

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE Auburn University Technology Development Grant and University Services Contract			2. PROJECT NUMBER <u>931-1314</u> AID/DSAN-C-0053 AID/DSAN-C-0053	3. MISSION/AID/W OFFICE DS/AGR
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) <u>80-36</u> <u>3/19/80</u> <input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION				
5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY <u>78</u> B. Final Obligation Expected FY <u>81</u> C. Final Input Delivery FY <u>81</u>	6. ESTIMATED PROJECT FUNDING A. Total \$ <u>1,118,000</u> B. U.S. \$ <u>1,118,000</u>	7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>5/78</u> To (month/yr.) <u>2/80</u> Date of Evaluation Review <u>2/11-2/13/80</u>		

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

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
1. AID/DSAN-C-0053, the University Services Contract should be extended from its present expiration date 3/14/80 until 4/30/81 so that it may terminate at the same time as AID/DSAN-B-0039, the Aquaculture Technology Development Grant.	C. Breitenbach	PIO/T complete on 2/20/80
2. Contract AID/DSAN-C-0053 should be increased by \$70,000 with FY 1980 funding to cover the anticipated travel expenses which will be incurred under it during the period 3/15/80 through 11/30/80.	C. Breitenbach	PIO/T complete on 2/20/80
3. Contract AID/DSAN-C-0053 should be increased by \$50,000 with FY 1981 funding to cover the period 12/1/80 through 4/30/81 at which time both contract AID/DSAN-C-0053 and grant AID/DSAN-G-0039 will terminate.	Project Manager	PIO/T to be completed 9/30/80
4. Starting on 5/1/81 contract AID/DSAN-C-0053 and grant AID/DSAN-G-0039 should be substituted for by a cooperative agreement.	Project Manager	9/30/80
a) PP	Project Manager	10/30/80
b) PIO/T		

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9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Financial Plan</td> <td><input checked="" type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>_____</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input checked="" type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIO/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input type="checkbox"/> Continue Project Without Change B. <input checked="" type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input checked="" type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIO/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____											
11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles) M. Mozynski, DS/AGR <i>MEM</i> R. Neal, DS/AGR/F <i>RAN</i> C. Breitenbach, DS/AGR/F <i>CB</i> E. Shell, Director, International Center for Aquaculture D. Moss, Deputy Director, International Cntr. for Aqua.	12. Mission/AID/W Office Director Approval Signature <i>Tony Babo</i> Typed Name <u>Tony Babo</u> Date <u>3/17/80</u>												

Evaluation Summary (PES) - Part II

13. Summary

The Project Review Committee found that both the University grant and the University contract were successfully achieving their purposes.

Under the grant a strong educational program is being implemented in aquaculture for 48 graduate students from 25 foreign countries and these students consider it well oriented to their LDC needs. Special training is being provided to the LDC students both to assist them in their studies and to provide extra curricula aquaculture field observations between academic quarters. A three-month practical training course in warm-water aquaculture is provided each summer to special LDC students and this year 30 students have already been enrolled. Practical aquaculture manuals and farmer-type bulletins are being prepared for the transfer of technology to government implementing officers and small fish farmers in the developing countries.

Under the contract overseas advisory services have been made available at the request of 13 different USAID missions and numbered a total of 20 separate trips during which technical services were provided in project development, project planning and feasibility studies.

No problems were encountered in the execution of either the grant or the contract but the Review Committee did recommend that on the termination of the grant, on April 30, 1981, both it and the contract be substituted with a single collaborative support agreement. This will require that the contract be extended from its present termination date, March 15, 1980, through April 30, 1981.

14. Evaluation Methodology

The present evaluation was undertaken for the purpose of determining how effectively Auburn University has made use of its A.I.D. development assistance funds in the training of LDC nationals and in the furtherance of aquaculture and inland fisheries in the LDCs. A further purpose of the review was to determine whether the contract which currently terminates on March 15, 1980, should be extended and, if so, prior to preparing a PIO/T, for how long an extended period and with what funding increments the PIO/T should be written.

The review was performed on the Auburn Campus by Mary Mozynski, DS/AGR, C. A. Breitenbach, DS/AGR/F, and Richard Neal, Aquaculture Specialist assigned to DS/AGR/F under the NOAA RSSA. The team was ably assisted by Drs. E. Shell, Director of the International Center for Aquaculture at Auburn University, and D. Moss, Deputy Director. Extensive interviews were held with numerous staff members and students.

15. External Factors

At the time Grant AID/DSAN-G-0039 was entered into, certain legal constraints made it impossible to continue with the 211(d) mode. Auburn University had already developed its International Center for Aquaculture as a foremost center. However, the AID/W regional bureaus and DS/AGR agreed it was necessary to provide a source of sustained support for the purpose of continuing to draw on these facilities as they related to international development. The A.I.D. counselors agreed that a grant, Grant AID/DSAN-C-0039, would be satisfactory for the funding of pertinent activities undertaken on the campus. For technical services provided to USAID missions overseas, they recommended a contract, Contract AID/DSAN-C-0053; thus, the two separate yet coordinated projects. The legal problem has now been resolved. Under similar circumstances, a cooperative agreement mode is now being employed to finance both on-campus and mission assistance type activities. Such a mode is anticipated when the present grant terminates.

16. Inputs

In the case of the grant the A.I.D. input covers the cost of certain staff salaries, those related to the training and supplementary preparation of LDC students. It provides for a special three-month short-course for non-degree short-term students each year and it funds assistance-type manuals and farmer-type bulletins designed to assist LDCs in their transfer of appropriate aquaculture technology. No research is funded under the grant although Auburn with state and federal funds provided for aquaculture research.

In the case of the contract, the A.I.D. input pays for travel and per diem for the Aquaculture staff when it concerns USAID mission requests related to aquaculture assistance. It also funds staff salaries during those periods when the consultant is working on mission problems.

The Review Team observed that much of the overhead related to the contract is, in fact, paid for with Auburn Aquaculture Department funds, thereby extending the A.I.D. contribution.

17. Outputs

It was found that the accomplishments achieved both under the grant and the contract have exceeded expectations. Examples are the present enrollment of 48 graduate degree foreign student candidates instead of the 35 required and the laudatory opinion these students have of their training. This year 30 students have applied for admission in the three-month short-course and requests now exceed possible enrollment.

Under the contract the numbers of missions which have developed aquaculture projects have steadily increased. Demand for assistance has exceeded the contract's ability to provide such and in 1979 nine missions paid for Auburn services either through special contracts or task order agreements.

18. Goal and Subgoal

To provide assistance for the training of LDC students in tropical aquaculture and to provide materials which will assist the LDCs in the transfer of appropriate aquaculture related technology to small farmers.

To assist USAID missions in assessing the aquaculture potential of their host countries and in developing appropriate host country mission projects.

19. Beneficiaries

As a result of Auburn assistance, aquaculture programs are now successfully being implemented in Guatemala, El Salvador, Honduras, Colombia, Peru and Brazil, and in Jamaica, in the Philippines, and in Indonesia. In Africa there are programs in Zaire, Tanzania, and the Central African Republic. The International Center for Aquaculture has trained a large number of the host government officers who are managing these projects and continues to provide them with technical backstopping.

20. Unplanned Effects

Not pertinent at this time.

21. Lessons Learned

The two basic lessons learned are that the benefits from grant assistance may not be experienced in the first few years. However, with long-term continued support the outreach results of that support does take effect and the results as in the case of aquaculture may then multiply rapidly.

It is only possible to maintain a facility developed for international LDC assistance, once assembled, if continued support to the core budget is provided. Neither state nor federal funds can be expected to do so. These are allocated to serve our U.S. beneficiaries. Foreign Assistance funds can, however, make use of and build onto existing domestic resources for overseas development and, thus, effect considerable "piggyback" benefit. The cooperative grant mechanism should prove advantageous in achieving that goal.

22. Special Comments

The quality of the work at Auburn merits continued DS/AGR/F funding of the international aquaculture program there after termination of the present grant on April 30, 1981. There is attached a 12-page Management Review which covers in detail the Review Committee's findings while the team was on detail in Auburn, Alabama.

February 26, 1980

Management Review of Three Auburn University Aquaculture Projects

- a. Grant AID/DSAN-G-0039

Aquaculture Technology Development

- b. AID/DSAN-c-0053

University Services Contract

- c. AID/DSAN-G-0150

Title XII Strengthening Grant

Introduction

From February 11 through February 13, 1980, DS/AGR conducted a management review of the aquaculture program being implemented by Auburn University with Agency for International Development funding. Included in the review were a University Services Contract (AID/DSAN-c-0053), a grant for Aquaculture Technology Development (Aid/DSAN-G-0039), managed by DS/XII. A Title XII Strengthening Grant (AID/DSAN-G-0150) was included in the review because at Auburn it is utilized for Aquaculture Institutional Development and is closely coordinated with the DS/AGR managed projects.

The AID review team consisted of three DS/AGR officers. These were:

Mary Mozynski, Special Assistant
Richard Neal, Aquaculture Advisor
C.A. Breitenbach, Acting Chief, DS/AGR/F

The review team was assisted throughout its assignment at Auburn by Dr. E. W. Shell, Head of the Department of Aquaculture, and by Professor Donovan Moss. They were assisted as the program required by other members of the staff and graduate student body.

There is attached as supplemental background a history of Auburn University and the Development of Fisheries and Allied Aquaculture, Appendix #1. This is from a USDA Comprehensive Review of the Auburn University Department of Fisheries and Allied Aquaculture, dated September 18-21, 1979.

I. Background on the International Center for Aquaculture

The International Center for Aquaculture of the Auburn University Department of Aquaculture serves the international community in three capacities. It is perhaps the foremost facility for the training of foreign students, particularly those of the LDCs, in pond culture and fresh water fish farming. It is a center of expertise capable of inland fish production and utilization developed on a basis of extensive foreign experience. It serves in the capacity of a one-of-a-kind demonstration farm illustrating how an integrated agriculture system may be made to benefit a less developed region and its population.

A. Sources of Funding of the Aquaculture Facility

1. Funding to Establish the International Center for Aquaculture

The International Center for Aquaculture was organized within the Department of Fisheries and Allied Aquaculture in 1970. A 211(d) grant was awarded to the Center to develop its capacity as a resource for international assistance work. However, vast amounts of funds were obtained from non-A.I.D. sources. The State of Alabama funded the construction of Swingle Hall, named for the late Dr. H. S. Swingle who guided the development of the Auburn fisheries programs for 40 years, where the Department and Center are housed. The Rockefeller Foundation and the Kresge Foundation provided grants to expand the experimental facilities just north of Auburn in east-central Alabama where field research and practical training in fisheries and aquaculture are carried out.

2. Pond Experimental Facilities

The research undertaken at the experimental pond facilities totals approximately \$1.26 million annually and is funded completely from non-A.I.D. sources. However, it should be pointed out at this time that the results of the research are used by the Auburn scientists and experts to assist the small farmers in the LDCs. The research is funded under grants from such sources as the USDA, Hatch Funds, NSF, State of Alabama, industry grants and agreements, and from other non-A.I.D. sources. In addition, Auburn University has contributed approximately \$0.2 million annually for the upkeep of the facilities and the revenue realized from the sale of the fish and timber is returned to the Center for priority purposes.

During the same thirteen-year period, Auburn's International Center for Aquaculture provided the services of 19 professional staff who contributed a total of 63.5 man-years of long-term advisory services in fisheries and aquaculture development in Brazil, El Salvador, Nigeria, Panama, Philippines, Indonesia, Jamaica, Honduras and Colombia.

Including both short- and long-term services, approximately 79 man-years have been dedicated to overseas work since July 1967.

Appendix #5 provides a chronological list of short-term foreign work carried out by the staff. Appendix #6 provides a chronological list of long-term staff assignments in foreign countries.

C. The student body of the Department of Aquaculture

The Department is primarily a graduate student facility. Although undergraduate students are eligible to attend most of the courses in their third and fourth academic years, all courses are given at the graduate level.

Of the 104 graduate students registered in the Department 48 are foreign representing 25 countries. There are 66 American students and of these 14 have had previous foreign experience, a majority being with the Peace Corps. For the most part, they wish to use their present training in the LDCs. Although the 52 American students without previous foreign experience have not been polled, if previous classes are indicative, upon graduation many of them will also become associated with aquaculture work in the foreign field.

Appendix #7 provides a breakdown of the graduate student body.

D. The physical plant

The physical plant consists of the on-campus facilities and a field station.

On campus there is a modern four-story building, named Swingle Hall after the Department's founder and first director. It was constructed in the early 1970s and contains modern laboratories for the study of all phases of ichthyology and fish culture, class and conference rooms and office space for the faculty and graduate student body. There is also a separate laboratory building for small scale studies with live fish.

The field facility, approximately 1600 acres to the north of the University is divided into an upper area for recreational fisheries

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and a lower section which is used intensively for fish farming. The upper area which comprises all but 23 acres of the Station, largely consists in a pine-forested catchment basin in which there is set a series of man made earthen lakes. Here game fish are managed for sports fishing under natural conditions.

The lower area of the Station, the remaining 23 acres, is divided into numerous small ponds which are used for fish farming research. Here there are also a shed for weighing pond fish production, a feed shed, a water filtering plant and various facilities for the storage and maintenance of equipment.

Appendix #~~10~~⁸, parts (a) and (b) constitute a map of the upper area. Appendix #~~11~~⁹ is a map of the lower section. Appendix #~~10~~¹⁰ is a map of the entire field station and Appendix #~~11~~¹¹ is a listing by series and number of the acreage and type of construction of each of the lakes and ponds shown in the above maps.

II. A Farming Systems Approach to Land Use and Fish Production

Until the Second World War the area in which Auburn University is located had as its primary industry the production of cotton. The soil being of a poor quality for row-crops became so severely over-exploited by the 1930s that there remained no top soil. Gully and sheet erosion caused cotton no longer to be profitable and unemployment became chronic. It was this situation which caused Homer S. Swingle, a Professor of Biology at Auburn University to consider alternative uses by which to again make the spent land productive. Mr. Swingle, who is called the father of Alabama fish farming, reasoned that if the land were planted in forest it could serve as the catchment basin for a network of ponds where fish could be economically produced for food and recreation.

Professor Swingle found a 1,600 acre tract of abandoned land close to the University which Auburn was able to acquire at \$5.00 an acre. There he visualized a complex of artificial lakes and small ponds set in step series so that the seepage of the uppermost ponds would filter from the pond above to the next one below without any significant loss of water. To make a reality of that vision he purchased surplus army bulldozers and as funds were acquired he dug out ponds one at a time according to a carefully engineered plan. Thus, it was that the elaborate system of catchment basins, lakes and ponds were constructed which now serves as the Auburn University Aquaculture Experiment and Demonstration Station.

At the same time as the ponds were dug, Professor Swingle planted pine trees around them to increase the water retention capacity of the catchment basins. Now these managed forests have become a valuable resource which is sold for cordage and timber.

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Up to 600 pounds of game fish per acre are produced each year on the lakes in the upper area where sports fishermen are invited to fish at a modest recreational fee. On the fish farming ponds in the lower area special fertilization practices and carefully formulated feeds have been elaborated which yield harvests as high as 3000 pounds of live fish per acre per year and this produce is sold at the farm gate.

Unlike University profits in other states all the profits from the Auburn Aquaculture Experiment and Demonstration Station revert back to the field facility and not to the State of Alabama.

The Aquaculture Experiment and Demonstration Station serves as testimony to how land not unlike that which has been over-exploited in the LDCs may be utilized in gainful production. A farming system has been demonstrated which includes a self-sustaining forest industry associated with water catchment and conservation practices. Within this system fish farming and recreational fisheries have been perfected to where they have become major industries for Alabama and throughout much of the South. A superior example is being provided to visiting students of how systematic land use might be employed to make vast areas of non-productive, eroded land and salt flats yield profitable harvest in the third world.

III. Comments in regard to the three AID/W financed Aquaculture Projects

A. Grant AID/DSAN-G-0039, Aquaculture Technology Development.

The Review Committee found the objectives of the grant were being meritoriously met. The quality of the educational programs for foreign students was superior. The program was extensively being utilized by foreign students. In fact of 104 registered graduate students, 48 were of foreign nationality. The Department is providing a three- to four-month short-course to professional fishery workers in the LDCs each year. Last year there were nine students. This year 30 students have applied. Special three- to five-day trips and individual interest tours are provided for foreign students between the quarters of academic training about three times a year. The Department has prepared or is preparing a series of manuals to be utilized in technology transfer to the LDCs. Among these are the following publications.

Water Quality in Warm Water Fish Ponds
Aquaculture Research Methodology
An Aquaculture Extension Manual

The Review Committee received a briefing on the Auburn survey of four West African nations, Zaire, Nigeria, the Cameroons and Liberia.

The review indicated that the potential for in-land fish farming is excellent in each case. A draft report of the review has been prepared and is presently in circulation for A.I.D. comments, both at AID/W and in the four respective A.I.D. missions. A seminar on the Auburn review is to be scheduled at AID/W as soon as possible.

As a result of the review it was concluded A.I.D.'s original hypothesis--namely, that it would be possible for universities to maintain the special facilities developed under their 211(d) grants after the grants terminated--was erroneous. Auburn University, with State and Federal support, finances all parts of the aquaculture programs designed for domestic use. The University even picks up a part of the overhead of the foreign assistance program. In contrast the State is not able, nor should it be expected to finance the international phase of the aquaculture activity. The Review Committee is of the opinion that it is in A.I.D.'s interest to build on the otherwise financed aquaculture facility. It was reasoned that a continued support of the Aquaculture Center for this purpose can be considered the same as A.I.D.'s support of the core budgets for the CGIAR International Agriculture Research Centers.

We recommend that when the current grant terminates on April 30, 1981, Grant AID/DSAN-G0039 and Contract AID/DSAN-c-0053, the Auburn University Services Contract, be integrated and substituted with a cooperative agreement. Project planning for this should be started as soon as possible.

B. AID/DSAN-c-0053, University Services Contract

The University Services Contract is used to finance requests from missions for technical assistance. It provides the necessary support for foreign travel in relation to such requests and for effecting surveys, feasibility studies and short-term training programs overseas.

The Review Committee believes that the funds have been well made use of. Appendix #7 provides a chronological list of short-term foreign work from September 1978, through February 1980, and enumerates that travel which has been effected with Contract AID/DSAN-c-0053 funds.

The Review Committee was advised, when an Auburn Aquaculture faculty member enters on foreign travel status his salary is charged to the contract as are his travel and per diem. We were

told that the proposed travel under AID/DSAN-c-0053 through November 1980, will be the following:

<u>Country</u>	<u>Number of Work-Months</u>	<u>Staff Assigned</u>
Guatemala	4 months	Staff
Indonesia	1 "	E. W. McCoy
Panama	2 weeks	J. L. Lovshin
Panama	2 "	E. W. McCoy
Thailand	2 months	H. R. Schmittou A. R. Covender
Turkey	1 month	Staff
Asia	1 "	"
Africa	1 "	"
Latin America	1 "	"

12 months

The Committee recommends that the Contract be extended from its current expiration date, 3/14/80, until 4/30/81, in order that it may terminate at the same time as the University Grant AID/DSAN-G-0039. It also recommends that the Contract funds immediately be increased by \$70,000 with FY 1980 funding to cover the anticipated needs for travel expenses during the period 3/15/80 through 11/30/80. Another \$50,000 should be requested early in FY 1981 using FY 1981 funds to cover the remaining five months, 12/1/80 through 4/30/81.

C. AID/DSAN-G-0150, Title XII Strengthening Grant

This is a rotating grant approved for five years at a level of \$500,000 for the five-year period or \$100,000 each year. It is a rotating grant because it is automatically extended an additional year each year that the requirements of the grant have been met. The grant is provided by the DSB Title XII office which automatically provides similar grants to all Title XII universities which so request. These grants may be used to strengthen any foreign assistance activities for LDCs and, as a consequence, they are for the most part distributed throughout the University.

At Auburn it has been decided to use the Title XII Strengthening Grant entirely for the purpose of fortifying the Department of Aquaculture and, as a consequence, it strongly complements the DS/AGR Grant AID/DSAN-G-0039, Aquaculture Technology Development. That is the reason for now reviewing it with the two DS/AGR projects even though it is funded by a different office of the Development Support Bureau.

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The Grant is presently financing two salaries in the International Center for Aquaculture. These are in the disciplines of aquaculture economics and fish marketing. A third position originally intended to be funded in extension has not been filled. Instead it is intended to employ the money saved to get the southern universities together during the summer of 1980 at a workshop where the topic will deal with how to get the technology derived from research into the hands of small fish farmers.

The Review Committee commends Auburn University for its dedication to strengthening its role in international aquaculture development as signified through this Title XII Strengthening Grant.

III. Summary Statement

During the course of A.I.D. support to Auburn University an unusual institution has been brought into being which is contributing to the development of aquaculture and thereby to the availability of animal protein in LDCs in a number of ways.

On the Auburn Campus a strong graduate level educational program in aquaculture is in place including a comprehensive, well-rounded curriculum. The Aquaculture Department now has the second largest group of graduate students on campus, 104 students of whom 48 are foreign students. Professional teaching and research staff numbers 40. Twenty-three of these have long-term experience overseas. In addition to the standard course work and thesis research supervision, special training is provided to foreign graduate students to help them overcome deficiencies in their educational background and to provide special assistance as needed in their education.

A three-month practical training course in warm-water aquaculture is offered annually at Auburn and 30 students are enrolled in this summer's course from a variety of countries.

Publications produced under the grant include an international aquaculture newsletter used to inform any interested parties of recent research results and significant aquacultural development progress. About 700 copies of each issue are distributed to aquaculturists around the world. In addition, a set of manuals have been prepared specifically to address LDC problems in fish farming development. Manuals either completed or in late draft form include: "Water Quality in Warm Water Fish Ponds," "Aquaculture Research Methodology," "Aquaculture Extension," "A Statistical Manual on Research Techniques," "Hatchery Management and Fish Seed Production," and "Status of World Aquaculture." Each is an important contribution to the set of tools available to the working extension agents and biologists in LDCs.

Research work was supported by A.I.D. under the 211(d) grant, but is not now a part of the services being provided. Nevertheless, research is being funded by other agencies and the overall research base provides an important source of knowledge flowing from the center on a continuing basis. Auburn has done pioneering research work in a number of applied areas in freshwater aquaculture.

The Center provides a resource base for its field workers on contract with A.I.D. or other donors as well as for short-term consultants moving constantly back and forth from the LDCs. This professional backstopping in library services, professional advice and technical information adds greatly to the proficiency of the Auburn field workers and to the work of former students working in their home countries.

The aquacultural capability developed under A.I.D. support has enabled Auburn to do field work for A.I.D. and for World Bank, and other donors totaling 64 man-years of long-term and 15 man-years of short-term technical assistance overseas. The quality of field personnel and the work performance have consistently received good marks in project reviews and evaluations. Auburn has an excellent reputation for providing top quality personnel who are closely involved in applied aspects of the field work.

The educational program provided at Auburn is unusual in the degree of practical experience and first-hand working knowledge transferred to the students. Students entering graduate school at Auburn may have an academic orientation only, but those graduating have practical experience and applied skills that form an important part of their role on returning to their homes.

IV. Other Topics Discussed at Auburn

Conference with Foreign Students

During the afternoon of Tuesday, February 12, 1980, time was reserved for a conference with the foreign graduate students in the Aquaculture Department. Appendix #12 is a listing of the students invited, their nationalities, sponsoring agencies, and the degrees each seeks.

The students were asked their opinions of the training they received. Their report was unanimous. It was considered that the Auburn University Aquaculture Department was an outstanding facility at which to be trained. The teaching was considered superior. Several of the students commented that they were given extra tutorage to help them keep up to their U.S. colleagues when they had difficulty in their class work or in the implementation of their research

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activities. The only recommendation the students had was that the curriculum lacked any course dealing in tropical aquaculture. It was felt that because of the vast experience possessed by the Department staff the presentation of such a course should be possible.

As regards the personal situation of the students the difficulties were numerous and often serious. All of the A.I.D. sponsored students found their monthly stipend of \$418 a month very inadequate. Most students are finding they must supplement the A.I.D. stipend with personal funds. The problem is generally most acute during the first six weeks of residency. Most off-campus housing is only basically furnished. The student must purchase such items as bedding and table lamps. Often special equipment, for example, kitchen ware is required. These expenses are experienced at the same time the student may require winter clothing. They said they are ashamed to ask for help and often this causes them serious anxieties and sleepless nights.

The married students are particularly concerned. They generally feel that when they bring their families to the United States with them their dependents are their personal responsibilities. As a consequence they are embarrassed to ask their student councilors for assistance when a child gets sick or a wife does not know how to shop for special items.

We were surprised to learn that the Auburn aquaculture faculty were unappraised of the existence of these personal problems among the foreign graduate students. We asked them to see if the local church groups, the International Student Association and other social groups might not be rallied to assist the foreign student body.

An allied problem for all students at Auburn is that to obtain reasonable housing in the Auburn area many students live in the neighboring village of Opelika. There is no public transportation between Opelika and Auburn and this required the student to acquire a private vehicle or else make use of car pools which is difficult for the graduate student who must be on the campus at odd hours. It would seem that the University might organize a campus transportation system at least on week days.

Generally, the foreign students felt comfortable in the Auburn community. They felt most Alabamians tried to be helpful. The one criticism heard in this regard was that some of the residents did not try to understand when English is haltingly spoken. At times they laughed at foreign accents. We explained that this was not a matter of making fun of the foreigner. It was more a matter of laughing with the student than at him.

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AUBURN UNIVERSITY AND THE DEPARTMENT OF
FISHERIES AND ALLIED AQUACULTURES

History of the University

Auburn University was chartered on February 1, 1856 as the Methodist-sponsored East Alabama Male College. Although chartered in 1856, the college formally opened on October 1, 1859 with a student body of 80 and a faculty of six. Classes were suspended in 1861 for the duration of the Civil War.

The school became the first land-grant college in the south separate from a state university in 1872 when Alabama Methodists, unable to continue support of the school, offered the entire facility to the State of Alabama. Under the Morrill Act of 1862, the Legislature accepted the institution and changed the name to the Agricultural and Mechanical College of Alabama.

As recognition of the college's expanding academic program, it was renamed the Alabama Polytechnic Institute in 1899 and Auburn University in 1960—the simplest and most appealing name the school has known.

Women students were first admitted to Auburn in 1892, making it the oldest coeducational school in Alabama and the second oldest in the southeast.

Auburn's greatest growth and development has been experienced since World War II. From a campus of 35 buildings at the close of the war, the University's multi-million dollar physical complex today includes 65 main buildings on 1,871 acres plus Auburn University at Montgomery. In addition, Agricultural Experiment Station holdings over the state

include 20,699 acres. Enrollment on the main campus has increased from 6,641 in 1950 to approximately 18,000 for fall 1979.

In 1967, the State Legislature approved a \$5 million bond issue for the purpose of establishing a four year university at Montgomery under the supervision and control of the Board of Trustees of Auburn University. The University of Alabama Extension Center in Montgomery was purchased as a temporary location for AUM and the first freshman class entered those facilities in 1969.

The Montgomery community raised approximately \$1 million for the purchase of a 500-acre site seven miles east of the city on Interstate 85 and the new campus was occupied in 1971. Current enrollment is approximately 3,000.

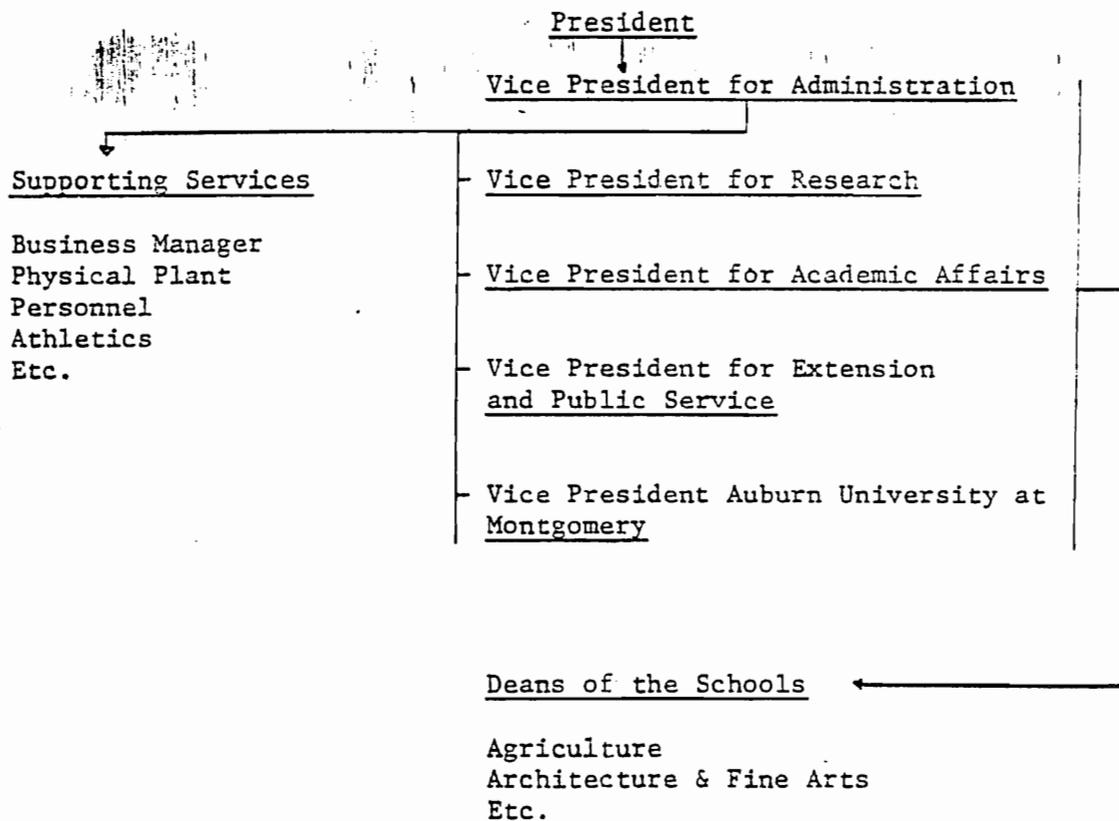
In cooperation with Air University at Maxwell Air Force Base, Auburn offers masters degree programs in political science and business administration at the base in facilities provided by the Air University.

The city of Auburn, in Lee County, was founded in 1836. It is located 55 miles east of Montgomery, 120 miles southeast of Birmingham and 118 miles southwest of Atlanta. The city has a population of 28,000 and an area of approximately 27 square miles.

The city of Auburn is located on the tip of the southern-most extension of the Piedmont in the U.S. The remains of the ancient coastline lies across the southern half of the campus. It is located at an elevation of 762 feet and is one of the highest cities in the state.

Organization

The University is operated by an independent Board of Trustees who are appointed by the Governor. The chief administrative officer is the President. The organization of the University is as shown in the following diagram:



There are nine Schools at Auburn. These are:

1. Agriculture
2. Architecture and Fine Arts
3. Arts and Sciences
4. Business
5. Education
6. Engineering
7. Home Economics
8. Pharmacy
9. Veterinary Medicine

The Department of Fisheries and Allied Aquacultures is one of the 10 academic Departments in the School of Agriculture. These include:

1. Agricultural Economics and Rural Sociology
2. Agricultural Engineering
3. Agronomy and Soils
4. Animal and Dairy Sciences
5. Botany and Microbiology
6. Fisheries and Allied Aquacultures
7. Forestry
8. Horticulture
9. Poultry Science
10. Zoology-Entomology

The academic Departments in the School of Agriculture are organized around the various agricultural commodities and groups of commodities. All of the courses in the biological sciences, botany, zoology, microbiology and biochemistry offered at the University are taught in the School of Agriculture. The basic courses in biology are taught by an interdepartmental group from the Departments of Botany and Microbiology and Zoology-Entomology. The biochemistry is taught by an interdepartmental group from the Department of Animal and Dairy Sciences in the School of Agriculture and the Department of Chemistry in the School of Arts and Sciences.

There are several service and research Departments in the School of Agriculture. These include:

1. Animal Health Research
2. Home Economics Research
3. Research Data Analysis
4. Research Information
5. Research Operations

The Auburn University Agricultural Experiment Station is organized under the Vice President for Research. It has its own line-item budget in the total University budget. The Dean of the School of Agriculture

is also the Director of the Agricultural Experiment Station. The Experiment Station is also organized along commodity lines..

Extension work at Auburn is organized in a rather unique manner. There is a Vice President for Extension and a Director of the Cooperative Extension Service. Although there is good cooperation between research and extension there is no organization coordination between the two below the President's Office. The relationship between research and extension at the Department level will be discussed later.

The Department of Fisheries and Allied Aquacultures

This Department is the newest of the academic departments in the School of Agriculture. Prior to July, 1970, both teaching and research in fisheries were conducted in the Department of Zoology-Entomology. At that time the University and the U.S. Agency for International Development decided to establish the International Center for Aquaculture at Auburn. It also was decided at that time to separate the teaching and research functions related to fisheries from the other elements of the Zoology-Entomology Department and to join them to the newly created Center.

The Department of Fisheries and Allied Aquacultures is administered by a Department Head which is an administrative, non-tenured position. This position is not rotated within the Department. The Department Head has the following general responsibilities.

1. Administers the undergraduate teaching program of the Department under the direction of the Associate Dean, the Dean and the Vice President for Academic Affairs.

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2. Administers the graduate teaching program of the Department under the direction of the Dean of the Graduate School and the Vice President for Academic Affairs.
3. Administers the departmental portion of the research program of the Agricultural Experiment Station under the direction of the Associate Director, the Director and the Vice President for Research.
4. Administers various grants and contracts for training, research and development under the direction of appropriate University officials.

The Faculty of the Department is listed in the following table.

Most of the faculty have joint appointments with the School of Agriculture and the Agricultural Experiment Station. Overseas staff and Research Associates on specific research projects generally have appointments only with the Agricultural Experiment Station. More specific information on each staff member is available in Appendix I.

- 12 Shell, E. W., Ph.D. - Prof. and Head of Department
- 12 Allison, R., Ph.D. - Assoc. Prof., aquaculture
- 12 Bayne, D. R., Ph.D. - Assoc. Prof., aquatic ecology
- 12 Boyd, C. E., Ph.D. - Prof., aquatic ecology
- 2 Ciliax, Rebecca M., B.S. - Res. Assoc., aquatic ecology
- 2 Cremer, M. C., M.S. - Res. Assoc. aquaculture
- 12 Davies, W. D., Ph.D. - Assoc. Prof., sport fisheries management
- 2 Duncan, B. L., Ph.D. - Asst. Prof., aquaculture (Indonesia)
- 2 Goodman, R. K., M.S. - Res. Assoc., aquaculture
- 12 Grizzle, J. M., Ph.D. - Asst. Prof., fish pathology
- 2 Grover, J. H., Ph.D. - Assoc. Prof., aquaculture
- 2 Hougart, Bille, M.S. - Adjunct Prof. and Special Consultant, aquaculture
- 2 Hughes, D. G., M.S. - Res. Assoc., aquaculture, (Honduras)
- 2 Johnson, M. C., M.S. - Assoc. Prof., aquaculture, (Nigeria)
- 2 Johnston, E. S., M.S. - Res. Assoc., aquatic ecology
- 2 King, T. A., Ph.D. - Res. Assoc., sport fisheries management
- 12 Lawrence, J. M., Ph.D. - Prof., management of rivers and impoundments
- 12 Lovell, R. T., Ph.D. - Prof., fish nutrition and technology
- 2 Lovshin, L. L., Ph.D. - Assoc. Prof., aquaculture

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- 12 Malvestuto, S. P., Ph.D. - Asst. Prof., fisheries biology
 12 McCoy, E. W., Ph.D. - Assoc. Prof., aquaculture economics
 2 Moss, D. D., Ph.D. - Prof., international fisheries programs
 2 Phelps, R. P., Ph.D. - Asst. Prof., aquaculture (Colombia)
 12 Plumb, J. A., Ph.D. - Assoc. Prof., fish diseases
 2 Popma, T. L., M.S. - Res. Assoc., aquaculture (Colombia)
 12 Prather, E. E., M.S. - Assoc. Prof., aquaculture
 124 Ramsey, J. S., Ph.D. - Assoc. Prof., ichthyology
 2 Randolph, K. N., Ph.D. - Asst. Prof., aquaculture (Jamaica)
 12 Rogers, W. A., Ph.D. - Prof., fish diseases
 12 Schmittou, H. R., Ph.D. - Assoc. Prof., aquaculture
 124 Shelton, W. L., Ph.D. - Assoc. Prof., sport fisheries management
 12 Spitherman, R. O., Ph.D. - Prof., aquaculture
 12 Snow, J. R., M.S. - Assoc. Prof., aquaculture
 2 Thune, R. L., M.S. - Res. Assoc., fish diseases
 2 Timmons, T. T., Ph.D. - Res. Assoc., sport fisheries management
 2 Woodruff, V. C., M.S. - Res. Assoc., aquaculture (Jamaica)
 Dendy, J. S., Ph.D. - Prof. Emeritus

-
- 1 School of Agriculture Faculty
 2 Agricultural Experiment Station Faculty
 4 In Cooperation with United States Department of Interior

The Department also has a number of supporting staff that are vital to its mission. These are listed in the following table:

Adams, A. J., Secretary
 Black, A. L., Fisheries Foreman
 Butler, A. P., Administrative Secretary
 Byrd, J., Fish Cult. Aide I
 Canterberry, D. L., Staff Secretary
 Cruce, A. D., Technical Assistant
 Dowell, E., Fish Cult. Aide II (Leadman)
 Ellington, C. S., Asst. Fisheries Foreman
 Howard, W., Fish Cult. Aide I
 Jones, A. M., Staff Secretary
 McWhorter, G. M., Senior Clerk
 Morgan, D. A., Secretary
 Ogletree, J. W., Fish Cult. Aide I
 Pitts, W. J., Fish Cult. Aide I
 Pitts, W. G., Fish Cult. Aide II
 Ray, L., Fish Cult. Aide II
 Washington, M., Fish Cult. Aide I

The Department also utilizes a number of Graduate Research Assistants. These are usually employed to work on specific research projects or extramural contracts. Usually there are 30 to 35 students employed in this capacity. There are no Graduate Teaching Assistants employed by the Department.

For many years the teaching and research program of the Department was supported from funds provided by the State and from USDA (Purnell, Bankhead-Jones and Hatch). In the past 10-12 years the funding situation has changed dramatically. Now a large portion of the funds are derived from grants and contracts. The Department has shared in the general increase in grant and contract funds available throughout the country from both public and private sources; however the primary cause of the shift in the funding pattern has been increasing Departmental involvement in international fisheries development. Since 1967 the Department has provided most of the technical assistance in warm-water fisheries needed by USAID world-wide. The Department has been awarded a number of grants and contracts to provide the assistance.

The following table includes a summary of the source of funds for the Departmental program:

<u>Source of Funds</u>	<u>Amount</u>
State of Alabama appropriated funds	
For teaching	\$ 225,296
For research	205,886
University funds	340,041
Federal grants and contracts	
Hatch	85,380
Other USDA	66,736
USAID	1,259,843
Other Federal	269,797
Grants and contracts from other states	123,229
Grants and contracts from private companies	<u>77,112</u>
Total	\$2,653,320

Departmental personnel are supported with funds from a variety of sources. There are a total of 32 full-time equivalent (FTE) academic teaching, research and development faculty in the Department. Of these 21.61 FTEs (68 percent) are funded from grants and contracts (so-called "soft" funds). There are 17 staff support FTEs. Of these only 4.76 FTEs (28 percent) are funded from grants and contracts. A summary of the sources of funding for the academic and support staffs is presented in the following table:

	Academic Teaching, Research and Devel- opment Faculty (full- time equivalents)	Supporting Staff (full- time equivalent)
State Instructional Funds	5.61	4.63
State Research Funds	2.67	6.28
University Funds	0.86	1.33
Hatch Research Funds	1.25	0.00
Grants and Contracts	<u>21.61</u>	<u>4.76</u>
Total	32.00	17.00

Considering the combination of field and laboratory facilities, Auburn has one of the finest physical plants for research and teaching aquaculture, in sport fisheries management and aquatic ecology in the world. Probably the single factor that has contributed more to Auburn's development as an International Center than any other has been its experimental facilities.

The field facilities are located on a 1600-acre tract approximately five miles north of the campus. This tract is a part of a larger tract utilized by the Agricultural Experiment Station. There are 228 earthen ponds with a surface area of approximately 190 acres. In addition there are 96 concrete ponds and 200 plastic pools. Located near the ponds are service buildings, equipment storage buildings, shops, feed and fertilizer

storage and a large fish holding-handling building. A combination laboratory-processing plant for research and development in fish technology has recently been completed at the pond area. A new building for research and development on fish spawning and reproduction placed in operation in 1978. A new laboratory for fish nutrition will be operational later this year. Three new water storage lakes were recently completed and twenty, 0.05-acre ponds to be utilized specifically for training were put in operation this summer. With the vacating of the Beef Cattle Unit at North Auburn by the Department of Animal and Dairy Science, water storage ponds will be developed on that land. This area is in the same watershed as many of our other ponds. Preliminary surveys indicate that there are an additional 30 acres of suitable pond sites available.

A unique aspect of the pond facilities is their arrangement and organization into a large water harvest and storage area. There is virtually no groundwater available in the area. The ponds are arranged in a way to collect and impound much of the rainfall falling on the tract. The ponds were constructed in a "stair-step" series so that seepage water is used repeatedly as it flows down grade. The entire series of ponds is arranged in such a way that virtually no pumping is required either for filling or draining.

The Department has a modern classroom and laboratory building. Swingle Hall was completed in 1972. It contains approximately 25,000 square feet of space. The building contains offices, a conference room, two classrooms, two teaching laboratories, several staff research laboratories and two wet laboratories for experiments with live fish. The staff research laboratories are equipped for work in pathology, bacteriology, virology, parasitology and nutrition. These labs are generally

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well equipped although some of the equipment is becoming dated. Many items of equipment were purchased 8 to 10 years ago. Swingle Hall also contains 37 graduate student study spaces. These are assigned on a "first-come-first-served" basis.

The Department also occupies the Fisheries Annex on Wire Road. This building and several out-buildings associated with it contains a total of approximately 8,300 square feet of floor space. These buildings contain primarily staff offices, staff research laboratories and a few graduate study spaces.

TITLE 1978-1979

LOCATION OF RESEARCH FUNDS TO WORK UNIT/PROJECT AT LOCATION		FIELD NUMBER	FY 79 ACTUAL \$
FEDERAL RESEARCH FUNDS CSRS ADMINISTERED <i>State/USDA Land Grant College funds</i>			
Hatch Funds \$75,981 + \$4,290 ¹⁹⁷⁹ ENC. - 400 ENC 1978 + ADM 3,459		(201)	79,494
Regional Research Funds \$13,317		(202)	13,317
McIntire Stennis Funds		(203)	
Special Grants for Research (PL 89-106)		(204)	
Other Funds (Identify)		(205)	
TOTAL		(231)	92,816

OTHER FEDERAL RESEARCH FUNDS			
USDA Contracts-Grants Co-op Agreements (Identify Agency). <i>USDA 5B7 \$6,890 USDA 58E \$17,136.50</i>		(219)	25,319
National Science Foundation <i>NSF LC \$15,631</i>		(209)	15,631
Energy Research and Development Administration <i>ERDA EE \$2,237</i>		(310)	2,237
Agency for International Development <i>AID \$1,115,258</i>		(308)	1,115,258
Department of Defense		(311)	
National Institutes of Health		(316)	
Public Health Service		(312)	
Health, Education and Welfare		(313)	
National Aeronautics and Space Administration		(314)	
Tennessee Valley Authority <i>TVA 3038 79 \$2,904</i>		(315)	2,904
Other (Identify) <i>Fish - CA \$3,825 NOAA \$256 ANADROMOUS FISH \$20,781 DE 900 \$703 DE 8076 \$11,814</i>		(318)	163,167 179,312
DACW 77 \$10,725 DACW 78 \$114,045 DACW 79 \$20,988	145,758		
TOTAL		(332)	225,403 1311526

NON-FEDERAL RESEARCH FUNDS* (Sale of fish)			
State Appropriations \$198,627 + 63,256 ADM		(220)	261,883
Sale of Products \$208,887 + 60,657 FISH FAAM + 12,823 RIVERS + RES. + 5223 ADM		(221)	281,510
Industry Grants and Agreements <i>CONTAINER CO. \$9,800 AL FUR \$48,374</i>		(222)	58,174
Other Non-Federal Funds <i>COOP FISH \$208 FISH P&D \$74,956 ST. CONS. \$12,511 TENN. 194 \$6,003 MESC \$940 TAVLEK \$5257</i>		(223)	242,575
<i>FAO UNLIMITED FISH AGE/GROWTH \$2,358</i>		(223)	723,380
TOTAL		(233)	550,722

TOTAL ALL RESEARCH FUNDS AT LOCATION (234) 1,041,599
~~2318094~~

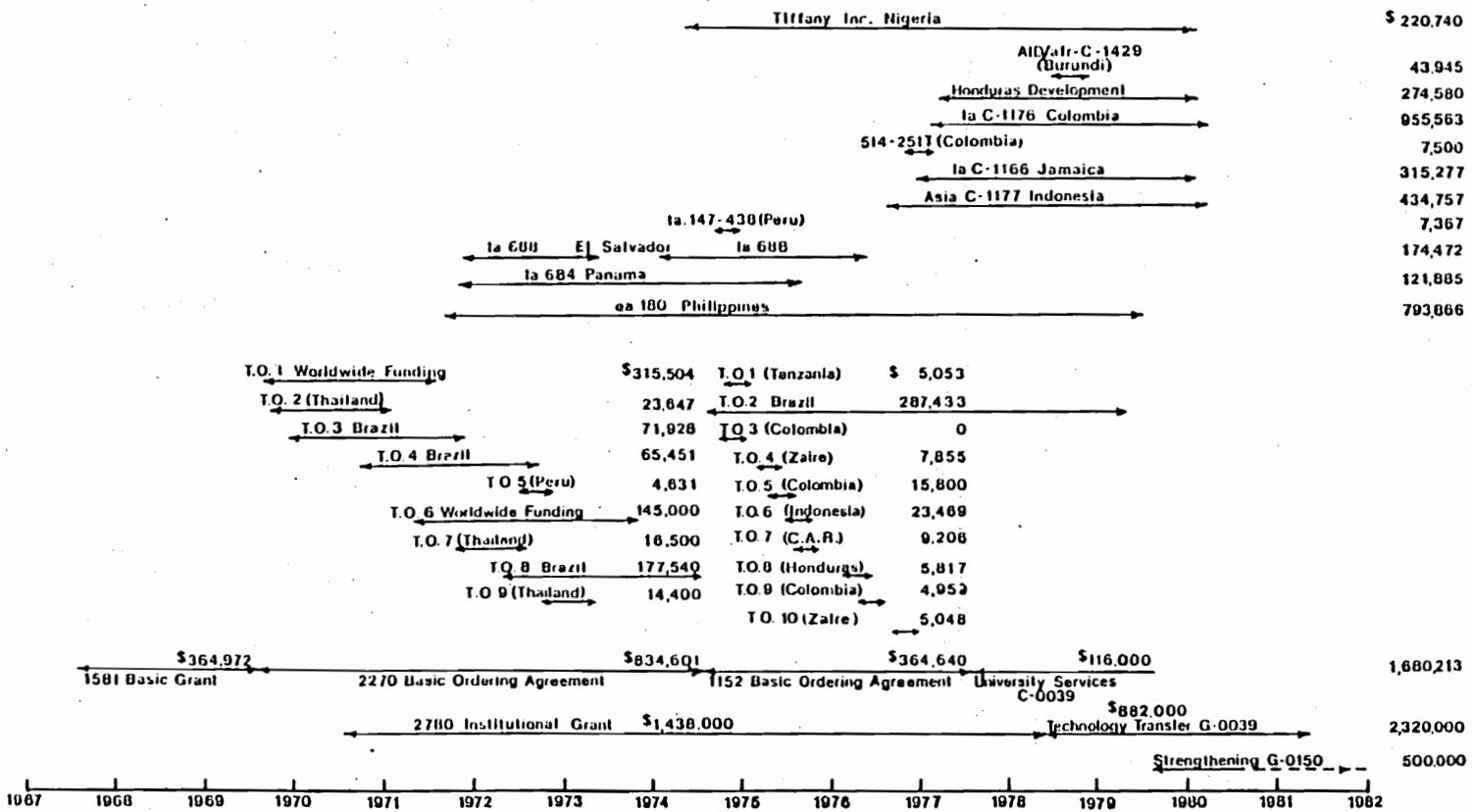
STAFF SUPPORT	STAFF EFFORT (years)	
	ACTUAL	ESTIMATE
	FY.	FY + 1
NON-FEDERALLY EMPLOYED STAFF SUPPORT (Report nearest 0.1)		
Scientists (Asst. Prof. and above)	(241)	.5
Professional Support	(242)	.2
Technical Support	(243)	.2
Clerical, Labor and Other	(244)	.9
TOTAL STAFF YEARS		(350) 1.8

OMITTED BY (Signature) TITLE DIRECTOR

Appendix #3

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TIME CHART OF INTERNATIONAL CONTRACTS
INTERNATIONAL CENTER FOR AQUACULTURE, AUBURN UNIVERSITY



Countries in brackets indicate short term projects

TOTAL \$7,850,165

FACULTY AND STAFF
FALL QUARTER 1979

APP. # 4

NAME AND TITLE

ADDRESS

Adams, Jackie-Secretary	P.O. Box 244, Notasulga
Allison, Ray-Asst. Prof.	Box 127 Waverly, AL
Bayne, David, Asst. Prof.	El Salvador
Black, A.L.-Pond Foreman	Rt. 3, Box 294, Opelika, AL
Boyd, C.E.-Professor	128 Carter Street
Butler, Priscilla-Admin. Sec.	Rt. 2, Box 407C -Auburn
Canterberry, Debra-Staff Spc.	Rt. 3 Swann's Tr. Pk ^{#314}
Ciliax, Rebecca M.-Res. Assoc.	8 Ridgewood Village
Cremer, Michael G.-Res. Assoc.	Indonesia, PCV-Philippines
Davies, William-Asst. Prof.	Brazil
Dendy, J.S.-Prof. Emeritus	Philippines
Ellington, Claude-Asst. Foreman	Rt. 3, Box 286-C Opelika, AL
Goodman, Randell-Res. Assoc.	740 Ogletree Rd.
Grizzle, John-Asst. Prof.	145 Sunshine Rd.-Opelika,
Grover, John-Asst. Prof.	Philippines, Libya
Hartzog, Lisa-Secretary	1013 3rd Ave.-Opelika
Hughes, David-Res. Assoc.	Honduras, El Salvador, PCV-Panama
Jensen, Gary, -Asst. Prof.	PCV- El Salvador
Jensen, John, Fish. Specialist	Brazil, PCV- Brazil
Johnson, Malcolm	Nigeria
Johnston, Ellen-Res. Assoc.	1151 McKinley Ave.
Jones, Amy M.-Staff Sec.	3909 Pepperell Pkwy.
King, Terry-Res. Assoc.	P. O. Box 2282
Lawrence, John-Professor	1037 Terrace Acres
Lovell, Richard-Professor	622 Terracewood-Opelika, AL
Lovshin, L.L.-Asst. Prof.	Brazil, PCV- Ivory Coast
Malvestuto, Stephen-Asst. Prof.	PCV- Kenya
Morgan, Cissy-Secretary	1312-A Randolph St.
Moss, Donovan D.-Professor	Indonesia
Phelps, Ron-Asst. Prof.	Colombia
Plumb, John A.-Asst. Prof.	1203 Nixon Ave.
Popma, Thomas-Res. Assoc.	Colombia
Prather, E.E.-Asst. Prof.	763 Sherwood Drive
Ramsey, John-Unit Ldr. CFU	Costa Rica
Randolph, Ken-Asst. Prof.	Jamicia
Rogers, W.A.-Professor	680 Ogletree Rd.
Schmittou, H.R.-Asst. Prof.	Philippines
Shell, E. W.-Department Head	765 E. Magnolia
Shelton, W.L.-Asst. Ldr. CFU	569 Cross Creek Rd.
Shinnick, Ron-Publication Clerk	Missionary-Philippines
Smith, Mary L.-Senior Clerk	Rt. 2, Box 345B-Auburn
Smitherman, R.O.-Professor	Panama
Snow, Jack R.-Asst. Prof.	1156 Rudd Ave.
Tave, Douglas-Res. Assoc.	PCV- C.A.R.
Thune, Ron-Res. Assoc.	33 Woodland Terrace
Timmons, Tom-Res. Assoc.	1239 Pene Lane
Duncan, Bryan-Asst. Prof.	Indonesia, PCV- Philippines
Galbreath, Pete-Res. Assoc.	PCV- C.A.R.
Nerrie, Brian-Res. Assoc.	PCV- Philippines
Self, Ross-Publication Clerk	
Woodruff, Vernon	Jamaica, PCV- Philippines

INTERNATIONAL EXPERIENCE

AUBURN PROJECT

OTHER ~~EXPERIENCE~~

Best Available Document

Appendix H
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CHRONOLOGICAL LIST OF SHORT-TERM FOREIGN WORK

CARRIED OUT BY STAFF OF

THE INTERNATIONAL CENTER FOR AQUACULTURE

Department of Fisheries and Allied Aquacultures
Auburn University
Auburn, Alabama 36830

September 1978-February 1980

DATE	COUNTRY	STAFF	PROJECT
September 8-September 22	Philippines	R. O. Smitherman	AID/ea-180
September 25-October 7	Colombia	L. L. Lovshin	AID/TA-BOA 1152 T.O.2
September 27-October 7	Kuwait	D. D. Moss	Kuwait Institute for Scientific Research
September 30-October 6	Denmark	E. W. Shell	AID/DSAN-G-0039
October 1-October 14	Colombia	J. S. Ramsey	AID/1a-C-1176
November 1-November 30	Indonesia	M. C. Cremer	USAID/Indonesia
November 3-December 20	Indonesia	D. F. Leary	Asian Development Bank/FAC
November 6-November 27	Brazil	D. R. Dunseth	M. K. Ludwig
November 12-November 18	Mexico	T. R. Popma	AID/1a-C-1176
November 12-November 18	Mexico	D. G. Hughes	Honduras Fish Development
November 12-November 26	El Salvador	R. Allison	AID/DSAN-C-0053
December 10-December 15,	Panama	R. O. Smitherman	AID/DSAN-C-0053
December 11-December 15, 1978	Chile	J. A. Plumb	University of Rhode Island
January 6-March 31, 1979	Italy (FAO)	D. F. Leary	Asian Development Bank/FAC
February 1-12	Indonesia	D. D. Moss	AID Asia-C-1177
February 4-9	Panama	G. L. Jensen	AID/DSAN-G-0039
February 13-15	Thailand	D. D. Moss	AID/DSAN-C-0053
February 16-21	Kuwait	D. D. Moss	Kuwait Institute for Scientific Research
February 22-March 3	Colombia	G. L. Jensen	AID/1a-C-1176

DATE	COUNTRY	STAFF	PROJECT
March 19-23, 1979	Argentina	K. N. Randolph	AID Mission/Jamaica
March 30-April 5	Panama	D. D. Moss	AID/DSAN-C-0053
April 6-10	Honduras	D. D. Moss	Honduras Government
April 8-May 5	Panama	E. W. McCoy	World Bank
April 15-28	Colombia	S. P. Malvestuto	AID/1a-C-1176
April 15-May 11	Jamaica	J. H. Grover	AID/1a-C-1166
April 24-May 5	Colombia	L. L. Lovshin	AID/1a-C-1176
April 24-May 6	Colombia	G. L. Jensen	AID/1a-C-1176
April 29-May 9	Colombia	D. D. Moss	AID/1a-C-1176
May 6-11	Jamaica	L. L. Lovshin	AID/DSAN-G-0039
June 8-12	Philippines	H. R. Schmittou	AID/DSAN-C-0053
June 9-15	Panama	R. P. Phelps T. J. Popma	AID/1a-C-1176
June 12-26	Thailand	H. R. Schmittou	AID/DSAN-C-0053
June 26-27	Italy (FAO)	H. R. Schmittou	AID/DSAN-C-0053
June 27-July 8	Colombia	L. Tucker	AID/1a-C-1176
June 30-July 8	Colombia	L. L. Lovshin	AID/1a-C-1176
July 3-11	Panama	L. L. Lovshin	AID/DSAN-G-0039
July 8-13	Panama	L. Tucker	AID/DSAN-G-0039
July 8-August 6	Panama	E. W. McCoy	World Bank
July 11-14	Honduras	L. L. Lovshin	AID/DSAN-G-0039
July 23-28	Italy (FAO)	D. R. Street J. H. Grover P. D. Starr	AID/DSAN-C-0053
July 25-August 11	Panama	C. R. Engle	AID/DSAN-C-0053
July 29-August 4	Colombia	D. D. Moss	AID/1a-C-1176

DATE	COUNTRY	STAFF	PROJECT
July 29-August 9, 1979	Zaire	J. H. Grover D. R. Street P. D. Starr	AID/DSAN-C-0053
August 10-22	Cameroon	J. H. Grover D. R. Street P. D. Starr	AID/DSAN-C-0053
August 23-September 5	Nigeria	J. H. Grover D. R. Street P. D. Starr	AID/DSAN-C-0053
August 25-September 6	Kuwait	D. D. Moss	KISR
August 31-September 8	Colombia	J. W. Jensen	AID/1a-C-1176
August 31-September 1	Panama	C. R. Engle	AID/DSAN-G-0039
September 2-9	Colombia	C. R. Engle	AID/1a-C-1176
September 6-21	Liberia	J. H. Grover D. R. Street P. D. Starr	AID/DSAN-C-0053
October 14-27	Colombia	E. W. McCoy	AID/1a-C-1176
October 18-30	Saudi Arabia	D. D. Moss	Aramco Services, Inc.
October 22-November 2	Dominican Republic	L. L. Lovshin	AID/DSAN-C-0053
October 27-31	Panama	E. W. McCoy	AID/DSAN-G-0039
October 30-November 16	Indonesia	W. D. Davies	AID/DSAN-C-0053
October 31-November 17	Honduras	E. W. McCoy	Government of Honduras
November 1-5	Honduras	R. Pretto M.	Government of Honduras
November 1-11	Colombia	G. L. Jensen P. W. Taylor	AID/1a-C-1176
November 11-21	Guatemala	G. L. Jensen	AID/DSAN-C-0053
November 16-19	Italy (FAO)	W. D. Davies	AID/DSAN-G-0039
November 27-December 18	Liberia Kenya Rwanda	J. H. Grover	AID/DSAN-C-0053
December 9-17	Rwanda	R. C. Palm	AID/DSAN-C-0053

DATE	COUNTRY	STAFF	PROJECT
December 18-January 22, 1980	Upper Volta Ghana	R. C. Palm	Peace Corps
January 10-20	India	B. L. Duncan	AID/asia-C-1177
January 15-February 8	Panama	L. L. Lovshin	AID/DSAN-C-0053
January 20-23	El Salvador	G. L. Jensen	AID/DSAN-G-0039
January 22-29	Philippines	H. R. Schmittou	AID/DSAN-G-0039
January 24-February 15	Costa Rica	G. L. Jensen	Peace Corps
January 30-February 29	Thailand	H. R. Schmittou	AID/DSAN-C-0053
February 3-22	Thailand	A. R. Cavender	AID/DSAN-C-0053
February 8-15	Sudan	R. T. Lovell	IDRC (Canada)

copying to 6

INTERNATIONAL CENTER FOR AQUACULTURE
RESUME OF STAFF ASSIGNMENTS IN FOREIGN COUNTRIES

Staff Member	Project & Number	Date went on Project	Date Arrived in Country	Date Returned to Campus	Date Taken Off Project
David R. Bayne El Salvador	AID 688 1324-30-0271	1- 1-72	1-28-72	12-30-73	1- 1-74
*Johnie Crance Philippines	AID/180 1324-30-0265	9-12-76	10- 1-76	12-15-78	3-11-79
Michael Cremer Indonesia	AID/ASIA-C-1177 1323-30-0263	7 -7-76	10-26-76	10- 2-78	10- 6-78
William D. Davies Brazil	AID 2270 T.O. 4 1324-30-0271	9- 1-70	11- 1-70	8- 1-72	9- 1-72
Bryan Duncan Indonesia	AID/ASIA-C-1177 1324-30-0263	7- 7-76	10-26-76	--	--
John H. Grover Philippines	AID 180 1324-30-0265	8- 1-71	1- 4-72	7- 1-76	7- 1-76
David G. Hughes El Salvador	AID 688 1324-30-0271	8- 1-74	9-9-74	--	5- 1-76
U.S. Peace Corps URI-211,d		5- 1-76	--	--	6-30-76
7- 1-76		7- 1-76	--	--	10-31-76
Honduras	Honduras Develop- ment ICA	2- 7-77	2-21-77	--	--
*Norris B. Jeffrey Brazil	AID 2270 T.O. 3 1324-23-0269	10-16-69	11-21-69	--	--
AID 2270 T.O. 3 1324-30-0269		--	--	10-26-71	2- 1-72
John Jensen Brazil	AID 2270 T.O. 8 1324-30-0276	5-19-72	5-19-72	--	--
AID 1152 T.O. 2 1324-30-0278		7- 1-74	--	5-26-75	7- 1-75
Malcolm Johnson Nigeria	Tiffany, Inc. 1324-30-5701	4- 1-74	6-15-75	--	--
*Daniel Leary Philippines	AID 180 1324-30-0265	8- 1-74	8-22-74	10- 2-78	10- 2 -78
L.L. Lovshin Brazil	AID 2270 T.O. 8 1324-30-0276	6- 6-72	6-16-72		
AID 1152 T.O. 2 1324-30-0265		7- 1-74	--	12-18-78	2-28-79

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Staff Member	Project & Number	Date went on Project	Date Arrived in Country	Date Returned to Campus	Date Taken Off Project
R. P. Phelps Colombia	AID/1a-C-1176 1324-30-0273	1- 7-77	2-10-77	--	--
T. J. Popma Colombia	AID/1a-C-1176 1324-30-0273	1-10-77	2-10-77	--	--
K. Randolph Jamaica	AID/1a-C-1166 1324-30-0268	10-18-76	1-10-77	--	--
H.R. Schmittou Philippines	AID 180 1324-30-0265	7-23-71	9- 1-71	7-30-76	9-1-76
R. Scully Colombia	AID/1a-C-1176 1324-30-0273	1-10-77	2-10-77	6-11-79	6-30-79
R.O. Smitherman Panama	AID 684 1324-30-0266	1-24-72	2- 3-72	9- 1-73	11- 1-73
V. R. Woodruff Jamaica	AID/1a-C-1166 5-33547	11-15-78	12- 4-78		

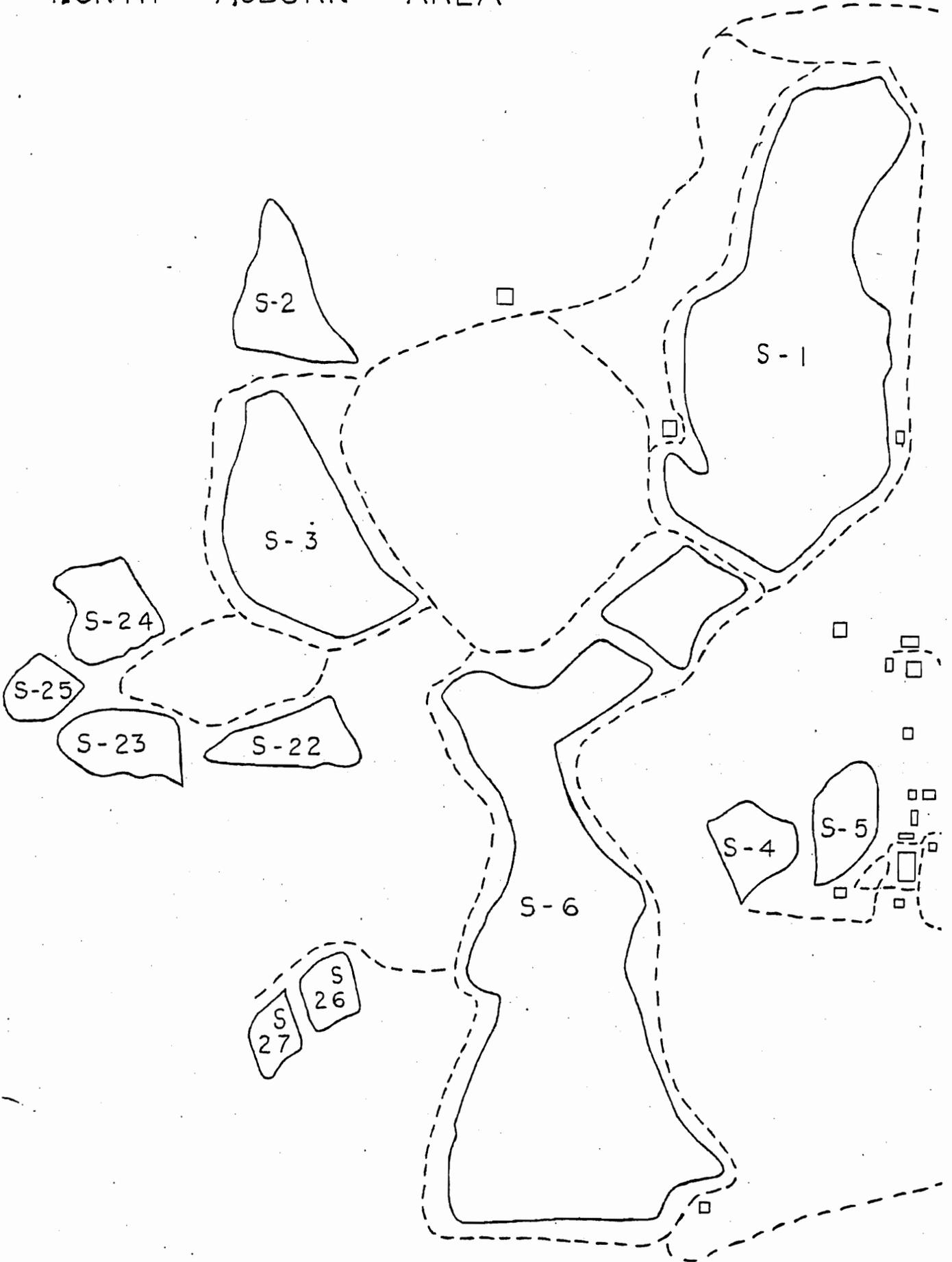
*These staff members are no longer employed by the center.

Johnie Crance is the Fisheries Director for the AID Mission in Manila, Philippines
 Norris B. Jeffrey is at the Wildlife Resources Commission, a Division of Inland
 Fisheries in Raleigh, N.C.
 Daniel Leary is homesteading in Arkansas

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U.S. FISHERIES RESEARCH PONDS
NORTH AUBURN AREA

Appendix Part (a)
8

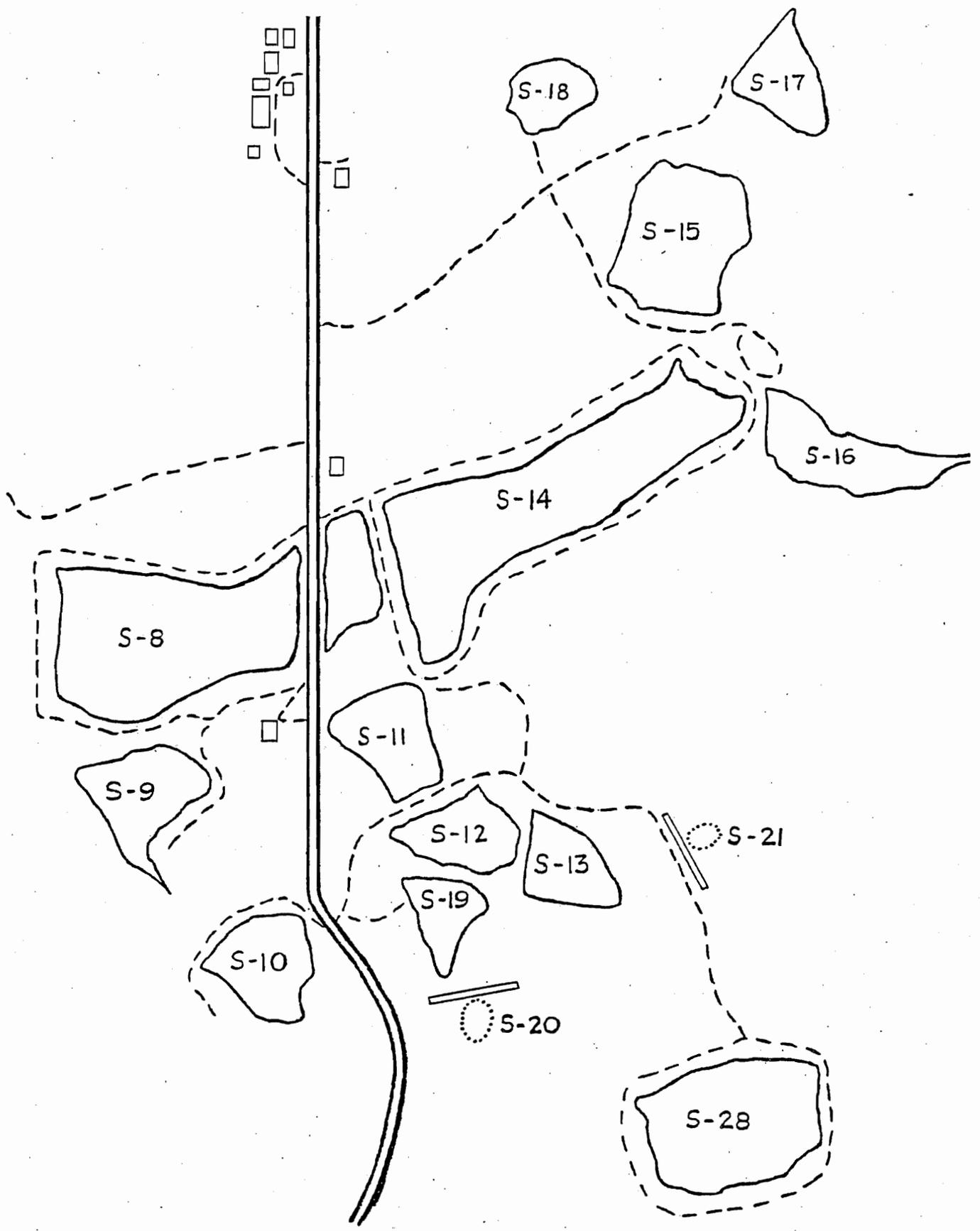


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A.U. FISHERIES RESEARCH FUNDS

NORTH AUBURN AREA

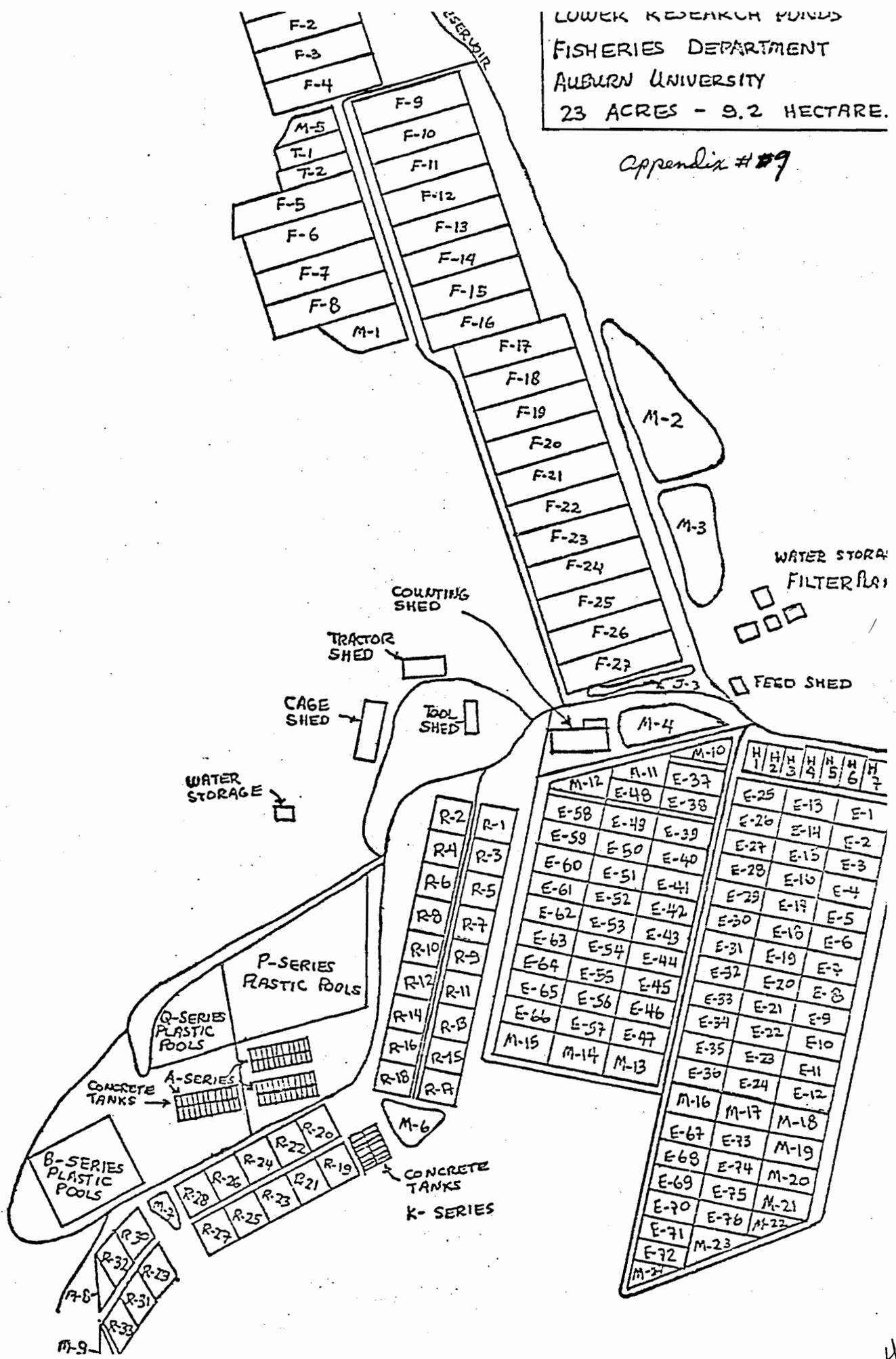
Appendix # 18
part (2)



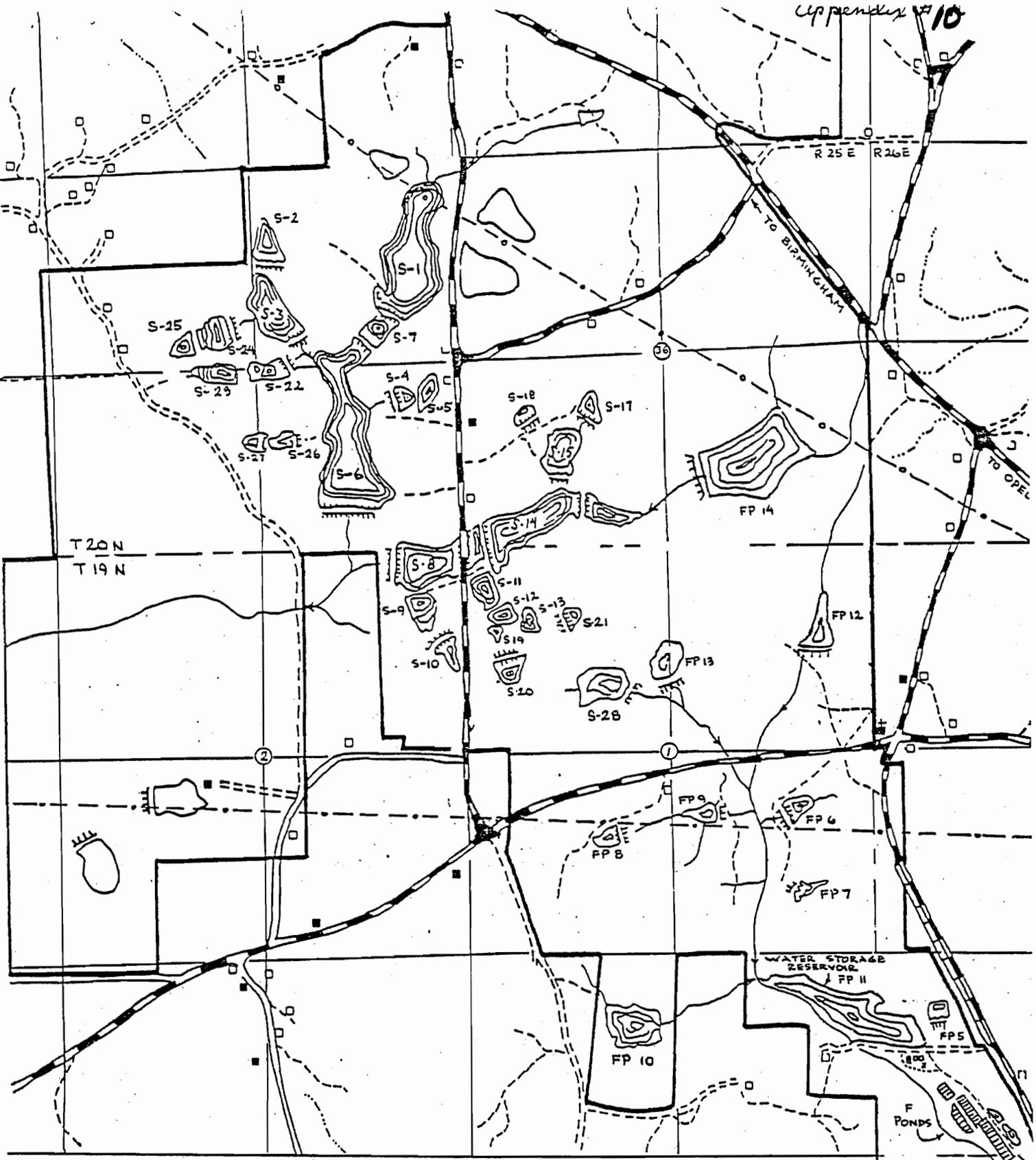
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LOWEK KEWEAKOH POND
 FISHERIES DEPARTMENT
 AUBURN UNIVERSITY
 23 ACRES - 9.2 HECTARE.

Appendix # 9

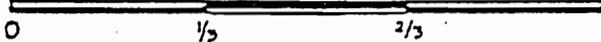


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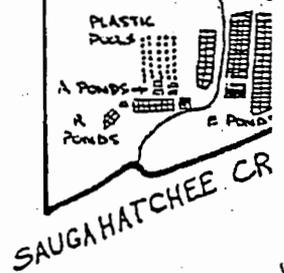


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MAP OF THE NORTH AUBURN AREA SCALE



- | | | | |
|-------|--------------------------|-------|-------------|
| ----- | TOWNSHIP AND RANGE LINES | ==== | GRAVEL ROAD |
| ----- | QUARTER SECTION LINES | ----- | DIRT ROAD |
| ----- | STATE LAND BOUNDARY | ----- | WOODS ROAD |
| ----- | POWER LINE | ----- | LIVE STREAM |



December 15, 1970
 Experimental Ponds at Fisheries Research Unit
 International Center For Aquacultures
 Department of Fisheries and Allied Aquacultures
 Auburn University Agricultural Experiment Station
 Auburn, Alabama

		<u>No.</u>	<u>Acres</u>
Series A	Concrete Ponds (0.005A)	72	0.360
Series B	Plastic-lined Ponds (0.0018A)	80	0.144
Series C	Earthen Ponds (0.125A)	1	0.125
Series D	Earthen Ponds (0.007A)	17	0.119
Series E	Earthen Ponds (0.1A)	76*	7.600
Series F	Earthen Ponds (0.25A)	27	6.750
Series F.P.	Earthen Ponds (1.0-5.0A)	7**	16.600
Series H	Earthen Ponds (0.046-0.079A)	7	0.376
Series J	Earthen Ponds (0.015-0.058A)	3	0.092
Series K	Concrete Ponds (0.005A)	20	0.100
Series M	Earthen Ponds (0.044-0.63A)	24***	3.585
Series P	Plastic-lined Ponds (0.0018A)	206	0.371
Series Q	Plastic-lined Ponds (0.0018A)	80	0.144
Series R	Earthen Ponds (0.1A)	33	3.300
Series S	Earthen Ponds (1.0-25.5A)	26****	123.460
Series T	Earthen Ponds (0.1A)	<u>2</u>	<u>0.200</u>
	Total	681	168.326

	<u>No.</u>	<u>Acres</u>
Earthen Ponds	223	167.207
Plastic-lined Ponds	366	0.659
Concrete Ponds	<u>92</u>	<u>0.460</u>
Total	681	168.326

*E-67 to -76 completed in Spring, 1971
 **FP-2, -3 and -5 omitted as they are not in use experimentally
 ***AL-16 to -24 completed in Spring 1971

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FOREIGN STUDENTS INVITED FOR DISCUSSION

NAME	COUNTRY	SPONSOR	DEGREE
Din Ali	Malaysia	Malaysian Government	M.S.
Rudy Arce	Philippines	USAID	Ph.D.
Vijaykumar Baragi	India	Indian Government	Ph.D.
Jacques Gabaudan	France	self (AU Assistantship)	Ph.D.
Chalor Limsuwan	Thailand	self	Ph.D.
Srijana Maskey	Nepal	Fullbright	undecided
Bernard Ngbenka	Nigeria	Nigerian Government	M.S.
Akoo Obi	Nigeria	Nigerian Government	Ph.D.
Cincinato Paiva	Brazil	Brazilian Government	M.S.
Victoria Rasheed	Kuwait	Kuwait Government	Ph.D.
David Sanches	Venezuela	LASPAU	M.S.
Bambang Sobientoro	Indonesia	Indonesian Government	Ph.D.
Marco Torres	Colombia	USAID	M.S.
Stella Williams	Nigeria	Nigerian Government	Ph.D.