analysis of these studies, and final outcome. It would benefit all parties to have "first-hand" knowledge of what transpired.

Early last week I communicated that I was available to participate at any time except May 14-15, due to a prior commitment. Recognizing the need to be flexible to flow levels, I was never-the-less put off by SCE's tentative scheduling for May 12-15. I am sure that after two years of effort, these are not the only possible dates available.

I am tentatively planning to arrive in Kernville late on Monday, May 16 (depending on flows and scheduling), as this is the earliest I can make it (I am also aware that Jim Testa, CA Boating and Waterways, is also unavailable next week). I believe that I could be most productive by being available at the start of these tests (my expertise will do little good coming in half-way through), I urge SCE to look closely at alternative schedules and travel expenses to allow this cooperative effort to continue.

I look forward to your response on these issues.

Sincerely,



Richard J. Bowers
Conservation Program Director

cc: Jim Testa

The AWA's Conservation Office Fax # is (301) 589-6121

MAY-07-1994 13:36 FROM SILVER SPRING MD

TO

1303453992938

P.01

Attn: Bill Taggart**american
whitewater
affiliation****Richard J. Bowe
Conservation Program Director****8630 Fenton Street, Suite 9
Silver Spring, MD 209
(301) 589-94
Fax (301) 589-61****BY FAX TRANSMISSION - 5 PAGES****May 7, 1994****Geoff Rabone
Southern California Edison
P.O. Box 800
2244 Walnut Grove Avenue
Rosemead, CA 91770****RE: Request for Postponement of Kern River Whitewater Tests****Dear Geoff:**

This letter is a follow up to several phone conversations yesterday with Bill Taggart, Taggart Engineering Associates, Inc., and my fax message to you dated May 5, 1994.

Please determine if next week is the only possible date that existing flows will be available to carry out this test. If not, please reschedule for a more appropriate time.

As I write this letter, not one party participating in this Wednesday's study (outside of SCE and their consultants) have had the opportunity to review even a draft plan for this test.

According to my phone conversation last night with Bill Taggart, a written draft will not be available until Monday. I was further informed that, due to travel schedules, a conference call could not be coordinated until Tuesday afternoon. The pre-test meeting with boating participants is scheduled for Tuesday night.

As I noted to SCE on April 28, I am unavailable to be in California next week, Jim Testa of CA Boating and Waterways will likewise be unable to attend at this time. Both private boaters and commercial interests have communicated to me their reluctance to continue without all parties participating, and without any kind of strategy in place.

I am extremely uncomfortable with not being included in the test, or even having the opportunity to comment on the test plan.

**Executive Office P.O. Box 85, Phoenicia, NY 12464
(914) 688-5569**

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MAY-07-1994 13:36 FROM SILVER SPRING MD

TO

1383455992930

P.02

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I faxed and mailed my recommendations to Mr. Taggart on April 28, and subsequent phone conversations have occurred, but in many cases this has confused the issues (to me) even more.

Here are my specific concerns with this study:

- (1) No action plan agreed to by all interested parties.
- (2) No viable scientific methodology for attaining the FERC required goals for this AIR.
 - group 1 (expert and more local boaters) will boat this Wednesday, May 11
 - group 2 (commercial interests) next weekend May 14-15
 - and group 3 (LA and intermediate boaters) the week of May 18-19. Unless the river level remains stable (which would offer time to complete a better plan), we will have 3 groups at 3 levels trying to determine a minimum and optimal boating level.

Under this scenario, no one group will experience all the levels which would allow for comparison and evaluation of these flows. What is the control group for any decision?

- (3) I have questioned including intermediate paddlers from the beginning of our discussion. They will be unable to complete the entire run, further destroying any controls or credibility of surveys or interviews. FERC has also required that "experienced" and boaters of "appropriate" skills be used.

Unless No. 2 and 3 can be explained, I do not understand how we will identify moderate and high quality whitewater runs, or determine the quality of safety, navigability, and recreational experience (FERC AIR requirements).

- (4) Natural water levels are too high to evaluate the lower 350 to 500 cfs. range of flows.

On Friday May 6, the natural flow was approximately 1100 cfs., and rising. This will eliminate examination of lower flows. Again, with SCE's cooperation, the best scenario would be to test at lower levels, and augment for a limited period to test the 1000 to 1200 cfs. range.

I am concerned that, until these issues and flows can be better explained and understood by all parties, next week's test will merely waste time and money. My constituency is donating considerable amounts of each.

During my conversation last evening, Bill Taggart remarked that "I can't control the situation" (water and timing), and that he had "approval from [FERC-staff] to do the best we can." AWA was not party to any such conversation which introduces a procedural question into the validity of this study. Whatever the discussion, I question whether it was FERC's intention to condone an uncontrolled and

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MAY-07-1994 13:38 FROM SILVER SPRING MD

TO

1383455992930

P.03

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unacceptable study.

Numerous tests have been conducted around the country in the last year, and all involve some degree of control. Even under natural flow (and I again state that SCE could expedite this testing by providing limited releases), all aspects except for flow levels can be controlled to some degree. Without control we have no valid test, and to date we have no idea of what controls exist.

The Kern is extremely important for recreation and to my organization. AWA has pursued these studies for over two years and I find it difficult to believe that we are now limited to a season of one week and that the "best we can do" is to arrive unplanned and unable to determine the needed information.

I am sure this was not FERC's intention in their April 4th AIR.

I urge SCE to take a closer look at this study. AWA does not want to delay this study, neither do we want to participate in a totally frustrating and useless undertaking.

Please contact me as early as possible on Monday morning to discuss these concerns and to set a more appropriate and planned recreation study.

Sincerely,

Richard J. Bowers
Conservation Program Director

cc: John Clements, Kathleen Sherman (FERC)
Jim Testa, CA Boating and Waterways
Chuck Richards (Chuck Richards Whitewater)
Katie Haines, Tom Moore (Kernville boaters)
Bill Taggart (Taggart Engineering)

ATTACHMENT I

EXCERPTS FROM PLAN OF ACTION AND RELATED CORRESPONDENCE

Action Plan

Personnel Form and Release

River Evaluation Form

FERC Order Dated April 28, 1994, Received SCE April 7, 1994

AWA Memo Dated April 28, 1994

TEA Letter to FERC Dated May 5, 1994

FERC Letter to TEA Dated May 5, 1994

California Department of Fish and Game Letter to TEA Dated May 5, 1994

**PLAN OF ACTION FOR CONDUCTING WHITEWATER RIVER EVALUATION
AND PREPARING SUMMARY REPORT**

OBJECTIVES

The FERC Letter of April 4, 1994 (Appendix D), fundamentally requires the determination of:

1. "Minimum" Boatable Flows
2. "Enjoyable" Boatable Flows

for the bypassed reach of the Kern River involved with Southern California Edison's Kern River No. 3 project.

REQUIREMENTS

The declarative (required) statements in the FERC letter are:

In cooperation with AWA and local outfitters, conduct a field evaluation to determine the following:

1. The approximate minimum boatable flow levels required for rafting.
2. The relative quality of the boating runs (for kayaking and rafting) in the bypassed reaches at flows higher than the minimum level. If possible, identify the flow ranges that provide moderate and high quality whitewater runs for kayaking and for rafting.

You (SCE) should coordinate with the AWA and local outfitters to obtain this information by having experienced boaters (kayakers and rafters) run the bypassed reach at available flows (under your normal operations) during the 1994 whitewater boating season, typically May through June.

A report presenting the whitewater boating is due in 90 days of letter (due July 5, 1994). SCE is to consult with AWA and outfitters when preparing the report. The report should include:

1.
 - Documentation of consulting
 - Methodology to implement the study and rationale for its selection.
2. Adequate documentation, text, figures, drawings or maps so that results can be interpreted.
3. A discussion of the minimum flow for each run in the bypassed reach for rafters and kayakers including difficulty of rapids (by AWA class), boat drags, portages, required skill level and quality.

4. A discussion of the optimal flows for each run for various skill levels for rafters and kayakers (within reason for run), the difficulty of rapids (by AWA class), any portages, and the quality of boating.

All other language in the April 4, 1994 FERC letter is of a nature to be classified as data, opinions, suggestions or requirements of others.

The following TEA program, on behalf of SCE, addresses or exceeds these requirements. We have considered the comments of FERC (Kathleen Sherman), Stone and Webster (Steve Nachtman), SCE staff (Geoff Rabone, Jim Wiber), Richard Bowers (AWA), Chuck Richards (Commercial Raft), Katherine Haines (Kayaker and Private Instructor and Representative of Local Kayaker Interests). Indirectly through these parties, it has incorporated the interests of many other parties.

There are numerous details involved with this plan and which will evolve as we begin dealing with Mother Nature and people schedules. We are developing and will further expand the necessary communication network and support services.

FIELD EVALUATION PARTICIPANTS

Based on interviews, suggestions of various parties, and willingness to assist the study effort, five individuals have been identified to assist with coordination of the study effort.

1. General coordination and assistance, Richard Bowers (AWA), national perspective, private boaters.
2. Primary commercial and rafting coordinator, Chuck Richards, commercial rafting and associated with many local boaters.
3. Primary local kayaking coordinator, Katherine Haines, kayaking instructor and local private boater.
4. Assisting coordinator, LA area boaters for Group II, Don Jackson, Long Beach and Kernville, Friends of the River, and assisting Chuck Richards.
5. Assisting coordinator, local private boaters, Groups I and II, John Seals, kayaker, cata raft, raft, and assisting Katherine Haines.

Other key parties to the effort include:

Geoff Rabone - SCE - FERC license project manager

Jim Testa - State Recreation *

Cheryl Bauer - Forest Service

Jim Wilber - SCE - Plant Operator

Chuck Williams - Water Master

Dean Marston - State Fish and Game

Sandra Perry and Susan Swift - Entrix - study management and assistance

Bill Taggart - TEA - study coordinator

* Contact has not been made by TEA due to telephone tag, but participants are aware of effort - further coordination to take place.

Kathleen Sherman of FERC and Steve Nachtman have been contacted as directed. The Sheriff's Office and National Fish and Wildlife will be contacted.

The AWA (Bowers) suggestions for field evaluation focus on a very limited group of kayakers with all Class V experience. We believe they also intended for the commercial rafters to participate. This means the "minimum" party to be involved is 8 to 10 kayakers in two groups and 10 to 14 rafters in two rafts. Given that the FERC letter dictates using experienced boaters, as opposed to an evaluation based on engineering hydraulics, we agree that this group's opinions are of significant concern, and required as a minimum for the effort. Literature also supports this as a viable and practical approach. In the following plan these participants are referred to as Group I. One immediate difficulty is that these kayakers and rafters are generally available at different times and boat at different minimums.

After interviewing Kathleen Sherman at FERC, Geoff Rabone at SCE, Sandy Perry at Entrix, it appeared that there were significant concerns regarding the opinion, practices, and input of the average "Joe" or "Jane". We also posed this concern. While the literature generally gives precautions against large, unwieldy numbers for river evaluations, it is also indicated that survey of "representative" boaters clarify practices and desires, and indicated, at least qualitatively, information pertaining to future outcomes. Therefore we are proposing that two other groups be involved.

Group II would be composed of other boaters notified by the volunteer coordinators through the boating network, locally and in the LA area. They would boat the river during a designated weekend(s) and be surveyed. We have tentatively identified the weekend of May 14 and 15 for their test, which is the most likely weekend to have sufficient high flows. The following weekend would be a backup or Second Collection Period. High flows means those towards the higher end of the likely study range. Presumably, this means we will collect data on minimum and quality experience (or at least two quality experiences). None of these boaters, as with Group I boaters, would be "required or pressured" to boat in hazardous or ridiculously low conditions, but they would be encouraged to try minimum conditions, at their own risk, including equipment, in order to help us establish "minimums". We believe these boaters would give information on quality of experience and willingness to return given similar flow conditions. Also they are likely to be more representative of recreation boaters that presently visit the areas, use the river for recreation, and expend "tourist" dollars.

Also Group I participants would be surveyed during this period as practical, but their results kept separate from Group II.

Group III would be informal interviews conducted by Entrix of random boaters on this reach of the river during the period basically following the Group II survey. This period is most likely to extend no longer than the end of May due to flow, but no later than June 12 given study logistic considerations. Parties that participated in Groups I and II will be requested to continue boating and evaluating the river, but their data kept with those groups. The intent will again reflect present practices and views of current users. No particular notice

of Group III interviews will be made, except possibly local signs that boaters coming to the site (anyway) would recognize and assist survey logistics.

Likely Group III interviews would be random and provide information on weekends and on a more limited basis weekdays (e.g., probably one 3 day over Memorial Weekend and one 3 day over a prior or following weekend). Our local representatives may assist with Group III participant interviews. This information will again indicate current practices, help cover the "boating season" requirement of FERC, and give information relevant to future usage and economic projections.

Maximum target participation for the groups is perceived as:

Group I	10 to 14
Group II	15 to 40
Group III	20 to 40

Maximum would not be greater than 200 total.

ACTION PLAN

The following plan is presented in outline format for the sake of brevity and clarity of key points. Much of the work of the first two major tasks has been completed as of the issuance of this report.

STUDY REACH OF THE RIVER

The reach to be investigated will involve the bypassed reach from Fairview Dam to the Hydroelectric Plant, as indicated on the following two maps (Figure 1 and Figure 2). Note however, that observations of the reach from the dam through Sidewinder and Bombs Away Rapids and immediate adjacent river segments will likely be limited by access, safety, and inadequate flow conditions.

Task and Scope Outline

I. INITIAL COORDINATION

1. Initial interviews and coordinating

- SCE, Geoff Rabone, Jim Wilber (Plant)
- Entrix, Sandy Perry, Susan Swift, Roy McDonald
- State Water Resources/Snowpack and Flow Predictions - Matt Colwell
- FERC, Kathleen Sherman
- Stone and Webster (S&W), Steve Nachtman - directed by Kathleen Sherman (FERC's EA Consultant)
- Richard Bowers - AWA - directed by Kathleen Sherman and Steve Nachtman
- Chuck Richards - Commercial Rafter and designated Local Rafting Coordinator generally and for Group I participants
- Katherine Haines - Kayak Instructor, Private Boater and generally Designated Local Kayak Coordinator

2. Identify hydrology facts and predictions.
3. Identify key active participants likely to conduct significant and mandatory efforts.
4. Refine study requirements.
5. Understand likely long term scenarios for flow management in order to collect appropriate data (limited success).

There are several scenarios being discussed among parties including:

- a. No change.
- b. Adjustments in physical access, safety measures, and public information to allow for better use of the river by private and commercial (e.g., ingress egress, debris removal, flow phone data on river flow below the dam, better guide information).
- c. Flow regulation for extended season for rafts and kayaks.
- d. Flow regulation for weekend releases.
- e. Flow regulation for special event releases (e.g., river races, Memorial Day).

a. and b. are likely among SCE and all government parties. c., d., and e. presumably would have to be justified by extensive socio-economic engineering analysis.

6. Identify study needs, approaches, schedules, needs based on facts and ideas of all parties.
7. Identify "bottom line" requirements with Kathleen Sherman (stated in Objectives, Appendix C). SCE must coordinate the study and get desired study results. If cooperation does not occur SCE must still complete the study.
8. S&W points to letter requirements only, will not respond to questions regarding flow management scenarios under consideration. Must contact only in approved teleconference meeting regulations. Contact ceased except as approved by FERC, Stone and Webster, SCE and Entrix, etc.
9. Outline facts, perceptions, limitations, requirements (See Appendix C).
10. Formulate rough plan.
11. Discuss verbally first concepts for plan. (All of the above done.)
12. Draft plan of action to SCE and Entrix and submit. (done)

2. Continuous flow monitoring and improved participation (periodic faxes, telecons, and letters).

II. FOLLOW UP AND EXPANDED INPUT TO PLAN OF ACTION

1. Recontact the above parties. No assistance anticipated by Stone and Webster or FERC other than comments in approved telecon (ingress/egress, traffic, facilities).
2. Expand contact with participants:
 - Forest Service - request for assistance, rescue, permit requirements, input and suggestion.
 - State Recreation - request for assistance, input and suggestions (e.g., video, transportation, monetary, facilities, safety, rescue).
 - Fish and Game, State and National (Awareness of test, review any test release or flow management, comments on long term flow management -- see State letter, Appendix D).
 - USGS, COE, Water Master - flow data, including immediate, real time access to gage, awareness of program. (Note SCE operators overcame problem with COE on obtaining data.)
 - Sheriff - awareness of test, coordination, traffic assistance. (Note that we became aware of accident, rescue reports that may be available at the Sheriff's Office.) (still to be done)
 - Other Support (AWA, commercial land private boating representatives, SCE and private business, transportation, safety, rescue, facilities, traffic, ingress/egress, lunches, signs, manpower and permission for flow regulation.
 - Private boating contact and awareness. (Have identified local and LA area representatives.)
3. Issue Plan of Action.
4. Identify Group I and II participants. Group I firm, II tentative.
5. SCE, AWA, Boating Representative, and FERC concurrence, (Teleconference in early May.)
6. Consensus achieved, or points of disagreement recognized and mitigation/alternative action approved with FERC.

III. MOBILIZATION AND STARTUP (Current as of May 6, 1994)

1. Draft forms and plan expressed to local interests and Group I experts.
2. Continued flow monitoring and communication network maintained with key parties.
3. Participation of Group I confirmed.

4. Participants of Group II solicited and confirmed as conditions allow.
5. Contact list refined and communication confirmed.
6. Group I kayakers continue testing, trying forms, trouble shooting program.

IV. INTENSIVE TEST PERIOD

1. TEA, Entrix mobilize to site for first combined tests.
 - a. Kick off Meeting, Group I
 - b. Review informal tests, Group I.
 - c. Refine plan.
2. Run tests, debriefing each day. (Group I) Video with discretion. Emergency support to be coordinated. (Group I kayaker is also local emergency/rescue coordinator.)
3. Ongoing Group I and start Group II.
4. Ongoing review of progress - SCE and consideration of flow management needs. (in particular days 3 and 4 of test period.)
5. Completion of final days with TEA in attendance.
6. Summary meeting with Group I. Informal meetings on site with Group II participants.
7. Possible informal trials, Group III.

V. CLOSURE TEST PERIOD

1. Entrix completes field evaluation with Group III.
2. Entrix and local leaders gather ongoing Group I and Group II data and summary comments.
3. TEA compiles first flow data and begins summary graphics.

VI. EARLY SUMMARIZATION OF DATA

TEA prepares early summary points and graphics (little or no text). Will submit to SCE, Entrix, S&W, Local Boating Representatives, AWA for comments and suggestions.

VII. VERY ROUGH DRAFT

- a. All data received.
- b. Data compilation and summary completed.

- c. Rough draft report to solicit corrections and comments.
- d. Circulate same parties in VI.
- e. Incorporate corrections and consider suggestions.

VIII. PRINT DRAFT

FIELD SCHEDULE

Figure 3 presents the current schedule as of May 5, 1994. Appendix C contains discussion of other options and factors influencing the schedule.

Basically, Group I kayakers begin Wednesday May 11th, the anticipated date of flow. Thus the key kickoff meetings is the prior evening. Group I rafting will follow when flows are available during weekdays. Group I rafting guides are involved with commercial trips and may conduct hybrid Group I/II evaluations with commercial customers on the weekends. Ideally we will have 4 Group I kayak days and 4 Group I raft days when TEA is present.

Group I and II boaters will continue boating periodically through the season, completing evaluation forms. When TEA/Entrix is present debriefing summary meetings will be held daily and at the end of the week.

SUPPORT SERVICES

A member of Group I is a Kernville emergency and rescue person. The Sheriff's Office has been notified and phone numbers identified. Emergency needs will be further coordinated in the field. However, these test will probably be largely under normal boating practices (emergency vehicles at their normal on call locations, not on site). When Group I or II is conducting organized boating during the test period a shuttle vehicle, probably a commercial raft van and trailer will be made available, and have water and limited emergency equipment.

We are making arrangements for lunches for the boating participants (they deserve something for filing out the paperwork).

SCE is arranging for selective video to capture boating whitewater features and variations with flow during a limited period.

DATA MANAGEMENT TOOLS

Appendix A contains a draft of a personal interview form. Standard demographic data will be obtained along with data relevant to boating capabilities, experience, and skill. This form will be used once per participant and coded by social security number or an alternative ID code. Each boater will be recognized by a unique number assigned at our office, so that no published data will reveal very personal data such as income or marriage status. The sheet of this secured personal data will be sealed separately and only the data processor in our Denver office will be privy to the tie from name to "most personal data." Information may be obtained such as boating frequency, local habitation, and spending for boating.

Appendix B includes a river reach evaluation form which is designed to address all considerations mentioned in the FERC letter, including specific data on rapids and features, and generalized impression of reaches. Flow data will be kept by SCE and TEA and then cross correlated in the office, entered on the form and subsequently analyzed.

Each boater will be given one form A with an envelope for the sheet with the secured data. It will be collected on the first day of participation. The secured information sheet will be returned to our office with reasonable security precautions. Numerous copies of form B, will be given appropriate to the number of runs and reaches that will take place (5 minimum). A river map, compiled from River Guide Documents and refined with the input of Katherine Haines and Chuck Richards, will be provided along with any instructions where needed.

Control of documents will be enacted but the local representatives will be given a stockpile of forms in order to distribute and collect from participants of Group I and II. They will also review the forms they receive to reduce errors, but not to influence various observations by other participants. This also will be true of Entrix, TEA, and AWA activities regarding distribution and collection of forms.

Data may or may not be computer analyzed pending size of data base.

CRITERIA REFINEMENT AND INTERPRETATION

The following summary given minimum criteria will be used to clarify the interpretation on minimum flow. Criteria for enjoyable boating is contained on the form.

I. Minimum Flow Criteria

		Rafts/Cataraft	Kayaks and Closed Deck Canoe
1.	Bottom scrapes in riffles.	Not more than 2 to 4 times per reach and not requiring more than 1/3 of paddlers getting out of the boat briefly to restore passage.	Not more than 2 to 4 times per reach and not requiring extensive pushups; or actually portaging more than once.
2.	Bumps or lateral contact, damage	Not more than 6 to 12 per reach. Minor scuffs allowed, but no appreciable damage (e.g., 6x6 patch okay, tears, rips, sewing not acceptable.)	Not more than 6 to 12 per reach. Minor scuffs allowed, but no appreciable damage. Scrapes and scuffs okay, but no penetrations, plastic or fiberglass repairs.

I. Minimum Flow Criteria (Continued)

	Rafts/Cataraft	Kayaks and Closed Deck Canoe
3. Rapid obstruction, or broaching.	Does not occur with a normal level of observance. If careless allowed once.	Does not occur with a normal level of observance. If careless allowed once.
	Rafters must be able to easily dislodge themselves.	If boater can get off with brace or ordinary manpower, acceptable.
4a. Long/Difficult Portage.	Does not occur.	Does not occur.
4b. Short Portage in reach.	However, if short portage needed in an otherwise boatable reach so note as acceptable.	However, if short portage needed in an otherwise boatable reach so note as acceptable.
5. General flotation and movement.	For 90% of reach can move easily albeit slowly and having to pick way through streambed.	For 90% of reach can move easily albeit slowly and having to pick way through streambed.
	Must be able to paddle in most cases, continuous pushing off bottom not acceptable.	Can reasonably paddle stroke, to low brace anywhere, depth for high brace in eddy.
6. Drops	Not greater than 2 feet with escapable approach. Any hole or keeper must be runnable and reasonable outlet/recovery situation. Rocks which would impale from below or other safety hazards must not exist.	Not greater than 3 feet with escapable approach. Any hole or keeper must be runnable and reasonable outlet/recovery situation. Rocks which would impale from below or other safety hazards must not exist.
7. Safety	Must be safe; no reasonable anticipation of loss of life situation.	Must be safe; no reasonable anticipation of loss of life situation.

Other minimum considerations to note. When acceptable minimum exists, note whether adjoining reaches were boatable and length of adjoining reaches that can be boated and their characteristics.

FLOW MEASUREMENT AND RELATED DOCUMENTATION

The approach herein includes documentation of flow at existing gages below the dam on the Kern, on diversion releases to the lateral streams (approximate), and the Kernville gage below the Plant. Flow determinations for the participant forms will be determined by extrapolation between gage data with due consideration, based on engineering judgment considering knowledge of stream flow hydrology and field observations. Hourly to 4 hour incremental readings will be observed at the gage below the dam. Similar data will be obtained, pending availability, for the Kernville gage. Estimates of the flow at the time of the run will be made, as appropriate, and average daily flows noted. The "derived" flows will be more accurate numerically than the average daily flows. But the average daily flows will probably be a more useful index to future users as only the average daily gage readings are generally available to the public.

EXTRAPOLATION FOR OTHER FLOW CONCLUSIONS

Reality regarding the present hydrologic situation, limited boater availability, and experience dictate that not every ideal flow e.g., 300 cfs to 1500 cfs in 100 cfs increments will be experienced. Also there will be difficulties in precisely determining even the four flows mentioned in the FERC letter. Also, we believe the cited flows for each type of boating (e.g., kayaking 350 cfs and 500 cfs) encompasses both minimum and desirable flows. The FERC letter implies a great range between minimum and very desirable flows, which is not the case. For rafting the cited flow range of 800 cfs to 1000 cfs is probably greater than the minimum in some reaches.

This coupled with relatively rapidly rising/falling river flow levels make "accurate" or very well defined determination of flows unlikely.

And, in consideration of the unlikely occurrence of even incremental differences in test flows, judgment based on engineering and boating experience judgment will very likely have to be used to define the minimum and desirable flow levels.

These realities and realistic expectations should be acknowledged.

These data and phenomena limit the accuracy of statements that can be made. For example, conclusions would be expressed in the narrative form might be typified by the following:

The minimum flow for running reach A in a kayak would be 300 cfs, with the primary limitation being long riffles with extensive exposure of 18 to 36 boulders and limited maze routes for clear continuous kayaking. At 400 cfs to 500 cfs enjoyable Class III kayaking occurs, where much more of the boulder bottom is covered at rapids and riffles, and many play spots and feature eddies and waves exist. However, the kayaker must always be vigilant because of the potential scuffles with boulders with shallow coverage and broaching on collections of exposed boulders which still exist. At flows of 600 cfs to 700 cfs, rafting can begin under minimal conditions and depending upon boat size and draft and rafting crew skill. Clearance between the remaining exposed boulder is tight for

rafting and requires an excellent crew and a little luck to avoid impingement and getting stuck. This flow is entertaining for the experienced Class III kayaker. The improving beginner kayaker has a chance at maneuvering through the boulder fields at this flow, but may risk bodily harm and boat damage upon a swim. At flows of 700 cfs to 900 cfs, depending on raft size and running depth, rafting becomes enjoyable, with a variety of waves, small rapids and features, definitely Class III water. The rafters need to keep aware of shallow coverage of boulders to avoid periodic scuffing at the lower end of this flow range. Difficulty for kayakers decreases with flow increase due to submergence of most river bottom rock, yet bank boulder eddies are more entertaining. The few larger massive boulders in the stream provide small surfer waves and modest eddies, but with enough power to fool the experimenting beginner . . .

Supporting graphs of boater survey data would be presented but the conclusion points may be at some large increment from observed boat experience. In the previous example, flows of 100 cfs, 350 cfs, 650 cfs, and 1000 cfs may be the only observed points, where the hypothetical conclusions above give a minimum kayak point at 300 cfs, a minimum range for rafting of 600 cfs to 700 cfs (considering wider equipment ranges), a desirable range for kayaks of 400 cfs to 500 cfs (considering subjective evaluation and the lack of observed data) and a desirable range of 700 cfs to 900 cfs for rafting (considering subjective evaluation and the lack of observed data). Great variation in the quality of boating above these points would not be anticipated (e.g., once there is enough water to boat, maneuver and play, which is not far above minimum, the quality is good.

In summary, do not expect:

- Great accuracy in determination of minimum (\pm 50 cfs to 100 cfs)
- Great change in quality with flow, once boatable it is probably good quality.
- Great shifts from already published data (e.g., The authors of river guides did not want to be low and, as observed by many, you can boat below the published low limits--say 300 cfs for kayaks.)

We state the above in the interest of study expectation and for discussion purpose. The study will certainly document, improve, and refine knowledge of whitewater river characteristics. TEA has cited an evaluation in the Fairview and Chamise Gorge Reach. It will be interesting to see how the survey results compare with the previous TEA review and testing by Chuck Richards (with flow correlations by TEA), and the published river guides.

CLOSURE

We are optimistic that the evaluation can be accomplished successfully.

We have concerns that a flat runoff year could significantly reduce the range of flows tested. It is imperative we test during the rising limb of the runoff hydrograph, which will probably occur during the 2nd or 3rd week of May. Cooperation among participants is good, but there are many tasks in front of us.

including agreement by all on a plan and budget approval by SCE. Also we are requesting the flexibility to increase flows during the designated test period, on a limited and short duration basis, should Mother Nature not cooperate with giving us flows covering the 300 cfs to 1400 cfs range.

We are hoping to cover a range of 300 cfs to 1400 cfs (1000 cfs minimum) but there are no guarantees. We understand the SCE is evaluating the costs of flow releases with the consideration of other regulatory difficulties involving charging customers and the various physical and manpower problems.

Results should be of benefit to the general boating public by revealing clearer information regarding boating characteristics. Subsequent steps would need to be taken (e.g., for Forest Service, State Recreation, Boating Groups) to prepare and disseminate guides. SCE could assist by relaying stream flow information from the gage below the dam. However if boating is to increase within already available flows, physical improvements for ingress, egress, safety, sanitary facilities are indicated.

FIGURE 3
Kern River No. 3 SCHEDULE BASED ON FLOW RISING 2ND WEEK OF MAY*
AND GROUP 1 KAYAKERS AVAILABLE ON WEDNESDAYS AND WEEKEND

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
May 1	May 2	May 3	May 4	May 5	May 6	May 7
Possible Group I Kayakers Trial - No Supervision - Use forms on their own	May 9	May 10 8:00 p.m. Kickoff Meeting by TEA/Entrix ANA, SCE, Agencies*, State Rec, All Group I Participants	May 11 Possible Group I Kayak Likely Group I Raft TEA-Entrix Supervised	May 12 Likely Group I Raft TEA-Entrix Supervised	May 13 Likely Group I Raft TEA-Entrix Supervised	May 14 Definite Group I Kayak Possible Group II Raft and Kayak TEA-Entrix Supervised
May 15* (200 more than Sat. 2 700) Definite Group I Kayak Possible Group II Raft and Kayak TEA-Entrix Supervised	May 16 Regroup Group I Raft TEA Supervised	May 17 Group III Backup Group I Raft Meeting Coordination/ Assessment so far TEA	May 18* (200 to 400 more + min. in raft 800 to 1000) Possible Group I Kayak and Raft Debrief/Summary TEA Supervised	May 19 Possible Group I Raft	May 20 Possible Group I Raft TEA-Entrix Supervised	May 21 Definite Group I Kayak Possible Group II Raft and Kayak Entrix Supervised
May 22 Definite Group I Kayak Possible Group II Raft and Kayak Entrix Supervised	May 23 Group III Entrix Supervised	May 24	May 25	May 26	May 27	May 28 Group III Entrix Supervised Group I Kayak and Group II Informal
May 29 Group III Entrix Supervised Group I Kayak and Group II Informal	May 30 Group III Entrix Supervised	May 31	June 1	June 2	June 3 Group III	June 4 Group III Entrix Supervised

* More likely days to consider augmenting flow (desired flow noted).

** May 10 to June 4 shifts by a week later if flows are down May 7, 8 and are likely to come up later.

WHITEWATER STUDY PERSONAL DATA QUESTIONNAIRE

Group No. _____

 Name: Last _____
 First _____
 Initial _____
 Preferred Nickname _____

 Date _____
 Social Security No. _____
 Birthdate & Initials _____
 Mo Day Yr Initial
 Boater No. _____
 (For Office Use - Don't Fill In)

SECURED PERSONAL INFORMATION SHEET

(NOTE INDIVIDUAL INFORMATION ON SHEET A-6 WILL NOT BE DIVULGED.)

Age _____ Place of Birth _____

 SEX ☐ Male ☐ Female

 OCCUPATION _____
 Title _____

 Do You Own Your Business? ☐ Yes
☐ No

 Is Whitewater Boating a primary recreational activity? ☐ Yes ☐ No

If Whitewater Boating is not your primary recreational activity, place a "P" by one of the following which is primary.

OTHER	_____	Hiking/Camping	_____	Running
HOBBIES	_____	Hunting/Fishing	_____	Jogging
	_____	Skiing	_____	Walking
	_____	Racquet Sports	_____	Acrobics
	_____	Weight Training	_____	Other _____

PRIMARY RESIDENCE (WILL NOT BE GIVEN TO MASS MAILERS.)

 Street _____
 City _____
 State _____ ZIP _____
 Phone _____

BUSINESS (WILL NOT BE GIVEN TO MASS MAILERS.)

 Street _____
 City _____
 State _____ ZIP _____
 Phone _____

SECONDARY RESIDENCE/VACATION HOME (WILL NOT BE GIVEN TO MASS MAILERS.)

 Street _____
 City _____
 State _____ ZIP _____
 Phone _____

Name of Business _____

GENERAL WHITEWATER ABILITY

Kayaker:

☐ Beginner ☐ Intermediate ☐ Advanced ☐ Expert

Canoeist:

☐ Beginner ☐ Intermediate ☐ Advanced ☐ Expert

Raft:

☐ Beginner ☐ Intermediate ☐ Advanced ☐ Expert

Cataraft:

☐ Beginner ☐ Intermediate ☐ Advanced ☐ Expert

Other:

Type of Craft _____

☐ Beginner ☐ Intermediate ☐ Advanced ☐ Expert

Classify your typical and usual limit of experience in terms comparable to AWA's Classification - see separate description sheet. (Also referred to as the International Canoe Federation System.)

KAYAK

	General (✓ one)	Maximum Limit Usually Experience (✓ one)
Class I	_____	_____
Class II	_____	_____
Class III	_____	_____
Class IV	_____	_____
Class V	_____	_____
Class VI	_____	_____

**WHITEWATER
CANOE**

	General (✓ one)	Maximum Limit Usually Experience (✓ one)
Class I	_____	_____
Class II	_____	_____
Class III	_____	_____
Class IV	_____	_____
Class V	_____	_____
Class VI	_____	_____

When kayaking or canoeing, do you:

_____ Lead a group _____ Go as one of the group _____ Go by myself or with one other person

RAFT

	General (✓ one)	Maximum Limit Usually Experience (✓ one)
Class I	_____	_____
Class II	_____	_____
Class III	_____	_____
Class IV	_____	_____
Class V	_____	_____
Class VI	_____	_____

SPECIAL OR CATARAFT

	General (✓ one)	Maximum Limit Usually Experience (✓ one)
Class I	_____	_____
Class II	_____	_____
Class III	_____	_____
Class IV	_____	_____
Class V	_____	_____
Class VI	_____	_____

When rafting, do you participate as a:

_____ Leader _____ Crew Person _____ Passenger

OTHER _____ (type)

	General (✓ one)	Maximum Limit Usually Experience (✓ one)
Class I	_____	_____
Class II	_____	_____
Class III	_____	_____
Class IV	_____	_____
Class V	_____	_____
Class VI	_____	_____

When doing this water activity are you:

_____ Leader _____ One of the group _____ Individual

Do you teach whitewater boating? ____ Yes ____ No

If Yes what level?

☐ First Timer ☐ Beginner ☐ Intermediate ☐ Advanced

If Yes what type of boating?

☐ Kayak ☐ Canoe ☐ Raft ☐ Cataract

If Yes are you paid?

☐ Yes ☐ No

Do you enter whitewater competitions? ____ Yes ____ No

If Yes what type?

☐ Canoe ☐ Kayak ☐ Raft ☐ Slalom ☐ Downriver

☐ Free Style ☐ River Celebration Fun Events

If Yes what level?

☐ Group Leader ☐ General Participant ☐ Newcomer

Are you employed with a commercial operator? ____ Yes ____ No

If Yes - How many years experience? ____

Average times you boat per year.

for the last 5 years ____

for the last year ____

Average passenger per trip ____ (e.g., 4 to 8).

BOAT TYPE

☐ Kayak

General Type:

☐ Slalom ☐ Downriver ☐ Combo ☐ Other _____

Manufacturer:

Material:

Do You?

☐ Own ☐ Rent \$ ____ /day ☐ Borrow

☐ Whitewater Canoe

General Type:

☐ Slalom ☐ Downriver ☐ Combo ☐ Other _____

Manufacturer:

Do You?

☐ Own ☐ Rent \$ ____ /day ☐ Borrow

☐ Raft

Size:

____ Length ____ Chambers

People Capacity ____

Self Bailing ____ Yes ____ No

Oaring Frame ____ Yes ____ No

Manufacturer:

Do You?

☐ Own ☐ Rent \$ ____ /day ☐ Ride with Others

☐ Cataract or Special

Size:

____ Length ____ Chambers

People Capacity ____

Self Bailing ____ Yes ____ No

Oaring Frame ____ Yes ____ No

Manufacturer:

Do You?

☐ Own ☐ Rent \$ ____ /day ☐ Ride with Others

☐ Other (Tubing or _____)

Size: _____

VISITOR INFORMATION

How often do you come to Kernville?

Resident ____ Yes ____ No

Frequent Vacation ____ Yes ____ No

If Yes:

(For the purposes of this survey generally relate to 1987, 1991 as dry years, 1984, 1985 as average years, and 1986 as a wet year)

How many days in the Kernville area per year? _____

How many days in the Kernville area during a dry year? _____

How many days in the Kernville area during an average year? _____

How many days in the Kernville area during a wet year? _____

Periodic Visitor ____ Yes ____ No

If Yes:

Kernville

Elsewhere

How many days do you boat per year? _____

How many days do you boat during a dry year? _____

How many days do you boat during an average year? _____

How many days do you boat during a wet year? _____

On what information do you base your decision to boat?

- ☐ Flow Phone ☐ Word of Mouth/Friends ☐ Sports Store ☐ Friends of the River
☐ Local Resident ☐ Media Weather Reports ☐ Media Sports/Recreation Reports
☐ General Media Information ☐ Look at the River (I'm local)

Which reaches of the Upper Kern do you boat? If you run during the same day, please indicate with bracket.

Reach	Wet	Average	Dry
Forks			
Limestone			
Sidewinder/Bombs Away			
Fairview (Calkins Flat)			
Chamise Gorge			
Salmon Falls			
Upper Gold Ledge			
Gold Ledge			
Thunder			
Camp 3			
Power House			
Lower Kern			
Comments			

Is there adequate information to understand the current flow situation on the bypassed reach of the Kern?

____ Yes ____ No

SPENDING INFORMATION

When you boat for recreation do you stay in the area? Yes No

If Yes:

Dry year: number of nights per visit _____ number of days per visit _____
 Average year: number of nights per visit _____ number of days per visit _____
 Wet year: number of nights per visit _____ number of days per visit _____

Do You? ☐ camp ☐ stay at a motel ☐ stay with friends

Do You? ☐ bring you own food/drink ☐ buy food/drink locally

Average number of days you visit the Kern River per dry year. _____
 Average number of days you visit the Kern River per average year. _____
 Average number of days you visit the Kern River per wet year. _____

Average amount \$ you spend per day locally. _____

How much do you spend on boating per season?

for boats and paddles	_____	locally	_____
for equipment	_____	locally	_____
for lodging	_____	locally	_____
for travel	_____	locally	_____
for food	_____	locally	_____

How much did you purchase your boats and paddles for?

Kayak _____
Canoe _____
Raft _____
Catacraft _____
Other _____

MISCELLANEOUS

How did you come to participate in this test?

Contacted by:	Name
----------------------	-------------

☐ **Whitewater Club:** _____ **Name** _____

☐ Commercial Rafter ☐ Work for SCE Where _____ Position _____☐ Kayak or Canoe School ☐ Forest Service☐ Equipment/Sports Store ☐ Friends of the River

☐ Contacted by Interviewer _____ TEA _____ EntriX _____ SCE _____ AWA _____ Local Boater
Local Study Coordinator

☐ Other _____

SECURED PERSONAL INFORMATION

(NOTE INDIVIDUAL INFORMATION WILL NOT BE DIVULGED OTHER THAN BY GROUP NUMBER)

SEX ☐ Male
 ☐ Female

EDUCATION

☐ Attended High School ☐ Attended College ☐ Graduate School
☐ Graduate - High School ☐ Graduate - College ☐ Other _____

INCOME

☐ Individual
☐ Joint

If Joint, is the other party a participant to this study? ____ Yes ____ No
If Yes, please give:

Name: _____
Social Security Number: _____
Birthdate & Initial: _____

☐ \$0 - \$10,000 ☐ \$50,000 - \$100,000
☐ \$10,000 - \$30,000 ☐ \$100,000 - \$150,000
☐ \$30,000 - \$50,000 ☐ \$150,000 +

MARITAL STATUS Single ____ Divorced ____ Married ____ Widow/Widower ____
 Number of Children ____ Children at Home ____

WHITewater EVALUATION STUDY**ASSUMPTION OF RISK AND GENERAL RELEASE OF LIABILITY**

1. I recognize that the whitewater evaluation study that I am about to participate in 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, can be dangerous and that the dangers may include damage to or destruction of personal property, serious physical injury or even death arising from a variety of hazards including, but not limited to and by way of example only, rocks, trees, powerful waves, waterfalls, hydraulics, being ejected from a boat, raft or kayak, and various other man-made or natural hazards and difficulty or improbability of rescue. I acknowledge that under those circumstances, the usual hazards associated with whitewater activities may be compounded. I also understand that during the course of the study, there may be significant variations in river flow that may alter the character of the river.
2. As a participant in this whitewater evaluation study, I recognize:
 - a. that I am a joint venturer with the other trip participants;
 - b. that none of the participants will be acting as a professional river guide;
 - c. that I am personally responsible for determining whether I have the skill and expertise to safely navigate any particular river segment under any and all potential circumstances;
 - 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 attempt on my part to rescue or assist any other person may result in injury or death to myself.

3. I UNDERSTAND AND EXPRESSLY ASSUME ALL THE DANGERS AND RISKS INCIDENT TO THE WHITEWATER EVALUATION STUDY ON THE RIVER SEGMENT INVOLVED AND HEREBY RELEASE ALL CLAIMS INCLUDING, BUT NOT LIMITED TO, PROPERTY DAMAGE OR DESTRUCTION, PERSONAL INJURY OR DEATH, WHETHER CAUSED BY NEGLIGENCE, BREACH OF CONTRACT OR OTHERWISE, WHICH I MAY EVER HAVE AGAINST: (A) SOUTHERN CALIFORNIA EDISON COMPANY AND ITS AFFILIATES, ITS OFFICERS, DIRECTORS, EMPLOYERS, AGENTS, ASSIGNS OR SUCCESSORS; (B) ANY SUPPLIER OF MATERIALS AND EQUIPMENT EMPLOYED IN CONNECTION WITH THE PROPOSED WHITEWATER EVALUATION STUDY; (C) AMERICAN WHITEWATER ASSOCIATION OR ANY OTHER PERSON OR ENTITY THAT MAY BE INVOLVED IN FACILITATING ANY USE AND ENJOYMENT OF THE RIVER SEGMENT INVOLVED; AND, (D) EACH AND EVERY OTHER PARTICIPANT IN THIS WHITEWATER EVALUATION STUDY.
4. I represent that:
- a. I am 18 years of age or older;
 - b. I am submitting this release and waiver voluntarily and of my own free will;
 - 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 Southern California Edison Company nor its affiliates, its officers, directors, employees, agents, successors or assigns are providing liability, health or other insurance in connection with this whitewater evaluation study and I agree to (i) assume all financial responsibility for any medical, rescue or other expenses that I may incur, and (ii) to defend, hold harmless and indemnify Southern California Edison Company, its affiliates, its officers, directors, employees, agents, successors and assigns for any loss or damage, including attorneys' fees, that they may suffer should I pursue an action or claim that is waived or barred by this release and waiver.
6. I assume full responsibility for and agree to defend, hold harmless and indemnify Southern California Edison Company, its affiliates, its officers, directors, employees, agents, successors and assigns against claims, losses or judgments that may arise from any damage or harm that I may do or cause while participating in this whitewater evaluation study.
7. This waiver shall be binding upon me, my heirs, executors and administrators.

05/09/94 13:27

0618 302 8964

SCE HYDRO GEN

--- NORTHERN HYDRO

004/004

Dated:

(Print)

(Print Name)

Signature

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3384 0000

WHITEWATER STUDY RIVER REACH EVALUATION

Group No. _____

Date of Run _____

Date You Completed Form _____

Name: Last _____

Social Security No. _____

Initial _____

Birthdate & Initials _____

First _____

Mo Day Yr Initial

Preferred Nickname _____

Boater No. _____

(For Office Use - Don't Fill In)

Reach Name (see map) _____

(If not on map, give river miles at entry and exit.)

Number in Party _____

Name of Leader _____

Boater? _____ Yes _____ No Bank Observer? _____ Yes (e.g., you boated other reaches but didn't boat this reach.) _____ No

If Yes, what was the reason? _____

Time of Arrival _____

Time In Water _____

Time Out of Water _____

Time Back on the Road _____

Weather:

☐ Sunny ☐ Overcast ☐ Windy ☐ Rainy

What were other intangibles of the day? _____

Quality of whitewater experience:

<input type="checkbox"/> Tiresome (1)	<input type="checkbox"/> Boring (2)	<input type="checkbox"/> Pleasurable (3)	<input type="checkbox"/> Good Training/ (4) Warm Up	<input type="checkbox"/> Enjoyable (5)	<input type="checkbox"/> Fun (6)
<input type="checkbox"/> Fun but (7) Scary	<input type="checkbox"/> Risky, low (8) water	<input type="checkbox"/> Risky, high (9) water	<input type="checkbox"/> Extreme Hazard (10)	<input type="checkbox"/> Other _____ (11)	

Character of the whitewater:

☐ Easy
☐ Moderate
☐ Difficult
☐ Very Difficult
☐ Hazardous

Estimated Flow _____

Certified Flow _____

(For Office Use - Don't Fill In)

General AWA Class for Reach (See separate explanation sheet.)

<input type="checkbox"/> Class I	<input type="checkbox"/> Class II	<input type="checkbox"/> Class III	<input type="checkbox"/> Class IV	<input type="checkbox"/> Class V	<input type="checkbox"/> Class VI
Maximum AWA Class for Reach					
<input type="checkbox"/> Class I	<input type="checkbox"/> Class II	<input type="checkbox"/> Class III	<input type="checkbox"/> Class IV	<input type="checkbox"/> Class V	<input type="checkbox"/> Class VI

Type of Flow:

☐ Low ☐ Moderate ☐ Okay ☐ High ☐ Extremely HighIs the general character? _____ Below Minimal _____ Minimal _____ Above Minimal
_____ Reasonable _____ Optimal _____ Hazardous High Water

Craft:

☐ Kayak ☐ Raft ☐ Canoe ☐ Cataract ☐ Tube ☐ Special/Other _____

RAPID OR FEATURE EVALUATION Check / or estimate as appropriate																
Name of Rapid → (note)																
River Mile (note)																
Rapid																
Pool																
Braid																
Riffle																
Obstruction																
Hazard																
Other (note)																
Class I																
Class II																
Class III																
Class IV																
Class V																
Class VI																
Maximum individual water drop at rapid, fall, constriction (feet)																
Minimum depth (feet)																
Typical depth (feet)																
Maximum depth (feet)																
Poor																
Fair																
Average																
Good																
Very Good																
Poor																
Fair																
Average																
Good																
Very Good																
Blind																
Difficult approach																
Complex water																
Difficult eddies to see																
Tricky eddies to be in																
Downfall																
Debris																
Brush																
Multiple drops and hazards in sequence																
Holes																
Holes that trap																
Disturbing fluctuations, flow patterns																
No escape routes																
No bypass routes																
Impact																
Fanning, branching																
Constrictions																
Difficult to swim if out																
Hazardous swim if out																
Egress if swimming																

May 6, 1994

B - 2

© TEA, Entrix, SCE

3386 0000

Portion of the reach boated? _____ Percent

If not 100% please explain:

- ☐ Debris ☐ Downfall ☐ Extreme drop ☐ Unavoidable keeper holes
☐ Unsafe ☐ Portions with hazards ☐ Portage ☐ Lack of water ☐ Other _____
☐ Shallows at riffle or rapid ☐ Rapid beyond capability ☐ Rapid unsafe ☐ Hazard to all

If you had to portage, was it because?

- ☐ Shallows at riffle ☐ Rapid beyond capability ☐ Rapid unsafe ☐ Hazard to all
☐ Unavoidable keeper holes ☐ Exhausting run ☐ Extreme drop ☐ Debris

Name of shallows, obstruction, rapid, and river miles involved with portage:

Related Comment: _____

Key problems encountered on run:

Number of bottom scrapes or stopped boat _____

Did boater(s) have to get out? _____ Yes _____ No

Number of unavoidable lateral contacts _____

Damage: _____ insignificant _____ significant

Injury: _____ Yes _____ No

- ☐ Downfall ☐ Over grown vegetation ☐ Debris hazards ☐ Unavoidable holes
☐ Obstructions ☐ Broaching (unavoidable) ☐ Navigability ☐ Extreme drops
☐ Ingress ☐ Dangerous keepers ☐ Blind rapids ☐ Other _____
☐ Egress ☐ Blind and can't inspect ☐ Unstable fluctuating flow characteristics

Paddling Depth: _____ Inadequate _____ Periodically inadequate _____ Marginal, but okay
 _____ Good _____ Unlimited, adequate for kayak rolls

Related Comment: _____

SAFETY/NAVIGABILITY/ENJOYMENT

Your opinion of the run. Put ✓ above your general whitewater class. Then ✓ closest statement below your class.
 You may enter your opinion for classes lesser than (to the left of) your skill level.

General Whitewater Classification → (✓ only above your class)						
	Class I ↓	Class II ↓	Class III ↓	Class IV ↓	Class V ↓	Class VI ↓
<u>Totally inadequate flow.</u> Minimal (frustrating, damage likely)						
<u>Tiresome, Boring.</u> No reasonable attractions too enjoy or play in, largely flat water requiring paddling to move, preoccupied with getting through.						
<u>Pleasurable/good warm up/enjoyed view/</u> some play in the water, some features to train, movement in water most places.						
<u>Enjoyable/good training -</u> water above, noticeable articulations, jets, eddies, holes appropriate to general class of water.						
<u>Exhilarating Fun/Challenging.</u> Whitewater features of appreciable interest and excitement, if ability and whitewater class the same, boater is happy, excited, and challenged but not with sense of risk.						
<u>Fun but Risky.</u>						
<u>Exceeding Envelop</u> for skill level. Body and equipment at risk.						
<u>Totally Hazardous Flow.</u>						

May 6, 1994

B - 3

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3387 0000

OTHER COMMENTS:

Do you boat in this reach at this flow magnitude?

- ☐ never ☐ 4 to 10 times per season
☐ once per season ☐ 10 to 20 times per season
☐ 2 to 4 times per season ☐ More: _____ How many per season?

Do you boat with adjoining reaches at this flow? Yes No

If Yes, please denote reaches:

ACCESS/EGRESS

(Fill out rest of this page once per run for entire test period unless changed with flow.)

Was the access? ☐ Terrible ☐ Tolerable ☐ Adequate ☐ PreferredWas the egress? ☐ Terrible ☐ Tolerable ☐ Adequate ☐ Preferred

Problems with ingress, egress, or emergency access/egress (Enter "P" for perceived or "A" for actually encountered)			
	Ingress	Egress	Emergency Access/Egress
Roadway			
Parking			
Restrooms			Not Applicable
Drinking water			Not Applicable
Difficult path to water			
Unwieldy boat transport route			
Brush			
Trash			
Conflict with campground			
Conflict with other users			
Other			
(explain)			

Other Comments or Suggestions:

Would you return to boat for this flow level?

- | | | |
|--|---|---|
| <input type="checkbox"/> No, too little.
(1) | <input type="checkbox"/> Yes, but only if it was clear that the season wasn't going to get better.
(6) | <input type="checkbox"/> Yes, I would come for a 3-5 day trip.
(11) |
| <input type="checkbox"/> No, too many problems.
(2) | <input type="checkbox"/> Yes I boat at this flow and in similar conditions.
(7) | <input type="checkbox"/> Yes, I would return several times over the season.
(12) |
| <input type="checkbox"/> No, too much or too scary.
(3) | <input type="checkbox"/> Yes, this was enjoyable.
(8) | <input type="checkbox"/> Other
(13) _____ |
| <input type="checkbox"/> Maybe, if in the area anyway.
(4) | <input type="checkbox"/> Yes, I would come for one day.
(9) | _____ |
| <input type="checkbox"/> Maybe yes, because I could boat with some other reaches.
(5) | <input type="checkbox"/> Yes, I would come for two days (10) or a weekend. | |

04. 12. 94 06:10 PM *ENTRIX-SACTO-CA.

P02

04/12/94 09:58

0818 302 S.J.

SCE HYDRO GEN

0002

STEPHEN E. PICKETT

APR 07 1994

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D. C. 20426

LAW DEPARTMENT

Project No. 2290-006 - CA
Kern River No. 3
Southern California Edison Co.

APR . 4 1994

Mr. David N. Barry
Southern California Edison Company
P.O. Box 800
Rosemead, CA 91770

Dear Mr. Barry:

In our letter of September 23, 1992, we requested additional information on whitewater boating in the North Fork Kern River. Specifically, in item 12 (b), we requested information on the range of streamflow needed to provide boating opportunities and the quality of the whitewater boating at various flow levels. In your response, you provided the estimated flow ranges based on published information from guidebooks.

The information you provided is useful to our analysis. However, information we obtained at the scoping meetings indicates that the published flow ranges may not fully identify the minimal and optimal flow levels for whitewater boating. American Whitewater Affiliation (AWA) and some of the Kern River Outfitters have stated that they would cooperate with Edison in developing better estimates of the flows that provide minimum and optimal whitewater boating opportunities in the bypassed reach of the North Fork Kern River. They have offered to coordinate and provide experienced kayakers and rafters to assist in any boating flow assessment.

The bypassed reach of the North Fork Kern River contains several high quality boating runs. Both the costs and benefits of enhancing whitewater boating at your project could be substantial. Because whitewater boating is an important issue at the Kern River No. 3 plant, developing better information on the relationship between flow levels and the quality of whitewater boating is useful for our analysis of this issue. Therefore, in cooperation with AWA and local outfitters, conduct a field evaluation to determine the following:

1. the approximate minimum boatable flow levels required for kayaking and for rafting. The minimum levels should provide a boating run that generally does not require boat dragging or portaging as a result of low water conditions. Portaging may still be required at especially difficult rapids such as Salmon Falls and Bombs Away. Existing information indicates that flows between 350 and 500 cfs for kayaking and between 800 and 1000 cfs for rafting should be targeted.

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P03

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SCE HYDRO GEN

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2

2. the relative quality of the boating runs (for kayaking and rafting) in the bypassed reach at flows higher than the minimum level. The determination of quality should include consideration of safety, navigability, and recreational experience. If possible, identify the flow ranges that provide moderate and high quality whitewater runs for kayaking and for rafting.

You should coordinate with the AWA and local outfitters to obtain this information by having experienced boaters (kayakers and rafters) run the bypassed reach at available flows (under your normal operations) during the 1994 whitewater boating season, typically May through June.

Within 90 days of the date of this letter you should submit a final report presenting the whitewater boating data you have acquired during the season's testing. Consult with the AWA and the local outfitters when preparing this report. The final report should include:

1. documentation of consultation, the methodology used to implement the study and the rationale for its selection;
2. adequate documentation, text, figures, drawings, or maps so that the results can be easily understood and interpreted;
3. a discussion of the minimum flow for each whitewater run in the bypassed reach for both rafters and kayakers, including the difficulty of rapids (using the International Canoe Federation class I-VI system), any boat drags or portages, required skill level and the quality of the boating experience; and
4. a discussion of the optimal flows for each whitewater run for boaters of various skill levels (within reason for that particular run) for both rafters and kayakers, the difficulty of rapids (using the International Canoe Federation class I-VI system), any portages, and the quality of the boating experience.

*form
id reads
fill
check
Richard*

04/12/94 09:50

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SCE HYDRO GEN

P04

3

Comments from other participants on the results of the study should be filed directly with the Commission within 30 days of the final report being filed with the Commission.

If you have any questions concerning this matter, please call Kathleen Sherman at (202) 219-2834.

Sincerely,



John H. Clements
Acting Director, Division
of Project Review

FAX - COVER SHEET**AMERICAN WHITEWATER AFFILIATION**

8630 Fenton Street, Suite 910

Silver Spring, MD 20910

Tel. (301) 589-9453 - Fax (301) 589-6121

TO:

GEOFF RABONE (318) 302-8964

Bill Taggart, fax (303) 455-9929

Chuck Richards, fax (619) 379-4334 c/o Karen Northcutt,

Jim Testa, fax (916) 327-7250

Tom Moore, fax (619) 376-1706

PAGES:

4 w/ Cover

FROM:

Rich Bowers

RE:

Upcoming Kern Recreation Test

DATE:

April 28, 1994

MEMO

After yesterday's phone conversation with Bill Taggart, I am following up with the AWA's vision of what this test should accomplish, how this should proceed, and who should hold what responsibility. Remember this is only one vision, and a draft to start the process.

I would however, recommend that we use this as a basis for a draft plan to go back to FERC for their approval. We should add, subtract and brainstorm on this draft, and send it in ASAP.

Before this step, there are several questions which need to be answered:

When to schedule the tests (the sooner the better)?

Will SCE regulate their production during the test to allow flexibility and verified flows? If not can we work around this, or do we need to go to FERC to accomplish this? I'm not sure the test is possible without their help on this issue.

How long will the tests take? Will we video and run the entire 20 mile section at each level, or pick specific drops, segments, etc. to determine our needs? I would recommend we finish in 3 days or less, but if we do the entire stretch it could take longer. If SCE is willing to help with flows, we could seriously cut down on the time needed (it would also be less than effective to ask SCE to curtail production for a whole week - another push for 1 or 2 days of testing).

We should be talking on almost a daily basis if we want to pull it off during natural high flows. Perhaps we could get a few phone conferences going? If anyone has the ability to set this up please let me know. Since I will be coming from the greatest distance, by schedule is as follows. I can come out anytime except the weekend of the 14-15 of May, and the week of June 26.

I plan on mailing additional information tomorrow, it should arrive by Monday. This package will include a copy of our liability waiver, and a draft of the boater questionnaire.

If there are any problems with this transmission,
please call (301) 589-9453 immediately.

DRAFT KERN RIVER RECREATION TEST OUTLINE

prepared by Rich Bowers, AWA

A. Tasks

1. To identify "the minimal and optimal flow levels for whitewater boating (kayaking and rafting)". 2nd paragraph of FERC AIR.
2. Determine the quality of the run at levels above minimum

I believe there is a third task-

3. To determine the needed flow duration for completing the entire run, and to document the arrival time of adequate flows at each whitewater section between the impoundment and the powerhouse.

#3 works to everyone's best interest. We can determine the length of releases (bubble), at appropriate levels to fully benefit recreational use of the river. This could allow SCE to more closely tailor the flows needed for releases, thus reducing any lost generation.

For private and commercial boaters, it allow us to know what time the water gets to different sections. Since the Kern project affects approximately 20 miles of whitewater, it allows a long continuous run, or the ability to select shorter runs at different times of the day. A real benefit to enhancing use of the river.

Here is an example: If we have SCE releasing water at 8am, and we know it takes two hours to reach full level at Salmon Falls:

Commercial companies could select a long trip early, or use offsetting short trips after 10, late arriving customers could still get on a good trip, even in the afternoon.

For local private boaters, this offers various options depending on the time of day. For those coming from LA (for example), they know that they can leave at a certain time to run the section they have planned for on that day.

B. How to Accomplish This (Responsibilities)

1. Prepare a study plan explaining the steps that will be taken to implement and document this boating test. (All parties)

a) SCHEDULE

*set-up preparation - which includes safety procedures (such as throw ropes, medical prep, notification of emergency personnel, setting up a shuttle timetable if needed, etc.), scouting runs. What can be set up the day before we start? (Boating groups, private & commercial) Set up of shore mounted video equipment (SCE and others depending on who is providing what).

2

*anticipated spill release timing, duration and flow levels to be gaged. (SCE) Recommendation: 350cfs./500/800/1000 to cover AIR requests.

*pre-test boater evaluation - what kind of survey will we distribute to evaluate different flows on different runs? (AWA will provide a draft, which will need to be reviewed by commercial interests and SCE).

*anticipated boating runs - with shuttle provisions. (Private & Commercial interests) What sections will be studied? (All parties)

*boater debriefing after each run and section to gather impressions. Videos of this are sometimes useful. (All parties)

*how we will record travel time for flows for individual segments (options include rigging short-term gauges at each section, or using a dye to measure travel time (SCE and Bill Taggart may be able to help out here).

b) TEST PREPARATION

*prepare maps and outline of setup, including location and functions of cameras, safety equipment, access points (All parties, using SCE existing maps, commercial interests may be able to provide on the water and perhaps other cameras. SCE may want to provide land based cameras?)

*explain plan for briefing all participants on the test schedule, objectives, criteria and safety procedures (boating interests).

*Discuss utilization of liability waivers (AWA will provide a copy for private participants, recommend we adapt this to cover commercials and SCE also.)

*emergency preparations and plan (all parties)

c) PARTICIPANTS

*identify the boating test participants and their respective skill levels and boating experience. (AWA and commercial interests). This includes letting people know when test will be, and getting commitments to participate. Test should be restrictive, 10 (max - 2 teams of 4 or 5 boaters) private boaters who can handle the class v portion to the run. This follows with FERC's requirement that we have "experienced boaters" conduct this test.
[this should be locked in during the next few weeks]

d) DOCUMENTATION

*collect and document boater performance for each run, video and document flow levels at each critical drop or area. (All parties)

*post-test wrap-up meeting to collect final evaluation. All parties identify issues and tasks for final report to be presented to FERC before July 4, 1994, including:

- documentation of consultation, the methodology used to implement the study and the rationale for its selection;
- adequate documentation, text, figures, drawings, or maps so that the results can be easily understood and interpreted;
- discussion of the minimum flow for each whitewater run in the bypassed reach for both rafters and kayakers, including the difficulty of rapids, any boat drops or portages, required skill level and the quality of the boating experience; and
- discussion of the optimal flows for each whitewater run for boaters of various skill levels (within reason for that particular run) for both rafters and kayakers, the difficulty of rapids, any portages, and the quality of the boating experience.

2. Conduct test

3. File final report with FERC

NOTE: FERC repeatedly references the International Canoe Federation class I - VI system, this system was developed by the AWA, not the IPC.

ADDITIONAL ITEMS

While not mentioned, I think FERC will want video coverage of both kayaks and rafts in Sidewinder and Bombs Away, also possibly other large drops.

We should include Fish & Wildlife into appropriate discussions early on. Otherwise, we may create problems later on with artificially varied flows. SCE should help here, since they have more qualifications and historical studies than the boaters.

Budget: What will it cost to do this? Since this is a FERC required test, will SCE pick up the tab for the expenses. NOTE: expenses for this test should be minimal since boaters are supplying rafts, kayaks, boaters, etc. Costs could include travel (for me), video rental, copies for FERC and other interested parties, emergency costs for local fire and rescue (if needed), etc. What else?



2525 16th Street • Suite 210 • Denver, Colorado 80211 • (303) 455-3600 • FAX (303) 455-9929

May 5, 1994

Ms. Kathleen Sherman
Federal Regulatory Commission
Washington, DC

RE: Communication Procedures with Stone and Webster;
Request for Information Pertaining to Whitewater Recreation Related Flow
Management Proposals/Concepts Stated by Others or under discussion with
FERC and/or Stone and Webster;
Clarifications Regarding Survey Data Pertinent to Above.

Dear Ms. Sherman:

Taggart Engineering Associates, Inc. (TEA) and Entrix are assisting Southern California Edison in the formulation of the Work Plan for the field evaluation cited in FERC's letter of April 4, 1994.

As we discussed over the phone, people, planning, and actions are generally coming together for the evaluation and the summary. Hopefully nature will provide enough water for a good evaluation given that this a low snowpack year. We had a few items to make you aware of or to request FERC's assistance.

1. You directed that we contact Stone and Webster to request expansion and clarification of the FERC letter, and for questions on survey data, approach, and ideas being considered for flow management, etc.

On the second contact, Steve Nachtman indicated that conversation between us could be inappropriate. Therefore we ceased communication until an approved circumstance/criteria was found. We believe a multi-party teleconference would be appropriate, particularly when we submit our action plan for the evaluation and study.

Do you agree? Please address other appropriate communication mechanisms.

2. Please provide information, however rough, of ideas/concepts for flow management/releases/scenarios, etc. that could be required of Southern California Edison at Kern No. 3. We believe this would help us design interview questions that would provide useful data. If you have questions that you think should be asked of the participants please let us know (quickly).
3. The FERC letter has no requirements or even implications for data related to demographics (participant address, income, local address), vacation statistics, economics (funds expended on recreation and boating annually and locally, boating trips per years, boating as a function of flows), or preferences (other than quality of boating).

Ms. Kathleen Sherman
May 5, 1994
Page 2

Although we have asked many of the key parties these questions, we believe the study would benefit by your answers to points 2 and 3. Our phone conversation today was helpful, but we would like to get your key thoughts in writing.

Sincerely,

TAGGART ENGINEERING ASSOCIATES, INC.



William C. Taggart, P.E., President

cc Geoff Rabone, SCE
Sandra Perry, Entrix
Steve Nachtman, Stone & Webster

DATE : May 5, 1994

MEMORANDUM TO: Bill Taggart
Taggart Engineering Associates, Inc.

FROM : Kathleen Sherman *WS 6549*
Federal Energy Regulatory Commission

SUBJECT : Request for Procedural Information on Kern No. 3
Boating Studies

1. Clarification of additional information requests should be made in a forum such that all intervenors have an opportunity to participate. In the case of the Kern No. 3, the only intervenor is a consortium consisting of American Whitewater Affiliation, Kern River Outfitters, American Rivers, America Outdoors, and Friends of the River. The points of contact for these groups is Richard Bowers and Chuck Richards. A multi-party teleconference would be a good way to address this matter. Please note that the intervenors are not required to participate, but they should be notified so they can participate if they choose to do so.

2. Results of the scoping process indicate that there is interest in extending the boating season in the bypass reach either by (a) providing additional flows on weekends at either the beginning or end of the boating season or (b) possibly enhancing flow levels during the boating season. These would be likely scenarios to be evaluated.

3. While the FERC letter has no requirements for data related to demographics, if you believe this information would help us get a more complete picture of the issue, I encourage you to submit this information along with the boating study. I also encourage you to provide information pertaining to any physical limitations to providing flows to the bypassed reach such as measuring or gate limitations, or any timing problems of controlling flow levels through the bypass reach.

cc: Richard Bowers
Chuck Richards
Steve Nachtman

STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME

REGION 4

1234 East Shaw Avenue
Fresno, California 93710
(209) 445-6520



5 May, 1994

Mr. William Taggart
Taggart Engineering Associates, Inc.
2525 16th Street, Suite 210
Denver, CO 80211

Ramping Rates for the Kern River

Dear Mr. Taggart:

Pursuant to our telephone conversation this morning I am providing you with ramping rate criteria for the proposed May 11-21, 1994 white water rafting test period you indicated. From our conversation it is my understanding that Southern California Edison (SCE) proposes to augment Kern River flow if natural run-off does not produce about 1,800 cubic feet per second (cfs), and that the flow augmentation will be a single event lasting four to six hours. At 1,800 cfs, 600 cfs is available for maximum SCE diversion and 1,200 cfs is available to conduct the white water raft testing as planned. Should less than 1,800 cfs run-off occur SCE will reduce their diversion to accommodate flow needs.

Since it is anticipated that the maximum run-off during this period is expected to be in the range of 1,000 to 1,200 cfs, it is likely that SCE will augment flows downstream of Fairview Diversion Dam thus precipitating the need to address flow ramping as SCE once again maximizes their diversion. To reduce potential fish stranding the following ramping schedule is provided. A return to the maximum diversion, i.e. up to 600 cfs, shall occur during no less than a two hour time period, with incremental diversion rates not exceeding 100 cfs per 20 minute time period.

If you have further questions please contact me at (209) 445-6152.

Sincerely,

Dean Marston

Dean Marston
Environmental Specialist

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