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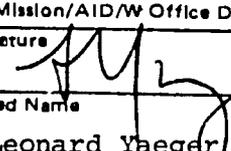
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CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE FRESH WATER FISHERIES DEVELOPMENT			2. PROJECT NUMBER 527-0144	3. MISSION/AID/W OFFICE USAID/Peru
5. KEY PROJECT IMPLEMENTATION DATES			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)	
A. First PRO-AG or Equivalent FY <u>78</u>	B. Final Obligation Expected FY <u>78</u>	C. Final Input Delivery FY _____	<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION 7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>12/78</u> To (month/yr.) <u>6/80</u> Date of Evaluation Review <u>6/80</u>	
6. ESTIMATED PROJECT FUNDING			8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR	
A. Total \$ <u>864,000</u>				
B. U.S. \$ <u>465,000</u>				

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
See item 23, Recommendations		

8. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input checked="" type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	A. <input type="checkbox"/> Continue Project Without Change	
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify) _____	B. <input type="checkbox"/> Change Project Design and/or	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C		<input checked="" type="checkbox"/> Change Implementation Plan (See No. 23-G)	
<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project	
11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Name and Title)			12. Mission/AID/W Office Director Approval	
Douglas Chiriboga, Project Manager			Signature 	
César Zavaleta, Representative of ORDENOR-CENTRO			Typed Name <u>Leonard Yaeger</u>	
Arturo Balcazar, Representative of INP			Date <u>January 2, 1981</u>	
Enrique Schroth, USAID/Peru				

PROJECT EVALUATION SUMMARY

Fresh Water Fisheries Developmen Project No. 527-0144

13. Summary

Having completed the infrastructure construction stage, equipment procurement and installation, fish farmer training with the cooperation of the communities, in-country training of technicians and initial stocking of the two fishfarms and the two lakes, all sub-projects were analyzed. Currently, the project is in the trout production stage, raising and selecting the new genetic stock imported from the U.S., evaluation of each sub-project in order to determine the economic viability of the enterprises, and preliminary nutritional impact. Subsequently, the potential replication of the activities shall be studied.

Specific Activities

Huashao and Acopalca fishfarms are stocked with 200,000 and 227,000 fingerlings respectively, from the Huaraz Hatchery, and are operating as expected. Harvesting activities are carried out in Huashao as well as marketing through the GOP Agency EPSEP. About 2 tons have been sold. The great distance from the Acopalca Fishfarm to major consumption centers able to pay competitive prices, currently renders this enterprise as financially unfeasible in the short term. Direct marketing of the product will eliminate financial losses and add a small profit.

The pellet plant is processing ingredients procured mainly in Chimbote and Arequipa (where fishmeal plants are located). The balanced feed produced at the plant is providing the average of food/meat ratio anticipated by the CSU experts. Production volume of the plant is 1/15 of the installed capacity. Promotion of processed product (pellets) and greater utilization of plant capacity as well as the seasonal variations in the supply of ingredients, are problems affecting this sub-project. The pellet plant is operating with counterpart funds according to the Project Agreement.

The CSU experts have determined that the small lake (Yanacocha, which has been stocked with 24,000 fingerlings) has a substantial production capacity (on a small scale) resulting from its favorable ichthyologic conditions. A small dam and/or a simple structure to reduce the number of fish leaving the lake are contemplated in order to increase the production volume of the lake. Lake Purhuay, the larger of the two lakes, has become over populated through natural reproduction; this situation is currently being evaluated in order to establish the most efficient mode of operation. It has already been established that this lake's ichthyologic value is low.

The Fish Hatchery was improved with project funds and at present has 168,000 improved ovas from which a stock of 25,000 fish will be kept for reproduction purposes and the remainder will serve to stock the fishfarms.

Under the training activities, about 60 community members from the sub-projects have been trained in management and operation. Plans for short term (1 1/2 month) training in the U.S. in specialties to be determined by the T.A. team are contemplated for professionals working at the Fish Hatchery. Promotion and education campaigns for consumers have also been carried out in surrounding project areas. Initial data are being gathered to determine the nutritional impact of introducing trout into the food diets of the communities' residents.

14. Evaluation Methodology

The purpose of this evaluation is to review the program conducted by ORDENORCENTRO (O-C), and also to appraise the fish farms and lakes on-going activities as they are carried out by the project beneficiaries, in order to formulate recommendations for the remainder of the project's life, as well as to request appropriate technical support from the T.A. team experts.

In addition to AID staff members, Mr. Douglas Chiriboga and Mr. Enrique Schroth, the evaluation committee was composed of two O-C representatives Mr. César Zavaleta and Mr. Manuel Ames and a representative from the National Planning Institute, Mr. Arturo Balcazar.

The visits to the sub-project sites were planned ahead of time in order to prepare the basic information on progress made. All sub-projects were visited and meetings and discussions were held to carefully examine every matter of concern.

Information has been obtained from the 1979 Annual Bulletin of O-C's Regional Sub-Directorate and from project reports for March 1980 as well as trip reports of CSU technicians.

15. External Factors

The most significant external factor affecting the project is the lack of regular supply of the necessary ingredients for the preparation of the balanced feed. This problem has created difficulties in obtaining accurate feed to meat conversion ratio estimates, has delayed project progress due to difficulties in preparing new diets and also has generated confusion among the technicians in charge of feed preparation. Though the problem is due to external factors, the Colorado Technical Assistance group has not given timely assistance with regard to substitute ingredients and reformulation of the balanced feed.

16. Inputs

Of the total project funds US\$465,000, US\$294,272 are direct expenditures and US\$403,840 are committed and expended.

Thirty-three weeks (US\$83,000) of in-country technical assistance on specialties such as fish pellet feed production, Hatchery, fish-farms, lakes operation and administration and laboratory species analysis was given to hatchery technicians under the contract with CSU experts group. Of the total 68% (US\$56,440) of visit to sub-project site has been accomplished.

Inconsistent technical assistance from the CSU technicians due to sporadic visits and poor planning has resulted in a poor performance in some areas, particularly in marketing, economic and financial analysis of sub-projects, processing techniques of fish and preparation of balanced feed. (See letter to Dr. Hagen, Attachment #1).

The original programmed training for 2 technicians with MS degrees has been modified since no candidate with language requirements was found. On schedule for next September-October is on the job training in the U.S. for the hatchery technicians. The training will consist of a short term course at CSU and off-campus travel directed visits to a laboratory, Hatchery lakes and Pellet Plant.

Project investment support has been provided in an amount of US\$235,435 of the US\$240,500 considered originally and by now modified to \$317,866.

In-country Ministry of Fisheries technical assistance on fish farm operating, accounting, administration and nets maintenance has been conducted in which 55 community members participated, Also, 35 participants attended a seminar conducted by CSU experts at Huaraz on latest May.

Originally, US\$71,950 was planned for local training, research equipment and trout consumption promotion, a project implementation reprogramming on January 80 assigned and updated estimated amount of US\$41,134.

17. Outputs

Due to GOP institutional problems, project activities have been delayed approximately one year. This negative impact has affected activities related to sub-projects operation, economical feasibility and nutritional impact demonstration. A summary of accomplished project outputs is presented below:

- The Feed Pelleting Plant has been established. Production of 360 MT/Yr was originally planned for the second year. The new estimates indicate, however, that 300 MT/Yr would be achieved only by the third year of project (December 81). Since the plant began operating in October 79, 42 tons of feed pellets have been prepared.
- The Huaraz Hatchery has been improved and produced 1,200,000 fingerlings in 1979. Procurement of additional incubators is underway which will give the Hatchery a capacity of 2,000,000 fingerlings. With the arrival of 168,000 ovas from Colorado in January of 1980, genetically improved trout species have been recently introduced to the project.
- For the community fishfarm established at Huashao, outputs projections have been modified from 36 MT/yr to 20 MT/yr of trout produced and marketed due to an incorrect estimate of raceways capacity. Full capacity is expected by June 1981.
- The community fish farm in Acopalca will reach the expected program of 36 MT/yr of trout produced and marketed by July 81 (a delay of one year).
- Lake Yanacocha has the capacity to produce approximately 2.5 MT/yr of trout; most of it consumed by community members. By June 30, 1980, the community had marketed 0.6 MT of which 0.1 MT has been consumed by farmers. (See attachment #2)
- Lake Purhuay has not been stocked since it has its own natural existing trout. Original programmed output of 10.8 MT/year is now considered too high since an explorative harvest determined an estimated production capacity of 0.9 MT/yr.
- On December 79 the Ministry of Fishery conducted a trout consumer campaign in the communities of Acopalca, Huashao and Villanueva (Lake Yanacocha). The campaign was directed to 860 community members. They had worked with the women community group cooking indigenous rural food and in the school with children.

18. Purpose

The pilot project aims to increase the incomes of the inhabitants as well as to contribute to nutritional improvement of the sierra small farmers through the introduction, expansion and improvement of a viable model for the production of trout. Since June 1980, fish farms operator activities (intensive production) initiated a change in the farmers incomes. It is estimated that the sale of the trout will generate enough income to keep in operation the enterprises created with grant funds. This will mean a real impact for the rural poor who will complement their income from agricultural activities with the income generated from fishfarm and lake activities. In addition, nutritional status of participants will improve.

It is expected that AID direct participation will terminate by the end of 1981. Therefore, all ongoing activities shall follow the project plan until such date.

An economic/financial analysis will demonstrate the real budget conditions of these enterprises.

19. Goal/Sub-Goal

This is a pilot project whose significance and feasibility may permit replication and extension at national level. The project has surpassed equipment and infrastructure goals. At present, activities to meet production goals are being developed. The corresponding economic evaluation is underway. (See attachment #2).

20. Beneficiaries

The families directly benefited are the following:

<u>Sub-Project</u>	<u>Families</u>	<u>Total Beneficiaries</u>
Huashao Fishfarm	39	234
Lake Purhuay and Acopalca Fishfarm	100	600
Lake Yanacocha	<u>38</u>	<u>228</u>
	177	1,062

Education campaigns for consumers focussed on a rural population of 860 people ranging from students to women from the communities.

21. Unplanned Effects

The Government decentralization policy created a significant delay due to changes in project management from the Ministry of Fisheries to the (O-C) organism. At the same time, significant changes of technical personnel occurred.

During project execution, the following changes in project design are being carried out:

- Direct marketing of product rather than through EPSEP, to obtain better prices for the Communities. This modification could be made by selling the promotion truck which is not very important for the project and in turn purchasing with same funds a refrigerated truck.

- Seasonal condition and poor quality of inputs utilized in feed preparation, caused significant mortality and irregular supply. In order to resolve this problem, it is proposed to request from both the Ministry of Fisheries and the Ministry of Agriculture assurance of regular good quality supply of inputs, and sound analysis of same prior to acquisition.

- It was planned that the fishfarms would produce genetically improved ovas. This will not be possible until 1981.

- Participation of the technical assistance group is irregular.

22. Lessons Learned (General Recommendations)

Full time foreign technical assistance unrelated to university schedule is needed to fulfill project requirements.

It is desirable that counterpart participant professionals should have a working knowledge of English since components, manuals, literature, U.S. training etc. require it.

Among counterpart personnel, an economist should be assigned to carry out economic evaluations.

23. Recommendations

a. The sale of the promotional truck and the procurement of a refrigerated vehicle is recommended since direct sale and marketing of the product will increase the enterprise's profits.

b. The technical assistance group from Colorado State University, should indicate, as soon as possible, dates and costs of the training course for the Fish Hatchery technicians.

c. The Evaluation Team recommended to the Executive Director of ORDENOR-CENTRO to develop future plans to further promote Fresh Water Fisheries Development in Ancash.

d. The Fish Hatchery at Ancash should study the seasonality of inputs required for balanced feed preparation and develop appropriate plans for the timely acquisition of ingredient stocks.

e. CSU experts will provide plans for the use of the remaining contract funds and will assign an economist to carry out the project economic evaluation in conjunction with ORDENOR-CENTRO.

f. CSU should propose practical solutions for fish processing.

g. The PACD and the CSU contract should be extended one year.

h. The pellet plant balanced feed technician and the Colorado Technical Assistance should consider project risk due to the good possibility of anchovy extension.

i. Among counterpart personnel, an economist should be assigned to carry out economic evaluations.

The USAID project manager will oversee the implementation of these recommendations.

BEST AVAILABLE DOCUMENT

J
ENR 1412

March 31, 1980

Dr. Harold K. Hagan
Professor of Fishery Science
Dept. of Fishery & Wildlife Mgmt
Colorado State University
Fort Collins, Colorado 80523

Dear Dr. Hagan:

Concerning your letter dated March 13, 1980 I have the following comments.

Manuel Ames has been notified that the course will be held in Duraz the week of May 19th. We have not discarded the program plan you sent last summer and we will plan the events according to that program unless you have changes which you should forward ASAP, as well as all other details requested previously.

As far as the technical assistance we expected from CSU and the skimp budget, as you put it, I need not remind you that CSU freely entered into a contractual agreement with AID. It is my job to see that this work, according to the contract, gets done.

The negative attitude and desire to see the project fail which you attribute to me and others in Duraz/Duraz is a fabrication which we were shocked to read; the motives for which we can only speculate about. The project was approved in order to develop a technically and economically viable project in Duraz and to determine its replication possibilities in other areas in Peru. It was not approved in order to make it fail. We never have nor are we now placing all blame on CSU. We do however recognize and demand the fulfillment of obligations contractually agreed on, as is reasonable to expect of any person or institution.

Now, some comments on the evaluation attached to your letter:

Mr. Paragon's Evaluation: I am glad to learn of your contact with EPSEP a few years back. Since I could not find Paragon's name to this in the trip reports, I would appreciate a copy of this information. Also, I would be interested to know if Mr. Paragon

re-established contact with EPSEP on marketing trout from each sub-project, agreements reached, plans, etc., since the first batch of trout from Huashao is about to be marketed and there was no information on marketing coordination in Mr. Paragon's report. Since you have been "way ahead" on this, we would appreciate this information ASAP.

Dr. Post's Evaluation and Notes: Concerning Dr. Post's comment that there is nothing in the contract which says he is to teach disease diagnosis to the people in Huaraz, see Annex A of Contract AID-527-341/1 with CSU "We will, of course, present a short course training program for GOP technicians to enable them to detect early syndromes for any disease problem".

I have already explained why training the lab technician had not begun sooner, in my past communication.

I recognize that Dr. Post has suggested we send someone to CSU to be trained in formulating balanced feed diets. In my past communications I have asked you for information on when, where, for what period at each location, costs, etc. for U.S. training of four Peruvian technicians. Once again, I am soliciting precise information so we can prepare the necessary paperwork. We are currently budgeting \$23,000 for this purpose.

I recognize the problem of ingredient supply consistency. This problem was surely anticipated during project design and must clearly be the reason why under Description of Services, Fish Nutrition and Disease page 2 of the contract it states that "These formulas shall be adapted to local availability of low cost feed ingredients in coastal and highland regions ..." (my emphasis). During Dr. Post's trips to Peru some additional time could have been dedicated to visiting the Ministry of Agriculture, etc., to find out about ingredient supply consistency and related matters, so he can prepare formulas adapted to local availability, as called for in the contract.

Manuel Ames is looking into the use of feathers and their availability but informs us that they need to know the details on hydrolyzing feathers for use as an ingredient.

I agree entirely with Dr. Post that the five problems he identified are serious, however, what we need is more than a mere identification, we need precise plans, instructions, and CSU input in solving these problems.

Dr. Maga's Evaluation: The reason I stated in my 2/29/80 letter that recommendations on fish preservation techniques should have been made long ago is because Dr. Maga stated (you may refer to his trip report dated March 24, 1978) he would look into the use of corn cobs as fuel for smoking fish and that he would bring small portable solar collectors for drying fish in order to explore the concept. In point 8 of his last report (almost 2 years later) he is still offering to look into the first venture, while the second never materialized. According to M. Ames, Dr. Maga never made recommendations on salting, smoking, drying, etc. to members (past or present) of the fisheries station at Ancash.

As far as recommending drying racks or salting baths, surely other CSU T.A. team members can give him some idea of intended use and volume approximation.

We are happy to learn that Dr. Maga is trying for a grant to investigate technologies for handling and marketing trout; we eagerly await results.

T. Hardin's Evaluation: T. Hardin did not mention that the marginal product of labor at the communities was zero, as you note. I stated this (as it is a condition for assigning a zero shadow wage rate) in order to stimulate deeper thought to the assignment of zero harvesting costs and present a more substantive justification than as you put it "... economists here say that under certain conditions he could be correct...". If, for instance, trout harvesting occurs during agricultural peak labor demand seasons, then the opportunity cost of labor may not be zero. There are many other technical considerations which must be satisfied for the assumption to be realistic.

Dr. Madsen's Evaluation and Notes: I agree that since 1979 was an experimental year, feed production costs were high, and that these high initial feed costs would not be used for future years in an economic evaluation.

There are two issues here. First, since the 1930's economists have had a methodology by which to appraise the economic rationality of investment projects. This technique, the theoretical framework for which is based on a branch of economics called welfare economics, is commonly referred to as cost-benefit analysis. Since the 1930's, when one asks for an economic analysis of a project, economists understand that what is asked for is cost-benefit analysis, calculation of the internal rate of return, etc. Typically, fixed investment is attributed to an initial point in time, actual costs and returns for the first year (if available) are attributed to the first time period, subsequent costs and returns are estimated making explicit assumptions (e.g. in the second year feed production will be five times larger and cost will

be 100 rather than 239 because CSU has estimated that two new fish farms will start operation and because Huashao and Huarì will use X more feed, additional fixed costs of Y will be incurred in the second year because the plant will require drying racks and an electric fan; in the third year due to expected increase in demand for feed, - mixing machine capacity will be a limiting factor requiring a new investment - feed costs will decrease to Z, etc.; depreciation is attributed each year, salvage value to the last, explicit assumptions are made concerning both price and cost, inflation, costs and returns are discounted to their net present values, etc., etc.). Project economic analysis requires estimates of future events, some of which must necessarily be subjective. One of the purposes of working through a project economic evaluation is precisely to make explicit the various assumptions about present and future parameters. In a nutshell (though I do not presume to be an economist with a world-wide reputation, I have been trained in economics and do recognize an economic analysis of a project when I see one) the economic analysis of sub-projects which we requested was not delivered.

Second, we requested a financial analysis of fish farms and lakes in order to find out if these production centers would be able to generate enough revenue in 1981 to cover operating costs, since they would no longer be subsidized by the grant after December 1980. The 100 versus 239 feed cost issue entered here.

The tables presented by Dr. Madsen contain useful information which we expected he would supplement with the additional information the other CSU T.A. team members would supply him with, in order to make reasonable assumptions and thus develop what is commonly referred to as an economic analysis. The integration of his numbers and supplemental information would have made the evaluation an "Integrated Project Analysis", not, as you have done, i.e. summarizing the individual reports and presenting the work under that label.

On another point, given that no estimates or assumptions as to the probable range of own demand elasticities or cross-price elasticities with corvina, lenguado or other fish were presented, on what scientific basis can it be stated that prices may be raised 50-60% with no likely sales restriction? Arguments based on deference to a person's world wide reputation do not substitute for logical or statistical inference.

The market analysis does not even give us an idea of the quantity of trout produced in Peru, nor identification of market channels (intraregional, interregional, export), an idea of costs and returns in other regions, etc., as called for in the contract, in

order to provide sufficient justification for expanded replication of the project in other highland areas in Peru, as called for in the contract. Instead what is concluded is (See Appendix A of the Evaluation) "... to truly identify the market potential for trout will require an in depth market survey which could be conducted by the Ministry of Fisheries." Since we consider that the information noted in this paragraph is necessary for determining the feasibility of an expansion of a fresh water fisheries program in Peru, we will attempt to contract a study with the Ministry of Fisheries for an in depth market survey.

Had an economist been incorporated early during project implementation, as was planned, he could have provided guidance and a scope of work for such a market study, to complement the information being generated by the pilot project and thereby determine replication feasibility. Please make arrangements so we can do this as soon as possible.

We are anxious for results of the fish and feed analysis since, as I explained in our last phone conversation, the mortality has reached disastrous proportions. As I notified Dr. Post in my cable, the affected fingerlings are back on the old diet. Therefore in order to prevent the entire project from regressing back to the 4 to 1 conversion ratio, ingredient supply availability, balanced feed formulation, and whatever else is contributing to the problem require further attention.

From what we consider a less than adequate economic analysis of the project and components we understand CSU considers Huashao fish farm and lake Yanacocha as viable enterprises and are waiting for more data on the Acopalca fish farm and lake Purhuay.

As for the replication of the project in other areas we consider that the information contained in the analysis is insufficient, at present, to recommend a more extensive program in Peru.

To conclude, we, like yourself, have a strong interest in making the experiment work. I am here to help you in any way I can to see that the project is standing on its own feet by the end of

the year, so let's make the most of the time that is left in the contract.

Sincerely,

Douglas A. Chiriboga, Ph.D.
Project Manager 527-0144

Clearance:
OARD: JBO'Donnell
bcc: ENGRI ✓
 EXO
 CONT
 AID/W Contracting Officer
 Auditors

AGR:DACHiriboga:mlv

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ATTACHMENT #2

<u>SUB-PROJECT</u>	<u>PROGRAMMED OUTPUT</u>	<u>MODIFIED OUTPUT</u>	<u>ESTIMATED DATE TO BE REACHED</u>	<u>PROGRESS OBTAINED</u>	
				<u>Year 1979</u>	<u>Year 1980</u>
Pellet Plant	360 MT/yr of balanced feed	300 MT/yr of balanced feed	Dec. 81	22 MT/yr of balanced feed	6/80 20 MT/yr of balanced feed
Huaraz Hatchery	2 million fingerlings per year	2 million fingerlings per year (with additional incubators under procurement)	Dec. 80	1.2 million of fingerlings	
Huashao Fish Farm	36 MT/yr of trout produced and marketed	20 MT/yr of trout produced and marketed	Dec. 80	-	2 MT of trout produced and marketed
Acopalca Fish Farm	36 MT/yr of trout produced and marketed	36 MT/yr of trout produced and marketed	Dec. 81	-	-
Purhuay Lake	10.8 MT/yr of trout produced and most of it consumed by community members	4 MT/yr of trout	Dec. 81	-	-
Yanacocha Lake	1.6 MT/yr of trout produced and most of it consumed by community members	2.5 MT/yr of trout	June 81	0.3 MT/yr trout	0.6 MT/yr of trout

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