



# Klamath Fishery Management Council

*Working to Restore Anadromous Fish in the Klamath River Basin*

P.O. Box 1006, Yreka, California 96097

California Commercial Salmon  
Fishing Industry

California Department of  
Fish and Game

California Offshore Sport Fishery

Hoopa Valley Business Council

Klamath In-River Sport Fishery

National Marine Fisheries Service

Non-Hoopa Indian Representative

Oregon Commercial Salmon  
Fishing Industry

Oregon Department of  
Fish and Wildlife

Klamath Fishery Management  
Council

U.S. Department of the Interior

## Memorandum

TO: Klamath Fishery Management Council

FROM: Ron Iverson

SUBJECT: Draft minutes of the Management Council meeting  
held 1-3 November 1989.

Attached for your review are minutes of the subject meeting held in Eureka, California. Included are several handouts provided at the meeting. Attachment 14 was a late submission from the June 7-8 meeting but is included here for your information.

Enclosures

NOTES ON THE MEETING OF THE KLAMATH FISHERY MANAGEMENT COUNCIL I

HELD, 1-3 NOVEMBER 1989

IN EUREKA, CALIFORNIA

1 November

Call to order

Chairman Fullerton convened the meeting about 9:10 a.m. on October 31, with a quorum present (see attendance roster, Attachment 1). Burnie Bohn represented Oregon Department of Fish and Wildlife, in Jim Martin's absence.

Correction/approval of minutes and agenda.

Minutes of the previous meeting were approved as drafted. Comments on the agenda for this meeting (Attachment 2) included:

- o Discussion of spring chinook fisheries should be broadened to include the inriver fishery.

- o It would be helpful if agenda changes could be made, and provided to the Council, earlier.

Report on proposed or recently-enacted legislation .

HR 2061, proposed amendments to Magnuson Act (Bruce Taylor) Bruce reported on some revisions being considered by the House Subcommittee on Fisheries and Wildlife Conservation and the Environment, including: a call for an international ban on high seas drift gillnetting; inclusion of management of tuna fisheries under the Magnuson Act; reduced per diem for management council members; modifying regulations to take bad weather into account; and requiring councils to retain all decision making authority, rather than delegating to advisory teams and panels. The last revision would seem to require a change in the language of the 9th Amendment to the PFMC Salmon Plan.

Bruce will send the subcommittee's report, when available, to Klamath Field Office for distribution to the Klamath Council (not available as of 11/16).

Proposed Sacramento River fishery restoration program (Bruce Taylor) Bruce explained that Mr. Bosco's bill calls for expending \$185 million (not all new money) over ten years for fish restoration... sources would be 1/4 State, 1/4 Federal, 1/2 water users (since revised to .375 Federal, .375 water users, .25 State). Actions would include: improvement of Coleman hatchery, and possibly construction of another hatchery; improved fish passage at Red Bluff Diversion Dam and Anderson-Cottonwood Irrigation District Dam; and cleanup of Iron Mountain mine. An advisory committee of about 30 members is being considered...presumably this number will be reduced as the bill is reworked.

Comments:

o Lead agency for Sacramento restoration? Answer: Department of the Interior...bill doesn't specify an agency.

o Water users support Sacramento restoration? Answer: Yes, they were part of the planning effort organized by State Senator Neilsen.

Assembly Bill 1018 (Odemar) Mel described this bill, signed into State law in September, as providing a small increase in authority to the Director, California Department of Fish and Game, to open commercial fishing in state ocean waters to harvest an underutilized stock - Klamath spring chinook salmon. Such fisheries would be similar to the special fisheries now conducted off the Rogue, Elk and other rivers...fisheries targeted at specific abundant stocks.

Comments:

o Should PFMC now set an escapement goal for Klamath springs? Answer: Looks that way.

o Concerned that the Klamath Council was not involved in drafting of 1018. When we were first told of 1018 in its early draft stage, it seemed that the Klamath Council would get involved in developing this bill...but that didn't happen. Response: California still wants the Klamath Council's review of harvest plans for spring chinook...whether or not 1018 specifically mentions the Council.

o Would the Klamath Council be involved in review of these fisheries as with fall chinook fisheries? Answer: (Fullerton) Yes - this is required by the Klamath Act.

o How about amending 1018 to specify Klamath Council review of fishery plans? Response: (Fullerton) This probably isn't necessary...we just need an understanding with the CDFG Director that we will be involved.

o Last spring the Klamath Council battled over a proposed commercial net fishery for spring chinook, but we were left out of decision making on ocean spring chinook fisheries...some appearance of a double standard here. Response: (Bingham) Trollers will not request a spring fishery without Klamath Council review.

Report on the Klamath River Basin Fisheries Task Force work plan for Fiscal Year 1989-90 (Bingham)

Nat reported the following highlights of recent Task Force actions:

o Task Force is considering a permanent technical work group, with a range of expertise, to advise on project selection and other technical issues. A budget committee may also be set up to advise on funds allocation.

o Restoration Program budget is around \$1.3 million. The current work plan does not include a Rogue River fall chinook monitoring proposal offered by Oregon.

o Long-range planning for the Restoration Program is being conducted by Kier Associates, under contract to Fish and Wildlife Service. Two meetings have been held to gather public comment for the plan.

Other comments:

o (Naylor): A sport angling representative position on the Task Force has been vacant for some time...CDFG has submitted two names to the Governor's office (position has since been filled by Dr. H.D. Sumner of Yreka).

Update on long-range planning for the Klamath Fishery Restoration Program  
(Bill Kier)

Bill noted the following work tasks to date:

- o Assembled planning team, started work with contract signing in July.
- o Identified issues, and problems, drafted goals and objectives...by means of two public scoping sessions, interviews with each Task Force member, interviews with fishery staff people, and review of documents.
- o Analyzed existing fishery restoration projects for effectiveness... field team has looked at about 200 of 600 known projects.
- o Looking at alternative plan formats...examining fishery restoration plans in other river basins for usable elements. One issue here is how to organize data - the EPA Reach File seems a promising organizer.

Draft plan will be mailed for Task Force review by late December. One issue the Task Force will be asked to decide is whether to extend restoration planning into the upper Klamath basin...above Iron Gate...as requested by the Klamath Tribe of Oregon.

Kier foresees a plan broader than fish restoration, tying in to other opportunities for environmental restoration, such as the Clean Water Act. The restoration plan must be consistent with the Klamath Council's harvest management plan: consistency is called for by the Klamath Act.

Report of the Technical Advisory Team (Baracco)

Alan reviewed recent changes in the Team: Alan replaces Scott Boley as chair; Joe Polos replaces Jim Larson; Dave Hankin has resigned owing to press of other assignments. Discussion ensued as to how to replace Dr. Hankin. Operating Procedures give the Council chairperson authority to select Tech Team members, but chairman Fullerton said he would seek consent of the full Council in future appointments.

o Update on 1989 salmon fisheries

Alan distributed preliminary information on 1989 chinook fisheries (Attachment 3) indicating that ocean troll catches were down from last year in the KMZ and the Fort Bragg and Coos Bay fisheries, while ocean sport fishing was well above average in the KMZ. Sport fishing effort was not much greater than in prior years, but fish availability was exceptionally good.

A report on net fisheries for spring chinook salmon was distributed (Attachment 4). The test commercial net fishery for spring chinook took only about 200 fish toward a target of 10,000.

o Response to PFMC (Schwarz) letter

Baracco provided the Technical Team's suggestion for a response to chairman Schwarz's letter (Attachment 5). Highlights of the response included:

oo No change recommended in definition of overfishing; insufficient information to judge whether Klamath chinook stocks are being overfished under the harvest management concept.

oo No change from currently-used alpha value (stock productivity, measured as 2-year-old recruits per parent spawner) of 14.

oo Restructure and simplify the Klamath Ocean Harvest Model.

oo No change recommended in the Klamath chinook spawning escapement rate of 33-34% to protect natural stocks.

The Team made no response to PFMC requests for information on the KMZ troll fleet and relative values of Klamath chinook caught in the KMZ as compared with areas north and south.

Mike Maahs provided a minority report (Attachment 6) arguing for management of Klamath fall chinook as a mixed hatchery/natural stock, which would result in a revised estimate of alpha and a changed definition of overfishing.

o Status of KOHM predictive model

Changes proposed for the model, based on Dave Hankin's analysis, are summarized in the Team's response to Mr. Schwarz. Restructuring of the model should be completed by January 1990 - in time to be used in projections for the 1990 season.

oo Question: Will the update include changes in choice of baseline years to consider shifts in abundance? Answer: The Team will select calibration years with stock abundance comparable to 1990 projections.

o Team concerns are expressed in Attachment 7. Discussion of these included:

oo Item B.1: How will the Team interact with the Klamath Task Force. For example, how will the Team respond to Task Force requests for technical review of project proposals? Charlie Fullerton responded that the Team should accept work assignments only from the Klamath Council.

oo Item B.2: Concern about apparent bias of the gillnet harvest toward 4-year-old Klamath chinook, as opposed to 3s and Trinity stock...which may translate to excessive harvest of natural stocks, and underharvest of Trinity stock...proposed solution is a delayed opening of the estuary net fishery, together with separate early and late quotas. Discussion of this included comments that BIA and Yuroks wanted to begin fishing on 8/15/89, but were pressured into an earlier fishery to avoid ostensible conflicts with sport anglers. Rebuttal: Sport interests were not informed early enough as to what BIA proposed. Comment: Klamath Council needs to get a timely look at all harvest management proposals...we were provided no plan for the fall net fishery in 1989...this needs to change.

Council response to Team reports

Responding to concern B.3 on the need to pursue the Optical Pattern Recognition System in order to refine partitioning of the chinook run into hatchery and natural components, the Council voted to ask the Team to use this technology.

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Keith Wilkinson suggested the Team be asked to evaluate the redline/greenline concept for use in Klamath chinook management, and to make their findings a part of the Council's recommendations to PFMC for the 1990 season. It was left that the Klamath Council would await evaluation of this concept by PFMC, at their November meeting, before pursuing its application to Klamath stocks.

There was lengthy discussion as to whether to accept only the Team majority report on a response to the Schwarz letter, or to raise the mixed stock issue addressed in the minority report (see Attachments 5 and 6). A motion to include the minority report in the response was rejected.

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A motion by Nat Bingham to reexamine the policy of managing harvest for protection of natural stocks of Klamath chinook passed by consensus.

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It was decided to forward the Team response to PFMC without change. (Forwarded 11/6/89)

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Chairman Fullerton said he would explain to the PFMC that the Klamath Council is considering a policy change toward mixed-stock management.

Other discussion with the Team:

- o Anything new on the issue of (perceived) poor communication between the Klamath Tech Team and the PFMC Salmon Technical Team? Answer: Baracco will serve on both...expect him to help communicate.

Briefing on proposed Tenth Amendment to the Salmon Framework Plan (John Coon)

John noted that spawning escapement goals of the Framework Plan can be changed without amendment of the Plan, if technical justification exists. Issue 5 of the draft Tenth Amendment (Attachment 8) responds to comments that harvest rate management of Klamath chinook, as specified in the Ninth Amendment to the Salmon Plan, deviates from the Optimum Yield goal in failing to provide sufficient harvest in years of abundant stocks. John summarized the three alternatives of Issue 5 as:

- o (1) Status quo - no change from Ninth Amendment
- o (2) When natural spawning escapement is projected to exceed 70,000 adults, allocate the excess 1/2 to harvest, 1/2 to escapement.
- o (3) A general approach of deviating from the escapement rate goal as indicated by preseason information.

These alternatives were distributed, in October, for public review. At its November meeting, PFMC may elect to proceed with review of these alternatives, defer further action for a year, or drop the alternatives from consideration. (Postscript: PFMC decided to defer Issue 5 until the next public review cycle, in October 1990.) Implementing Amendment 10 in 1990 would require emergency action.

Council discussion and action on proposed Tenth Amendment

A motion was offered to request PFMC to consider the Issue 5 alternatives in the current comment cycle - without endorsing any one alternative. Discussion included:

- o Why should the Klamath Council support continued consideration of Issue 5 without having made a decision to deviate from management for natural stocks.
- o Concern about public review of alternatives 2 and 3 with no impact analysis. Coon responded that impacts of alternative 2 are being estimated by CDFG, but no analysis of alternative 3 is possible.
- o If we ask PFMC to defer public review, that would allow us time to develop and analyze Optimum Yield (OY) alternatives we want to see considered.
- o Regarding the possibility of implementing one of these alternatives in 1990, the Tech Team sees little likelihood that the trigger of a projected 70,000 natural spawners would be reached in 1990.

Following this discussion, the above motion was withdrawn, and a motion was entered to request PFMC to defer Amendment 10 to the 1991 cycle. Coon responded that, under this option, PFMC would, at its March 1990 meeting, ask staff to redraft the amendment and prepare alternatives to go out for public review in October 1990, for implementation in 1991. The alternatives prepared would not have to be the ones now under consideration. At this point, the motion on the floor was amended to say that the Ninth Amendment should remain in effect through the 1990 fishing season. This motion passed, with Nat Bingham abstaining.

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Council discussion of in-river/ocean chinook harvest allocation, 1990 fishing season (Odemar)

Mel said that CDFG needs timely guidance from the Klamath Council, both for its own management decisions and in review of harvest plans submitted by other managers. He suggested that, by its action supporting the Ninth Amendment through 1990, the Council has endorsed an escapement rate of about .34. Why not go on to agree on an ocean/inriver allocation that provides the .34 escapement rate...ocean stock size estimates for 1990 are not needed for a proportional allocation. The Council could also, at this time, provide guidance on the KMZ sport catch...whether or not the Council considers last year's catch excessive and would like to see dampeners put in place. All these issues need attention before the March PFMC meeting...Mel urged the Council to negotiate as much agreement as possible, as early as possible.

Discussion points included:

- o Sue Masten provided information (Attachment 9) comparing actual fall chinook harvest rates with those called for by the 1987 allocation agreement, and those called for by PFMC action. Actual ocean harvest rates have been higher, and actual inriver harvest rates lower, than target rates. The Tech Team was requested to review and comment on this material. Nat Bingham asked that the Team expand the postseason harvest estimates to include years 1980-85, to illustrate how ocean harvest rate on Klamath chinook, and catch of chinook in the KMZ, has fallen off. This information is provided in Attachment 10.

- o Some handle on stock size is needed before we allocate harvest. (Baracco): This information would be available by late January.

- o Revive allocation subcommittee?

- o Extensive discussion of how much Klamath Council involvement is wanted in developing the specifics of fisheries. Fullerton insisted that the Klamath Act requires the Council to formally comment on all harvest plans for Klamath anadromous stocks. Informal "working out" by user groups does not satisfy the law, until the resulting harvest plans are brought to the full Klamath Council in public session.

o (Fullerton) KFMC will request, from each managing agency, a schedule of harvest planning, so that review of each plan can be included in the Council agenda. Klamath Council won't write the plans, but will review them in terms of the natural stock protection policy and other Council objectives.

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Council discussion of harvest monitoring and enforcement of harvest regulations

This topic grew out of the previous discussion of 1990 allocation. Discussion points included:

o There were abuses in the large California KMZ sport fishery this season...some individuals catching large numbers of fish...rumors of fish being sold...

o Similar situation on south Oregon coast, except anglers there have a 40 fish annual limit.

o KMZ sport fishery regulation was of concern to trollers...as were illegal sales and unrecorded catches in the gillnet fishery.

o A punchcard and annual bag limit for salmon will be proposed by CDFG to the Commission for application statewide in 1991.

o Why single out one fishery for criticism of monitoring/enforcement... Klamath Council should hear a report on this issue for all 1989 Klamath fisheries.

It was decided that all fishery managers would be asked to report, during the February 1990 meeting, on harvest monitoring and enforcement for 1989 Klamath chinook fisheries.

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Public comment

o Doug McCollum, Trinidad:

oo KMZ troll fishery is no longer viable...has been reduced to provide for sport anglers and tribes. Decline of KMZ trolling has been caused mostly by Federal agencies, principally the Interior Department.

oo We hear of many violations of regulations in sport and subsistence fisheries, but don't get any information from the managing agencies. Sport anglers were selling to restaurants, failing to turn in punchcards...(Sue Masten offered to provide information on monitoring and enforcement of the net fishery).

oo Responding to a question from Bingham, McCollum said he did not consider the 1989 fishery (20 chinook/day trip limit x 4 days of fishing) a viable fishery. Council discussion ensued around the point that the California troll industry had called for no KMZ fishery at all in 1989, but

PFMC favored a small fishery with trip limits to favor local boats. In fact, trip limits did not keep outside boats from the KMZ because fishing was poor elsewhere in June.

- o Bill Duncan, Shelter Cove:
  - oo KMZ troll fishery is not viable...doesn't provide a living.
  - oo NMFS appears to discriminate against small boat trollers in enforcement.
  - oo Cites an example of a sport angler landing 8 fish in one day.
- o Dave Bitts, Eureka: (see Attachment 11)
  - oo In response to comments by Bitts about enforcement and monitoring problems, the Council affirmed that reports on these subjects will be provided at the February meeting.
  - oo Responding to a question, Bitts said more boats than he expected came into the KMZ for a chance to catch 20 fish/day in the troll fishery.
  - oo Providing for the late-summer portion of the KMZ troll fishery involved a two-week closure of the Fort Bragg fishery at a time when chinook were available.
- o Paula Yuen, Eureka (see Attachment 12).
- o Jim Johnson, Coos Bay
  - oo Supports minority report (Attachment 6) arguing for mixed-stock management of Klamath chinook
  - oo KMZ troll fishery is too expensive in terms of harvest foregone in adjacent ocean areas...\$5 million lost to provide 22,000 fish in KMZ.

## 2 November

### Council discussion of items to be considered by California Fish and Game Commission (Odemar)

- o First item is to give the Yurok Tribe the same status as the Hoopa Tribe under Title 14 of the California Administrative Code...having to do with exemption from possession limits outside reservation boundaries. This would require legislative action, which would probably go into effect 1 January 1991. Discussion:
  - oo Code change would not affect Karuks
  - oo Yurok tribal members, like Hoopas, will have identification cards and permits to transport fish.

oo Wording of the proposed code change has been reviewed by BIA (Overberg)

o Second proposal to the Commission is to extend the six-salmon possession limit from the Klamath river sport fishery to include the Klamath ocean sport fishery i.e. all areas where punchcard is used. If the punchcard is made a statewide requirement, the possession limit would be extended, also. Future options for a possession limit include the Klamath catch limit of six fish taken in seven consecutive days, or perhaps allowing the angler to possess an entire annual catch limit, as in Oregon.

Discussion:

oo (Hayden): ocean anglers don't object to six-fish possession limit.

o Third proposal to the Commission is to eliminate language about "triggers" from the Klamath salmon angling regulations...feel it is confusing and unnecessary.

Council discussion of 28-inch chinook size limit north to Cape Falcon (Baracco)

The agenda identifies this as a PCFFA proposal, but in fact the CDFG analysis responds to a question posed at a recent PCFFA meeting. The objective of increasing the size limit from 26" to 28" would be to protect smaller, immature 2 and 3 year old fish...fish in the 5-7 lb range. For the Sacramento chinook stock, Alan's analysis indicates a reduction in numbers landed of about 10% if size limit is increased. Klamath chinook run smaller, so the impact of a limit change would presumably be greater...no analysis yet.

Discussion:

o Q: Can trollers select against smaller fish? A: Yes, by modifying gear. There would still be some contact with the 26-28" fish, and some shaker mortality.

o Q: Benefit to spawning escapement? A: Over the entire life of a brood cohort, yes.

o Q: Any benefit in terms of loosening time constraints and other constraints on ocean fisheries? A: If the spawning escapement rate objective is being met, fisheries could theoretically operate more freely under an increased size limit. If spawning is below objective, the increased size limit would help reduce the deficit.

o Q: What effect on the apparent problem of excessive harvest of Klamath 4-year-olds / underharvest of Trinity 3s? A: An increased size limit would tend to spare both stocks. Harvest rate on 4s would not change as they are fully vulnerable to either a 26 or 28" size limit. Underharvest of Trinity 3s would be exacerbated, unless the inriver fishery were modified to take them.

o (Bitts): Disagree about impact on 4s...ocean stock size of 4s should increase because of less harvest of the cohort as 3s...so both harvest and escapement of 4s should increase.

o The Council requested the Tech Team to extend the impact analysis for a 28" size limit to the Klamath and Rogue chinook stocks. Priority: to be done after work gets done on 1990 management issues.

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Update on genetic stock identification (Odemar)

Dr. Graham Gall, UC Davis, has submitted a final report on genetic stock identification for chinook. CDFG questions some conclusions so has not yet accepted the report, but the technology looks promising. Summary:

o Methods: Genetic profiles prepared for 37 source stocks. These were used for comparison with >9,000 fish samples taken from Oregon and California ocean fisheries in 1987-88.

o Findings:

oo California and southern Oregon chinook stocks can be clustered into five genetic groups:

- Sacramento/San Joaquin
- Eel and neighboring coastal streams
- Klamath
- Smith R. and southern Oregon, including Rogue
- Mid-Oregon

oo Blind test of 220 cwt fish representing all 5 genetic groups agreed with GSI within 1% for four genetic groups and 2+% for the fifth stock

oo Sacramento/San Joaquin stock is the major contributor in northern and southern zones, but not in KMZ. 60-80% of chinook harvested in the northern area are S/SJ or Smith/south Oregon. Southern zone fish are 50-70% S/SJ. KMZ harvest is 65-80% Klamath and Smith/south Oregon.

oo KMZ sport harvest includes a smaller proportion (20%) of Klamath chinook, and a bigger proportion of S/SJ fish, than does the troll catch.

oo Estimated relative contribution for 1987-88:

- Central Valley 32-51
- Smith/south Oregon 28-22
- Klamath 16-18
- Eel coastal 13-5

oo Relative contribution of north coast stocks, 1987-88:

- Eel 31-19
- Klamath 68-80
- Smith 1-1

oo GSI estimates of Klamath landings are less than cwt estimates, even though GSI includes spring run (difference = 12-21% coastwide). Difference is most likely due to biases in sampling or errors in expansion methodology.

Future plans: CDFG wants to continue developing GSI...will maintain a contract with UC Davis, and may hire a geneticist, \$\$ permitting. Possible applications: monitor small special fisheries where cwt data is poor...monitor contribution rates in real time, where you are managing toward a harvest target for a particular stock.

Discussion:

o (Bingham): troll industry favors more development of GSI...shows promise for separating strong and weak stocks, to allow more harvest of the strong.

#### Other new/old business

Returning to the issue of new appointments to the Tech Team, it was affirmed that the entire Council will get a chance to review nominations. Alan Baracco will provide the Council with nominations to replace Dave Hankin.

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#### Discussion of next meeting

Brookings was suggested as a meeting site...a KMZ port affected by Council actions, with considerable local interest in Klamath fishery issues. Nat Bingham concurred with the understanding the Council will meet in Fort Bragg sometime. Hoopa was also suggested as a meeting place. Site for the next regular meeting of the Council will be Brookings, convening at noon on February 7 and meeting through February 8. Agenda items will include fall chinook escapement rate and ocean/inriver allocation.

#### Development of long-range plan for harvest management (Mackett)

Chairman Fullerton cited the charge to the Council to develop a plan (section 460ss-2(b)(1)(A) of the Klamath Act). After an introduction to planning principles, Dave Mackett proceeded with the "nominal group" planning technique by asking a trigger question: What are the significant issues that need to be resolved in designing a harvest management system for the Klamath River basin? Following is a list of the issues so identified, along with clarifying comments:

Issue 1. (Bostwick) Need for reliable bio data... is what we have good enough? Clarification: Do we accept what we have or seek more accurate data? ...refers to information received from Tech Team.

Issue 2. (Masten) Acceptance of Indian fishery ...that it is here to stay. Clarif: Lack of understanding of Indian fishing rights...and of the cultural significance of fishing to Indians.

Q: Why an issue? A: People know fishery exists, but may not accept it.

Q: Shouldn't people also know scope of fishery?

A: There is lack of understanding of the significance of the indian fishery  
Rewrite of (2) add: "and lack of understanding of Indian fishing rights".

Issue 3. (Marshall) Commitment to enhancement goal...and increased production in Klamath and Trinity basins.

Clarif: I mean commitment seems to be waning...some are willing to sell out for short term fix. We are supposed to restore fishery...concerned about lack of commitment to that. Want to maintain current rebuilding schedule.

Issue 4. (Warrens) Determination of MSY for Klamath River basin stocks.

Clarif: I mean, in order to have realistic goals, we need to know productivity of watershed currently and in future with restoration

Q: Natural fish?

A: MSY would refer to overall productivity.

Issue 5. (Bohn) Clear understanding of goals/needs of all users.

Clarif: Ocean sport, troll, inside sport, indian fisheries each have own needs.

Issue 6. (Wilkinson) KFMC integrity.

Clarif: Council integrity is member responsibility to Council goals and process...The issue also includes lack of codirection with Klamath Task Force...Task Force hasn't considered some of the issues we have here today.

Q: Does your definition of "integrity" include: when Council decides something, individuals will carry through on it.

A: Yes. ...I feel integrity is key thing lacking.

Q: Would "council ethic" or code of ethics be better term?

A: No...relates to need to form a unit...maybe cohesiveness or unity is the term I am seeking.

Q: Does integrity mean respect, differences notwithstanding, on basis of working toward common goal, and that each member truly speaks for constituent group...

A: Yes.

Issue 7. (Hayden) Definition or agreement on components of fishery management system.

Clarif: We need to agree on fish species, geographic distribution of those, which groups of users, will we deal with habitat... deal with only fall chinook? Will we consider resident species that affect anadromous stocks?...Will we consider marine mammals? Which human activities will we consider? You could manage fishery by managing habitat. Will we?

Q: Do you mean define limits of management system?

A: Yes.

Issue 8. (Bingham) Indian fisheries goals versus ocean fishery goals.

Clarif: Such a conflict between the 2 goals...we need to articulate them, so we can find middle ground...goal of ocean fishery is to go back to traditional 5 month season...even though we know we can't do it right away.

Q: Are you saying resolve goals, or just identify them?

A: Clarify goals, which will lead to more open discussion.

Q: Do you mean short term or long term goals?

A: Guess you could refine it that way.  
Q: Ocean goal is season length, not numbers or pounds of fish?  
A: Basic goal is traditional season...not that we expect to reach it.  
Q: Do you mean we need to accommodate those goals in our planning?  
A: Probably could say that.  
Q: Are you saying you will only define goals that are presently attainable?  
A: No....full season is our long run goal...cant reach in short term.  
Q: Are you referring to fishing opportunity more than numbers of fish?  
A: Not necessarily....full season with tight trip limits no good.  
Q: Would you include goals of other groups?  
A: Yes.

Issue 9. (Reed) What fair share of resource should go to various users?  
Clarif: By resource I mean available fish stocks...  
Q: Do you mean harvestable share?  
A: Yes.

Issue 10. (Naylor) Define resource limitations to achieving msy.  
Clarif: Assuming the Klamath Act directs us to achieve msy, we should define that goal, and attack the factors preventing achievement.

Issue 11. (Fullerton) Determination of natural and hatchery productivity of Klamath and Trinity basins.  
Clarif: We need Task Force to tell us productivity before we can complete a harvest plan.  
Q: Do you mean long range?  
A: Yes.  
Q: Task Force plan may not give that answer...If we need that information, how can we insure we get it?  
A: Believe the Task Force is charged with determining long range productivity...wont get answer all at once.

Issue 12. (Bostwick) Access to harvestable fish, Klamath stocks as well as mixed stocks.  
Clarif: I mean, access to stocks should be respected.  
Q: Tie in to Klamath contribution rate issue?  
A: Yes.

Issue 13. (Masten) Too much demand, not enough fish.  
Q: How much is not enough?  
A: Don't know but seems we can't meet demand...maybe we never can.  
Q: Are you talking about demand from predators or other uses besides harvesters?  
A: Could be.

Issue 14. (Marshall) Creation of process that allows sharing of abundance by all user groups.  
Clarif: We have been trying to figure this out for 2 yrs.  
Q: Does this relate to situation where ocean stock is bigger than predicted?  
A: No. Relates to Indian fishers held to quota that hasn't allowed them to reach percent share as of 5 yr agreement.  
Q: Do you mean equitable share? A: Probably.

Issue 15. (Warrens) Definition of equity in harvest opportunity.  
Clarif: Equity tends to be defined as what gets you what you want...it is a perception...we need to have agreement, conceptually, across the Council, on "equity".

Issue 16. (Bohn) Define water management program that maximizes fish production.  
Clarif: Getting at needs of fish at different life stages...Task Force or someone needs to identify those water needs.

Issue 17. (Wilkinson) Biologically, economically, socially sound management.  
Clarif: Depend on experts to define bio and econ soundness. Social soundness harder...would include esthetics.

Issue 18. (Hayden) What is going to be managed?  
Clarif: Refer to which parts of system will be managed.

Issue 19. (Bingham) Hatchery versus natural stocks in basin restoration plan  
Clarif: More of a Task Force issue...but we have to be involved in reaching decision on relative emphasis to put on the two kinds of stocks. Can't separate harvest management from rebuilding of stocks.

Issue 20.(Reed) What impacts on abundance will harvest rate management accomplish?  
Clarif: People will negotiate differently, depending on how they view the future...whether they expect abundance or shortage.

Issue 21. (Naylor) Define role of public participation in mgmt process  
Clarif: Issue is getting public acceptance of the plan

Issue 23. (Fullerton) Determine escapement needed to reach maximum productivity of basin.

Issue 24. (Bostwick) Development of trust, communication, and a commitment  
Clarif: In past, there has been lack of these things.

Issue 25. (Masten) Lack of communication.  
Drop, because is covered in 24.

Issue 26. (Marshall) Defining "viable" in order to provide for viable fishery in KMZ.  
Clarif: We haven't been given a definition...we are asked to provide a viable fishery, but when we offer something, we are told: close the KMZ because what was offered isn't "viable".

Issue 27. (Warrens) Development of criteria for addressing contingencies i.e. el nino.  
Clarif: So many unexpected natural phenomena that affect availability of fish, yet our regs are too inflexible to accommodate them.

Issue 28. (Bohn) Clear understanding of why KFMC was formed .

Clarif: There was a harvest allocation plan developed prior to this Council...some constituents may not understand your purpose.

Q: Do you include: where KFMC fits in mgmt?

A: Yes.

Q: Do you mean one purpose of our plan is to explain our mission to public?

A: We need outreach ...not necessarily in the plan.

Issue 29. (Bohn) What the KFMC role would be in long term plan.

Clarif: If new plan is very different from current plan (allocation agreement), would role change?

Issue 30. (Wilkinson) Geographical scope of management.

Clarif: Need to define the geographic scope within the basin..i.e. include the upper basin?...and in ocean.

Issue 31. (Hayden) Who is going to do management?

Clarif: Define roles/relationships once plan is accepted. Maybe we want some new roles and relations...don't just accept them as they are now without question.

Issue 32 (Bingham) Klamath contribution rate in ocean fisheries.

Clarif: Trollers have restoration funds put into various parts of state. As Klamath stocks go up, ocean fishing is driven down...this is a problem.

Issue 33. (Reed) What impact on abundance will restoration of habitat accomplish?

Clarif: Allocation disputes may look different with prospect of more fish. I assume estimate will be sketchy early, better numbers with time.

Issue 34. (Naylor) Address need to monitor the plan.

Clarif: Need to assess progress toward achieving goals.

Issue 35. (Fullerton) Determine socioeconomic needs of the resource users.

Clarif: Somewhat repeats Keith's issue.

Issue 36. (Bostwick) Role of enforcement agencies in protection of resource

Clarif: This issue keeps coming up...need to know who does what, responsibilities...

Q: Need to evaluate effectiveness of law enforcement, as a plan element?

A: Yes.

Issue 37. (Masten) Management roles of agencies: tribes, states, Feds.

Clarif: Our comanager role isn't understood by others...and how we work with others...

Issue 38. (Marshall) Insuring that fallout from allocation process doesn't render user groups incapable of working together in addressing outside threats to resource.

Clarif: Let's at least agree on protecting habitat, getting enough water...

Issue 39. (Warrens) Refinement of current, and development of future management tools/methodologies.

Clarif: Let's use latest, best methods.

Issue 40. (Wilkinson) Fair distribution of harvest.

Clarif: Has been said several times...ex. #9...could probably scratch this issue.

Issue 41. (Bingham) Management accountability.

Clarif: Be open on the record, understand effects of our actions.

Q: Include accountability of technicians?

A: Yes.

Issue 42. (Reed) What flexibility should be built into long range management scheme to provide for alteration of standards/guidelines/parameters?

Clarif: One problem with 5 yr allocation agreement is, it doesn't have this feature...couldn't adapt to change in resource abundance. Let's make the plan adaptable to change.

Issue 43. (Naylor) Investigate need for habitat improvement.

Clarif: This is a Task Force job...maybe would be duplication of effort for us to be concerned about.

Q: But is it an important issue in management plan?

A: Let's toss this issue.

Issue 44. (Fullerton) Coordination between Task Force and Council in plans and implementation.

Clarif: Task Force needs our advice, we need theirs.

Issue 45. (Bostwick) Implement water management.

Clarif: Combine with # 16.

Issue 46. (Masten) Need for evaluation of current agreement.

Clarif: Let's ask why current agreement hasn't worked before we go on to develop something new.

Q: Combine with 42?

A: No...a different issue.

Q: Wouldn't you say the existing agreement doesn't meet Klamath Act requirements..

A: Doesn't change need to evaluate it.

Issue 47. (Marshall) Ensure that future agreements require adherence by all users for length of agreement.

Clarif: Last agreement was signed in good faith, I thought...and we should stand by such agreements even if numbers change through factors beyond our control.

Q: Shouldn't plan have built in flex?

A: My concern is breach of agreement. Whatever flex we agree to should be spelled out in agreement.

Issue 48. (Warrens) Interagency coordination.

Clarif: We know there has been miscommunication in the past...Magnuson Act changes regarding habitat may help.

Issue 49. (Wilkinson) Develop list of definitions for Council use

Clarif: Terms like wild, rehabilitation, can mean different things.

Issue 50. (Reed) What are data needs to accomplish management of system?

Issue 51. (Naylor) Funding for all of this...to implement the plan.

Clarif: Will cost \$\$

Q: Would you include funding for KFMC function...should we seek our own funding?

A: If consistent with plan, yes.

Issue 52. (Bostwick) In season mgmt tools for ocean users.

Clarif: Indian users have mechanism to dampen overharvest, as do inriver sports...but ocean can run above allocation.

Q: Would that include ways to liberalize harvest if it appears quota won't be met?

A: Sure, adjust plus or minus.

Issue 53. (Marshall) Increase monitoring of offshore sport fishery.

Clarif: I would withdraw this issue...think is covered under 35. Just making a point that rumors influence people...sports are now in same spot Indians are used to.

Issue 54. (Bohn) Who would act as facilitator/lightning rod to get plan written?

Clarif: This process reminds me of Columbia experience...U.S. vs Oregon. We had a core group to keep the tasks moving.

Issue 55. (Masten) Difference between perceived and actual needs.

Clarif: Might already be covered...but I refer to differences between what others think we need and what we think we need.

Issue 56. (Bingham) Monitoring and data collection on the river.

Clarif: Let's drop.

Q: If we drop this as an issue, does that mean we won't hear about it again?

A: No, so it should probably stay in, or maybe combine into a general issue about monitoring.

Q: Add, "and offshore"?

A: Fine.

Q: Monitoring of what? Just harvest?

A: More concerned with harvest, yes..

Issue 57. (Reed) Will all participants agree on process.

Clarif: We have to work by consensus when we get to decision on the final plan, so need to buy in now.

Q: Define process.

A: Process of developing the plan...we need to agree now that we want the plan...will use it, rather than subverting...

Issue 58. (Masten) Managing for natural stocks.

Clarif: Some think we should, some don't...and there is difference of opinion as to how to do it.

Q: Do you refer to the issue of natural versus aggregate mgmt...the issue brought to us yesterday by the Tech Team?

A: Includes that.

Mackett asked that issue identification/clarification stop at this point. Dave asked Council members to return tomorrow with their selections for the five most important of the issues just identified.

### 3 November

Agenda for today: Review issue rankings, and begin developing an issue structure...thinking about how issues relate to one another. Mackett distributed a handout on consensus methodologies (Attachment 13) including interpretive structural modeling (ISM).

Voting on issues: (numbers by issues refer to rank - among the top five issues - assigned by Council members)

#3: 1,1,1,2,5

#4: 1

#5: 1,1,2,2

#6: 1,5

#7: 1

#8: 1

#9: 1,2,2,2,2,3,3,3

#11 1,2

#14: 3

#15: 5

#17: 3

#18: 2

#21: 4

#22: 2

#23: 2

#24: 4,4

#26; 3

#27: 4

#28: 4,5

#29: 4

#32: 3

#34: 3

#36: 5

#37: 3

#38: 5

#41: 5

#42: 4

#44: 3,5

#47: 4,4,5

#49: 4

#50: 5,5

#57: 4

Council comments on planning process so far:

- o Most issues are value-related: equity, sharing, fairness...not sure whether the standard planning process can deal with this.

- o Constraints include: information too poor, estimates too shaky, picture of reality too subject to change.

Mackett provided a second trigger question, to stimulate discussion of how issues interrelate: In the context of designing a Klamath River basin fishery management system, will work on the resolution of issue X substantially help to resolve issue Y?

Using as an example the two issues that got the most votes as significant, Dave asked whether commitment to enhancement of Klamath stocks (Issue 3) would help to resolve the "fair share" issue (Issue 9).

Comments:

- o Increased Klamath production may exacerbate the mixed stock problem in the ocean fishery

- o There will probably never be enough fish to satisfy everyone

Consensus: Resolving Issue 3 won't substantially help resolve Issue 9.

Next question: Will resolving Issue 9 help resolve Issue 3?

Comments:

- o Commitment to restoring/enhancing resource is basic to everything...no progress possible without this

- o Trollers have been punished for recent success of Klamath chinook stocks

- o Don't understand that last comment...more fish means more harvest, fewer fish means less harvest

- o Has it been easier to allocate harvest in years of abundance? No.

- o Issue 3 is the primary focus of the Task Force, Issue 9 the primary focus of the Klamath Council

- o If everybody agreed on allocation, this would help gather more support for restoration

- o The Klamath Act commits us to Issue 3...if Issue 9 remains unresolved because of disputes over allocation, this will hurt our efforts to get water and other resources needed to resolve Issue 3.

Vote on whether resolving #9 helps resolve #3: No - 4 votes to 1.

Next, look at interaction of issues 3 (commitment to restoration) and 5 (clear understanding of goals/needs of users): Does resolving #3 help resolve #5?

Comments:

- o Don't see how commitment to restoration would help us understand goals of other users

Vote on this question: No on 3/5.

How about 5/3? Yes.

Next, how about #5 and #9? Will an understanding of goals of user groups (#5) help resolve the fair share issue? Vote on 5/9 is a nearly unanimous yes.

How about 3/4? Will commitment to increasing fish stocks help determine MSY for those stocks?

Comments:

- o It has to help, because restoration will bring fish stocks up to Basin capacity, which provides MSY.

- o There is no relation at all...estimation of MSY is a purely technical task.

- o Commitment to restoration will tend to increase MSY as productivity of the Klamath basin increases.

- o Improving basin productivity is a Task Force task, not ours.

- o We need large escapements to test the productivity of the system.

Vote on 3/4 = yes.

How about 4/3? Would knowledge of MS help commitment to enhancement of stocks? Comments:

- o The Klamath Act directs restoration, so we can't be satisfied with a low MSY.

- o Calculation of the current level of MSY doesn't help restoration...but information on various levels of MSY for various levels of restoration would be helpful in planning restoration.

- o Agree...information on carrying capacity will help guide restoration.

- o We should define MSY as something to be estimated over a period of years, as restoration proceeds.

Vote on 4/3=yes.

Next, 4/5...will determining MSY help understand user needs?

Vote on 4/5=no.

Next, 3/4: will understanding user needs help determine MSY?

Vote on 5/4=no.

Next, 4/9: Will estimating MSY help resolve the fair share issue? Comments:

- o MSY gives us an estimate of what we have to allocate.
- o Before we can allocate fair shares we need to know MSY. because we don't want to allocate more than the maximum sustainable yield.
- o Knowing the numbers doesn't help get at fairness.

Vote on 4/9=no.

Next, 3/7: Vote=no.

Next, 7/3: Will agreeing on plan elements help with commitment to restoration?

Vote on 7/3=yes.

Next, look at 3/8: Will commitment to enhancement help articulate Indian and ocean fishery goals? Comments:

- o Enhancement has to help users reach harvest goals.
- o The ocean fishery is adversely impacted, not so much by increased contribution rates of Klamath stocks as by PFMC impact analysis.

Vote on 3/8=yes.

Next, look at relations to issue #6, Council integrity. Keith refined his definition of integrity as: dedication to purpose...to producing something...to making the process work, keeping fishery management out of courts.

Look at 3/6: Will commitment to restoration contribute to Council integrity?

Vote on 3/6=yes.

Next, 5/6: Will understanding of user needs contribute to Council integrity?

Vote on 5/6=yes.

There was agreement that resolution of Issue 6 would contribute to resolution of just about any other issue.

That concluded the exercise in developing a structure of issue relationships.

Assignments and targets (Fullerton)

Charlie asked whether the Council wished to proceed with this planning process. Dave Mackett estimated a plan could be developed with about 15-20 days of group effort, and could be completed in a year. An option would be to turn some of the work over to a subcommittee, with reports back to the Council. Public hearings would also be needed. Dave said he would lay out a plan development process, with some options, and provide it to the Council in a few weeks.

\*\*\*\*\*

It was agreed to proceed quickly, and a Council meeting was planned for 4-5 (and possibly 6) January 1990. Location will be the Southwest Fisheries Center in La Jolla, in order to make use of their computerized planning capability.

Fullerton said emphasis of the plan would be allocation, as opposed to restoration which is primarily a Task Force responsibility. The plan will address anadromous stocks - not just salmon. The Council will need to work closely with the Task Force and the consultant - Kier Associates - now drafting a long-range plan for the Klamath Restoration Program.

Other discussion:

- o Report on monitoring/enforcement should be an agenda item for the Brookings meeting.

- o Council should meet in March and April in order to be well-prepared to coordinate, on 1990 regulations, with PFMC...don't want another last-minute night meeting.

- o There was prolonged discussion of what the Council will request of management agencies by way of harvest management proposals for Council review and comment. Fullerton said the Klamath Act directs the Council to make recommendations on all harvesting regulations without exception, and to do this in public session. Thus, managers will be asked to submit all proposed plans and regulations for review, including those for subsistence fisheries.

The meeting was adjourned at noon, 3 November 1989.

ATTACHMENT 1

KLAMATH FISHERY MANAGEMENT COUNCIL

Attendance Roster, November 1-3, 1989 meeting, Eureka, California.

Management Council Members

Nat Bingham	California Commercial Salmon Fishing Industry
Virginia Bostwick	In-River Sportfishing Community
E. C. Fullerton	National Marine Fisheries Service
Robert P. Hayden	Offshore Recreational Fishing Industry
C. Lyle Marshall	Hoopla Indian Tribe
James Martin	Oregon Department of Fish and Wildlife
Susan M. Masten	Non-Hoopla Indians residing in Klamath Area
A. E. Naylor	California Department of Fish and Game
Dr. J. Lisle Reed	Department of the Interior
Frank Warrens	Pacific Fishery Management Council
Keith Wilkinson	Oregon Commercial Salmon Fishing Industry

Others Attending

D. I. Robinson	Sari Sommarstrom
John Coon	Steven Scott
Chuck Lane	Tricia Whitehouse
Dave Bitts	Douglas McCullough
David O'Neill	Leonard Masten
Norman McLemore	David Mackett
Gary Pankel	Paula Yoon
Mary Kay Bush	Gene Schnell
James Wroble	Bruce Taylor
Pat Higgins	W. Duncan
Bill Kier	Michael Maahs
Jim Johnson	Ronnie Pierce
Bryce Kenny	Mike Morford
Mike Orcutt	
Joe Polos	
Robert Franklin	

ATTACHMENT 2

DRAFT AGENDA

KLAMATH FISHERY MANAGEMENT COUNCIL

MEETING OF 1-3 NOVEMBER 1989

1 November

- 9:00 a.m. Call to order
- 9:10           Correction and approval of minutes and agenda
- 9:20           Report on proposed legislation
- o    HR 2061, proposed amendments to Magnuson Act (Taylor)
  - o    Proposed Sacramento River fishery restoration program (Taylor)
  - o    Assembly Bill 1018, ocean spring chinook fishery (Odemar)
- 9:40           Report on the Klamath River Basin Fisheries Task Force work plan for Fiscal Year 1989-90 (Bingham)
- 10:00          Update on long-range planning for the Klamath Fishery Restoration Program (Bill Kier)
- 10:20          Report of the Technical Advisory Team (Baracco)
- o    Update on 1989 salmon fisheries
  - o    Response to PFMC (Schwarz) letter
- 10:45          Break
- 11:00          Reconvene. TAT report (continued)
- o    Status of KOHM predictive model
  - o    Proposals for research /monitoring investments
- 11:45          Lunch
- 1:00           Reconvene. Council response to Tech Team reports, including discussion of a formal response to the Schwarz letter.
- 1:45           Briefing on proposed Tenth Amendment to the Salmon Framework Plan (John Coon)

2:30 Break

2:45 Reconvene. Council discussion and action on proposed Tenth Amendment.

3:30 Council discussion of in-river/ocean chinook harvest allocation, 1990 fishing season (CDFG to start discussion)

4:15 Public comment

5:00 Adjourn

2 November

8:00 Convene. Council discussion of items to be considered by California Fish and Game Commission (Naylor)

- o Add Yurok Tribe to Section 5.86, Title 14 of California Administrative Code, regarding exemption from possession limits outside reservation boundaries
- o Increase ocean sport possession limit to six salmon
- o Klamath River sport salmon regulations - proposed language changes

8:30 Council discussion of 28-inch chinook size limit proposed by PCFFA north to Cape Falcon (Bio-analysis: Baracco)

9:00 Update on genetic stock identification (Odemar)

9:15 Other new business: Discussion of next meeting

9:45 Break

10:00 Seminar on group planning principles and techniques (Dave Mackett, NMFS)

11:45 Lunch

1:00 Reconvene. Begin drafting long-range and 1990 annual harvest management plans (Mackett, facilitator)

2:30 Break

2:45 Reconvene. Continue plan development

4:00 Adjourn

3 November

8:00 a.m. Reconvene plan development discussion

9:30 Break

9:45 Reconvene

11:30 Summarize products, identify remaining planning work to be done, make assignments, set target dates (Fullerton)

12:00 Adjourn

a:kc11-1c

ATTACHMENT 3

PRELIMINARY REVIEW OF 1989 CHINOOK FISHERIES AND COMPARISONS TO 1988 AND THE 1984-1988 AVERAGE (x1000).

	<u>1989</u>	<u>1988</u>	<u>1984-88 AVG</u>
<u>OCEAN FISHERIES</u>			
KMZ SPORT	72.7	52.9	46.9
KMZ TROLL			
MAY (ROGUE)	5.0	8.9	N/A
JUNE+AUGUST	22.2	58.9	85.0 <sup>1/</sup>
SEPT (ROGUE)	7.8	0.1	N/A
SEPT-OCT (EEL)	2.5	18.5	N/A
NORTH OF CAPE BLANCO	19.7	402.4	312.7
SOUTH OF POINT DELGADA	605.9	1361.8	800.0
<u>RIVER FISHERIES</u>			
SPORT	N/A	21.2	19.3
COMMERCIAL GILL NET			
SPRING	0.2	0.0	0.0
FALL	27.5	27.8	28.4 <sup>2/</sup>
SUBSISTENCE GILL NET			
SPRING	6.4	5.6	3.4
FALL	18.1	23.9	20.7

1/ FOUR YEAR AVERAGE, NO FISHING IN 1985.  
2/ 1987-88 AVERAGE.

COMPILED BY KRTAT 10/31/89.

#### ATTACHMENT 4

### FINAL REPORT ON THE SPRING CHINOOK FISHERIES ON THE YUROK INDIAN RESERVATION 1989

#### INTRODUCTION

The Bureau of Indian Affairs (BIA) conducted a gill net test fishery on the Yurok Indian Reservation during June and July of 1989 to determine the feasibility of commercial harvest and sale of spring chinook salmon. The fishery was conducted only in the estuary portion of the Klamath River below the Highway 101 bridge within the boundaries of the Yurok Indian Reservation. A quota of 10,000 adult spring chinook salmon over 26 inches in total length was established as an upper limit.

The BIA required that all fish to be offered for sale be transported by boat directly to a single on-reservation buying station located in close proximity to the estuary. The salmon were sold to one buyer selected by the BIA through a competitive bidding process. The price negotiated for this sale was \$1.81 per pound for all sizes 26 inches in total length and over. Fish were presented for sale in a field dressed condition, i.e. the guts and gills removed.

Following the procedures established in the Final Environmental Impact Statement Indian Fishing Regulations Hoopa Valley Indian Reservation/California July 1987 (INT F.E.S. 87-29), a Harvest Management Plan for the commercial fishery was prepared by fishery biologists from the U.S. Department of the Interior. A copy of that plan is attached as a part of this report.

In addition to the test commercial fishery, qualified Indians of the Yurok Indian Reservation fished for spring chinook salmon with gill nets for subsistence purposes during the same period.

#### THE TEST COMMERCIAL FISHERY FOR SPRING CHINOOK SALMON

The test fishery began on June 13, 1989 and ended on July 15, 1989. Fishing with gill nets was initially allowed for five days a week (Tuesday through Saturday) from 7:00 AM to 7:00 PM. Drift net fishing was allowed on Tuesday and Wednesday and set net fishing was allowed from Thursday to Saturday. On July 4, regulations were changed prohibiting daytime fishing in the estuary but allowing fishing for the same nights of the week from 7:00 PM to 7:00 AM. For experimental purposes, drift net fishing was allowed during outgoing tides and set net fishing was allowed during incoming tides.

During the 25 days the fishery was in operation, 37 Yurok Indian fishers participated in the fishery at least one day.

After a very short time, it became apparent that the spring chinook run had passed thorough the estuary prior to the opening of this fishery. On six days, no deliveries were made; on four days, one delivery was made; and on six additional days, only two deliveries were made. The fishers did make 80 deliveries totaling 206 fish which weighed 2730 pounds. The total resource value of this fishery was \$4941.30 of which the fishers received \$3958.50 with the balance of \$982.80 deposited in a special Yurok Tribal Account. The Indian fishers who participated received an average income of \$107 each from this fishery.

The fishery was monitored by biologists from the U.S. Fish and Wildlife Service (FWS). Information on catch and effort was obtained by interviewing Indian gill net fishers at the buying station or at their camps. Biological information was also collected during those interviews. Commercially sold chinook were sampled for length, fin clips and a scale sample was collected for age identification. Snouts from adipose fin clipped (AD-clips) chinook were collected for coded wire tag (CWT) analysis.

A total of 322 chinook salmon were harvested in the estuary during the period of the spring chinook test commercial fishery (Table 1). Two-hundred and six chinook (64 percent) were sold. An estimated seven steelhead and ten green sturgeon were also incidentally harvested. Catch levels of spring chinook did not reach expectations in 1989 as the harvest of that species in the estuary during June and July was less than in 1987 and 1988 (Table 2). In 1988 a significant portion of the spring chinook harvest (41 percent) occurred in the estuary and was indicative of a strong spring chinook run into the Trinity River which was predominantly of hatchery origin (Figure 1). A similar trend was also seen in 1987.

Concerns over the impact of the test commercial fishery on wild spring chinook, steelhead, sturgeon and shad were expressed by other management agencies and the public at large, but did not materialize. Comparison of observed AD-clip rates in the commercial fishery (13.7 percent) and at the State-operated Junction City weir (13.3 percent), which is predominantly hatchery fish, indicates that there was minimal impact on the wild chinook stocks.

The negligible impact on steelhead was expected due to the selectivity of the gear used. Gill net selectivity investigations by the FWS (un-published) indicate that gill net impacts on steelhead will usually be minimal due to the mesh sizes commonly used (seven to eight-inch stretched mesh).

Very few shad were observed during the test fishery and the impacts on that species are not believed to be of concern.

The impacts on sturgeon, although small this year (ten), could potentially be troublesome if a more intensive fishery were to occur. A portion of the Klamath River sturgeon populations on their post-spawning migration to the ocean pass through the estuary during June through August and are vulnerable to the gill net fishery. Since little is known of the sizes of the Klamath River green sturgeon and white sturgeon populations, the true potential detrimental impacts of this fishery on those species are unknown at this time.

Drift net fishing was allowed during the test fishery in an attempt to test the efficiency of the different methods of using gill nets. Although no definitive comparisons can be made due to the low numbers of fish harvested, drift net fishing appeared to be more efficient than set net fishing during the period when fishing occurred during the day (Table 3). Drift netting accounted for 229 (71 percent) of the total number of spring chinook harvested during the test fishery. Ninety percent of the sturgeon were captured by drift nets while the incidental steelhead harvest was approximately equal between drift and set nets. When fishing was changed to nights, catch/effort for the drift and set netting was similar.

A total of 227 of the estimated 322 chinook harvested in the estuary were examined for AD-clips. The snouts of 29 of the 31 observed AD-clipped chinook were collected and 26 CWTs were recovered and decoded. Those recoveries expanded to an estimated harvest of 37 CWTed spring chinook, three fall chinook and two no-tags during the test fishery.

Recoveries by tag code are presented in Table 4. Tag code 06-61-44, a yearling release from Trinity River Hatchery from the 1985 brood, accounted for 69 percent of the AD-clipped spring chinook harvested. Age composition based on expanded CWTs was 14.3 percent age three, 80.4 percent age four and 5.3 percent age five.

Age composition from 170 scale samples collected during the fishery was 9.4 percent age three, 85.3 percent age four and 5.3 percent age five. Mean fork length of chinook salmon measured at the buying station was 72.5 cm ( $s=5.42$ ,  $n=171$ ).

#### THE SUBSISTENCE FISHERY FOR SPRING CHINOOK

Gill net fishing for spring chinook to be used for subsistence purposes was allowed in the entire Yurok Indian Reservation during this reporting period. With the exception of the estuary area, fishing was allowed seven days a week, 24 hours a day except that all nets were removed from the water from 9:00 AM to 5:00 PM each Monday. In the estuary area when the test commercial fishery was being conducted, subsistence fishing days and hours were the same as the more restrictive test fishery.

In 1989, an estimated 4,745 spring chinook, including the 206 that were sold in the test fishery, were harvested on the Yurok Reservation (Table 2). That was the highest level of spring chinook harvest observed since net harvest monitoring began in 1979. In 1989, the majority of the harvest (61 percent) occurred during May, while in 1987, 55 percent of the harvest occurred in July and in 1988, 74 percent occurred in June and July (Figure 2). An estimated 82 steelhead trout, 256 green sturgeon and 25 white sturgeon were harvested in 1989 during the spring net harvest monitoring period (April through mid-July).

An estimated 589 CWTed spring chinook were harvested on the Yurok Reservation during the spring gill net fishery. This includes the estuary harvest during the test fishery. Table 5). An estimated three CWTed fall chinook and 32 no-tags were also harvested. The observed AD-clip rate was 13.8 percent based on a mark sample of 355. Age composition based on expanded CWTs was 3.7 percent age three, 96.0 percent age four and 0.4 percent age five.

Mean fork length of spring chinook was 73.7 cm (s=5.29, n=355), 59.7 cm for steelhead (s=11.4, n=9), and total length for green sturgeon was 169.8 cm (s=18.7, n=18).

While the fishery was a failure in terms of economic benefits to the Indian fishers and much of the information obtained was inconclusive due to relatively small numbers of fish handled, some benefits were derived. Considerable information was added to the spring chinook data base and the BIA gained additional information and experience in managing a commercial fishery on other than fall chinook salmon..

TABLE 1. HARVEST AND EFFORT ESTIMATES (ACCOUNTED HOURS AND FISHES IN PARENTHESES) DURING THE 1989 SPRING CHINOOK COMMERCIAL FISHERY IN THE ESTUARY AREA.

WEEK	HOURS FISHED	CHINOOK	STEELHEAD	GREEN STURGEON	WHITE STURGEON
6/13-17	766 (487)	122 (66)	0 (0)	2 (0)	0 (0)
6/20-24	170 (114)	40 (36)	0 (0)	4 (3)	0 (0)
6/27-7/1	336 (208)	100 (68)	7 (5)	2 (1)	0 (0)
7/4-7/8	118 (77)	34 (11)	0 (0)	0 (0)	0 (0)
7/11-7/15	161 (104)	26 (12)	0 (0)	2 (2)	0 (0)
TOTAL	1551 (990)	322 (193)	7 (5)	10 (6)	0 (0)

TABLE 2. MONTHLY SPRING CHINOOK HARVEST ESTIMATES ON THE YUKON RESERVATION BY AREA FOR 1986-1989.

YEAR	MONTH	ESTUARY	MIDDLE KLAMATH	UPPER KLAMATH	TOTAL
1986	APRIL	5	54	98	157
	MAY	6	37	76	119
	JUNE	15	71	169	255
	JULY	15	5	155	175
	TOTAL	41	167	498	706
1987	APRIL	10	51	18	79
	MAY	11	115	120	246
	JUNE	250	10	169	429
	JULY	538	0	402	940
	TOTAL	809	176	709	1694
1988	APRIL	2	20	18	40
	MAY	251	178	294	723
	JUNE	225	512	227	964
	JULY	1199	0	0	1199
	TOTAL	1677	710	539	2926
1989	APRIL	123	445	191	759
	MAY	360	1331	1217	2908
	JUNE	307	232	479	1018
	JULY	60	0	0	60
	TOTAL	850	2008	1887	4745

TABLE 3. WEEKLY DRIFT AND SET NET CATCH/EFFORT (CHINOOK/HR), ESTIMATED HOURS FISHED (ACCOUNTED HOURS IN PARENTHESES), AND CHINOOK HARVEST DURING THE ESTUARY SPRING CHINOOK COMMERCIAL FISHERY IN 1989 (JUNE 13-JULY 1 FISHING PERMITTED 7AM-7PM, FROM JULY 4-JULY 15 FISHING PERMITTED FROM 7PM-7AM).

WEEK	C/E	HOURS	CHINOOK	C/E	HOURS	CHINOOK
6/13-17	0.048	572 (372)	94	0.513	190 (115)	28
6/20-24	0.036	88 (55)	38	0.407	82 (59)	2
6/27-7/1	0.109	234 (147)	78	0.820	102 (61)	22
7/4-7/8	0.293	78 (58)	10	0.263	40 (19)	24
7/11-7/15	0.280	109 (63)	9	0.171	52 (41)	17
		set nets			drift nets	

TABLE 4. CODED WIRE TAG RECOVERIES DURING THE 1989 SPRING CHINOOK COMMERCIAL FISHERY IN THE ESTUARY AREA.

TAG CODE	RACE	BRD YEAR	REL TYPE	HATCHERY	# TAGS	EXPANDED # TAGS
06-61-43	SPR	84	Y	TRINITY	1	2.13
06-61-44	SPR	85	Y	TRINITY	18	29.00
06-61-45	SPR	86	F	TRINITY	1	2.13
06-61-46	SPR	86	Y	TRINITY	3	3.57
06-56-25	FALL	85	Y	TRINITY	1	3.06
NO TAG	****	**	*	*****	2	2.38
TOTAL					26	42.27

TABLE 5. CODED WIRE TAG RECOVERIES FOR THE 1989 SPRING GILL NET FISHERY ON THE YUOK RESERVATION (INCLUDING THE SPRING CHINOOK COMMERCIAL FISHERY).

TAG CODE	RACE	BRD YEAR	REL TYPE	HATCHERY	# TAGS	EXPANDED # TAGS
06-61-42	SPR	85	F	TRINITY	4	61.54
06-61-43	SPR	84	Y	TRINITY	1	2.13
06-61-44	SPR	85	Y	TRINITY	49	504.00
06-61-45	SPR	86	F	TRINITY	1	2.13
06-61-46	SPR	86	Y	TRINITY	4	18.95
06-56-25	FALL	85	Y	TRINITY	1	3.06
NO TAG	****	**	*	*****	4	32.49
TOTAL					64	624.30

FIGURE 1. SPRING CHINOOK HARVEST IN THE ESTUARY OF THE YUROK RESERVATION (1986-1989).

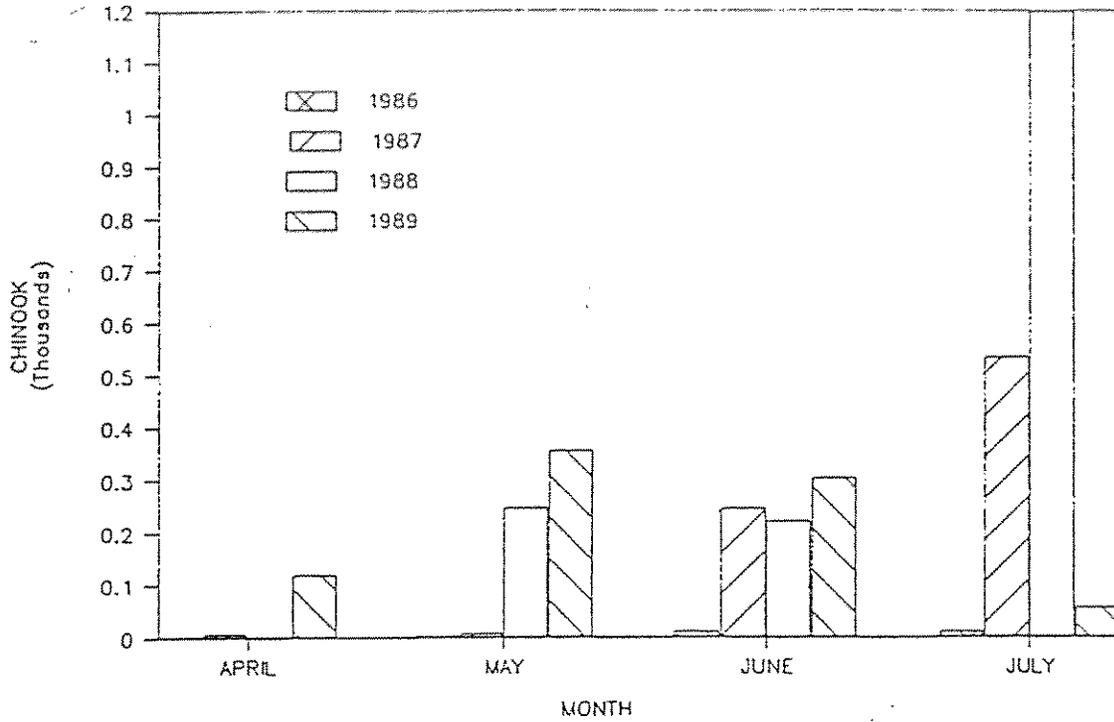
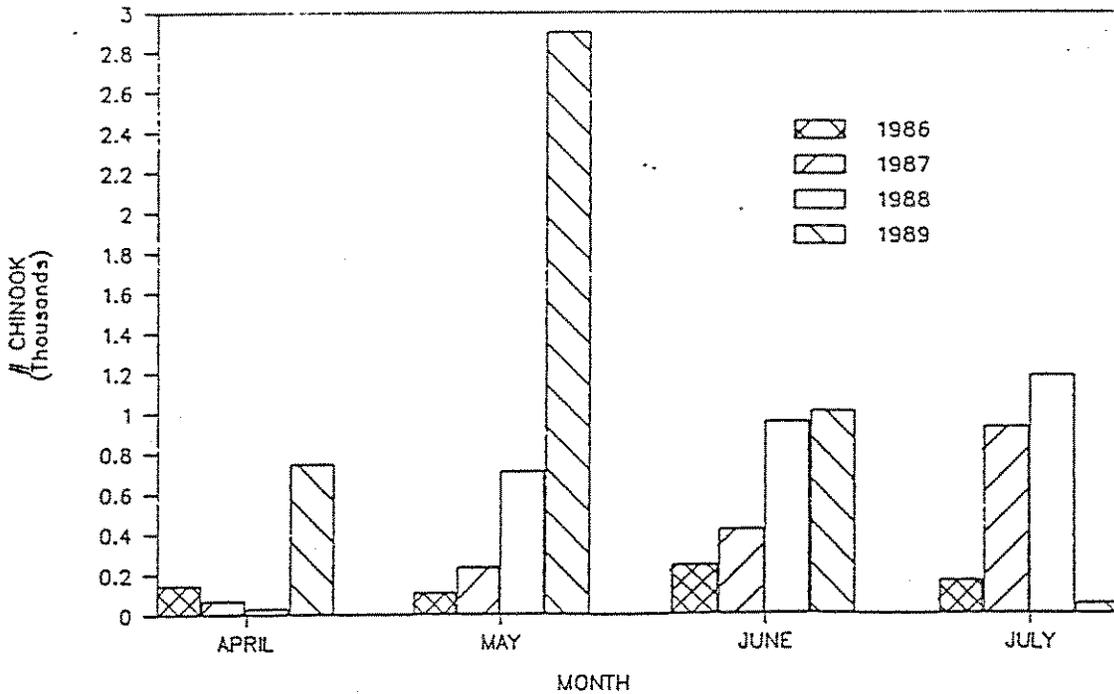


Figure 2. SPRING CHINOOK HARVEST ON THE YUROK RESERVATION (1986-1989).



PLAN FOR A TEST FISHERY FOR COMMERCIAL HARVEST OF SPRING CHINOOK SALMON ON THE KLAMATH RIVER PORTION OF THE YUROK INDIAN RESERVATION, CALIFORNIA 1989

I. INTRODUCTION

The Bureau of Indian Affairs (BIA) will conduct a test fishery for spring chinook salmon during June and July of 1989 to determine the feasibility of commercial harvest and sale of that species. The fishery will be conducted in the estuary portion of the Klamath River within the boundaries of the Yurok Indian Reservation with a quota of 10,000 spring chinook salmon established as an upper limit. Only fish over 26 inches total length will be offered for sale.

This action is in agreement with and follows the established procedures in the Final Environmental Impact Statement Indian Fishing Regulations Hoopa Valley Indian Reservation/California July 1987 (INT F.E.S. 87-29). That document adopted Alternative C as the plan of management for Indian fishing in the Klamath River Basin. Alternative C allows phased commercial fishing and, under that alternative, no commercial fishing will be permitted on any species until a specific harvest management plan has been prepared for that particular fishery which will assure an adequate number of fish for Indian subsistence and ceremonial harvest and for spawning, after taking into account any anticipated in-river harvest by persons not subject to federal regulations.

The fishery will be managed under terms and conditions established by this plan and will be regulated through a series of pre-season and/or in-season amendments to 25 CFR Part 250 of the existing regulations governing Indian fishing.

This plan has been prepared by qualified fishery biologists from the U.S. Department of the Interior and is on file at the BIA office at 1900 Churn Creek Road, Redding, California 96002.

II. BIOLOGICAL AND TECHNICAL BASIS OF THIS PLAN

Data on the spring chinook stocks of the Klamath River Basin are very sparse and incomplete except for the upper Trinity River sub-basin. The California Department of Fish and Game (CDFG) has operated a weir on the main-stem Trinity River at Junction City, California since 1978 to collect information on returning salmonid stocks. Information from that project and other CDFG studies has supported the generation of run-size estimates, estimates of angler harvest and spawning escapement for the area above the weir site. These estimates are generated post season and do not provide specific information concerning natural spring chinook stocks. Data are also gathered at the Trinity River Hatchery (TRH) to include counts of returning salmon and recovery information on coded wire tag (CWT) returns.

Additional data are obtained by the Hoopa Valley Business Council's Tribal Fishery Department and from the U.S. Fish and Wildlife Service (FWS) on the subsistence gillnet fisheries on the Hoopa and Yurok Reservations.

Information is also available from various State and Federal agencies which describe levels of escapements to tributaries in the upper Klamath River Basin such as the Salmon and Scott Rivers and in the lower Trinity River Basin such as the South Fork Trinity River.

It is commonly held that the vast majority of spring chinook in the Klamath River Basin are of hatchery origin and originate from the TRH above Junction City. For purposes of this plan it is assumed that 90 percent of the spring chinook entering the Klamath River from the ocean are destined for the Trinity River above Junction City.

Other assumptions concerning spring chinook within the Klamath River Basin are:

- (1) That four (4) percent of the run entering the Klamath River from the ocean spawn in the upper Klamath Basin (Salmon River and Wooley Creek).
- (2) That two (2) percent of the run entering the Trinity River spawn in the lower Trinity area below Junction City.

Based on observed harvest patterns, it is evident that an average of 14 percent of the run above Junction City is harvested in the sport fishery in that area. Also based on known harvest patterns of the Indian gillnet subsistence fisheries, it has been shown that those fisheries harvest an average of 2,926 spring chinook annually (1519 for the Hoopa Reservation and 1407 for the Yurok Reservation). The harvest time frame for the Yurok subsistence fishery on spring chinook is from late March through early June in the lower Klamath River (mouth to Weitchpec). Depending on flows and spring weather patterns harvest is concentrated in mid to late April through late May. In the recent past a number of spring chinook (identified through CWT recovery) have been taken in July in the estuary of the Klamath River. These fish been from CWT releases made at TRH.

A major premise in shaping the timing of this test fishery is that, by starting on June 1, most natural stocks of spring chinook would have cleared the estuary and the fishery would target on hatchery stocks from TRH.

Close monitoring of the fishery at the buying station should result in the collection of a significant number of CWT's to either authenticate or refute this premise. For purposes of this plan, those harvest patterns are not expected to change in 1989.

The TRH escapement needs are 3,000 adults annually. This is based on a 1:1.1 female to male sex ratio and average fecundity of 3,000 eggs per female.

The average age composition of adults returning to the TRH is 52 percent three-year-olds and 48 percent four-year-olds. This age composition is based on CWT return data from the 1979-1982 brood years returning to the hatchery.

The BIA is aware of concerns about the possible impacts of this fishery on spring-run steelhead stocks in the Basin. At this time, very little data are available concerning run-timing of those stocks and no definitive information is available about gillnet mesh selectivity for steelhead. In light of the lack of information, it has not been determined to what degree incidental catch of steelhead, sturgeon, shad and natural stocks of spring chinook would be a problem, if indeed, one exists.

However, the BIA is emphatic that monitoring levels of this fishery by the FWS will be adequate to allow the gathering of information to begin to address this concern in the future.

### III. ADAPTATION AND USE OF AVAILABLE INFORMATION IN THIS PLAN

Analysis of the information concerning harvest and escapement levels and hatchery returns and releases has been used to develop a 1989 spring chinook run-size forecast for the Klamath River Basin as follows:

The 1989 TRH return was forecast by applying the average 1982-1984 brood return per release ratio to the 1985 and 1986 pounds of hatchery product released. The 1982-1984 brood return per release ratio is used to reflect recent ocean troll restrictions within the Klamath Management Zone and the increase in spring chinook run-size produced by those brood years. Please refer to figure 2.

$$N = (1985 \text{ brood release} \times 0.48) + (1986 \text{ brood release} \times 0.52) \\ \times \text{average } 1982\text{-}1984 \text{ return/release}$$

$$N = 9830$$

The 1989 Trinity River run-size above Junction City was forecast by applying the average 1978-1988 hatchery component ratio to the 1989 TRH forecast as follows:

$$N = (\text{average } 1978\text{-}1988 \text{ hatchery component}) \times \text{TRH return} \\ \text{forecast}$$

$$N = 50055$$

The 1989 Klamath River run-size was forecast by applying the assumption that 90 percent of the Klamath River run of spring chinook in the recent past originates in the Trinity River above Junction City.

N = (Trinity River run-size above Junction City) x 1.10  
N = 55,617

The 1989 harvest schedule for spring chinook in the Klamath Basin with the anticipated harvest in the Indian test fishery, resulting run-sizes and spawning escapements is presented in figure 3. Also shown are the assumptions used for forecast run-sizes to the upper Klamath River Basin and the lower Trinity River Basin.

#### IV. MANAGEMENT OF THE FISHERY

Participation in this fishery will be regulated by the existing 25 CFR Part 250, Section 250.5 WITH THE FOLLOWING EXCEPTION; members who were enrolled on August 8, 1988 in the Hoopa Valley Tribe will NOT be permitted to participate in any fishery on the Yurok Indian Reservation regulated by the BIA.

The test fishery will be conducted in the main-stem of the Klamath River in the area commonly known as the estuary. This is further defined as the Klamath River from its confluence with the Pacific Ocean upstream to the Highway 101 bridge. This fishery will operate from June 12, 1989 to July 15, 1989 unless closed by the BIA for harvest management reasons. Fishing will be permitted five (5) days each week during the daylight hours of 9:00 AM to 9:00 PM. Fishing will be prohibited from 9:00 PM each Saturday until 9:00 AM each Tuesday during the period of this fishery. Subsistence fishing days and times will be the same as test fishing days and times while this plan is in effect. Fishing with gillnets in other parts of the Yurok Indian Reservation will not be affected by this plan and will continue to be regulated by 25 CFR Part 250.

Harvest will be accomplished with gillnets and described in 25 CFR Part 250 and specifically regulated through pre-season and in-season adjustment to those regulations. The following major exception to 25 CFR Part 250 will apply during this test fishery. "In the area known as the estuary, which is the main-stem Klamath River below the Highway 101 bridge, drift-net fishing with gillnets up to 200 feet long and 25 feet deep will be permitted two days per week on an experimental basis."

Set-net and drift-net fishing will not be allowed at the same time. Drift-net fishing will be permitted during Tuesdays and Wednesdays with set-net fishing permitted during Thursdays, Fridays and Saturdays.

Special conditions will apply to the preparation and transport of fish prior to sale as well as during the actual sale to an authorized buyer. Those items are presented in Section VI.

#### V. CONTROL AND MONITORING OF THE FISHERY

Day-to-day control of the fishery will be the responsibility of

the Field Representative of the Klamath Field Office (KFO) of the BIA. Technical assistance and staff support will be provided on a continuing basis by the Fishery Biologist of the Northern California Agency at Redding, California.

Monitoring will be accomplished by technical and professional personnel from the Arcata, California FWS Office under terms of a Memorandum of Agreement with the BIA. Monitoring will be conducted at a level which will provide for "real time" accountability of the fishery as well as for an appropriate level of data collection and retrieval of CWT's. The FWS will report catch and effort statistics to the KFO on a weekly basis for evaluation. Copies will be provided to other management Agencies upon request to the BIA.

Enforcement will be accomplished by qualified law enforcement personnel from KFO of the BIA. The Field Representative of the KFO will be in charge of the BIA law enforcement staff. Warrants, citations and arrests will be prosecuted through the Court of Indian Offenses at Klamath, California.

#### VI. MARKETING ASPECTS OF THE FISHERY

Because the BIA must act for the Yurok Tribal Government in conducting this fishery, some special actions are necessary to insure control and accountability of all aspects of this fishery which involve the sale of a tribal asset.

A pre-determined landing fee of 20 percent of all individual sales of salmon will be collected by the BIA and deposited in a tribal trust account for the future use of the Yurok Tribal Government. To accomplish this tribal requirement, it will be necessary to manage the transportation, sale and payment for fish as they proceed through the system.

To purchase the fish from this fishery, an established fish buyer will be selected by the BIA through a competitive bidding process. The successful bidder must establish one (1) buying station on or near the estuary portion of the Reservation in a general area designated by the BIA. All fish from the test fishery must be sold to the designated buyer at the designated buying station and delivered by boat to the station. NO PRIVATE OR OFF-RESERVATION SALES OF FISH OR FISH PRODUCTS FROM THIS FISHERY WILL BE PERMITTED.

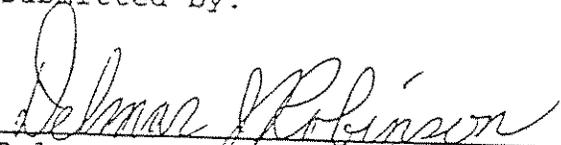
Fish to be sold will be presented at the buying station "troll dressed", that is, gutted and head on. One (1) price per pound will be paid for fish. Fish will not be graded large, medium or small, and the buyer will have the right to reject fish that do not meet quality control conditions such as freshness or seal bites. The buyer will be encouraged to make ice available at the buying station for use of Indian fishers.

At the buying station, each fisher will be given a copy from a four-part fish receipt/data ticket showing number fish sold, weight of fish sold, price per pound (computed with the tribal share deducted) and an extension of the amount due to fisher. Within one (1) week, the fishery must be paid by the fish buyer by check through the mail or by direct delivery of the check at some predetermined and mutually agreeable point. The BIA will also be provided with a copy of each fish ticket for its record-keeping requirements.

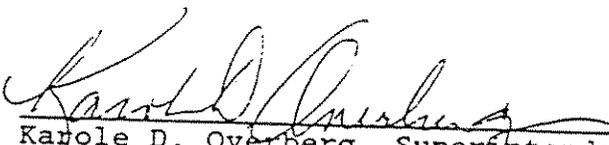
VII. OTHER

The Superintendent of the Northern California Agency may amend this plan to delete or add items that he/she may deem necessary for enforcement, safety, improved management or accountability of the entire process.

Submitted by:

  
\_\_\_\_\_  
Delmar J. Robinson, Fishery Biologist  
Northern California Agency

Approved by:

  
\_\_\_\_\_  
Karole D. Overberg, Superintendent  
Northern California Agency

Concur:

\_\_\_\_\_  
Pete Bontadelli, Director  
California Department of Fish and Game

Figure 1.

cumulative season catch of spring chinook adults at junction city weir

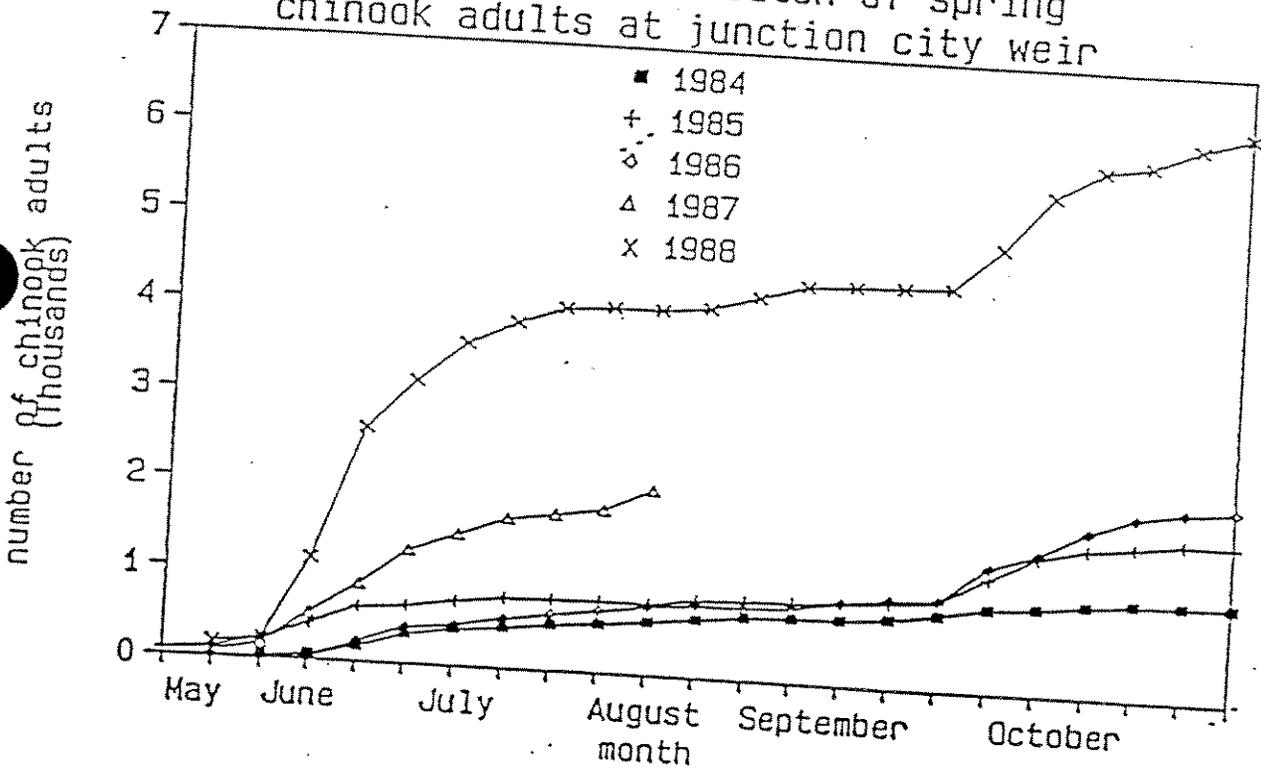


Figure 2.

KMZ troll effort in days fished, Spring  
Chinook run size above J.C., 1981-1988

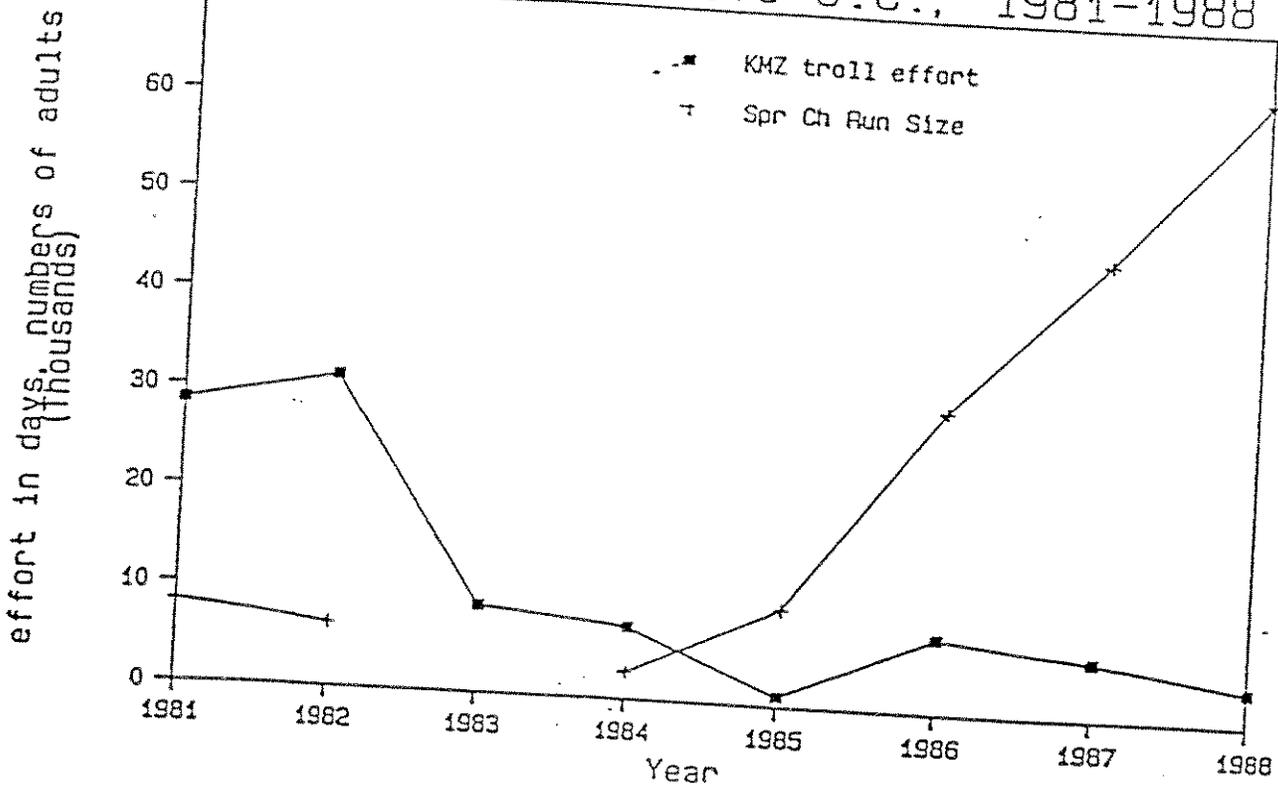


FIGURE 3

1989 Harvest Schedule for Spring Chinook in Klamath Basin

TRH Escapement needs 3000 adults assuming 1.1:1 ratio of males in females and 3,000 eggs per female  
 Recreational fishery above Junction City takes 14% of spring chinook run Run Size above Junction City (JC)  
 is 90% of the Klamath River basin Run size Klamath escapement is assumed to be 2 per cent of run size  
 at Weitchpec Lower Trinity Escapement is assumed to be 3 percent of run size at Willow Creek.

From 1982-1984 database

Run Size Klamath mouth	Yurok Harvest comm subs	Klamath escapement	Trinity run size	Hoopla Harvest comm subs	Indian Harvest
55617	10000 1407	884	43326	0 1519	12926
Lower Trinity escapement	Run Size above JC	Sport Harvest above JC	TRH escapement	Natural escapement	
1254	40552	5677	6975	27900	
Harvest rate Indian harvest	Harvest rate sport and net	Escapement rate natural and hatchery			
0.23	0.33	0.67			

ATTACHMENT 5

PACIFIC FISHERY MANAGEMENT COUNCIL

Metro Center, Suite 420  
2000 S.W. First Avenue  
Portland, Oregon 97201

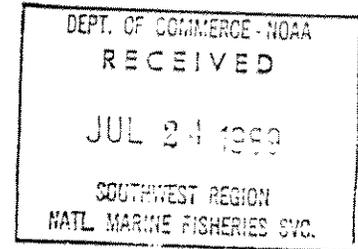
Phone: Commercial (503) 326-6352  
FTS 8-423-6352

EXECUTIVE DIRECTOR  
Lawrence D. Six

CHAIRMAN  
Richard Schwarz

~~ECF~~  
~~JG~~  
RRR

July 19, 1989



E. Charles Fullerton, Chairman  
Klamath Fishery Management Council  
National Marine Fisheries Service  
300 South Ferry Street  
Terminal Island, CA 90731

Dear Charlie:

Management decisions made by the Pacific Fishery Management Council (PFMC) concerning the Klamath River fall chinook salmon fishery have a significant impact on all other salmon fisheries off the Washington-Oregon-California coast. The harvest rate management concept for determining spawning escapement into the Klamath River was recommended by the Klamath Fishery Management Council (KFMC) to the PFMC in July 1988, and was adopted by the PFMC in the recently approved ninth amendment to the salmon fishery management plan (FMP). This concept is based upon a report prepared by the Klamath River Technical Advisory Team (KRTAT): RECOMMENDED SPAWNING ESCAPEMENT POLICY FOR KLAMATH RIVER FALL-RUN CHINOOK, February, 1986. It could be argued that this report represents the "best scientific information available" concerning the status of Klamath River fall chinook stocks. Almost three-and-a-half years have elapsed since the report was published, and the PFMC has developed salmon harvest regulations for four seasons based in a large measure on the report.

I believe it is appropriate and timely now to review and, where necessary, revise the KRTAT scientific information available for the Klamath River fall chinook stocks. There are also other factors influencing management of the Klamath River fishery which should be either reaffirmed or revised to assure that the decisions of both the KFMC and the PFMC provide a management regime which best meets the needs of the fishermen while at all times protecting the fishery resource. I will address these below.

Because of the statutory responsibility of the KFMC I am requesting that you, as Chairman of that council, take the lead in accomplishing the reviews suggested herein, and provide recommendations to the PFMC on possible changes or improvements resulting therefrom. Hopefully this can be done before the PFMC meeting on November 15-16, 1989, so that the appropriate entities have the opportunity for review and comment prior to the deliberations on salmon seasons for 1990.

Following are some specific items of concern to me. There may be others which have an impact on Klamath fishery management decisions which I have overlooked. I am confident you will include all pertinent information in your recommendations.

E. Charles Fullerton  
July 19, 1989  
Page 2

On page 16 of the KRTAT report in the first full paragraph under OPTION 4 - the option adopted by the PFMC - there are two references to evidence of "overfishing" on Klamath chinook. This judgement was made in 1986 based on the low returns of natural spawners, and the relative abundance of hatchery spawners, from 1978 through 1985. However, the returns in 1986, 1987, and 1988 have greatly changed the balance observed during the previous eight years. In light of these recent spawning escapements I would ask if there is still evidence of "overfishing". I believe this assessment is important because of the emphasis placed by the Magnuson Fishery Conservation and Management Act (MFCMA) and the National Standards and guidelines on prevention of overfishing, and the restrictions that a determination of overfishing places on the flexibility of the PFMC in making management decisions.

I would also request that the KFMC provide an objective and measurable definition of overfishing for the Klamath river fall chinook stocks, together with an analysis of how the definition was determined and how it relates to the reproductive potential of the Klamath River system.

The KRTAT Report states on page 20: "The harvest rate approach, however, is highly dependent for its success on a close approximation of the average productivity of the stock (alpha in the Ricker model)." Appendix III, Description of Klamath River Harvest Rate Model, page 51, specifies a value of 14.0 for "alpha" for age 2 natural stocks from the Klamath basin. Recently there has been testimony that this value is too low. Please provide reaffirmation of the validity of the 14.0 value for alpha currently being used, or a recommendation for a new value together with the basis for such a recommendation. This information will be reviewed by the Scientific and Statistical Committee (SSC) which will provide its recommendations to the Council.

Also, all other parameters used in the Klamath Ocean Harvest Model should be reviewed and any suggested changes in values provided to the PFMC for review by the SSC.

Some criticism has been leveled recently that adherence to the Klamath River natural spawning escapement goal of 35% will provide "more spawners than there is water in the river to support." Suggestions were made to reduce the 1989 spawning escapement goal because of this perception. A March 6, 1989 memo from the KRTAT to the KFMC disagrees with this suggestion and provides the reasons for this disagreement. I believe the conclusions of this memo have a direct impact on the long-term management strategy for the Klamath fall chinook fishery. Therefore, it would be appropriate for the KFMC to ask the KRTAT to reaffirm the conclusions of this memo and to transmit them formally to the PFMC.

Comprehensive information concerning the economic value of a restricted commercial troll fishery in the Klamath Management Zone (KMZ) vis-a-vis an expanded fishery outside the zone is lacking. In 1989, as you know, the Council established a limited KMZ chinook fishery specifically for the benefit of the day boats in the zone. The fact that this fishery closed after only four days, despite an inseason adjusted quota up to 17,700 fish and a 20 fish

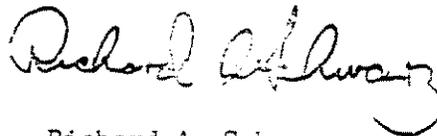
E. Charles Fullerton  
July 19, 1989  
Page 3

per day landing limit, indicates that many more boats participated in the fishery than were expected. It would be extremely helpful to the Council if the KFMC could provide an accurate description of the commercial troll fleet in the KMZ, including the number of boats and the fishing capacity, together with an assessment of economic importance of the salmon fishery to the support industry in the zone. Simply stated, what is the relative value to the troll industry of a Klamath-origin chinook available for harvest in the KMZ versus the same fish available for harvest outside the zone, either north or south?

Finally, I would ask the KFMC to examine the size and location of the current buffer zones north and south of the KMZ to see if they can be adjusted to provide some relief to the boats in Shelter Cove and Port Orford in getting access to the fishery when it is open in the areas outside the current boundaries of the KMZ.

I recognize that some of the things I have asked you to examine may be beyond the capabilities of the KFMC to accomplish. But I think that the impact of the Klamath fall chinook fishery on all other salmon fisheries along the Washington-Oregon-California coast is of such significance that both the KFMC and PFMC must do all that is possible to provide a fishery which meets the needs of the industry dependent on the resource while providing the requisite protection to the fishery resource itself. The PFMC will cooperate with the KFMC in all respects to provide the best information possible. I am not suggesting that the PFMC deviate from the ninth amendment or the harvest rate management concept which is the technical basis for that amendment. However, given the events of the past three years, now is the time to make a critical re-evaluation of the Klamath fall chinook fishery to assure all concerned interests that the fishery is being managed to meet the requirements of the MFCMA.

Sincerely,



Richard A. Schwarz  
Council Chairman

M E M O R A N D U M  
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To: E. C. Fullerton, Chairman                      Date: October 23, 1989  
Klamath Fishery  
Management Council

From: Klamath River Technical Advisory Team (KRTAT)

Subject: Response to Technical Issues Raised in a Letter from  
PFMC Chairman Schwarz, dated July 19, 1989

The various items for technical input in subject letter have been reviewed by the KRTAT. Chairman Schwarz asked for input in four specific technical areas:

1. Definition and measurement of overfishing.
2. Productivity of the Klamath fall chinook stock.
3. Klamath Ocean Harvest Model parameters.
4. Klamath basin carrying capacity for natural spawning fall chinook.

In addition, Chairman Schwarz asked the KFMC for input in two areas that the KRTAT feels is outside our responsibility and expertise, specifically a socio-economic evaluation of the KMZ troll fishing fleet and the size and location of KMZ buffer areas.

This memorandum provides background information on each of the four technical issues and discusses the Team's current recommendation to the Council.

1. Overfishing.

Background: The Teams' 1986 report titled Recommended Spawning Escapement Policy for Klamath River Fall-run Chinook stated (page 16) that "available data indicates that Klamath chinook are being overfished and that reduction in harvest rate would increase the long-term yield from the resource". Evidence of overfishing included equilibrium population modeling showing higher yields from lower harvest rates, declining returns of spawners throughout the basin and increased percentage of hatchery spawners compared to natural spawners.

Team Recommendation: Chairman Schwarz' letter asks how the KFMC would define overfishing and how overfishing would be measured.

The KRTAT believes that an appropriate definition of overfishing has been recently provided by the National 602 Guidelines: a level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock-complex to produce MSY on a continuing basis. The KRTAT's use of the term "overfishing" in its 1986 report was consistent with this definition.

Our judgement in 1986 that overfishing had taken place with regard to Klamath chinook was based primarily on calculations of cumulative brood removal rates based on CWT recovery data. Catch divided by catch plus escapement ( $C/(C+E)$ ; calculated over a brood) gives a crude approximation to this cumulative removal rate. For Iron Gate Hatchery (IGH) fingerling and yearling releases,  $C/(C+E)$ 's ranged from 80-90 percent for 1976-1979 brood years (exposed to fisheries from 1979-1984). For Trinity River Hatchery (TRH) fingerlings and yearlings, equivalent figures were about 70-75 percent. Based on the current harvest rate management policy, which roughly calls for  $C/(C+E)$  of 65 percent to produce MSY for naturally spawning fish, these rates of cumulative removal must be regarded as those which would result in overfishing if done on a continuing basis.

For Klamath River Natural stocks, MSY is an average harvest rate of 66 percent to 67 percent, based on an Alpha of 14. Single-year deviations from the MSY harvest rate for Klamath natural stocks will occur, due to imprecision in preseason estimates of stock sizes, fishery impacts, or for other reasons. These deviations do not necessarily jeopardize the recruitment potential of the stock, unless they occur frequently enough that the average harvest rate over a number of years is above MSY. The MSY harvest rate is dependant upon the alpha parameter, and as alpha is reviewed and possibly revised, the recommended MSY harvest rate could change.

Chairman Schwarz' letter also asks if there is currently evidence of overfishing. On a brood basis, to date no complete brood has been exposed to harvest rate management, therefore no quantifiable answer can be given. However, it appears harvest rates have been reduced below those observed in the 1979-84 period due to management decisions.

2. Productivity of natural stocks (alpha).

Background: The KRTAT's 1986 report (Appendix III) discussed the Team's approach to selecting alpha for Klamath River fall chinook. That approach consisted of analyzing available Klamath stock data and reviewing estimates of alpha for other chinook stocks. It was pointed out by the Team that the conventional approach to estimating alpha (log-log fit of

recruits per spawner on parent stock size) may be in error for a heavily exploited population made up of several contributing stocks, as is the case for Klamath chinook, due to dominance in the data for the most productive spawning units. Approximate values for alpha between about 10 (Klamath stock in its entirety) to 18 (Trinity Hatchery component) were derived. Although none of the literature reviewed for the productivity of other Pacific coast chinook stocks were age specific, alpha values between 13 and 53 were found, adjusted to age 2 recruits. Based on Klamath River hatchery data most of these alpha estimates appear too high for Klamath natural stocks. The Team chose an alpha value of 14.0, based mainly on Klamath chinook data available at the time.

Team Recommendation:

The KRTAT has analyzed stock-recruit data from recent brood years (Table 1 and Figure 1, attached). These data are consistent with the value for Klamath natural stock productivity currently in use. The Team recommends that no change in the current alpha value of 14 be made at this time.

Data points on Figure 1 were derived from relatively low parent stock sizes. When data becomes available from higher parent stock sizes (1986, 1987 and 1988 broods) a re-examination of the stock recruit relationship will be warranted.

3. Klamath Ocean Harvest Model (KOHM) parameters.

Background: The KOHM uses population and fishery parameters during the calibration and analysis phases. Such items as stock size, shaker mortality factor, age 3 vulnerability factor and time/area cell harvest rate values are used, and the values for same are discussed in a KRTAT report titled Description of Klamath River Fall Chinook Ocean Fishery Model for Use in 1988 Management, December 1988.

Team Recommendation:

The KRTAT is considering several modifications of the structure of the Klamath Ocean Harvest Model (KOHM). Currently, model structure incorporates a total of 30 time/area-specific "cells" within which cell-specific exploitation rates from previous seasons are required. These exploitation rates have been based on recoveries of coded-wire-tagged fish released from IGH and TRH. Preliminary findings by Hankin and Mohr (1989, progress report to Klamath River Task Force) suggest that numbers of recoveries and levels of ocean fishery sampling are not sufficient to allow reliable estimation of 30 cell-specific exploitation rates.

Existing levels of tagging and sampling have been sufficient, however, to allow reliable estimation of such exploitation rates for a reduced number of cells.

We have therefore considered a restructuring of the KOHM so as to produce a model with a smaller number of cells but without entirely sacrificing the model's ability to predict time/area-specific ocean impacts. This simplified structure should reduce errors in predictions of ocean harvest impacts on Klamath fall chinook, although the KOHM will not be able to provide predictions on as fine a time/area scale as in the past two seasons.

On a subject related to the use of the KOHM, it has come to the attention of the KRTAT that the PFMC used the model to estimate landings of all chinook stocks south of Cape Falcon. This is an inappropriate use of the KOHM. By design, except where quotas are mandatory, usefulness is limited to estimating the number of Klamath fall chinook that would be harvested under varying regulatory options.

4. Klamath basin carrying capacity

Background: In 1989 it was suggested that spawning escapement be reduced in response to anticipated dry year conditions. The KRTAT responded to the particular concern for 1989 (memo to KPMC dated March 6, 1989, attached) recommending no reduction in the escapement rate.

Team Recommendation:

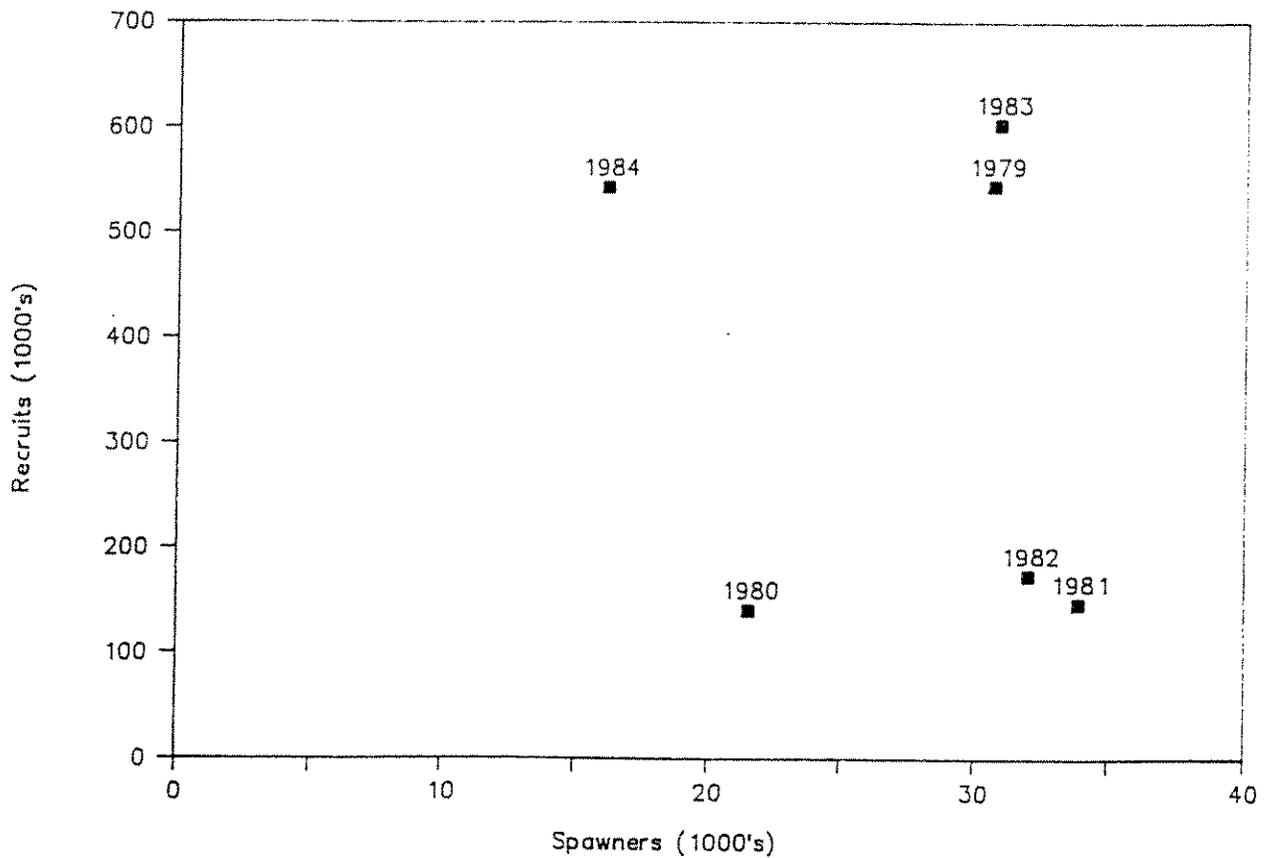
The KRTAT maintains the position stated in the March 6, 1989 memorandum regarding any reductions in the spawning escapement goal for Klamath fall chinook.

The KRTAT will be available at the Council's next meeting to answer any questions you might have on the subjects covered above.

Table 1. Natural spawners, naturally produced recruits and recruits per spawner for Klamath fall chinook salmon. Brood years 1979-84.

Brood Year	Spawners (1000's)	Recruits (1000's)	Recruits per Spawner
1979	30.6	544.1	17.8
1980	21.5	141.3	6.6
1981	33.9	147.8	4.4
1982	32.0	174.8	5.5
1983	30.8	602.9	19.6
1984	16.1	542.5	33.7

Figure 1. Naturally produced age 2 recruits vs. natural spawners for Klamath River Fall Chinook. Brood Years 1979-1984. Data from table 1.



Date: 6 March 1989  
To: Klamath River Management Council  
From: Klamath River Technical Advisory Team  
Subject: Team concerns regarding reduction of 1989 spawning escapement goal for Klamath Fall Chinook relative to anticipated fall flows.

Some members of the KFMC have suggested reducing the 1989 spawning escapement goal for Klamath Basin Fall Chinook Salmon because anticipated drought conditions in the fall would not provide sufficient flows to support the level of spawning escapement expected by harvesting 67% of the projected 1989 stock size. The Klamath Technical Advisory Team does not agree with this suggestion. Our disagreement is based on our understanding that: 1) Fall flow regimes cannot be adequately predicted by summer flow forecasts and 2) The spawning success of the majority of naturally spawning Klamath Basin Chinook are not influenced by water withdrawals from the Trinity Basin.

Flow regimes that will occur in the fall of 1989 are, to a large degree, dependent upon fall precipitation, not precipitation that has occurred or will occur during the current water year. To our knowledge there is no available means of predicting fall 1989 precipitation.

Although flows in the Trinity Basin downstream from Lewiston Dam during the fall of 1989 are currently scheduled to be reduced by water withdrawals from Lewiston Reservoir, the majority of wild chinook spawn in areas of the Klamath Basin that is not influenced by this reservoir. Most of the wild chinook populations of the Klamath Basin spawn in the Shasta, Scott and Salmon River Basins (Figure 1). Naturally spawning chinook in the Trinity Basin are the only population of chinook in the Klamath Basin that could be influenced by withdrawals from Lewiston Reservoir. Reducing the escapement goal on the segment of this population that spawns in the reach of the Trinity River immediately downstream from Lewiston Reservoir could be justified if water withdrawals reduce Trinity flows this fall, and evidence can be produced that expected escapements will exceed stream capacity. Stream capacity should be viewed in terms of spawning success and rearing success of resulting juveniles.

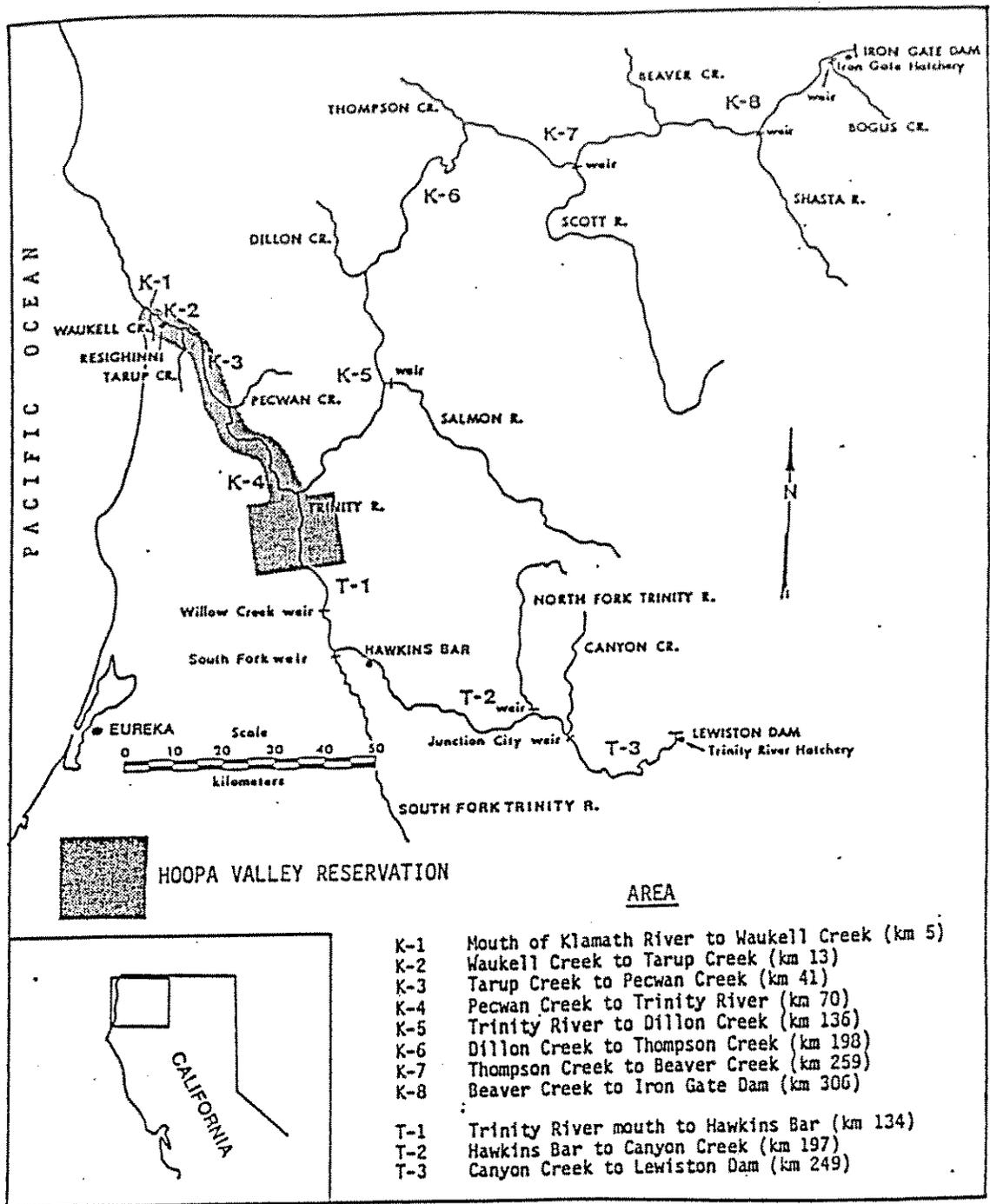


FIGURE 1. Overview map of the Klamath-Trinity River basin and Hoopa Valley Indian Reservation delineating recovery areas for chinook salmon tagged during 1979-1986 beach seine operations.

ATTACHMENT 6

MEMORANDUM

October 31, 1989

TO: KLAMATH FISHERY MANAGEMENT COUNCIL

FROM: MINORITY GROUP OF KRTAT

SUBJECT: IDENTIFICATION OF STOCK OR STOCK COMPLEX TO BE USED IN  
CONJUNCTION WITH HARVEST RATE MODEL

The Klamath River Technical Advisory Team (KRTAT) has been asked to review the alpha and other parameters used in the Harvest Rate Model for the Klamath River fall chinook. Alpha is one of the key variables within the Harvest Rate Model. It describes the productivity of a stock of fish. The greater the productivity (alpha), the higher the harvest rates can be. Once an alpha and other model parameters are selected, the Harvest Rate Model gives, as output, a range of ocean and river harvest rate combinations that will result in Maximum Sustained Yield (MSY) for the Klamath fall run chinook.

The KRTAT has reviewed information pertaining to the Klamath fall chinook run and has judged that the appropriate alpha for the naturally produced segment of the Klamath fall chinook run is 14. The naturally produced segment would be described as the progeny of fish that spawned naturally (regardless of whether the spawners originated in a hatchery or natural areas). For example, included as natural spawners are the large numbers of hatchery fish that spawn just below Trinity River Hatchery.

Minority view

While all of the KRTAT agree that an alpha of 14 was appropriate for the naturally produced segment of the stock, the minority believe that a higher alpha is appropriate to manage the stock-complex; a composite of both hatchery and naturally produced fish. At some harvest rate, where the natural component was fished over the level which produces MSY, and the hatchery stock fished under the level which produces MSY, the real MSY for the basin exists.

Differential Harvest Rates for Natural and Hatchery Stocks

The ocean fishery has limited capability to effect differential harvest of Klamath River stocks, whereas the inriver fishery has a greater opportunity depending on gear selection. Based on USFWS data, there is a need to increase the in river harvest of Klamath River 3 year old fall run chinook, primarily the component of hatchery production.

If the fisheries had the capability of harvesting natural and hatchery stocks at different levels, then the harvest rate for the natural component should be set using the alpha of 14 and the hatchery stock at some much higher level. This would result in greater allowable harvests of Klamath stocks than are now possible. The full utilization of hatchery stocks are important for other reasons as well; because of restrictions on fisheries to protect natural stocks, large numbers of hatchery stocks spawn and compete for space with naturally produced spawners. In addition, future hatchery releases will be greater than what occurred in earlier years, and these hatchery fingerlings will compete with naturally produced juveniles. The affect on naturally produced juvenile salmon created by releasing these large numbers of hatchery fish is unknown but potentially harmful.

#### Choices of "Stock" to Manage for MSY

The definition of the stock managed to produce MSY has broad implications to the fisheries being managed. The following three categories are possible stock or stock-complex options to manage for MSY:

- 1) an aggregate of natural and hatchery chinook stocks from northern California and southern Oregon
- 2) an aggregate of natural and hatchery stocks from the Klamath River
- 3) the naturally produced segment of the Klamath fall chinook stock

It is the second option that the minority of the KRTAT recommend be considered for it's possible benefit in yields to the fisheries. If the KFMC determines that the third option is what it intends to use as the stock to manage for MSY, then the alpha value of 14 is the appropriate value for use in the harvest rate model.

If, on the other hand, the KFMC considers the second option, we recommend that a series of analyses using alpha values of 14, 16 and 18 be developed, balancing the advantages of yield against the potential risks to natural or wild stocks.

The sensitivity of the harvest rate model to changes in ocean and in-river harvest rate combinations is an important consideration. For instance:

- ocean and in-river harvest rates of .40/.40 result in 100% of MSY for natural stocks.
- ocean and in-river harvest rates of .50/.40 or of .40/.55 result in 96% of MSY for the natural stocks, and may produce 100% of MSY for the natural/hatchery stock complex.

Managing for an alpha appropriate to the aggregate natural and hatchery Klamath fall chinook stocks (utilizing the 14,16,18 alpha analysis), may provide a substantial increase in yield with a minimal reduction in natural stock production.

#### Overfishing Definition

If the Klamath Council wishes to consider managing for aggregate natural and hatchery stocks, the definition of overfishing forwarded to you by the team will need to be revised with regards to the specific mention of the 66% harvest rate, and the specific value of 14 for alpha.

Respectfully Submitted by  
Mike Maahs  
Mike Morford  
Scott Boley

ATTACHMENT 7

MEMORANDUM

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To: Klamath Fishery                      Date: October 23, 1989  
Management Council

From: Klamath River Technical Advisory Team

Subject: Status Report on Items Under Team Review and Request  
for KFMC Review of Team Concerns

The Klamath River Technical Advisory Team (KRTAT) has met three times thus far this fall to discuss and complete assignments made to the Team previously and to discuss tasks needed to be accomplished in the coming months. Many of the issues carried over from last year are covered in the Team response to the Pacific Fishery Management Councils' July 19, 1989 letter to the Council. Following are issues the Team is currently discussing or is concerned about.

A. KRTAT items under review.

1. The Team has compiled coded-wire-tag (CWT) data from Klamath River basin fall chinook for the 1979-1986 brood years partitioned by hatchery release type. Prior to the 1979 brood year, the hatchery

tagging programs were insufficient to account for all components of production. Data elements of the CWT recoveries throughout the life of the fish were placed in a computer spreadsheet, facilitating updates, summaries and manipulations needed for potential uses of the data.

2. The Team has produced estimates of Klamath fall chinook (ocean population) in a manner somewhat different than previously reported and used for management. The result of this work is an analysis of each cohort since the 1979 brood year using CWT data in the partitioned data base and estimates of fishery impacts, natural mortality and the performance of unmarked hatchery production. The naturally produced segment of the Klamath fall chinook population is included in this analysis; using certain CWT fishery exploitation rates and the subtraction of hatchery contribution to the inriver run. Many aspects of the basic CWT, inriver run, spawning escapement, age composition and ocean harvest data estimates were reviewed during the construction of the cohort analysis, and while many data elements are of unknown precision or accuracy, they represent the best information that currently exists. A report of the methods and data parameters the Team used for this work is in preparation and will be available for review by January 1, 1990.
3. The work accomplished for the partitioned cohort analysis has produced information that may be useful for Klamath fall chinook stock projection purposes. The Team is currently analyzing these data, and while the specific stock projection values may differ from

those previously reported, the methods themselves (regression relationships between age 2 fish inriver to age 3 fish available for harvest the next year and age 3 fish inriver to age 4 fish available the next year) are not expected to change.

4. As briefly described in the Teams response to the PFMC letter, there is work being done to restructure the Klamath Ocean Harvest Model (KOHM). This work involves determining how best to structure the model in time-area cells, select the appropriate base year or years for calibration, and how best to project stock sizes of stocks other than Klamath chinook. The Team's goal is to produce a model with reasonable management flexibility but without dividing the data into segments beyond the reliability of the data. The Team expects to complete the majority of work by the end of 1989, but will need to await fishery impact estimates from the 1989 season in the selection of base year calibration values.
5. The Team had previously developed and discussed catch-per-unit-of-effort (CPUE) relationships involving Fort Bragg area commercial fishery CPUE in May and June and post-season Klamath fall chinook stock size estimates. A highly significant relationship exists for the years analyzed, but further development of this relationship as a management tool is needed. The Team will pursue this work in the coming months, including examining the 1989 information. Subsequent to the technical analysis, the KFMC may wish to examine policy issues relating to use of the method for inseason adjustment of projected Klamath fall chinook stock size.

B. Team Concerns.

1. The KRTAT has recently been requested to comment on specific proposals requesting funding in relation to their importance to Klamath/Ocean Fishery Management. We would like the KFMC to clarify whether it wishes this group to comment on specific proposals.

In the discussion of this issue, concern was voiced that funding decisions being made by the Klamath River Basin Fisheries Task Force (Task Force) lack coordination with the KFMC and KRTAT. We believe that in order for restoration activities to accomplish the established goals the Task Force needs to more closely coordinate it's activities with the KFMC and the KRTAT.

2. Based on CWT recovery data, Indian net fishery exploitation rates on age 4 Klamath River stock fall chinook (IGH) have been about 60 percent, whereas they have been about 30 percent on Trinity River stock fall chinook (TRH). The figure for TRH fish is even less if only the estuary net fishery catches are included. Thus, the estuary net fishery has been harvesting a far greater proportion of Klamath stock than of Trinity stock. We believe that the exploitation rate for IGH CWT's may reflect serious over-exploitation of wild Klamath origin stocks (Shasta, Salmon and Scott rivers); Trinity stocks may be under harvested.

There are two probable causes for these different stock-specific harvest rates: 1) run-timing of the IGH fish is earlier than that

of TRH fish; and 2) TRH fish are slightly smaller than IGH fish and are therefore less vulnerable to the net fishery. Of these two causes, we believe that run-timing is the more important factor.

We therefore encourage adjustments in terminal area management that may more nearly equalize harvest rates on the two stocks. In particular, we suggest delaying the opening date of the estuary gillnet fishery until mid- to late August and setting early and late season quotas designed to target on each stock.

We regard this as a very serious concern that should be addressed immediately.

3. In the course of investigating hatchery and natural chinook population parameters as part of the partitioned data analysis, the Team has concerns about some of the assumptions needed to apply this methodology. Specifically, the portion of each hatchery's returning fish that are from direct hatchery production versus those that are from natural production is unknown, as is the same information for natural areas influenced by hatcheries (Trinity River main stem and Bogus Creek, for instance). The Team, with input from river management agencies, would like to pursue the utility of the Optical Pattern Recognition System, as an independent method to determine the hatchery/natural component.

AMENDMENT ISSUE 5 - MODIFICATION OF THE KLAMATH RIVER  
FALL CHINOOK SALMON SPAWNING ESCAPEMENT GOAL

This issue concerns the current FMP spawning escapement goal for Klamath River fall chinook salmon and achievement of optimum yield (OY) from the ocean and inriver fisheries which impact the Klamath River stock. Concern with this issue arose primarily in the initial implementation of the ninth amendment to the salmon FMP during the 1989 preseason regulatory process.

Background on FMP Escapement Goals and OY

The framework amendment (Option 3 at page 3-14) clearly states that spawning escapement goals are fixed elements of the FMP, subject to change without FMP amendment if a comprehensive technical review of existing biological data, approved by the Salmon Technical Team (STT) and the Council, justifies a modification. Other changes require FMP amendment or emergency regulations, except action by a federal court that indicates modification of an escapement goal is appropriate. These framework amendment requirements are implemented in 50 CFR § 661.22 and in the Appendix to this Part, Section IV.

The first National Standard of the MFCMA requires the Council to manage for OY and it is defined as:

. . . the amount of fish--(A) which will provide the greatest overall benefit to the Nation, with particular reference to food production and recreational opportunities; and (B) which is prescribed as such on the basis of the maximum sustainable yield from such fishery, as modified by any relevant economic, social, or ecological factor.

The framework amendment at Section 3.3 (page 3-9) further specifies that OY is:

. . . that amount of salmon . . . which will to the greatest extent practicable, fulfill the following:

1. The spawning escapement goals for natural and hatchery stocks,<sup>3</sup> as established by the Council;
2. The obligation to provide for treaty Indian harvest opportunity, as mandated by applicable decisions of the federal courts;
3. The requirements of the Indian fishery for salmon on the Klamath River;
4. The allocation goals between or among ocean fisheries established by the Council;

5. The allocation goals between ocean and "inside" fisheries conducted by other than treaty Indians, as recommended by the various states and the Council; and
6. Other social/economic objectives of the FMP and its amendments.

Based on the information reviewed above, spawning escapement goals are fixed elements of the FMP which establish the total allowable harvest (both ocean and inriver) which is available for OY in any given year. However, this is just one aspect of OY. Allocation of the total allowable harvest among the various ocean and inside fisheries and annual management measures to achieve social and economic objectives of the FMP constitute the other major factors in determining OY. Within the FMP, these considerations are a mix of fixed and flexible management measures.

#### Purpose and Need for Action

#### Background

The ninth amendment (implemented in 1989) included a new spawning escapement goal for Klamath River fall chinook salmon which was expressed as a spawning escapement rate for natural adult spawners (based on estimates of the productivity of the stock). The Council adopted an escapement rate, rather than a fixed escapement goal, because there is significant uncertainty over the specific spawning escapement needed to achieve maximum sustainable yield (MSY). A comparison of the fixed escapement goal versus a harvest rate goal was developed by the Klamath River Technical Team (KRTT) of the Klamath River Salmon Management Group (KRSMG). Given uncertainty over the MSY spawning escapement level, the KRTT analysis indicated greater long-term yield and more annual harvest stability could be achieved with the escapement rate plan (KRTT 1986).

In addition to the achievement of higher long-term yield and harvest stability, an important aspect of the escapement rate goal is that it should produce a valuable data base. Over many years, by allowing the spawning escapement to vary with stock abundance, data can be obtained to reduce uncertainty over the spawning escapement level needed to achieve MSY under equilibrium conditions. If spawning escapements are not allowed to range in proportion to stock abundance, determination of MSY will be delayed and the Council's ability to manage the resource for OY will be diminished.

The initial Klamath River fall chinook natural spawning escapement rate was set at 35 percent of the potential adults from each brood of natural spawners, but no fewer than 35,000 naturally spawning adults in any one year. Over time, natural spawning escapements at the goal rate should begin to stabilize around the level needed to achieve MSY. As with all escapement goals, the Klamath River fall chinook spawning escapement rate is subject to technical review and modification without FMP amendment upon approval of the STT and Council. This was done in 1989

and the spawning escapement rate goal was modified to 33-34 percent. This change was based on reassessment by the Klamath Technical Advisory Team and the STT of the biological parameters used to determine the escapement rate most likely to achieve MSY.

#### Achievement of OY

During hearings on the ninth amendment and in the 1989 preseason salmon management process, some managers and fishermen contended that the FMP should allow more annual flexibility in the choice of the spawning escapement rate for Klamath River fall chinook, especially when abundance is high, to avoid overescapement of spawners and to respond to social and economic needs of the fishing industry. In the preseason process these parties contended that this flexibility was necessary to the Council's determination of OY as required by the MFCMA. Further, some contended drought conditions in the Klamath River Basin would not support nearly as many spawners as the FMP required.

At issue in 1989 was whether the Council should request an emergency regulation to reduce the Klamath River fall chinook natural spawning escapement level below the FMP goal, or maintain the goal and significantly reduce commercial ocean salmon fisheries in the areas which impact Klamath River fall chinook. Some fishermen and managers contended that the adopted spawning escapement level of approximately 80,000 naturally spawning fall chinook was over twice the escapement floor (35,000) and well above any possible MSY escapement level. In addition, the spawning escapement for the past three years has been at the highest levels ever recorded since records began in 1978. A reduction in the goal would allow more liberal ocean fisheries rather than exacting a heavy toll on the commercial ocean salmon fishermen and the coastal communities which depended on their welfare.

In its final decision for the 1989 ocean salmon seasons, the Council upheld the need to meet the newly implemented Klamath River fall chinook spawning escapement goal which had been developed over several years and concurred in by the Klamath Fishery Management Council (KFMC). In rejecting the request to deviate from the goal, the Council cited a lack of substantive socio-economic data to indicate that an emergency regulation was necessary when viewed in terms of the harvest impacts on all commercial fisheries south of Cape Falcon. The Council's action also conformed with the stated goal of allowing the spawning escapement to vary in proportion to stock strength and thereby provide data from which to eventually determine MSY. Without a more precise estimate of MSY, achievement of OY is extremely uncertain.

The procedures by which OY is determined and its relationship to the Klamath River fall chinook spawning escapement goal should be clear to the Council members and the public. The three alternatives proposed below provide various ways in which the Council could determine the annual spawning escapement for Klamath River fall chinook.

## Proposed Alternatives

### Alternative 1 - Total Allowable Harvest for OY is Best Achieved by Meeting the Present Spawning Escapement Goal (Status Quo)

Under this alternative, the present language of the ninth amendment defines the spawning escapement goal for Klamath River fall chinook as a percentage of each brood year of natural spawners which, within the limits of current knowledge, best approximates the MSY level of production. This escapement percentage establishes the subsequent total allowable ocean and inriver harvest rate available for OY and is designed to allow spawning escapements to vary over time with stock abundance to provide data with which to eventually develop an estimate of the MSY spawning escapement level. Over time the natural escapements under the harvest rate plan should begin to stabilize around MSY.

Each year the STT may review the current spawning escapement rate goal (33-34 percent in 1989) to determine if it is the most appropriate rate to achieve MSY. If the STT believes or concurs with evidence that the current rate is not the best assessment of the rate to achieve MSY, it must provide its determination of the appropriate rate to the Council. Without FMP amendment or an emergency rule, the rate can be modified only upon approval of the STT and Council, or upon action by a federal court. The spawning escapement rate goal must also be modified to assure a minimum of 35,000 naturally spawning adults in those years in which the goal rate would not meet this minimum. This minimum floor can only be changed by FMP amendment.

### Alternative 2 - Total Allowable Harvest for OY Requires Deviation from the Present Spawning Escapement Goal at High Abundance Levels

The objective of Klamath River fall chinook management under this alternative is to allow a fixed percentage of the potential adults from each brood of natural spawners to escape the fisheries and spawn, subject to a minimum escapement level and to a reduction in the escapement rate for naturally spawning adults above 70,000. Except for the reduction in natural spawning escapement rate at levels above 70,000, the present language adopted in the ninth amendment would define the spawning escapement goal for Klamath River fall chinook (same as Alternative 1, above). The reduction in the harvest rate to meet total harvest needs for OY when the spawning escapement was projected to exceed 70,000 naturally spawning Klamath River fall chinook salmon adults would be stated as follows.

When the natural spawning escapement of adult Klamath River fall chinook salmon is projected to be greater than 70,000, the projected escapement in excess of 70,000 shall be allocated one-half to spawning escapement and one-half to harvest. That portion of the harvest which is allocated to the ocean fishery will be available only in the current biological year and will be measured in adult equivalents.

Alternative 3 - Total Allowable Harvest for OY May Require Deviation from the Present Spawning Escapement Goal Based on Deliberations During the Preseason Process

This alternative would utilize the present spawning escapement goal for Klamath River fall chinook (Alternative 1), but would clarify that the Council may deviate annually from the goal to achieve OY. Such deviation would be based on the Council's consideration of socio-economic or ecological factors which emerge during the preseason management process and would follow the specification of OY found in Section 3.3 of the framework amendment. The Council meeting and hearing record, including specific analysis of the OY determination and its impact on the spawning escapement goal and fisheries, would document and provide the justification for deviating from the goal.

At the September Council meeting, California Department of Fish and Game (CDFG) offered the following language to provide basic guidelines for the Council to make OY decisions affecting Klamath River fall chinook escapements.

The overall assessment of any action to deviate from the established escapement rate plan on the basis of OY must clearly show (1) the long-term social and economic yield from the fishery will be enhanced, (2) the biological characteristics of the resource will be unaffected, (3) impacts on neighboring or other affected fisheries will be neutral or positive, and (4) there is major public support for the action. Additionally, any deviations from the escapement rate plan on the basis of ecological factors must be supported by all the entities responsible for managing the habitat of the salmon stocks possibly affected by the action.

Impacts of the Alternatives

Administrative Impacts

Implementation of the present Klamath River fall chinook spawning escapement rate goal (Alternative 1) requires extensive data analysis and computer modeling. Such requirements place a significant workload on fishery managers and impede public comprehension of the basis for management decisions. Alternative 2 would add some additional complexity to implementation of the escapement rate goal.

Implementation of Alternative 3 would require a significant increase in workload during the salmon preseason management process to develop analyses of the trade-offs resulting from varying levels of spawning escapement. Such analyses are generally complex and controversial. It is uncertain that the data or modeling tools are available to accurately assess meeting of the first three guidelines proposed by CDFG. Uncertainty each year over the escapement goal could tend to increase public testimony and confusion as well as to politicize the management process.

Implementation of an alternative similar to Alternative 3 could require modifying those parts of the FMP which define escapement goals as fixed elements. This could increase the scope and controversy of this amendment issue. The framework plan was adopted to avoid the necessity of developing complex impact statements each year to justify Council recommendations. If all spawning escapement goals were to incorporate an Alternative 3 type of approach, the preseason analyses could become staggering.

## Biological Impacts

### Background and Qualitative Description

Alternative 1 - This alternative, the harvest rate escapement plan, was developed by the KRTT (1986), a technical advisory body to the KRSMG. It requires the establishment of harvest rate combinations in the ocean and inriver fisheries that will achieve MSY under equilibrium conditions. This plan also includes a 35,000 floor for natural spawning levels to prevent extended periods of low juvenile production. Over time the natural escapements under the harvest rate plan should begin to stabilize around MSY.

The KRSMG defined MSY in terms of landed catch in numbers of naturally produced Klamath River fall chinook by the ocean and inriver fisheries operating under then current fishery selectivities (e.g., mesh size restrictions in the inriver gill net fishery and minimum size limits in the ocean fisheries). The harvest rate plan is based on the estimated productivity of the stock and was recommended by the KRSMG and the KFMC because of uncertainty in the capacity of the Klamath-Trinity basin for naturally spawning adults.

In 1985 CDFG biologists made an assessment of the capacity of the Klamath-Trinity basin for naturally spawning fall-run chinook salmon. They estimated the range of chinook spawners at basin capacity to be 41,000 to 106,000 (Hubbell and Boydston 1985). This rather broad range reflected the uncertainty in their opinions on the number of naturally spawning adults that would fully seed the available spawning areas. An important feature of the harvest rate plan is that the spawning escapement levels will be allowed to fluctuate, thereby providing needed data on the capacity of the basin. Such data could possibly lead eventually to the setting of a single number natural spawning escapement goal for the Klamath-Trinity basin. A more precise estimate of the MSY spawning level would allow the Council to manage the spawning escapement to achieve greater harvest of the resource over the long-term and to better define OY.

Alternative 2 - This alternative is a modification of the harvest rate plan (Alternative 1). It sets a partial ceiling on the escapement of naturally spawning fish in any year at 70,000 adults. Above the 70,000 escapement level, one-half the fish would be allowed to spawn and one half would be available for harvest. Under this alternative the cohort escapement rate is 33-34 percent, but can be lower if the returning adults would be part of a spawning escapement exceeding 70,000 naturally spawning adults.

Under Alternative 2 a weak year class returning in the same year as an especially strong year class could be severely overfished. This could lead to an extended period of low juvenile production by the weak cohort and possible major fishing closures to protect the escapement floor of 35,000 naturally spawning adults in future years.

The long-term fishery yield under Alternative 2 could be higher than the yield under Alternative 1. This assessment is based on the CDFG biologist's estimate of high basin capacity and computer analysis indicating MSY spawners for such a basin capacity to be about 68,000 adults. Thus the partial ceiling of 70,000 spawners will produce higher recruitment levels than Alternative 1 in those years in which spawning escapement is projected to exceed 70,000. If the basin capacity is nearer the lower end of the CDFG biologist's estimates (41,000), the difference between Alternatives 1 and 2 would be much less significant.

Alternative 3 - This alternative would follow the harvest rate plan except that the current year's escapement goal could be modified during the preseason process for socio-economic or ecological reasons as long as it met four specified guidelines. Because of the uncertainty involved in this alternative, it is not possible to quantify the effects it would have on natural production of Klamath River fall chinook. However, the effect of Alternative 3 would most likely always result in a reduction of the spawning escapement. This would lead to reduced long-term production of the Klamath stock and extend the time for determining the capacity of the basin for naturally spawning fall chinook adults.

#### Quantitative Analysis

Table 5-1 provides a comparison of ocean and inriver harvests and natural spawning escapements at the stock abundance levels observed in 1980 through 1988 under alternatives 1 and 2. No comparisons can be made for Alternative 3 as it is impossible to know in advance of the annual preseason process what the escapement goal might be.

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To provide a sense of the dynamic impacts of alternatives 1 and 2 on future production and yield, it will be necessary to modify the Klamath River Harvest Rate Model used in developing the harvest rate plan. The harvest rate model needs to be modified to allocate fish above a specific escapement level to harvest and escapement and to evaluate the effect of variability in survival rate of recruits on long-term fishery yield. Ceilings and floors on an escapement rate are extremely difficult to evaluate because they require additional critical assumptions about basin carrying capacity and the pattern and extent of variability in survival rate of recruits. The CDFG is proceeding with the needed model modifications which are expected to take two months to complete. Results of this modeling will be coordinated with the KIAT and may not be available before the November Council meeting.

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Socio-Economic Impacts

To be prepared.

Interaction With Other Amendment Issues

There is no interaction between Issue 5 and any of the other issues contained in this amendment.

References

Literature Cited

Hubbell, Paul M. and L.B. Boydstun. 1985. An assessment of the current carrying capacity of the Klamath River Basin for adult fall chinook salmon. CDFG, Inland Fisheries Division, Sacramento, CA.

KRTT. 1986. Recommended spawning escapement policy for Klamath River fall-run chinook. National Marine Fisheries Service, unprocessed report. 73p.

FMP

Council. 1984. Final framework amendment for managing the ocean salmon fisheries off the coasts of Washington, Oregon and California commencing in 1985. Portland, OR. p.3-9 through 3-20.

\_\_\_\_\_. 1988. Ninth amendment to the fishery management plan for commercial and recreational salmon fisheries off the coasts of Washington, Oregon and California commencing in 1978.

Regulations

50 CFR § 661.22 and Appendix Section IV.

Table 5-1. Comparison of alternatives under 1980-1988 ocean abundance levels (thousands of fish) for ages 3 and 4 Klamath River fall chinook and the 1989 Council harvest allocation (0.375 ocean/0.49 river).<sup>a/</sup>

Season	Alternative 1		Alternative 2		Alternative 3
	Ocean	Inriver	Ocean	Inriver	
1980	54.7	30.6		Same	Unknown
1981	82.2	34.8		Same	Unknown
1982	93.5	46.3		Same	Unknown
1983	74.7	36.4		Same	Unknown
1984	13.9 <sup>c/</sup>	7.3 <sup>c/</sup>		Same	Unknown
1985	8.4 <sup>c/</sup>	3.9 <sup>c/</sup>		Same	Unknown
1986	209.6	82.1	242.6 <sup>d/</sup>	91.8 <sup>d/</sup>	98.9
1987	206.4	106.8	229.4 <sup>d/</sup>	118.7 <sup>d/</sup>	97.0
1988	159.7	78.6	160.3 <sup>d/</sup>	78.9 <sup>d/</sup>	70.7

a/ C.F. Table II-5 in 1989 pre-season report I for population estimates.

b/ Based on actual natural/hatchery escapement.

c/ Adjusted downward to clear escapement floor (35,000); scaled in proportion to impacts on maturing fish under 1989 allocation.

d/ Adjusted upward for partial ceiling based on 1989 allocation. No adjustment was made in 1987 and 1988 harvest levels above to higher than .375 ocean harvest the year before.

Preseason estimates of Klamath fall chinook stock abundance, allowable harvest as per Allocation Agreement and expected harvest from regulations adopted by PFMC, 1986-1989 (X 1000)

Year	Preseason stock abundance (age 3+4)	Preseason spawning escape projection	Allocation Agreement harvest (rate)		PFMC regulations harvest (rate)	
			Ocean	Inriver	Ocean	Inriver
1986	266.0	61.2	75.3 (.35)	36.0 (.50)	75.3 (.35)	36.0 (.50)
1987	420.8	102.5	118.5 (.325)	77.1 (.525)	128.5 (.35)	77.1 (.525)
1988	334.5	132.0	101.9 (.325)	67.3 (.525)	131.1 (.39)	67.3 (.525)
1989	397.7	98.3	121.0 (.325)	78.0 (.525)	133.3 (.375)	67.6 (.49)

Postseason estimates of Klamath fall chinook stock abundance, estimated harvest by fisheries and adult spawning escapements, 1986-1988 (X 1000)

Year	Postseason stock abundance (age 3+4)	Postseason harvest estimates (rate)		Adult spawning escapement
		Ocean	Inriver	
1986	767.7	360.8 (.47)	46.2 (.24)	146.3
1987	667.0	339.2 (.51)	73.3 (.36)	143.9
1988 <sup>a/</sup>	530.2	215.7 (.41)	67.5 (.37)	130.7

a/ Preliminary

Post season #'s redone by Baracco and Jacobs 11/2/89

Preseason estimates of Klamath fall chinook stock abundance, allowable harvest as per Allocation Agreement and expected harvest from regulations adopted by PFHC, 1986-1989 (X 1000)

Year	Preseason stock abundance (age 3+4)	Preseason spawning escape projection	Allocation Agreement harvest (rate)		PFHC regulations harvest (rate)	
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1988	334.5	132.0	101.9 (.325)	67.3 (.525)	131.1 (.39)	67.3 (.525)
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Postseason estimates of Klamath fall chinook stock abundance, estimated harvest by fisheries and adult spawning escapements, 1986-1988 (X 1000)

Year	Postseason stock abundance (age 3+4)	Postseason harvest estimates (rate) b		Adult spawning escapement
		Ocean	Inriver	
1986	767.7	360.8 (.47)	46.2 (.56)	146.3
1987	667.0	339.2 (.55)	73.3 (.55)	130.8
1988 <sup>a/</sup>	530.2	215.7 (.48)	67.5 (.51)	113.6
1980-84 AVE.	225.6	123.0 (.65)	22.5 (.47) <sup>c</sup>	35.4

a/ Preliminary

b Approximate brood year harvest rate estimated by age 4 Klamath fish.

c 1983-1984 average.

TO: KFMC  
FROM: Dave Bitts  
DATE: 11-01-89

ATTACHMENT 11

Mr. chairman, Council members:

As you might guess, I am extremely unhappy with many aspects of the salmon management process. I will confine my comments today to two areas: relative penalties (hence risk) for violations, and the methodology for estimating the take in the subsistence fishery. I retain my right, and intent, to complain about other issues at other times.

In the June 20-fish "bag limit" fishery, I was highly motivated to cheat, as I had caught a total of five fish in May, and fish were abundant off Eureka in June. At one point I thought I'd found a legal way to squeeze out an extra 20 fish. When I realized my dodge was not legal, hence put me at risk, I abandoned my plan. The reason: my license was at risk if I was caught. Even if the chances of being caught were very low, it was not worth the risk of having my license suspended.

I'm not going to claim that nobody cheats in the troll fishery: only that those who do must either be unaware of the risk, or have a lot more balls than I do.

Lately we've been hearing stories about loads of fish leaving the reservation for sale in San Francisco, Salt Lake City, Reno, Arcata, and other exotic destinations. I'm not here to accuse anyone, merely to ask: What are the sellers of these fish risking? The public perception in Humboldt and Del Norte counties is that they are risking very little. Hence these stories generate a lot of bad feelings towards Indians, and towards the government that apparently tolerates these abuses of the subsistence fishery.

If BIA could show to the public a record of strict enforcement and substantial penalties for convicted violators (such as loss of fishing privileges for the following year), it would go a long way towards easing hostilities between neighbors on the North Coast. It might also reduce the incentive which apparently exists to take advantage of the current census methodology for personal profit.

As for that methodology: to the extent that it relies on fishermen accurately reporting their catch rather than on actual counts of fish, and to the extent that a motive exists for fishermen to cheat (combine: a quota fishery, a strong black market, and little risk of substantial penalty), the current methodology places an intolerable burden on the fishermen, the fish counter, and the resource.

In summary: as things are, citizens of the north coast have no faith in either the counting or the enforcement of the subsistence fishery. Two steps towards establishing that faith might be: 1) rely only on actual counts, rather than "interviews" with fishermen, to estimate the catch; and 2) impose (and publicize) substantial penalties for serious violations.

ATTACHMENT 12

KFMC 11/1/89

Paula Fitzgerald Yoon

CFWH Commercial Fishermen's Wives of Humboldt

Major Points:

- Most Salmon trollers didn't meet their boat expenses this year.
- A lot of Commercial Ocean Salmon families didn't get much Salmon to eat - because they had to sell what little was caught. In the zone, every time the 20 fish daily quota was met, the vessel was required to come in to port and deliver, wasting time and fuel. I hope and pray that this 20 fish/day experiment which was imposed on our fleet has shown you once and for all the inadequacy of such a proposal for Salmon Trollers.
- At the same time, many Ocean and River sports fishermen were catching their daily quotas 2 and 3 times a day, giving Salmon away left and right - buying as many cards as they want, and not being required to turn the cards in. My grandparents live in Willow Creek - I try to make sure that they have 2 nice Salmon in their freezer at the end of the summer. This year I couldn't even give them one - but they got plenty of Salmon - it was given to them by sportsfishermen and subsistence fishermen. A tremendous amount of sports caught Salmon was sold illegally to restaurants. Salmon was reported being used as fertilizer in Crescent City gardens. Illegal River Salmon was reported being sold in flea markets - the sellers disappeared as soon as they were questioned by curious people.
- There is no question that significant amounts of Salmon are being illegally caught and sold N. of the 101 bridge, where sufficient monitoring is inadequate.
- High grading occurred in both ocean and river commercial fisheries - will this be dealt with?
- It's clear that the enforcement agencies are not sufficient to meet the regulations set by the Fed govt and agreed to by the State govt.
- During the same season that govt regulations were not being enforced for river & ocean sports, the commercial ocean fishermen were being boarded by govt agents at an incredible rate to uphold 0-Tolerance drug mandates. For the thousands of vessel boardings, no drug arrests were made.
- The Ocean Sports quota was near filled, the NA commercial fishery was filled; the KMZ Ocean Commercial fishery was not met because 2 of the 3 openings were set for times when fishing is traditionally slow.

- The method of gillnet capture on the Klamath River is just as disasterous now as it was in the early 20's on the Sacto River and up to the 50's on the Klamath. The possiblility of completely wiping out a specific run, whether it is an early, intermediate or late run of the main stem or of a specific tributary is highly likely using this method of capture. I cannot believe that concerns for the resource are sincere as long as this method of capture is supported.

- I do not question the right of Native Americans to make an honest living from a resource whose existance they have sought to perpetuate with the sound ecological management practices which were used before profit motive overtook the right to make a good living. I support the right of every human being to have a good life from an honest living. What we have to do now is to think and talk about what a good living is - what does it take for fishing families to be able to own a modest home, have adequate transportation, eat well, have medical and dental coverage, have some time off and a family vacation now & then - as well as being able as self-employed small businesses to set sufficient money aside for retirement.

- I think that this representative body would be wise to recognize the potential problems imposed by the high sea gillnetting industry. In this way we voice our concern for the larger problems which are besetting the Salmon culture as a whole. I know that the Fed government is working deligently on this issue, but I also feel it would be remiss of this organization whose main concern is enhancement of the Salmon - it would be remiss to not acknowledge that problems created from afar may indeed directly adversely affect our efforts right here.

- I would propose that the KFMC voice its concerns regarding bycatch of Salmon within the KMZ by the Joint Venture Fleet.

- I certainly believe that this body should make a general reccommendation to the Bureau of Reclamation re: Trinity River Water releases as well as Iron Gate releases.

- Don't forget input on the forest practices -

- We must substantiate the importance of these influencing factors on the Salmon to the pertinent powers on a regular basis in order to make our case in the long run. In the long run, we are here to protect and increase the Salmon populations - so that we may sustain the Salmon cultures which exist around that resource. The only way we can do that is together and for each other - not in opposition. For this reason, I request that honest, unselfish communication take place within this council - and that the representatives make decisions for the good of the whole.

CONSENSUS METHODOLOGIES

SEPTEMBER 1982 ©

DR. JOHN N. WARFIELD

DIRECTOR, CENTER FOR INTERACTIVE MANAGEMENT  
SCHOOL OF ENGINEERING AND APPLIED SCIENCE  
UNIVERSITY OF VIRGINIA  
CHARLOTTESVILLE, VIRGINIA

SUB-SET

- ① BRAIN WRITING (IDEA WRITING)
- ① NOMINAL GROUP TECHNIQUE
- ① INTERPRETIVE STRUCTURAL MODELING (ISM)
- ① TRADE-OFF ANALYSIS METHOD

KFMC  
NOV. 2-3, 1989

1 BRAINWRITING (IDEAWRITING)

AN EFFICIENT METHOD FOR GENERATION OF IDEAS BY GROUPS.

## BRAINWRITING (IDEAWRITING)

A method of collective inquiry useful in generating ideas about some issue or question. The method is helpful for idea generation by small groups. Ideas are individually generated in response to a trigger question and then shared with others to encourage generation of additional ideas.

### APPROPRIATE CONDITIONS FOR USE

- There is a need to collect ideas or elements relevant to some issue, in little time.
- The information desired is spread among various people.
- It is desired to eliminate the potentially inhibiting influence of dominant personalities.
- People are available and willing to take part in the idea generation.

### APPLICATION AREAS

- Generally appropriate for all efforts where collective idea generation is of value and especially useful for issue formulation, including problem definition, and identification of objectives.

### RESULTS

- Spontaneous occurrence of ideas, triggered by other ideas.
- A list of 50 to 150 ideas about an issue or question.
- Increased understanding of ideas generated by collective inquiry.

### RESOURCES REQUIRED

- A specific trigger question that is to be the basis for idea generation.
- A group leader who has mastered the process and is willing to act as process facilitator.
- No more than six people for a single brainwriting process. Any number of simultaneous processes may be held.
- Each group needs a table and chairs and a quiet room, as well as paper and pencils.

### RESOURCES REQUIRED (continued)

- At least 15 minutes, typically 45 minutes and certainly no more than two hours of time.
- Funds, if required, to compensate participants and leader.

### HOW THE METHOD IS APPLIED

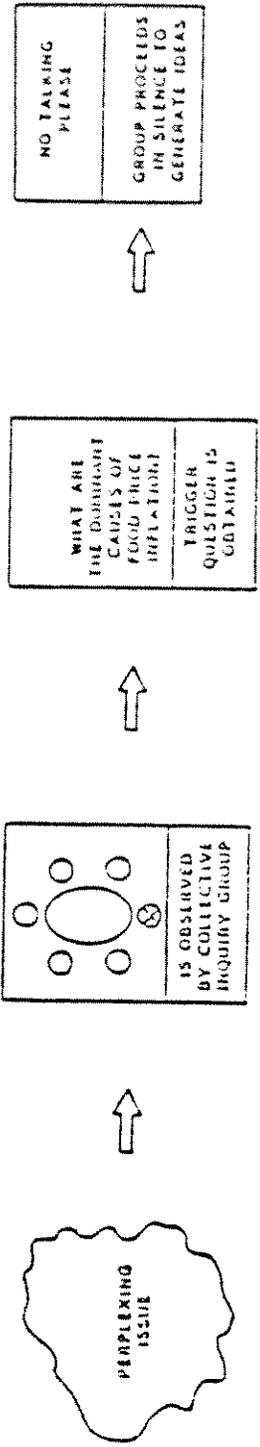
- Silent generation of ideas in writing by individuals for about 5 to 10 minutes in response to a carefully prepared trigger question.
- Exchange of sheets of paper and continuation of idea generation for 5 to 10 minutes; continued exchange of sheets of paper until all participants have examined all papers.
- Ideas are edited and organized for presentation.

### IMPORTANT ATTRIBUTES AND FEATURES

- Potential for generation of many ideas concerning organizational, behavioral and other aspects of an issue.
- Potential for encouraging contributions from those normally noted for reticence and quietness.
- Potential for greatly enhanced stakeholder input into the planning process.
- Not useful for negotiation or simple information exchange.

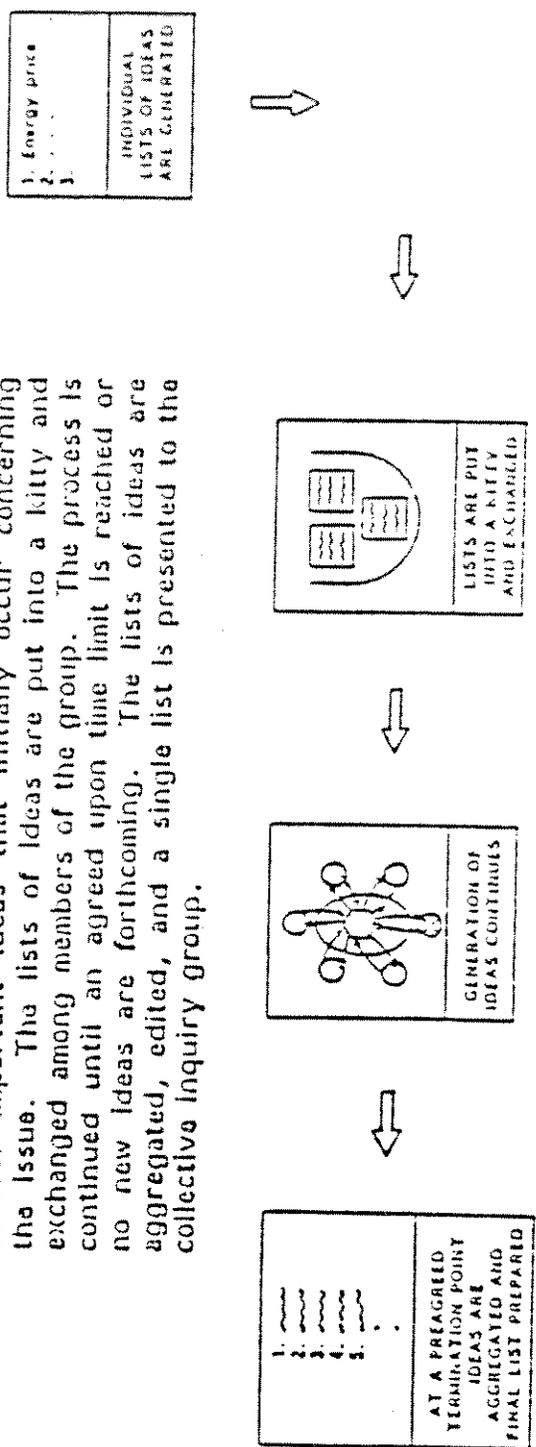
### RELATED METHODS

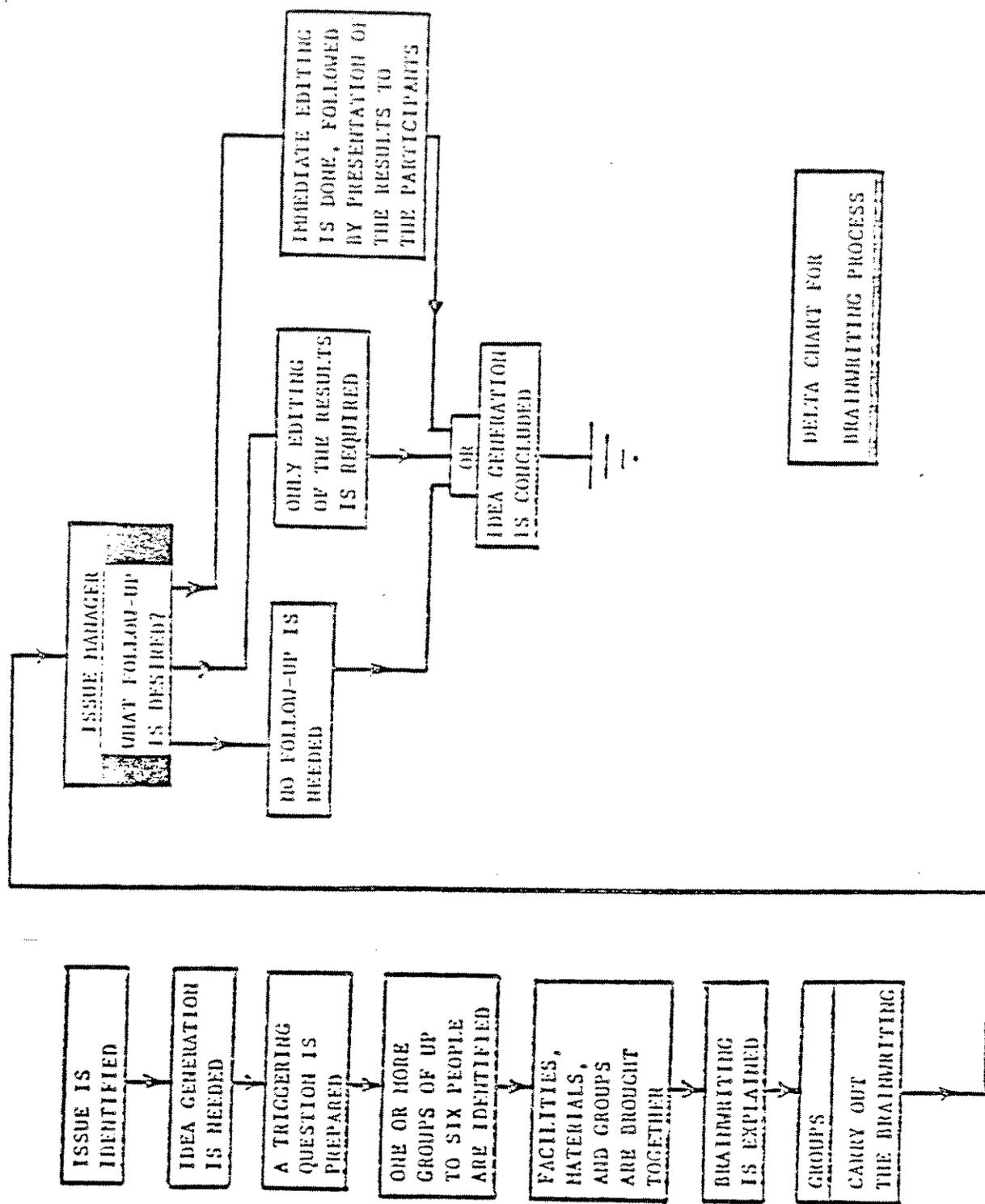
- There are no methods prerequisite to use of brainwriting.
- Alternatives are brainstorming, synectics, charrette, survey, nominal group technique and DELPHI.
- The ideas generated by brainwriting generally represent useful elements for further analysis and impact assessment.



**BRAINWRITING**

Faced with the need to generate ideas related to an issue or problem, facilities are obtained and a group familiar with the issue is chosen. A simple trigger question is carefully prepared by or explained to the group who individually write ideas generated by the question on a sheet of paper. After about 5 to 10 minutes each member of the group is able to write several important ideas that initially occur concerning the issue. The lists of ideas are put into a kitty and exchanged among members of the group. The process is continued until an agreed upon time limit is reached or no new ideas are forthcoming. The lists of ideas are aggregated, edited, and a single list is presented to the collective inquiry group.





DELTA CHART FOR BRAIDWRITING PROCESS

## 2 NOMINAL GROUP TECHNIQUE (NGT)

AN EFFICIENT METHOD FOR GENERATING IDEAS IN GROUPS,  
FOR CLARIFYING THE GENERATED IDEAS, FOR EDITING  
THE GENERATED IDEAS, AND FOR DEVELOPING A PRELIMINARY  
RANKING OF THE SET OF IDEAS.

## NOMINAL GROUP TECHNIQUE (NGT)

A method for collective inquiry. Individual ideas and judgments are generated and effectively aggregated. The technique is helpful in identifying problems, establishing priorities, and postulating and exploring policies and problem solutions.

### APPROPRIATE CONDITIONS FOR USE

- A need to collect ideas relevant to some issue.
- Controversy and uncertainty exist concerning the nature of an issue or problem and its possible resolution.
- It is important to neutralize the effect of dominant individuals in generally small group meetings.
- A first selection or prioritization of ideas or elements is desired.

### APPLICATION AREAS

- Generally appropriate where collective idea generation is of value, and therefore especially useful for issue formulation.
- Business and government planning.
- Fostering stakeholder participation in planning.

### RESULTS

- A list of 20 to 100 ideas about an issue.
- A preliminary prioritization of these ideas according to a specific relation.
- Increased understanding of generated ideas.
- Opportunity to assure that ideas of each member of the group are part of the output.

### RESOURCES REQUIRED

- A carefully prepared trigger question.
- 6 - 10 task-oriented individuals with issue-related expertise.
- A group leader who is willing to act as a process facilitator, not a substantive expert.
- Papers and pencils for each participant; flip chart and felt-tip pen for process leader.
- Brief training of group leader(s).

### RESOURCES REQUIRED (continued)

- Meeting room with adequately sized table, chairs, and surfaces on which to tape ideas.
- 60 to 120 minutes time for the process.

### HOW THE METHOD IS APPLIED

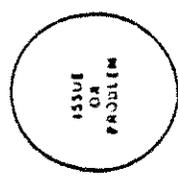
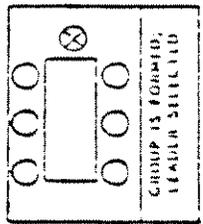
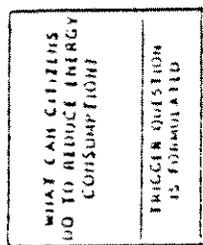
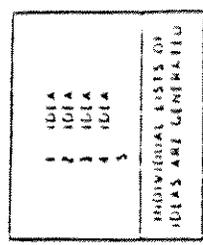
- Silent generation of ideas in writing by individuals in response to oral presentation of a carefully prepared trigger question.
- Round robin recording of ideas in which individuals present one idea at a time.
- Spontaneous hitchhiking of ideas is encouraged, but no discussion or justification of ideas.
- Serial discussion of the resulting list of ideas.
- Voting on the priority of generated ideas.

### IMPORTANT ATTRIBUTES AND FEATURES

- Potential for generation of many ideas concerning organizational, behavioral and other issues.
- Potential for encouraging contributions from those normally noted for quietness.
- Greatly enhanced stakeholder input into the process.
- Not useful for negotiation.
- Ideas and/or elements need to be thoroughly discussed and analyzed by the group before the evaluation or prioritization takes place.

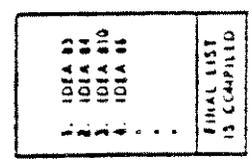
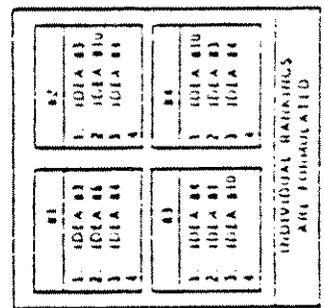
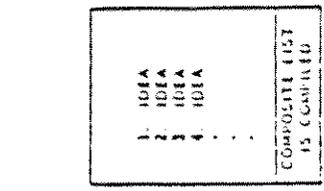
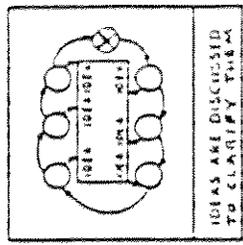
### RELATED METHODS

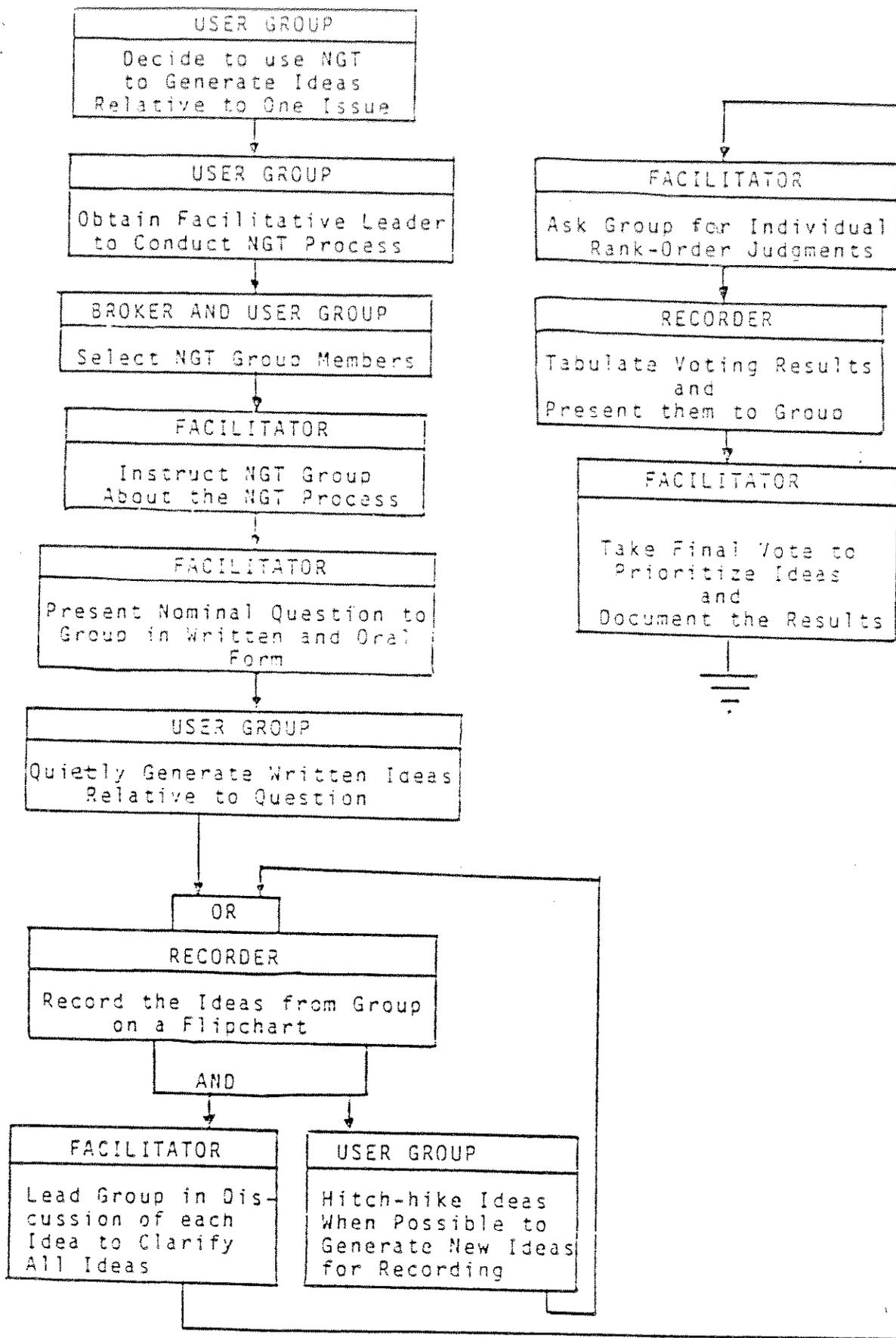
- Alternatives include brainwriting, brainstorming, synectics, surveys, charette, and DELPHI.
- Any of several voting schemes may be used in conjunction with nominal group technique.



NOMINAL GROUP TECHNIQUE

Faced with a need to generate ideas related to an issue or problem, facilitators are obtained, a group leader selected, and a group familiar with the issue chosen. A simple trigger question is carefully phrased by the group to stimulate the formation of individual lists of ideas. One by one, each individual presents an idea for discussion until all ideas are presented. Individuals rank ideas according to relevance or usefulness and these rankings are combined by a voting scheme to produce a final list of ideas ranked in order of importance.





#### 4 INTERPRETIVE STRUCTURAL MODELING (ISM)

A COMPUTER-ASSISTED LEARNING PROCESS THAT CULMINATES IN THE DEVELOPMENT OF A STRUCTURE OF AN ISSUE, PROBLEM, PLAN, OR PROJECT. THE STRUCTURE IS DEVELOPED BY A GROUP OPERATING WITH THE ASSISTANCE OF A SKILLED FACILITATOR.

## INTERPRETIVE STRUCTURAL MODELING (ISM)

A computer assisted learning process that enables an individual or a group user to develop a structure or map showing interrelations among previously determined elements according to a selected contextual relationship.

### APPROPRIATE CONDITIONS FOR USE

- A complex issue is under study, with interactions among diverse elements.
- A focused group discussion on the issue is needed.
- A multilevel relation map is wanted.

### APPLICATION AREAS

- Linking of elements associated with issue formulation such as needs, constraints, or objectives, in a variety of fields, such as education, public facility planning, and city budget cutting.

### RESULTS

- A documented model of element interrelations.
- A carefully refined language with which to describe or discuss an issue or system.
- Modification and clarification of elements and relations used in the study.
- Enhanced understanding of the issue.

### RESOURCES REQUIRED

- A set of elements relating to the issue.
- A contextual relationship, which is appropriate to interrelate the elements.
- Up to 8 willing and able participants, as well as a group leader familiar with interpretive structural modeling, and a computer operator.
- Participants should have a genuine concern for the issue and capability to contribute through participation.
- A time-shared digital computer that contains the programs for structuring. A large screen display is helpful.
- Costs include participants' time, and equipment costs which are approximately \$50 per hour.

### RESOURCES REQUIRED (continued)

- The time required for an exercise depends upon the number of elements in the model and their complexity. A ten-element exercise may take as long as one to two hours.

### HOW THE METHOD IS APPLIED

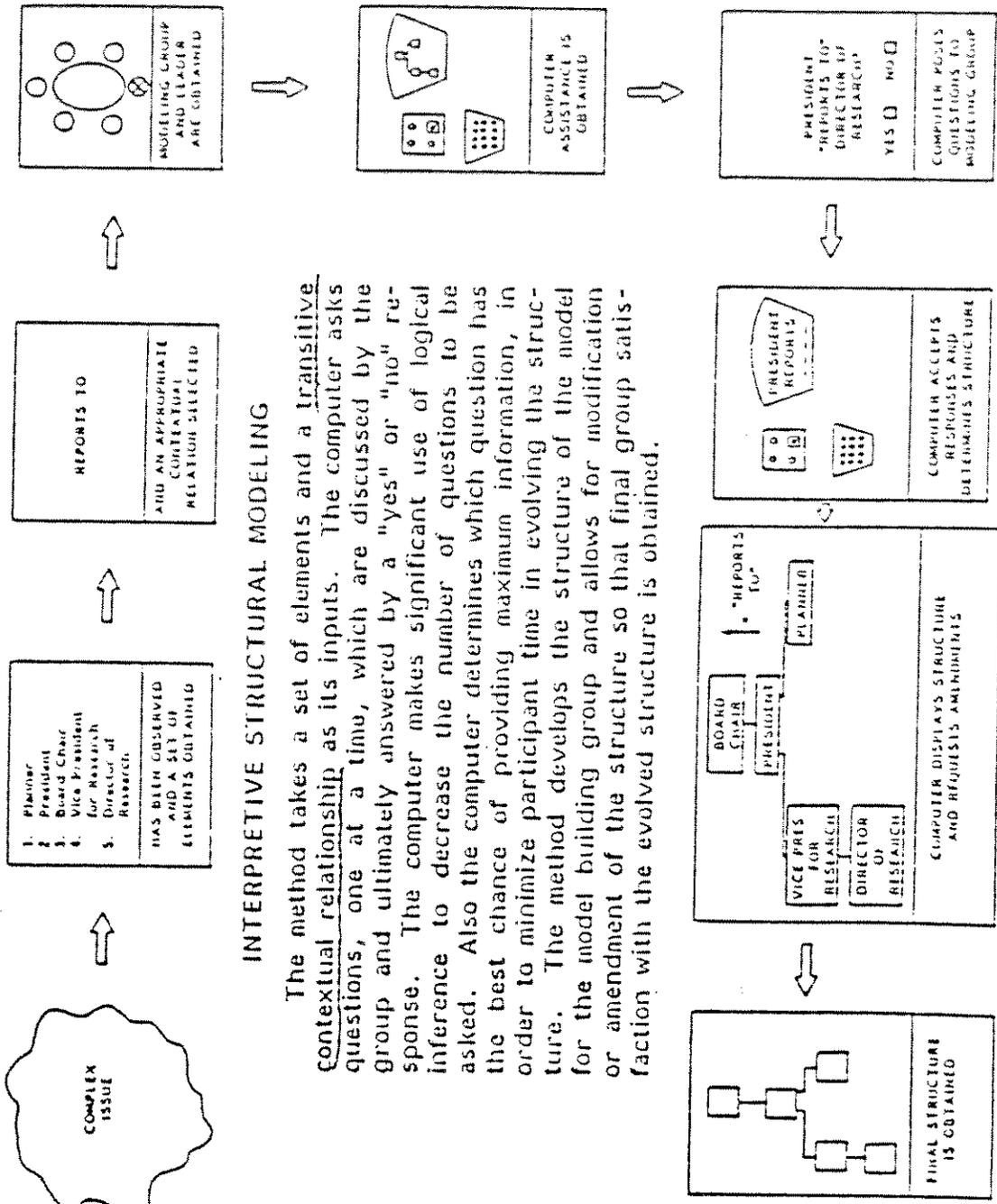
- An issue and structuring theme are identified.
- A group and a process leader are chosen.
- Elements and contextual relations are obtained.
- The group responds to computer-posed inquiries concerning element interactions.
- The computer displays the obtained map.
- The map is iterated and edited for group satisfaction with the structure.

### IMPORTANT ATTRIBUTES AND FEATURES

- Contextual relations must be transitive, and carefully chosen.
- Elements and relations are clarified by reasoning and discussion stimulated by the process.
- The quality of the results obtained is strongly dependent upon process leadership, which must be facilitative rather than issue-oriented.
- Overemphasis on the mechanistic and technical aspects of the process is undesirable.

### RELATED METHODS

- Nominal group technique, brainwriting, brainstorming, DELPHI, charrette, extensive literature search, or a combination of these may provide elements and contextual relations for the process.
- In very simple situations "rearrange and tape" and other heuristic non-computer assisted methods may be used.



**INTERPRETIVE STRUCTURAL MODELING**

The method takes a set of elements and a transitive contextual relationship as its inputs. The computer asks questions, one at a time, which are discussed by the group and ultimately answered by a "yes" or "no" response. The computer makes significant use of logical inference to decrease the number of questions to be asked. Also the computer determines maximum information, in order to minimize participant time in evolving the structure. The method develops the structure of the model for the model building group and allows for modification or amendment of the structure so that final group satisfaction with the evolved structure is obtained.

## 7 TRADEOFF ANALYSIS METHOD (TAM)

A METHOD FOR DOCUMENTING HOW ONE ALTERNATIVE DESIGN WAS SELECTED FROM AMONG A SET OF ALTERNATIVES, AND FOR PORTRAYING GRAPHICALLY THE CENTRAL IDEAS BEHIND THE SELECTION.

## TRADEOFF ANALYSIS METHOD (TAM)

A method for documenting, in great detail, how a choice was made from a set of alternatives. The method is intended to provide for the public sector of government a way of developing a choice through the use of a prescribed set of techniques that allow for broad participation, while at the same time providing a way to reveal all of the steps and procedures that led to a final choice. This same approach also allows for iterative choice-making, since all of the steps can be retraced.

### APPROPRIATE CONDITIONS FOR USE

- A complex choice is to be made from a set of alternatives. This choice will be a major one, involving a substantial and often long-term commitment. Usually it will involve the interests of many people, and many of them will desire that the basis for the choice be made clear.
- Participation in the making of the decisions is desired.
- The set of alternatives is small, usually less than ten.

### APPLICATION AREAS

- Environmental decisions, involving forestry, grasslands, land-use decisions, wildlife decisions.
- Large investment decisions, where there are competing alternatives.
- Major construction decisions.
- Prototype design of expensive systems or large equipment.

### RESULTS

- A thoroughly documented and rather easily interpreted basis for the decisions that have been made.
- Graphical portrayals of major aspects of decision-making.

### RESOURCES REQUIRED

- Knowledge of options and alternatives
- Large wall for display purposes
- Special-purpose software to facilitate the use of the method and the generation of appropriate displays
- Means for keeping records of all steps or topics being investigated, who will contribute to the dialogs and discussions
- Facilitator who is thoroughly familiar with the method.

### RELATION TO OTHER METHODS

- The Options Profile Method (OPM) can be used to generate alternatives to be explored with the TAM.
- The TAM method is the most complex and detailed of the decision-making methods used in consensus methodologies.
- The TAM method takes longer to apply than the other decision-making methods.
- The TAM method is most useful when the number of alternatives is small, while a method such as ISM can be used to prioritize a large number of alternatives. The ISM method provides less documentation than the TAM method.

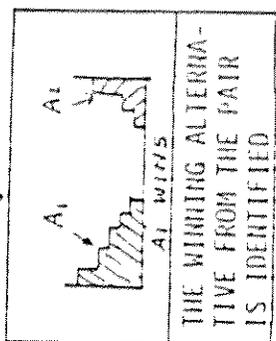
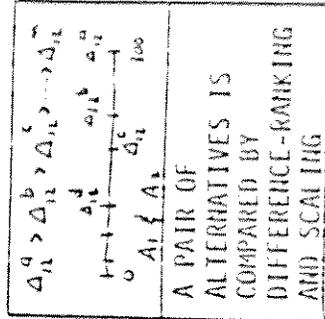
SEVERAL MULTI-DIMENSIONAL DESIGN ALTERNATIVES ARE AVAILABLE, FROM WHICH TO CHOOSE

A.	~~~~~
B.	~~~~~
C.	~~~~~
D.	~~~~~
E.	~~~~~

EVALUATION CRITERIA ARE CHOSEN

A	B	C	D	E	
ALT. 1	50	65	33	42	0-0d
ALT. 2	70	20	18	12	F-1r
- 1 DOMINANT ALTERNATIVE Z -					

A DOMINANCE TEST IS USED TO REMOVE ANY DOMINATED ALTERNATIVES FROM FURTHER CONSIDERATION



THE TRADEOFF ANALYSIS METHOD, AS APPLIED, IS DOCUMENTED IN A REPORT TO BE AVAILABLE FOR REVIEW OF THE DECISION

THE COMPARISON PROCESS, COMPARING ALTERNATIVES IN PAIRS, IS CONTINUED UNTIL A FINAL WINNER IS FOUND

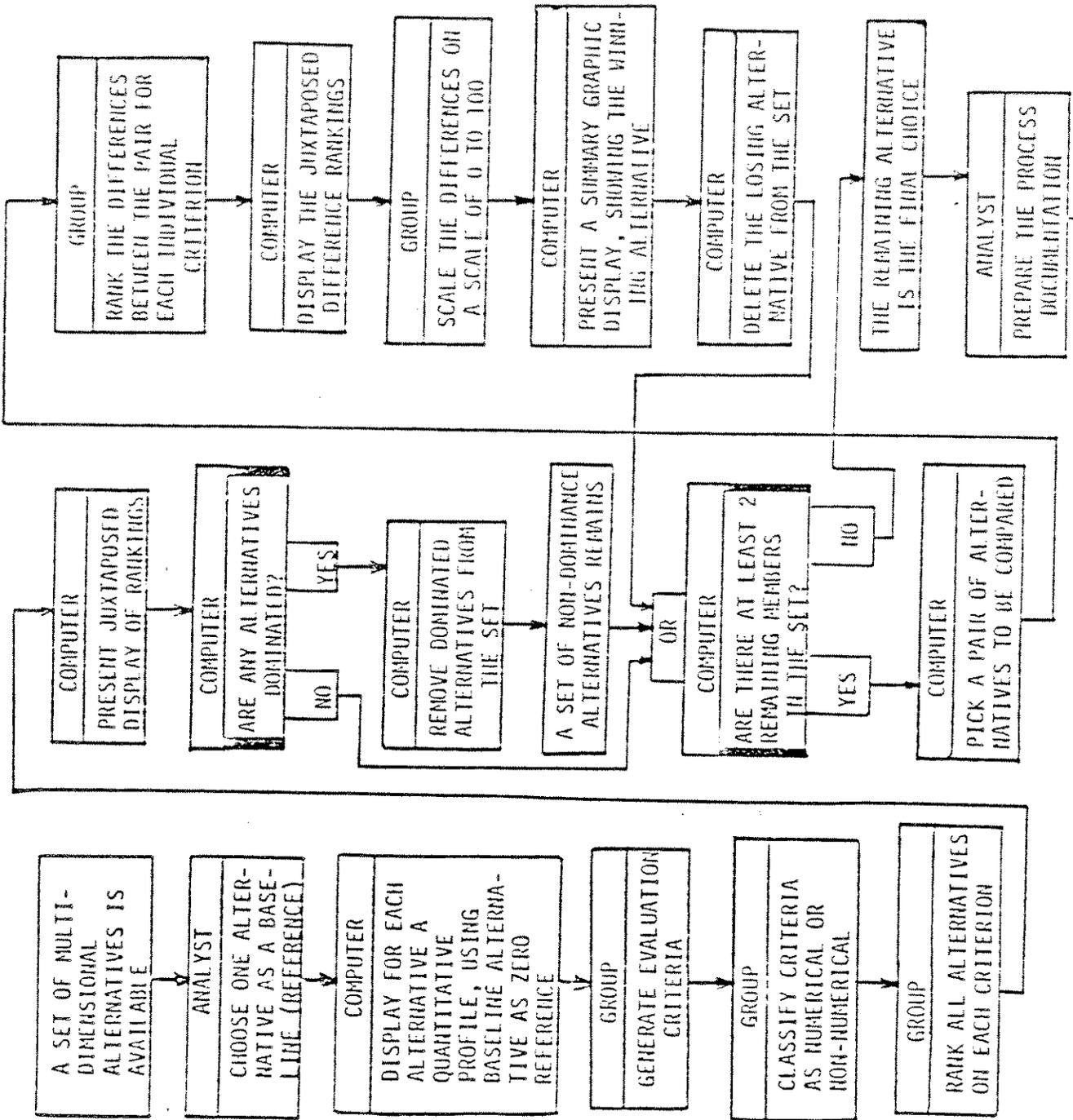
A1 & A3

THE WINNER IS COMPARED WITH ANOTHER ALTERNATIVE

TRADEOFF ANALYSIS METHOD

A small set of alternative designs or choices is available from prior effort, such as the product of an Options Profile Method. To make a choice of one of the several alternatives, evaluation criteria are chosen. Then the alternatives are ranked according to each of the evaluation criteria. If one alternative stands higher on each criterion than another one, the latter is dominated by the former, and the latter is removed from the set. The remaining alternatives are compared in pairs, where for a given pair the difference between the alternatives is inspected for each separate criterion. The differences are ranked, and then the ranked differences are scaled, with the highest rated 100 and with 0 as the lowest possible position on the scale. Summing of scores yields a winner from the pair. The loser is removed from the set. Repeated comparisons yields a final winner, with the results being documented.

DELTA Chart  
for  
Tradeoff  
Analysis  
Method  
(TAM)



June 7, 1989

TO: The Pacific Fisheries Management Council

I am the wife of a commercial salmon fisherman in the Humboldt Bay Area. I feel the increased restrictions on the local commercial salmon season over the last few years are unfair.

The increased numbers of salmon in this area has not been reflected in the commercial salmon regulations. The results have been further restrictions, to the near elimination of the local industry.

One cannot help but conclude that it is the politics in this matter that are bad, and not the actual fisheries practices.

Respectfully Submitted,  
Irene M. Holt

Irene M. Holt

1110 School Rd.

McKinleyville, CA 95521