MEMORANDUM

TO: N. Grigg, R. Longenbaugh
    W. Hall, E. Richardson
    D. Hendricks, J. Shafer
    K. Schneider

FROM: J. Labadie, Course Manager

SUBJECT: Schedule, Guidelines for Discussion Leaders and Budget for the Videotape Course and Workshop on "Water Resources Management: A Systems Approach" (July 5-14, 1978)

2 March 1978

I have attached a proposed schedule for the upcoming videotape course and workshop for this summer. This is only a suggested schedule, and I solicit any suggestions you might have. I've also included a budget breakdown. If there are any items you feel I have missed, please let me know. There are also some guidelines for the Discussion Session Leaders attached, for which I am also very much open for suggestions.

I've also included some brochures for you to distribute to people you may come in contact with who might be interested in registering for the course. We need 10 more registrants to "make it go."

vj
GUIDELINES FOR DISCUSSION LEADERS

The responsibilities of leaders of the Discussion Sessions following the tape showings are as follows:

1. Answer any questions that the participants might have concerning the tapes. Discretion must be used, however, since the length of the session will be about 1 hour. You are in complete control of the discussion. If someone is having a particularly difficult time with the material, or perhaps someone asks questions which are a significant departure from the subject of the tape, ask to meet with them later. The lunch period would be a good time for this.

2. Have some prepared questions for the group (to be answered by the participants verbally) that will ...

   (a) help review the important material of the tape (a blackboard will be available) and help you get an idea of where they are at with respect to understanding the material.

   (b) get them to think about the implications of the material and its applicability to their problems.

[Note: the cassette videotape player will more than likely be in the room and subject to your control. They are easy to operate, and would allow you to stop the machine during the showing (e.g., to hold on a particular diagram during the showing and explain it verbally) or go back to an important spot during the discussion session. We will try to have time counter values next to each paragraph in the scripts, which will allow you to use the counter on the video playback machine to find a particular visual very quickly].

3. Have some numerical examples prepared (with solutions) that will test their grasp of the material. (There are obviously some tapes that this doesn't apply to.) These can be worked on their own time, and not during the session. You probably can use homework and exam questions from some of the classes you've taught that are related to the subject of the tape.

I would appreciate it if I could receive from each Discussion Leader, by May 1, 1978, the following:

1. A set of discussion questions, with brief answers, which serve to review and summarize the most important concepts brought out in the lecture.

2. A set of numerical example problems, if applicable, that can be worked by hand or on the computer, with solutions.

Thank you very much.
VIDEOTAPE COURSE and WORKSHOP on WATER RESOURCES MANAGEMENT: A SYSTEMS APPROACH July 5-14, 1978

TENTATIVE

COURSE SCHEDULE

Wednesday, July 5

morning
• Tape #1: Introduction
  • Discussion of Tape #1
  N. Grigg
• Tape #2: The General Model of Systems Analysis (I)
  • Discussion of Tape #2
  W. Hall
"get acquainted" luncheon
  N. Grigg

afternoon
• Tape #3: The General Model of Systems Analysis (II)
  W. Hall
  [Specific illustrative examples to enhance understanding of the general model and how this understanding can help the participants; ask them to do some work on applying these concepts to their particular situation through some simple exercises]

Thursday, July 6

morning
• Tape #4: Opportunities for Application of Water Resource Systems Analysis [an introduction to the 3 case studies]
• Tape #5: Application of Systems Analysis to Water Resources Problems [directly follows Tape #4; general overview of the application of the general model of SA to the case studies]
• Discussion of Tapes #4 and #5
  N. Grigg
• Tape #6: Application of Systems Analysis: The Upper Smeto Basin System
• Discussion of Tape #6
  N. Grigg

*lunch hours will be used as a time of getting better acquainted with participants and answering their questions on a one-to-one basis.
afternoon
• Tape #7: Application of Systems Analysis: The Denver Urban Water System
• Discussion of Tape #7

• Tape #8: Application of Systems Analysis: The South Platte Stream-Aquifer System
• Discussion of Tape #8

evening [barbecue, or steak fry]

Friday, July 7

morning
• Tape #9: Tools of Systems Analysis: Simulation

• Workshop #2
[use interactive computer terminal to illustrate BUFFER and RELEASE -- Somehow try to get participants involved]

afternoon
• Tape #10: Tools of Systems Analysis: Optimization

• Workshop #3
[use interactive computer terminal to illustrate how we can apply optimization to the problems discussed in Workshop #2]

• Participants in Course A fill out a Course Evaluation Questionnaire

Monday, July 10

morning
• Tape #11: General Aspects of Modeling and Time Series Analysis [serves as introduction to Module II]

• Tape #13: Rainfall-Runoff and Sedimentation
• Discussion of Tapes #11 and #13

• Tape #21: Introduction to Techniques of Optimization
• Discussion of Tape #21

afternoon
• Tape #14: Development of Reservoir Operating Rules [I]
• Discussion of Tape #14

• Tape #25: Dynamic Programming [I]
• Discussion of Tape #25
Tuesday, July 11

morning

• Tape #16: Groundwater Modeling [I]
• Tape #17: Groundwater Modeling [II]
• Discussion of Tapes #16 and #17

afternoon

• Workshop #4
  [teach participants how to use DYNPRØ; go through example problems in resource allocation, reservoir operations, and conjunctive use; Note: the participants will be provided with clear documentation and example problems, along with a computer code, for linear programming applications. It is expected that this will be clear enough for them to read and understand on their own. They will be taught how to use interactive terminals]

R. Longenbaugh

Wednesday, July 12

morning

• Tape #19: Water Quality Simulation Modeling for Streams
• Discussion of Tape #19
• Tape #20: Urban Stormwater Management
• Discussion of Tape #20

D. Hendricks

afternoon

• Tape #27: Nonlinear Programming and Search Techniques
• Workshop #5
  [discuss blending of simulation and optimization, with examples in groundwater, water quality, and reservoir systems; applications of search techniques; DP and simulation; participants use interactive facilities]

J. Labadie

*There will also be optional evening tutorial sessions
Thursday, July 13

morning
- Tape #12: *Generation of Hydrologic Samples* J. Shafer
- Discussion of Tape #12

- Tape #15: *Development of Reservoir Operating Rules (II)* J. Labadie
- Discussion of Tape #15

afternoon
- Tape #26: *Dynamic Programming (II)* W. Hall
- Workshop #6
  [inclusion of risk and reliability in water resource systems management; example problems using FIERING model; stochastic DP]

Friday, July 14

morning
- Workshop #7 J. Labadie
  [continued use of DYNPRØ; multidimensional dynamic programming problems and how to deal with them; opportunity for participants to formulate problems from their own areas and receive help]

afternoon
- Tape #30: *Tradeoffs and Nonquantitative Techniques*
- Workshop #8 W. Hall
  [discussion of the surrogate-worth tradeoff method; some simple problems for the participants to work; also some discussion on decomposition and recomposition of systems]

* Thursday evening we will have a dinner to pass out certificates for taking the course. Ev Richardson may give a talk with slides on international water management.
The following computer codes will be made available to the participants in either card or tape form (we will probably have to charge them an additional amount for the latter). The codes should all be in ANSI standard FORTRAN IV, with sufficient COMMENT cards for debugging. Each should have its own written documentation clearly explaining input and output, as well as the theory behind the code, if this information is not readily available in another form. Each code should be ready to run with an example problem already coded. The written documentation should include an explanation of the example problem.

For the workshop sessions to proceed smoothly, it will be necessary to place the codes on interactive. The workshop leader will have a terminal available to him in the classroom, with output displayed on the video monitor. The participants will be able to use that terminal (after the leader is finished) as well as terminals down in the computer center. No doubt we will have to divide the class into shifts, if we have a large registration, so that the computer center isn't inundated. However, not all the participants will want to do computer work.

Codes to be Used

- **LINPRO** [general linear programming code]
- **DYNPRO** [general dynamic programming code]
- **POWELL** [nonlinear search algorithm--using Powell's method]
- **AQSIM** [finite-difference groundwater simulation model]
- **WAQUAL** [simple model for predicting DO and BOD in a stream]
- **RELEASE** [program for simulating a reservoir for mass curve analysis]
- **BUFFER** [program similar to HEC 3 for reservoir operations]
- **FIERING** [synthetic generation of stream flows using the Fiering model]

All of these codes need at least some additional documentation work and testing, as well as work on their transfer to an interactive mode. We will need to use a GRA (perhaps 1/4 time for 2 or 3 months) to help with this. He may also be used during the workshops to do the computer work in the classroom. J. Labadie will take responsibility for this.
BUDGET
VIDEOTAPE COURSE AND WORKSHOP
July 5-14, 1978

A. Advertising
1. Direct Cost
   - printing of approx. 65,000 brochures $ 1143
   - envelopes 312
   - ASCE mailing list 350
   - WRP mailing list 55
   - handling and mailing of brochures (incl. 10,000 foreign) 2500
2. Other Costs
   - truck rental to transport brochures 18

B. Conferences and Institutes
   - classroom - coffee [10.5 A + 28 B]

C. Local Arrangements
   - Kris Schneider (1/2 month) 600
   - J. Labadie (1/2 month) 1050
   - G. Frick (1 month) 800
   - GRA (1/4 time for 3 months to help develop interactive programs) 675

D. Lecturers
   - N. Grigg (5 Discussions and 1 luncheon talk @ $150 ea.) 900
   - W. Hall (1 Discussion @ $150 and 4 Workshops @ $250 ea.) 1150
   - J. Labadie (3 Discussions @ $150 ea. and 4 Workshops @ $250 ea.) 1450
   - R. Longenbaugh (3 Discussions @ $150 ea.) 450
   - Additional Discussion leaders (5 Discussions @ $150 ea.) 750

E. Computer
   - computer terminals in class and telephone --
   - computer time (assume $25 per student--to be paid by students) --

F. TV and Sound Equipment
   - rent videotape playback machine and 25" TV monitor [$30 first day; $20 for remaining 7 days] 170

G. Scripts and Workbooks
   - printing (assume 100 books at $7 per book) 700

$14,723
+$10.50A + $28 B
Income:
$190 \text{ A} + 475 \text{ B}

Assuming: \text{ A} = 0.25 \text{ B}

$13,073 + 10.50 (0.25 \text{ B}) + 28 \text{ B} = 190 (0.25 \text{ B}) + 475 \text{ B}

\text{ B} = 27 \quad \text{ A} = 7 \quad = 34 \text{ total}

with additional revenue from sale of 1 course:

\text{ B} = 20 \quad \text{ A} = 5 \quad = 25 \text{ total}

*This assumes $3,020 return from sale of one complete course.
TO: Participants in the Videotape Course: "Management of Water Resources: A Systems Approach"

FROM: John Labadie, Course Manager

SUBJECT: Present Status of Videotape Course and Suggested Royalty Allocations

DATE: February 28, 1978

SUMMER WORKSHOP

The attached brochure has the dual purpose of (i) advertising a summer workshop which will utilize the videotape course, and (ii) providing information on purchase of the videotape course. The primary motivation behind establishing the workshop is to encourage attendance by various individuals who in turn can use the course for training purposes in their respective agencies, firms, etc. In short, the workshop should enhance sales and distribution of the videotape course.

As of this date we have received 13 registrations for the workshop (which includes 5 individuals from developing countries who will be supported through UNESCO; we have Dr. Yevjevich to thank for this). We have also sent out 9 preview tapes (Introduction Tape #1). I have attached a response we received from Mr. Oto of HEC, Corps of Engineers, which is extremely encouraging. Those who have responded have included individuals from:

- U.S. Army Engrs.
  -- Ohio River Division
  -- Los Angeles District
  -- HEC
- U.S. Bureau of Reclamation [Arizona Project]
- U.S. Geological Survey [Denver]
- Department of Water Resources, State of California
- East Bay Municipal Utility District [Oakland, CA]
- Buchart-Horn, consulting engineers
- University of Akron

as well as from Canada:

- Saskatchewan Research Council
- Ontario Hydro
In addition, a preview tape has been requested by, and sent to, the government of the Philippines.

I have also attached a suggested royalty distribution for net sales of the videotape course. I believe this is a fair allocation according to effort contributed to this course. The Office of Educational Media received payment for only a fraction of the costs they incurred in producing the tapes. The suggested 10% return to them would not even make up for this, but it is felt that the extra effort they have put into the course (and hopefully will continue to do so in the future) is justified by the fact that these tapes have been used extensively for RI purposes. Several of the tapes have been shown in EG 510 and CE 546, as well as one of Dan Sunada's classes. There may be others that I am not aware of.

An additional 25% should be set aside in an 11 Account for marketing and improving the course. The consensus seems to be that several of the tapes eventually need to be redone. Though the course has many flaws, it is a good initial effort. A high quality course will eventually evolve over a period of years if we are willing to invest in it. In addition to potential financial benefits (as we improve the course and its reputation increases, we can increase the price), there are other benefits, such as:

- transfer of advanced technology to water-related agencies and consulting firms -- which could conceivably open the door for additional research and consulting opportunities.
- increased recognition for CSU in the area of water management and planning.
- increased recognition for the individual course lecturers.
- possible publication of the course scripts and workbook.

It is proposed that the remaining amount be distributed in a 30-70 split between management and lecturers, respectively. Neil put in a tremendous amount of his own time in the development and management of the course for over 3 years. Also, there simply would not be a course at all if it weren't for the initial efforts of Dr. Yevjevich in obtaining the contract with the University of Catania. In addition, Kris put in a lot of additional time on the course, and designed and prepared much of the visual material (perhaps the most time consuming aspect of preparing the lectures). Less is allocated to myself since I took over the management responsibilities in the Fall of '77.

It is proposed that this royalty distribution be valid through 31 December 1979, at which time we can renegotiate the distribution to include contribution to revision and updating of the course.

ROYALTY PAYMENTS

Dean Baldwin has agreed to include, without charge, the royalty payments for our videotape course in the accounting system for the videotape courses that he is currently administering. That is, on a roughly quarterly basis,
Slim Somervell, who is directing the Engineering Renewal and Growth Program for Dean Baldwin, will receive royalty funds from our account and transfer them to CSURF, who will then write and distribute the individual royalty checks. This service is available at no charge since we are doing our own advertising, marketing, and distribution. The reasoning is that our course appeals to a rather specialized audience that may not be fully included in the marketing operations being managed by Dean Baldwin. At some future date, however, we may find it advantageous to be incorporated into this marketing program.

A FINAL PROPOSAL

According to my initial calculations, we need at least 30 to 35 registrants for the summer workshop (see attached brochure) to "break even." However, if we decided to forego royalty payments from the 1st full course we sell, then we could conduct the workshop with about 20 participants. The advantage is that each of these participants would represent a potential "sale" of the videotape course. This is further justified by the fact that a major expense for the workshop is the printing and mailing of the brochures, which also serve to promote and advertise the videotape course. I would propose, then, that if total registration falls between 20 and 30, that we use royalties from the first sale to support the course.

RESPONSE TO THIS MEMO

If you have any comments, questions, or objections with respect to any aspects of this memo and the proposals herein, please contact me via written memo by April 15, 1978. If I don't hear from you by that time, I will assume that you are in accordance with these proposals and this memo will stand as a formal agreement. Otherwise, we will need to meet and negotiate any changes.

Thank you for your forebearance in reading through this rather lengthy memo.
Dear Sirs:

Ten people from our staff viewed your tape and found it to be of excellent quality and the subject matter very informative. We are very sorry for the delay in returning the tape. Mr. Bonner of our staff will be attending one of your courses in July and is looking forward to it with much enthusiasm.

Sincerely yours,

ALLAN K. OTO
Training & Methods Branch
HEC

Compliments of

THE HYDROLOGIC ENGINEERING CENTER
U.S. Army, Corps of Engineers
609 Second Street
Davis, California 95616
ROYALTY ALLOCATIONS FROM
SALE OF VIDEOTAPE COURSE
(VALID THROUGH 31 DEC 1979)

Direct Costs
(reproducing,
packaging, and
shipping tapes)

Office of
Educational
Media 0.10N

Net Return
(N)

Gross
Sales

0.25N
(Course Promotion,
Marketing, Improvement
and Updating)

0.65N
Lectures &
Management

0.30 (0.65N)
Management

Neil Grigg .30
V. Yevjevich .30
Kris Schneider .30
John Labadie .10

0.70 (0.65N)
Lecturers

Grigg .2111
Hall .0667
Hendricks .0333
Labadie .2444
Longenbaugh .1444
Morel-Seytoux .1000
Richardson .0333
Rossi .0333
Smith .0667
Sunada .0333
Yevjevich .0333

1.0000

These fractions are based on no. of lectures prepared.
VIDEOTAPE COURSE
and WORKSHOP on
WATER RESOURCES MANAGEMENT:
A SYSTEMS APPROACH

MOTIVATION
The increasing complexity of modern water management is staggering. Water managers need to avail themselves of the powerful tools of systems analysis for attacking the difficult management problems they face.

PURPOSE
To equip higher level water managers, both in the public and private sectors, with a basic understanding of what systems analysis is and how it can help them. In addition, to provide engineers that have more technical responsibilities in water management with a basic understanding of the tools of systems analysis and how to apply them.

For organizations interested in purchasing the videotape course an additional goal is to train individuals who would then be equipped to use the course for training personnel in their respective organizations.

VIDEOTAPE COURSE
A videotape course on the systems approach to water management has been developed through a cooperative effort between Colorado State University and the University of Catania, Italy. This comprehensive course is divided into 3 Modules of 10 lectures each, with each lecture approximately 30 minutes in length.


Module II: Time Series Analysis and Generation of Synthetic Data, Reservoir Management, Groundwater and Conjunctive Use, Pollution Control, and Urban Stormwater Management.

Module III: Theory and Applications (to the Case Studies described in Modules I and II) of Linear, Nonlinear and Dynamic Programming; Optimization Under Uncertainty and Trade-Off Analysis.

The course is in full color and comprised totally of visual aids; the lecturer is not seen. The visual aids are designed to present the course material in an interesting and often humorous way that enhances learning.
WORKSHOP

The Workshop will revolve around the Videotape Course, with two offerings:

Course A: (July 5-7, 1978): oriented to water managers interested in some of the broader aspects of systems analysis as applied to water management. [Videotape Module I]

Course B: (July 5-14, 1978): includes the material in Course A, but delves more deeply into the technical aspects of applying systems analysis to water management. [Videotape Modules I, II, and III]

FORMAT (Week Days)

Morning Videotape showings and discussion sessions

Afternoon Videotape showing and practical workshop sessions using computer programs and numerical examples

Evening Optional, informal tutorial sessions

Participants are not required to have any background in computer programming; however, it is beneficial that participants in Course B have at least some understanding of the use of the computer.

Participants are also encouraged to bring data and information on management problems they are concerned with.

WORKSHOP MATERIALS

Complete scripts for all videotape lectures are included with the registration fee.

Complete computer codes used in the course (written in ANSI Standard FORTRAN IV) will also be included, along with documentation.

COURSE MANAGEMENT

J. W. Labadie, Associate Professor of Civil Engineering
Kristine L. Schneider, Research Associate, Civil Engineering

Address all correspondence to:
Kristine L. Schneider
Colorado State University
Engineering Research Center
Fort Collins, CO 80523

DISCUSSION AND WORKSHOP LEADERS

Neil S. Grigg, North Carolina State University Director, Water Resources Research Institute
Colorado State University Faculty
Warren A. Hall, Elwood Mead Professor of Civil Engineering
John W. Labadie, Associate Professor of Civil Engineering
Robert A. Longenbaugh, Associate Professor of Civil Engineering
George L. Smith, Associate Professor of Civil Engineering

SETTING

Fort Collins, the home of Colorado State University, is located in the shadow of the spectacular front range of the Rocky Mountains. A progressive community of more than 65,000 inhabitants, the city is located on Interstate 25, about 65 miles north of Denver, at an elevation of 5,000 feet above sea level. Fort Collins enjoys a clear, dry atmosphere. From the CSU campus, it is only a ten minute drive to Horsetooth Reservoir, a man-made mountain lake and water recreational area. Thirty minutes from campus is the canyon of the Cache la Poudre River, famous as a trout fishing and mountain recreational area. An hour's drive up the Big Thompson Canyon takes one to Estes Park, the gateway to Rocky Mountain National Park.

ACCOMMODATIONS

Campus accommodations are available for participants and their families. You will find the residence halls more comparable to motel accommodations than those normally attributed to campus dorms. Adjoining twin bedrooms with shared bathroom between feature a private vanity and daily maid service. Family rates will be provided on request, with children's rates depending on age and sleeping accommodations requested. It is permissible for one child nine years or under to share occupancy of a room with his parents. Cot, sleeping bag, or crib may be used with no room charge assessed for that child.

REGISTRATION FORM

- Reservations may be made by individuals that require additional time for authorization from their organizations
- Organizations may reserve a number of spaces and supply names later
- Space is limited so please register early

Course A: $190.00
Course B: $475.00 + optional computer usage fee of $25.00

Checks or money orders should be made payable to CSU Water Management Course.

NAME ____________________________
AFFILIATION _______________________
ADDRESS __________________________
CITY ______ STATE ______ ZIP ______

Water management problems of particular interest to me include:

Information on purchase of the Videotape course:
Module I - $1800
Module I, II - $3200
Module I, II, III - $4200

• An instructor's manual for teaching purposes is included in the purchase price, and scripts for the lectures can be purchased in any quantity.

Tape #1, an Introduction, is available for preview at a rental cost of $25.00.

I would like to receive more information about the course and a copy of the preview rental tape.

Colorado State University is an equal opportunity employer and complies with Title IX requirements. Complaints should be filed with the Office of Equal Opportunity, Student Services Building.
Collection title: Papers of Everett V. Richardson

Collection code: WEVR

Description of item(s) separated:
47 - 35mm slides for presentation "Management of water resources"

Old location: Series 3: CSU administration + teaching materials,
Subseries 3.2: teaching materials, "Course - water resource management, July 5-14"

New location: Series 5: Visual materials, Subseries 5.3: Slides,
"Course - water resource management, July 5-14"

Name of processor: Clarissa J. Trapp

Date: 03/14/2012