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FINAL CONTRACTOR REPORT  
FOR TECHNICAL SERVICES IN SUPPORT OF  
THE MALI LIVESTOCK SECTOR PROJECT

MALI LIVESTOCK SECTOR PROJECT 688-0218  
CONTRACT NO. 688-0218-C-00-1014-00



8 March 1991 - 1 August 1992

WASHINGTON STATE UNIVERSITY COLLABORATOR GROUP:

Washington State University  
University of Wisconsin, Madison  
The Mitchell Group  
Land O'Lakes, Inc.  
Virginia State University  
Michigan State University  
Texas A & M University  
Center for PVO/University Cooperation in Development

MINISTRY OF RURAL DEVELOPMENT AND ENVIRONMENT, MALI

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/BAMAKO, MALI

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## LIST OF ACRONYMS AND ABBREVIATIONS

AID	Agency for International Development (United States)
AID/WA	AID/Washington D.C.
APEX	Animal Productivity and Export Project
CILSS	<i>Comit Inter-Etats pour la Lutte contre la Sécheresse</i> (Inter-State Committee for the War Against Desertification)
CMDT	<i>Compagnie Malienne De Développement des Textiles</i> (Malian Company for Textile Development)
CNRZ/CRZ	<i>Centre Nationale de Recherches Zootechnique</i> (National Center for Livestock Research)
CVL (LCV)	Central Veterinary Laboratory (Bamako) - <i>Laboratoire Centrale Veterinaire</i>
DNE	National Livestock Service (Mali)
GRM	Government of the Republic of Mali
IER	Institute of Rural Economy
ILCA	International Livestock Center for Africa
INRZFH/CRZ	National Animal Husbandry Research Institute
LOL	Land O' Lakes, Inc.
MAEE	Ministry of Agriculture, Elevage and the Environment
MDRE	Ministry of Rural Development and the Environment
MDST/ESDG	Management Development Support Team ( <i>Equipe de Soutien pour la Développement de la Gestion</i> )
MEE	Ministry of Livestock ( <i>Elevage</i> ) and the Environment
MLSII	Mali Livestock Sector Project, Phase II
MSU	Michigan State University
NGO	Non-Governmental Organizations
OMBEVI	<i>Office Malian du Betail et de la Viande</i> (Malian Office of Livestock and Meat)
PACD	Project Authorized Completion Date
PVM	Veterinary Pharmacy (Mali parastatal)
PVO	Private Voluntary Organization
PVO/U Center	Center for PVO/University Collaboration in Development
REDSO/WCA	AID Regional Economic Development Support Office/West Central Africa
TA	Technical Assistance
TAMU	Texas A & M University
TDY	Temporary Duty (Short-term TA assignment)
TMG	The Mitchell Group
VSU	Virginia State University
USAID	United States Agency for International Development
UW/Madison	University of Wisconsin, Madison
WSU	Washington State University

EXECUTIVE SUMMARY SHEET

FOR TECHNICAL SERVICES OF THE WSU COLLABORATOR GROUP IN SUPPORT OF THE MALI LIVESTOCK SECTOR II PROJECT

Contract Term:	8 March 1991 through 1 August 1992	
Funding Agencies:	United States Agency for International Development (USAID) Ministry of Rural Development & the Environment, (MDRE) <sup>1</sup> , Government of the Republic of Mali (GRM)	\$511,783  Various <sup>2</sup>
Host Institution:	Ministry of Rural Development & the Environment, Mali <sup>1</sup>	
Cooperating Contractor institutions:	Washington State University Collaborator Group: Washington State University University of Wisconsin, Madison The Mitchell Group Land O'Lakes, Inc. Virginia State University Michigan State University Texas A & M University Center for PVO/University Cooperation in Development	
Summary of Objectives and Accomplishments	<p><u>Contract objectives:</u> 1) to provide technical and other support services to the final stage of implementation of the Mali Livestock Sector II Project (MLSII); and 2) to assist the Ministry and USAID in the design of a follow-on project. <u>Activities:</u> Technical and support services for implementation of MLSII were modified during the life of the Contract by mutual agreement and fully provided in accordance with these modifications. Design of the follow-on project was carried out utilizing the Title XII Collaborative Assistance Mode. Under this mechanism and subject to availability of funds, AID/Washington D.C. approval of the Project Identification Document (PID) and a positive evaluation of the Contractor's performance under the design contract, the design Contractor may be selected as the Contractor for implementation. A collaborative design process was carried out involving a broad set of participants in the U.S. and overseas. These included AID (Washington and Regional Offices); USAID, Bamako; various livestock-related Malian ministries; the universities and private sector organizations of the WSU Collaborator Group; and cooperating agencies in the U.S., in Mali and in other countries. <u>Major Achievements:</u> <i>MLSII implementation:</i> Administrative/Financial system and Manual developed/adopted; immunology capacity assessed, training initiated; CVL laboratory animal and vaccine infrastructure and technical capacity strengthened; nutritional studies implemented; marketing data analyzed; epidemiological surveillance needs identified; market information system strengthened. <i>APEX Design:</i> The Project Paper and associated analyses for the Animal Productivity and Export Project (APEX) project were successfully completed and approved 31 March 1992. APEX implementation start-up was initiated by the Ministry and USAID in April 1992, and a Title XII contract for APEX implementation was signed between USAID and the WSU Collaborator Group 1 July 1992, one month prior to the completion of this Contract.</p>	
Short-term TA Provided	18.9 person months (PM) in Mali, of which 14.2 PM were funded through the Contract and 4.7 PM were funded all or in part from outside this contract.	
Technical/Administrative Support Provided	24.2 person months in U.S.. of which 14.4 were provided outside the Contract.	
Procurement	Equipment, expendable materials, supplies and shipping.	\$90,206.57

<sup>1</sup> Also entitled *Ministry of the Environment and Livestock and Ministry of Agriculture, Livestock and the Environment* at various times during the life of the contract

<sup>2</sup> Amount not available, but included a variety of in-country support services as well as personnel time for participation in activities in the U.S. and in Mali

## I. INTRODUCTION AND OVERVIEW

The Washington State University (WSU) Collaborator Group, comprised of a mixture of public and private sector organizations, signed a contract with USAID in March, 1991 to "provide technical services in support of Phase III of the Mali Livestock Sector Project". The WSU Collaborator Group consists of Washington State University, Pullman, Washington (Prime Contractor); University of Wisconsin, Madison, Wisconsin; Virginia State University, Petersburg, Virginia; Michigan State University, East Lansing, Michigan; Texas A & M University, College Station, Texas; the Mitchell Group, Washington D.C. (formerly Multi-Services, International, Inc.); Land O'Lakes, Inc., Minneapolis, Minnesota; and the Center for PVO/University Cooperation in Development, Cullowhee, North Carolina.

Implemented under the Title XII Collaborative Assistance mode, the contract was somewhat unusual in that it included a set of technical and training support activities for the Phase II extension of the ongoing Mali Livestock Sector II Project and a set of activities in support of the design of a follow-on project. A major strategy of the WSU Collaborator Group was to leverage institutional resources to augment those available through the Contract in support of both sets of activities.

The purpose of the Phase II extension of the MLSII project, as stated in the terms of the Request for Technical Expression, was: *To expand project activities that have brought about increased production; to continue testing those activities that show potential; to identify, through on-farm systems research, improved technology for future extension; and, in the process, to develop the capacity of Mali's public and private sectors to identify, plan, implement and evaluate viable livestock sector investments.* Project activities carried out by the Contractor supported achievement of this purpose through assisting with technical assistance, technical backstopping and training support activities in the three major areas of project activity: animal health, animal production, and management support.

Contractor activities in support of USAID and GRM/MEE design of a follow-on project constituted a second, although related, set of activities.

The activities of the Contractor, USAID and the Ministry were carried out in a dynamic and fluid environment, which included a change in government and restructuring of the Ministry, among other factors. As a result, contract activities were extended beyond the original termination date of 30 September 1991 until 1 August 1992. Throughout the implementation of both sets of activities, full collaboration and active participation of the three sets of partners were emphasized. These partners included: the Ministry in its various configurations as Elevage and the Environment (MEE), Agriculture, Elevage and the Environment (MAEE), and Rural Development and the Environment (MDRE); USAID/Bamako; and the WSU Collaborator Group. In addition, AID/Washington (especially the Africa Bureau) and the AID Regional Economic Development Support Office/West Central Africa (REDSO/WCA), were active participants in the design process. The high level of cooperation within and among the various partners was noteworthy and contributed significantly to the quality, timeliness and cost effectiveness of Project efforts and products.

Details of the Contractor's programmatic efforts provided under this Contract, including Individual Consultant Reports and Studies and Analyses prepared for the new Mali Livestock Sector project (now entitled Animal Productivity and Export) have already been documented in the Annual Report for the period March 1991 through March 1992 which was submitted to The Agency in April 1992. This Final Report is thus intended to: (1) summarize Contractor efforts for both implementation activities under the Mali Livestock Sector Project (688-0218) and design efforts for the Animal Productivity and Export Project (688-0244); and (2) based on lessons learned during the course of this contract, suggest new strategies and approaches for continued USAID efforts to strengthen the capacity of Mali's livestock sector to promote broad-based economic development.

## II. SUMMARY OF TITLE XII INTERVENTIONS IN SUPPORT OF THE PROJECT

### A. Implementation Support of Phase II Extension of the Mali Livestock Sector II Project

#### Technical Assistance in Mali:

Contractor activities initially programmed for implementation in Mali in support of MLSII included 10 out of an original total of 16 person-months, and included the following Technical Assistance (TA):

Financial Reviews	1.5 Person Months (PM)
Virologist	3.0 PM
Epidemiologist	1.0 PM
Clinical Pathologist	1.0 PM
Livestock Marketing	1.5 PM
Immunologist	2.0 PM

The projected activities were substantially modified during the course of contract implementation, by mutual agreement of the Ministry, USAID, and the WSU Collaborator Group. During an initial field visit to Mali in April/May 1991 by the WSU Coordinator and Deputy (directly following the change of government in Mali), a decision was made to redefine the individual TA requirements and scopes of work. A Joint Planning Meeting was held in Pullman in October 1991 to reassess needs and priorities, given the changed circumstances in Mali. Participants included representatives from: the Ministry of Agriculture, Livestock and the Environment, GRM; each of the WSU Collaborator Group members; USAID, Bamako; and AID/Washington. Changes recommended as a result of this meeting and of subsequent joint planning activities were formalized in Contract Modifications 1 through 4. Such modifications were the result of changing USAID and MAEE needs Project environment in Mali and included a condensed and intensified design effort and a need to provide support for a smooth transition between the phase-down of the MLSII project and the start-up of the new Animal Productivity and Export Project (APEX). The TA originally programmed for virology, epidemiology, clinical pathology and immunology under the Mali Livestock Sector Project were either met through means other than Contract-funded field TA or were deferred for consideration under the follow-on project. The TA activities programmed for financial reviews, livestock marketing and animal health were carried out in combination with related design activities. As a result of these modifications, Technical Assistance in Mali provided under the Contract (as well as TA funded from outside this contract) for support of MLSII implementation is summarized in Table 1.

**Table 1**  
**MLSII Implementation Support Technical Assistance in Mali**

Position and/or Specialty	Name	Person-months		Home Institution
		Contract	Non-Contract	
Campus Coordinator - Animal Health/Production	Richard H. Cook	1.0	0.0	Washington State University (WSU)
Deputy/Acting Coordinator Animal Health/Production	Jan C. Noel	0.0	1.0	WSU
Administrative/Financial Management	Lloyd Mitchell	0.7	0.0	The Mitchell Group
Livestock Marketing - (Analysis used for implementation and design)	Jeremy Foltz (Graduate Student)	0.0	0.6	University of Wisconsin, Madison
Animal Nutrition Specialist	Ron Kincaid	0.0	0.6	WSU
Veterinary Immunology	Steve Hines	0.0	0.2	WSU
Total Person Months Provided		1.7 PM	2.4 PM	

In addition, other members of the WSU Collaborator Group were able to take advantage of their related activities in Mali to provide additional input into several key technical areas, at no cost to the present Contract. Additional Project contributors are indicated in **Annex 1**.

Future technical support in the specialty areas originally envisaged under the Mali Livestock II Project will be reviewed under the APEX project and reprogrammed according to evolving needs and priorities.

#### Other Implementation Support Services

In addition to direct field TA, the Contractor provided other services during the final implementation phase of the Livestock Sector Project. These focused on providing management, administrative, technical and procurement support for certain programs considered of key importance for future activities anticipated under the APEX project. These included:

- Development of a comprehensive Scope of Work for strengthening epidemiological surveillance activities at the National Livestock Service.
- Support for the installation and operation of new vaccine production equipment at the Central Veterinary Laboratory.
- Procurement of equipment, computers and supplies (financed in part outside the Contract) for equipping key Ministry departments/units for future livestock sector development needs, including a new facility for rearing laboratory animals for testing improved diagnostic reagents and vaccines at the Central Veterinary Laboratory. Inventory and disposition of equipment procured under the Contract are included as **Annex II**.
- Training (financed outside the Contract) for managing and operating a new facility for rearing laboratory animals necessary for testing improved diagnostic reagents and vaccines produced at the Central Veterinary Laboratory;
- Technician training (financed outside The Contract) in clinical pathology.
- Implementation of a new financial management system; for the National Livestock Direction.
- Implementation of an improved animal disease surveillance system; and for National Livestock Marketing Office (OMBEVI) - for strengthening the livestock market information system.
- Professional networking support for key MLSII personnel (Ousmane Guindo, Conseiller Technique) to explore U.S. private and private sector livestock development resources.

Technical and administrative support in the U.S. associated with both implementation and design activities was provided by a broad spectrum of Collaborator Group members. A significant amount of this support was funded through sources outside the Contract. The U.S. administrative and technical support provided through the Contract and a partial list of that provided through other resources available to the members of the Collaborator Group is summarized in **Table 2**.

**Table 2**  
**Summary of Technical and Administrative Support in the U.S.**

Position and/or Specialty	Name	Person-months		Home Institution
		Contract	Non-Contract	
Campus Coordinator - Animal Health/Production	Richard H. Cook	3.3	3.0	Washington State University (WSU)
Deputy/Acting Coordinator Animal Health/Production	Jan C. Noel	0.5	2.5	WSU
Institutional Liaison & Livestock Economics	Ken Shapiro/Jeremy Foltz/Larry Herman	0.0	0.5	University of Wisconsin, Madison
Economist/ Land Tenure Specialist	Peter Bloch	0.3	0.3	UW / Madison
Animal Health Specialist/ Epidemiologist	Jane Homan	0.0	0.2	UW / Madison
Institutional Liaison - Rural Development & Extension	Winfrey Clarke	0.3	0.3	Virginia State University
Institutional Liaison - Dairy Development	Martha Cashman/Helen Nelson/Rosemarie Kelly	0.3	0.3	Land O'Lakes, Inc.
Institutional Liaison - Administration /Finance	Lloyd Mitchell/ Adama Traoré	0.3	0.3	The Mitchell Group
Institutional Liaison - Community Development	Ralph Montee/ Phyllis Stiles	0.3	0.3	PVO/University Center /Cooperation in Development
Institutional Liaison - Animal Health	Ed Mather	0.0	0.3	Michigan State University (MSU)
Institutional Liaison - Animal Health	Jim Goodwin	0.0	0.3	Texas A & M University (TAMU)
Immunologist	Steve Hines	0.0	0.5	WSU
Procurement Specialist	Dan Hardesty	0.0	2.0	WSU
Secretary/Administrator	M. Weitz	4.5	1.0	WSU
Administration/SPARC liaison	Linda Cleboski	0.0	0.3	TAMU
Livestock Economist	LeRoy Rogers	0.0	0.5	WSU
Animal Health	Dan Miller	0.0	0.3	MSU
Administration	Urdahl/Nelson/Fox	0.0	0.5	UW / Madison
Agricultural Economist <sup>1</sup>	G.E. Rodewald	0.0	0.5	WSU
Agronomist/Extension	Jerry Johnson	0.0	0.5	WSU
Total Person Months		9.8	14.4	

<sup>1</sup> Reflects only the level of effort (LOE) for which records were available, and thus under-estimates actual LOE

**B. Assistance to the Ministry of Environment and Livestock (MEE) and USAID in designing a follow-on [Phase III] Project**

The design by the MEE and USAID of a follow-on project (the latter originally scheduled to begin in September 1991) was delayed due to a number of factors. The most significant of these was the overthrow of the 22 year-regime of President Mousa Traoré in March 1991 and its replacement by a national transitional government. This resulted in a period of intensive re-examination of national needs and priorities by the GRM, by the reorganized Ministry and by USAID. The PACD of the MLSII project and the WSU Collaborator Group Contract were extended for approximately 12 months. This was necessary to allow time for the emerging needs and priorities to be integrated into the design of the new Project and for Project approval to be obtained prior to the end of March, 1992, to ensure a smooth transition in programs between the completion of the Mali Livestock Sector II Project and start-up of the Animal Productivity and Export Project.

As a result of these developments, the majority of support provided and resources expended by the WSU Collaborator Group concerned activities directly related to the design of the Animal Productivity and Export (APEX - 688-0244) Project. Levels of Effort in Mali for design activities are summarized in **Table 3**.

The major services provided and products produced by the WSU Contractor Group for APEX Project design activities have been detailed in the WSU Collaborator Group Annual Report cited above and in the individual reports. A complete list of these Project publications is included as **Annex III**. The APEX Project Paper was completed and approved by the MEE and USAID in March 1992. The Project Agreement between the Republic of Mali and the United States of America was completed and signed in March 1992.

**Table 3**  
**APEX Design Support - Person Months of Technical Assistance in Mali**

Position and/or Specialty	Name	Person-months		Home Institution
		Contract	Non-Contract	
Team Leader - Animal Health & Production Specialist	Richard H. Cook	6.0	0.0	Washington State University (WSU)
Agricultural Economist	Peter C. Bloch	1.4	0.0	University of Wisconsin, Madison
Livestock Marketing Economist	Ken Shapiro	0.0	0.7	U W. , Madison
Livestock Marketing Specialist	Larry Herman	0.8	0.0	U W. , Madison
Rural Sociologist/ Community Development	Lorna Butler	1.0	0.0	WSU
Livestock Sector Sociologist	David Miller	1.8	0.0	WSU
Financial Analyst	Lloyd Mitchell	1.5	0.0	The Mitchell Group
Dairy Development Specialist	Martha Cashman	0.0	0.3	Land O'Lakes, Inc.
Dairy Development Specialist	Kristin Rens	0.0	0.3	Land O'Lakes, Inc.
Deputy Coordinator/ Animal Health/Production	Jan C. Noel	0.0	1.0	WSU
Total Person Months		12.5	2.3	

### **C. Mobilization for implementation start-up of the Animal Productivity and Export Project (APEX)**

The Title XII Collaborative Mode of Contracting, in which the Contractor involved with a successful design is also the Contractor for implementation, allowed for substantial time and cost savings associated with the transition from project design to implementation (e.g., implementation contract signed 1 July, TA fielded 11 July). The cost savings achieved through leveraging resources from outside the Contract (see Tables 1 - 3, above), made resources available for a final set of investments to be made under the MLSII WSU Collaborator Group Contract to support the transition from the MLSII project to the APEX project. Following acceptance of the Project Paper, an assessment was made to identify procurement needs not yet met under MLSII which would better prepare key Ministry departments for participation in the APEX Project. These investments (listed in greater detail, under "Other Implementation Services", above) included primarily procurement of computers and laboratory equipment. Resources were also used to fund a trip to the U.S. of Dr. Ousmane Guindo, former Conseiller Technique of the Ministry and newly named Technical Coordinator of APEX, to plan for the MLSII to APEX transition and to meet with public and private sector institutions involved in livestock development in the U.S. (professional networking). In addition, the WSU Coordinator maintained close liaison with USAID and the Ministry to provide input and assistance to in-country mobilization planning, staffing, and other issues. During this period the WSU Collaborator Group also met to discuss lessons learned from the MLSII activities and to discuss issues associated with expediting the implementation start-up of APEX, including final approval of the Project Coordinator, selection of a short-list of candidates for Ministry/USAID review for the long-term Livestock Economist, and operational issues.

The WSU Collaborator Group APEX Contract was signed on 1 July 1992. The WSU/APEX Project Coordinator, Richard H. Cook, was formally approved by USAID and the Ministry and left for Washington D.C. to meet with key AID representatives the first week in July. He arrived in Mali on July 11, 1992 to begin APEX in-country start-up activities.

The MDRE of the GRM formally accepted transfer of title, custody and control of the full inventory of commodities procured under this Contract on 17 March 1993 (see Annex III).

### **D. Budget and Finance**

The original budget for activities conducted under the Contract was \$454,132. Following the extension of the PACD, the WSU Collaborator Group Contract effective date and level of effort were amended to reflect the emerging needs (Contract Modifications 2-4). These changes resulted in a final Life of Contract total budget of \$511,783. Costs savings achieved during both implementation and design resulted in a projected balance following completion of design. This was reallocated, with GRM, USAID Mission and Contracting Officer approval, to procurement of commodities (equipment and materials).

In accordance with the objectives of the Gray Amendment, it is desired that 10% of project resources are expended in association with Small and Disadvantaged Businesses, including Historically Black Colleges and Universities and 8A firms. Under this Contract, 10.5% of Contract resources were utilized by the two WSU Collaborator Group members in these categories (The Mitchell Group and Virginia State University).

Life of Project Contract resource utilization is summarized in Annex IV.

### **III. RESULTS AND LESSONS LEARNED**

#### **A. Mali Livestock Sector II Project Implementation**

The WSU Collaborator Group Contract inputs into implementation of the MLSII project were limited to a 15 month period of the final stages of a 10 year project. However, members of the WSU Collaborator Group have had a long-term association with USAID/GRM livestock development efforts in Mali. Thus, the following summary of results and lessons learned from implementation of MLSII, from the perspective of this Contract, also reflects this long-term experience.

The 1982-1992 Mali Livestock Sector Project (688-0218) was a collaborative effort by the Government of Mali (GRM) and USAID to bring about sustained improvements in the incomes and well-being of producers and others dependent on the livestock sector. This project, which was designed and initially implemented during the period of 1979-1981, focused on strengthening the technical and managerial capacities of livestock public sector services. At the time of MLSI and MLSII project design, this approach was considered both a necessary and sufficient condition to promote improved productivity within the livestock sector. The development strategy guiding the implementation of the Mali Livestock Project during its initial phase and during the recently completed Phase II, was to support institutional strengthening programs conceived, implemented, and, in general, evaluated by public sector institutions themselves. The approach adopted by MLSII for achieving this long-term goal included: (1) an initial program focus on improving program planning, implementation, and evaluation at the Project level with a long-term view of expanding successful management procedures throughout the Ministry of Livestock and the Environment; (2) an initial technical focus on improving livestock productivity with a long-term view of emphasizing the integration of livestock and crop production; and (3) an initial emphasis on increasing the management capacity of public sector institutions with a long-term view of providing more efficient and effective service support for the private sector.

During the 1982-92 implementation, Project programs underwent significant modifications based on several external evaluations and continuous assessments by Project Management, National Technical Services, and USAID/Bamako. In general these changes involved a clearer focus on institutional strengthening, particularly as regards the design and adoption of technical program and financial management systems, of improved integration of resources across technical service divisions, the establishment of qualitative and quantitative criteria to measure program achievements and impacts, and the establishment of mechanisms to provide greater access to continuing educational opportunities for central and regional staff.

Sustainability was one of the key elements determining the re-orientation of programs during the period of 1989 through 1992. In consideration of Mali's limited resources, in the short-term this translated into designing and implementing programs that would assist the Ministry to develop a more efficient and effective management structure to; (1) clearly and realistically identify and prioritize livestock sector development needs and objectives; (2) assign clear roles and responsibilities to service divisions for program implementation and coordination; and (3) monitor and evaluate resource allocation and use based on productivity-based priorities and program impacts. In essence, this focus on improving resource management was considered a prerequisite to achieving long-term economic sustainability of those public services and programs being supported by the project.

In addition, technical programs were re-oriented to those ecological areas where the chances of long-term economic growth appeared most likely, while continuing limited activities in lower rainfall areas which showed a high chance of success. Thus, production systems in medium and high rainfall areas, where existing markets offered a opportunity for economically viable changes in existing production practices, became a major area of focus. Where economic conditions favored an increased specialization in livestock production, or where livestock were an essential input for support of agricultural production, it was also assumed that producers would become increasingly dependent on more cost-effective animal health care services and, therefore, such producers represented an important potential clientele for promoting the

private animal health services sector. Such clients were considered to be the primary beneficiaries of an expanded and improved animal health service, and therefore, were considered an important target population for project activities.

The long-term objectives of these activities were to increase the intensity and diversity of livestock product output, to better integrate crop and livestock production, and, where feasible, to provide viable economic options for producers to increase the production of forage crops. In lower rainfall areas, efforts focused on improving the efficiency and effectiveness of animal health and production extension services to extend new forage production technologies. An important goal to which these activities were to contribute was to stabilize existing cropping patterns.

As a result of this evolution, during the latter stages of MLSII implementation project activities focused on *expanding project activities that have brought about increased production; continuing to test those activities that have shown potential; identifying, through on-farm systems research, improved technology for future extension; and, in the process, developing the capacity of Mali's public and private sectors to identify, plan, implement and evaluate viable livestock sector investments.* This was carried out through a focus in the following areas, involving the collaborative effort of the National Livestock Service (DNE), The Central Veterinary Laboratory (CVL), and The National Animal Husbandry Research Institute (INRZFH/CRZ):

- 1) design and implementation of an animal disease diagnostic network
- 2) strengthening the capacity of animal health field agents to more effectively address an increasing spectrum of animal nutrition and production issues
- 3) design and implement a disease monitoring/surveillance network that will provide timely and accurate information on the status of economically important diseases and provide data to improve resource management for public sector field veterinary services.
- 4) reinforcing animal production/forage production research activities in the project's high-rainfall regions; and
- 5) support institutional efforts to better integrate animal health and production services among national technical service divisions.

In the view of the WSU Collaborator Group, Phase II Livestock Sector Project achieved many of its objectives; (1) national service staff were trained; (2) the infrastructure of national technical services were strengthened and improved to provide more effective support services for livestock producers; (3) research activities produced and demonstrated the performance benefits to be achieved from improved livestock rations based on locally-grown (forages) feed supplements; and (4) significant strides were made in improving the resource management capacity of some national technical services (eg. CVL).

However, the Livestock Sector II Project achieved more of its objective of strengthening the capacity of *the public sector and that of private sector* to plan, implement, and evaluate viable livestock sector investments. This was primarily the result of two factors: (1) virtually all resources were provided directly to the public sector at the exclusion of the private sector; and (2) support for programs and activities was provided on the basis of long-term (life-of-project) subsidies rather than on the basis of short-term objective-targeted project support to build capacity and performance. In general, Livestock Sector Project II programs neglected the need to inform, train, and support producers, producer groups, and private professionals and commercial operators in the animal/livestock sector. The limited success of MLSII in these areas clearly constrained the achievement of higher level objectives such as improving livestock sector productivity and increasing incomes and well-being of livestock sector participants.

This appeared to be less the result of an oversight in program identification than a reflection of national policies during the time of Project conception and implementation. These policies have dramatically changed during the past twelve months. National and regional rural development strategies are now focused on building individual capacity in Mali's rural population and are directly supporting them to take greater charge of their own development. The institutional strengthening successes of the Livestock Sector II Project must

now be translated into a partnership with Mali's private sector and the beneficiary clientele at local and regional, as well as national levels. This can only be achieved if future development assistance is provided within a context of *short-term support* (to catalyze change, rather than developing dependence on continued Project investments). Such short-term investments can serve to strengthen individual and institutional capacity and performance of those involved in livestock and animal development in both private and public sectors.

#### **B. Building on the Successes of the Previous USAID-Sponsored Livestock Sector Efforts**

A partnership spanning 25 years between the United States Agency for International Development (USAID) and the Government of the Republic of Mali (GRM) in the livestock sector has built a sound foundation upon which to support expanded animal sector objectives. A vaccine production facility was established in 1963. From 1974-1981 the Mali Livestock Sector I project strengthened livestock production through cattle fattening programs (public sector feedlots and *embouche paysanne*), improved range management and recovery of tsetse-infested agricultural land, and upgrading extension and animal health diagnostic skills of livestock agents. The Mali Livestock Sector II Project (MLSII) carried the development of the Central Veterinary Laboratory (CVL) to its present status as one of Africa's premier animal health institutions. MLSII also played an important role in the policy dialogue which has resulted in privatization of veterinary medicine and commercialization of the parastatal veterinary pharmacy (PVM). The CVL, as one of three sites in Africa selected for the protection of a thermostable rinderpest vaccine, has played a key role in supporting the efforts of Mali's national livestock service to control this disease. The fact that no cases of rinderpest have been reported in Mali since 1986 demonstrates the success of this program. The diagnostic and research capacity of the CVL provides a national capability which will become increasingly important in the future for the development of new types of vaccines and disease control programs. These will support producers and the emerging private animal health care sector.

AID-supported efforts have also made important strides in animal production. In addition to the *embouche paysanne* program mentioned above, these efforts have supported animal production research and technology transfer programs which have resulted in the development and adoption of new and improved techniques. These include more efficient utilization of local feed resources, ration formulations, crop rotation systems incorporating forage legumes, and promising techniques to improve the productivity of fallow lands.

Thus, Mali's public sector institutions bring a strong commitment and experience to the further development of the animal sector. However, experience has shown that the responsibility for such development must be shared by *both the private and public sectors to be economically sustainable*. The recent consolidation of the livestock and environment and agricultural ministries into a single ministry of Agriculture, Livestock and Environment will facilitate enhanced communication and integration of the research, extension, information, training and other project activities relating to the animal sector.

#### **C Design of the Animal Productivity and Export Project (688-0244)**

The Animal Productivity and Export Project, which was designed in the period from December 1991 through March 1992, incorporated many of the above lessons learned, as well as those from previous livestock development efforts. Designers recognized from the onset the need not only to provide support to capitalize on investments and gains in public sector technical services, but also the need to target technical and operational capacity of the private professional/commercial sector and that of other sector participants themselves. The current economic policies of the Government of Mali (GRM) have demonstrated commitment to economic accountability and reform and ensuring broad participation in a market-based economy. This context has provided an opportunity unprecedented in the recent history of U.S.-Mali relations, to move toward shared Malian and USAID goals of sustained democratic and economic development. However, it also provides a setting in which the rules of the game and the key players, individual and institutional, are hard to identify at any given moment, much less for 5 and 10 years into the future. In such a setting, development efforts must be cognizant of and designed to deal with this dynamic

environment, to capitalize on emerging opportunities and to predict and deal with changing assumptions. It is within this optimistic and challenging context that Mali's Animal Productivity and Export Project (APEX) was designed and will be implemented.

Studies have shown that Mali's livestock sector has a comparative advantage within the region, especially in the production and marketing of cattle and small ruminants<sup>3</sup>. These include Mali's relatively low population and high natural resource potential, a rapidly developing agricultural sector, with an expanding livestock component, and a large animal resource base (national herds and flocks), already in place. Mali is geographically well-situated for accessing current and future markets in the North, West and Central African Regions. Despite recent policy and regulatory changes designed to capitalize on this advantage, constraints in the areas of improving and sustaining animal production and commercialization limit the sector's contribution in domestic and regional markets. Moderating these constraints, and making the animal sector a promoter of sustainable, private-sector, market-oriented development are key objectives in the GRM's long-term strategy for economic growth. It is also the focus of the Animal Productivity and Export Project (APEX), designed to increase the productivity and incomes in Mali's animal/livestock sector.

Numerous projects/programs which relate directly to the objectives of the animal sector are currently operating within or linked with the Ministry and other public sector organizations. Examples include: The Farming Systems Research Project (e.g. integrated crop/livestock production), the Support Project for Agricultural Research and Commodities project (forage and feed production, research planning and management, agricultural information systems), the World Bank Extension project, Programme National de la Vulgarization Agricole. An expanding and evolving set of private and quasi-private institutions, Compagnie Malienne De Développement des Textiles--CMDT--, l'Office du Niger, and associations (National Veterinary Order) are playing a greatly increased role in the animal sector. These range from non-governmental organizations (NGOs), local and international private voluntary organizations (PVOs), producer, transporter and trader associations, professional associations such as the National Veterinary Order, women's associations, and many others.

The public sector, in keeping with the national agenda, is refocusing its programs. The emphasis is on: identifying new ways to better serve the public; decentralization; improved efficiency and accountability; and enhancing private enterprise development. This is a new agenda, one which involves significant departures from past operating modes and entails risks. The institutions, organizations and associations in the private and commercial-public sector are expanding in number and scope in response to new opportunities and needs. Many are organized at local and regional levels, in concert with the decentralization of development responsibility. However, many, if not most, are still in the early stages of defining or redefining what their roles, objectives and functions should be. Thus, their capacities to contribute to and benefit from interventions in the animal sector vary widely.

Recent definition of policy reforms and positive steps toward their implementation are evident in the animal sector. Liberalization of marketing and trade policies has occurred, with reduction in the redundancy of documentation and fees previously required for animal export. Private veterinary medicine has been legalized and the National Veterinary Order has mobilized to monitor and improve the efficiency of private animal health care service delivery. Privatization of sale of veterinary pharmaceuticals is in process. Producer demand for these new services is already being demonstrated.

The overall goal of the APEX project is to promote sustainable economic growth. This will be accomplished through increasing the integration of animal/livestock commodity production and marketing systems, making them more efficient and competitive for both export and domestic markets. Improved animal production practices based on more efficient and environmentally sound use of the animal feed resource base will enhance the potential for sustained increases in productivity and incomes in the animal sector.

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<sup>3</sup> Stryker, Dirck J., et al. Incentive System and Economic Policy Reform in Mali, Washington D.C., June, 1987

Competitiveness will be enhanced by improving Mali's regional comparative advantage in the production of cattle and small ruminants through improved management of animal and animal feed resources, increased efforts to develop and expand export markets, diversification of animal commodity outputs, development of the private sector's capacity to supply production inputs, and the promotion of a favorable policy environment.

Translation of project results into sustainable and broad-based economic growth will depend on a number of factors outside the direct scope of this project. These include such factors as the stability and responsiveness of the government, changes in the marketplace within the regions of western, northern and even central Africa, the extent to which development interventions in this or related sectors compete with or complement those of APEX, and potential emergence of new economic opportunities or constraints. However, the *process* through which the project will be implemented, involving broad-based public and private sector participation, linkages with key stakeholders within and outside the sector, monitoring of goal level assumptions coupled with a management system which supports iterative feedback and redesign, will maximize opportunities for achieving the project's goal.

The purpose of APEX is to increase productivity and income in the animal/livestock sector on a sustainable basis. Thus, the project will measure its success not only in terms of *performance improvements* in the animal sector during the life of the project (efficiency of production, increased commercial development and income generation, and natural resource improvements in the targeted regions of the country), but also through the development of *improved capacity by animal sector stakeholders to make and implement decisions which sustain and enhance animal sector improvement over time*. This is a critical element in the conceptual framework of the project, as it demands that the *process* of identifying and implementing interventions be as carefully addressed as the carrying out of interventions themselves. In many projects, such capacity-building is approached within the context of a single or limited set of institutions. However, the diverse and evolving set of private and public sector institutions, and the impact-oriented, opportunity-seeking approach of APEX demands a modified approach. The strategy developed to achieve this purpose, and to link results to the higher level goals of economic and democratic development, includes three interlocking themes. These are:

- Utilization of animal sector commodity networks (*filières*) of economic investments and transactions leading from production to consumption, as the analytic framework with which to identify and implementing interventions. This approach facilitates an opportunity-seeking orientation which considers potential participants and beneficiaries, as well as impacts, positive and negative, both upstream and downstream of any intervention.
- Utilization of a *decentralized (regional/local)* approach to project planning and implementation, linking local needs, priorities and capacities with emerging opportunities, while facilitating buy-in and participation from a broad range of associations and groups in partnership with non-governmental and public sector personnel.
- Explicit consideration to the *mutually beneficial collaboration of public and private sector institutions, organizations, and individuals--as project beneficiaries and participants--to facilitate and support the evolving and complementary roles of each in the increasingly market-driven animal sector.*

The APEX Project will capitalize on the significant progress made in the animal sector under past and present development efforts, moving forward rapidly to implement programs showing a high probability of success. It will also take advantage of the current Malian development context by utilizing a process which will bring together individuals and institutions from a broad spectrum of animal sector stakeholders to plan and implement additional animal sector improvements. These include: GRM public sector institutions; animal producers; private sector input and service providers; marketers/traders; processors; professional organizations; organizations operating at the community or local levels, such as women's associations, private voluntary organizations (PVOs) and non-governmental organizations (NGOs).

#### **D. The Partnership Process**

The nature and level of collaboration throughout both implementation and design efforts were unprecedented in the experience of the Contractor. The GRM, USAID/Bamako, AID/Washington D.C., AID REDSO/WCA, the WSU Collaborator Group members and their extended network of contacts all participated with enthusiasm and a high degree of cooperation and trust. This was all the more remarkable when one considers the fluid and dynamic environment in which these activities took place. The overthrow of the Government in Mali resulted in significant reorganization of the involved Ministry and changes in personnel. The political environment also changed significantly, which presented both the opportunities and the challenges associated with reorientation of GRM priorities and approaches. Throughout, the Ministry was effective in mobilizing participation, support and maintaining commitment and leadership to the MLSII and APEX efforts.

As a result of the many changes in Mali, USAID/Bamako was faced with a significantly compressed timeframe for a large number of concurrent project phase-down and design efforts. Despite this stretching of its personnel and resources, the Mission was effective in providing leadership and support to MLSII and APEX. They were especially effective in coordinating efforts to achieve the approval of the PID and to integrate into the subsequent Project Paper design efforts strategies and mechanisms to address issues identified at the PID stage, including participation of key AID/WA personnel. The activities of the Livestock Office, the Agricultural Office, the Program Office, the Office of the Controller, the Executive Officer and the Mission Director were exceptionally effective, well-coordinated and consistent. Communication to the Contractor of emerging needs and changing circumstances was especially appreciated. REDSO/WCA was an active participant throughout the duration of the Contract, providing essential guidance, and support to the efforts of the Contractor, Mission and GRM.

The WSU Collaborator Group was composed of a large and diverse set of institutions. The evolution of needs and priorities during the Contract changed the anticipated nature and level of participation of several of the members of this Group. This dynamic environment also complicated their individual planning processes. AID contracting, financial and administrative processes are by nature complex, making the processes of utilizing such a variety of public and private sector institutional resources, sometimes on very short notice, somewhat burdensome to subcontractors. Despite these factors, each member contributed in a significant way to the success of implementation and design efforts. These contributions went well beyond the provision of field personnel and on-campus technical support, and included invaluable advice and counsel, provision of graduate student support, assisting Malian colleagues to enhance their professional networks and communicating information from their own related efforts for use by MLSII/APEX participants. The commitment of these institutions is demonstrated in the previous **Tables 1-3**, which illustrate their effectiveness not only in mobilizing personnel under the Contract, but also in accessing and utilizing non-Contract resources in support of the efforts.

A list of documented participants in the activities associated with this Contract is included in **Annex I**. This is by no means a comprehensive list of contributors, but it serves to illustrate the range and breadth of cooperation and the human resources utilized in the relatively short timespan (15 months) of this Contract.

#### **Future Risks and Challenges**

The APEX Project aims to transform Mali's livestock sector as rapidly as possible from a largely informal sector, supported by central public sector services, to one that both benefits from and contributes to expanded private sector development, while ensuring public and environmental safety. It plans to link regional, ground-up participation and decision-making, central coordination and support functions and public-private sector cooperation in an approach that incorporates the sector from production inputs to a diverse set of livestock and poultry end products. This approach is innovative for the livestock sector in Africa. There are substantial levels of uncertainty regarding future regional market opportunities (recent figures developed by the World Bank and the African Development Bank for projected market demand for live cattle

in Côte d'Ivoire differed by over 50%). Factors well beyond the control of the project, such as the future of the value of the CFA within the region, can have profound implications on the animal market opportunities within Mali and outside.

Private sector organizations in Mali are not yet organized in ways that facilitate working with them in significant numbers. Public sector institutions in Mali have historically been held responsible for providing goods and services to producers which may now be provided in whole or in part by the private sector. These public sector institutions have not yet had the opportunity to examine in-depth their evolving roles nor to prepare plans to disengage from certain activities while assuming new ones. Delays in doing so may compromise effectiveness of proposed private sector programs, such as animal health care. Likewise, failure of the GRM to provide sufficient flexibility and autonomy to public and commercial-public organizations may compromise their ability to capitalize on opportunities to implement new public support roles.

Project design has established a high degree of mutual trust, commitment, communication and cooperation between and among the GRM, AID and WSU Collaborator Group. This partnership can be continued and built upon throughout APEX implementation. APEX is not simply the replication of a project already tested and demonstrated to be successful in livestock development in West Africa. It is, instead, a rather bold attempt to apply lessons learned from the past to a very changed environment in Mali and in the world. The processes used in carrying out the recently completed Contract included joint and coordinated planning, implementation and assessment, coupled with formal and informal mechanisms for feedback and replanning, to adapt to the changing circumstances. This process appears to be equally appropriate for APEX implementation.

## Annex I

### LIST OF DOCUMENTED CONTRIBUTORS

#### Government of the Republic of Mali:

H.E. Mme. Sy Maïmouna Ba, Minster MAEE/MDRE  
Sadou Oumar Ba,, OMBEVI/ MDRE  
C. Bagayoko, MLSII/MDRE  
I. Baradji, CVL/MDRE  
Camara, Pharmacie Vétérinaire/MDRE  
M. Coulibaly, MDRE  
N. Coulibaly, DNE  
Oumou Coulibaly, MDST/MEE  
Abdoulaye Dagamaïssa  
A. Diallo, DNE/MDRE  
Boucar Diallo, MAEE  
M. Diallo, DNE/MDRE  
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M. Dicko, IER/MDRE  
Abou Doumbia, OMBEVI  
Mamadou Goïta, IER/MAEE  
Rokkeya M'Bodj, CVL  
Ousmane Guindo, MAEE  
Doumbia Hawa, DNE  
Mechell Jacobs, MDST/MAEE

Moussa T. Keita, DAF/MAEE  
Bonfing Koïté, MDRE  
Boubacar Kouyaté, CVL/MDRE  
Racine Ly, CRZ/MDRE  
I. Maïga, OMBEVI  
Sadou Maïga, CVL  
Bafotigui Sacko, MDRE  
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Hadj Oumar Tall, CRZ/MDRE  
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#### United States Agency for International Development

David Atwood, USAID, Bamako  
Tracy Atwood, USAID, Bamako  
Dennis Bilodeau, USAID, Bamako  
Dennis Brennan, Director, USAID, Bamako  
Jon Breslar, USAID, Bamako  
Oumou Cisse', USAID, Bamako  
Rob Daniels, AID/WA  
Bill Darkins, AID/WA  
Ana Diallo, USAID, Bamako  
Cheick Dramé, USAID, Bamako  
Vic Duarte, USAID, Bamako  
Christine Farhat, REDSOWCA  
Nancy Hoffman, USAID, Bamako

Tadesse Kibreab, USAID, Bamako  
Wayne McDonald, USAID, Bamako  
Mike McGahuey, AID, Washington  
S.K. Reddy, REDSOWCA  
Brahima Sangaré, USAID, Bamako  
Fidels Sarasoro, REDSOWCA  
Monica Stein, USAID, Bamako  
Ken Swanburg, AID/WA  
Mahamane Tandina, USAID, Bamako  
Bill Thomas, AID/WA  
Doral Watts, USAID, Bamako  
Steve Wisecarver, REDSOWCA

**WSU Collaborator Group:**

Randy Boldree, WSU  
Peter C. Bloch, University of Wisconsin, Madison  
Lorna Butler, Washington State University  
Martha Cashman, Land O'Lakes  
Winfrey Clarke, Virginia State University  
Linda Cleboski, Texas A & M University (TAMU)  
Richard H. Cook, WSU  
Jeremy Foltz, UW, Madison  
Lorretta Fox, UW, Madison  
Jim Goodwin, TAMU  
Dan Hardesty, WSU  
James Henson, WSU  
Larry Herman, UW, Madison  
Steve Hines, WSU  
Jane Homan, UW, Madison  
Rosemarie Kelly, LOL  
Ron Kincaid, WSU  
Cheick Konté, WSU  
Ed Mather, Michigan State University (MSU)  
Dan Miller, MSU  
David Miller, WSU  
Lloyd Mitchell, TMG

Ralph Montee, PVO/University Center for  
Cooperation in Development  
Lynn Nelson, UW / Madison  
Don Nelson, WSU  
Helen Nelson, LOL  
Jan C. Noel, WSU  
Tom Platt, WSU  
Mike Price, Virginia State University  
Jess Reed, UW/Madison  
Kristin Rens, LOL  
John Rowe, UW/Madison  
Fred Ruringirwe, WSU.  
Ken Shapiro, UW/Madison  
John Staatz, Michigan State University  
Adama Traoré, The Mitchell Group  
Phyllis Stiles, PVO/University Center  
Mary Weitz, WSU  
LeRoy Rogers, WSU  
Genevieve Thompson, WSU  
Loretta Urdahl, UW / Madison  
G.E. Rodewald, WSU  
Michael Weber,

**Other Contributors:**

Oumar Cissé, Peace Corps, Mali  
Siegfried Debrah, ILCA, Mali  
Donald Herbert Gelber, U.S. Ambassador to Mali  
Dan Gerber, Director, AFRICARE, Mali  
Gerti Hesselting, CILLS/Club du Sahel  
Jack Hyde, Chemonics  
Karen Woodberry, Peace Corps

**ANNEX II**  
**PROCUREMENT**



USAID MALI

AMBASSADE AMERICAINE



USAID/Bamako  
B.P. 34  
Bamako, Mali  
Tél: 22-36-02  
Fax: 22-39-33

DEC 23 1992

Bamako (I.D.)  
Dept. of State  
Washington, D.C. 20521 - 2050  
Télex : 448

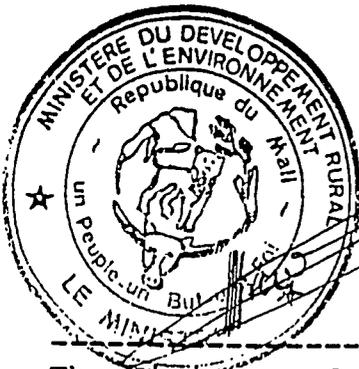
The Minister  
Ministry of Rural Development and Environment  
Government of the Republic of Mali  
B A M A K O

Subject: Mali Livestock Sector II Project 688-0218  
Project Implementation Letter No. 51:  
Title Transfer of Project Commodities to the MDRE

Mr. Minister:

The purpose of this letter is to transfer title and control of the commodities listed on Attachment 1 to the MDRE. Attachment 2 is a copy of the Project Grant Agreement 688-0218, Standard Provisions, Article B, "General Covenants", Section B.3, "Utilization of Goods and Services" that defines the agreement we made in August 31, 1982, on the use of project funded commodities after project termination. With the Project termination effective on August 10, 1992, the title and control of these Project funded commodities are to be transferred to the MDRE.

If you are in agreement with the above project management actions, I request that you indicate your agreement by signing this letter and returning it to USAID/Mali.



Sincerely,  
USAID  
George R. Thompson  
Acting Mission Director  
AU MALI

The Minister of Rural Development  
and Environment

Date: 17 MARS 1993

cc: The Director of International Cooperation

**ANNEX II**  
**PROCUREMENT/INVENTORY**

**INVENTORY SHEET FOR TRANSFER OF TITLE, CUSTODY AND CONTROL AS INDICATED FOR EQUIPMENT/INVENTORY CONTROL ITEMS**

Custody to

Project/Unit	Item	Description	Serial #	Price	Date	Location In Mail
LCV/MDRE	Computer, Notebook	Compaque Notebook LTE 386SG/2DB4 80 MB	6150HAT4D981	\$3,539	2/92	LCV/Sotuba
DNE/MDRE	Computer, Notebook	Compaque Notebook LTE 386SG/2DB4 80 MB	6149HAK40141	\$3,539	2/92	DNE/Bamako
LCV/MDRE	Computer, Desktop	Compaque Deskpro 386/33M; math coproc:210 MB; tape back-up	6218 HBV 10199	\$4,887	6/92	LCV/Sotuba
LCV/MDRE	Computer, Desktop	Compaque Deskpro 386/33L; math coproc:210 MB; tape back-up	6D51HAS3DD23	\$5,115	6/92	LCV/Sotuba
LCV/MDRE	Computer Monitor, Q	Compaque Q Vision 150 Color Monitor CD15HCQC1	22414092A358	\$725	6/92	LCV/Sotuba
LCV/MDRE	Computer Monitor, Q	Compaque Q Vision 150 Color Monitor CPAQ-C813D/Controller	22414092A187N	\$1,188	6/92	LCV/Sotuba
LCV/MDRE	Computer Monitor, Q	Compaque Q Vision 150 Color Monitor CPAQ-C813D	22414092A701	\$805	6/92	LCV/Sotuba
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG31453	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG31456	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG30125	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG30738	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG33515?	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG30742	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG34278	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG30699	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG31369?	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG31373	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG35884	\$2,160	7/92	APEX Office
APEX/MDRE	Computers, Notebook	Compaque Contura 386 SL:3/25 120MB; 4MB RAM; carry case	7239HCG34271	\$2,160	7/92	APEX Office
APEX/MDRE	Power Back-Up - UPS	Smarts-Up Power Back-up; AP800I (American Power Supply)	W920307497	\$453	7/92	APEX Office
APEX/MDRE	Power Back-Up - UPS	Smarts-Up Power Back-up; AP600I (American Power Supply)	W920307501	\$453	7/92	APEX Office
APEX/MDRE	Power Back-Up - UPS	Smarts-Up Power Back-up; AP600I (American Power Supply)	W920307510	\$453	7/92	APEX Office
LCV/MDRE	Laboratory Cages	Laboratory Animal Cages/Accessories (6 cages w/ rack/unit)	None	\$7,175	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cages	Laboratory Animal Cages/Accessories (6 cages w/ rack/unit)	None	\$7,175	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cages	Laboratory Animal Cages/Accessories (6 cages w/ rack/unit)	None	\$7,175	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cages	Laboratory Animal Cages/Accessories (6 cages w/ rack/unit)	None	\$7,175	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 16 cages/rack	None	\$545	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 16 cages/rack	None	\$545	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 16 cages/rack	None	\$545	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 16 cages/rack	None	\$545	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 24 cages/rack	None	\$510	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 24 cages/rack	None	\$510	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 24 cages/rack	None	\$510	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 24 cages/rack	None	\$510	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 5 Shelf, 24 cages/rack	None	\$510	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 56 cages/rack	None	\$525	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 56 cages/rack	None	\$525	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 56 cages/rack	None	\$525	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Cage Rack	Lab Cage Galvanized Steel Rack, 56 cages/rack	None	\$525	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Utility Cart	Lab Stainless Steel Utility Cart, 5 Caster	None	\$490	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Utility Cart	Lab Stainless Steel Utility Cart, 5 Caster	None	\$490	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Utility Cart	Lab Stainless Steel Utility Cart, 5 Caster	None	\$490	7/92	LCV/Sotuba
LCV/MDRE	Laboratory Utility Cart	Lab Stainless Steel Utility Cart, 5 Caster	None	\$490	7/92	LCV/Sotuba

Note: All items received in Mali and transferred to the GRM/MDRE are essentially new and in excellent condition. All assigned APEX (or MDRE)

### ANNEX III

#### LIST OF PROJECT PUBLICATIONS AND REPORTS

- Cook, Richard and Jan C. Noel. Summary Report of Initial Visit by WSU Campus Coordination Team for MLSII. May 1991.
- Mitchell, L. Strengthening Financial Management in the Livestock Sector Project. July 15-August 3, 1991.
- Foltz, Jeremy. Mali Livestock Sector II: Livestock Marketing Analysis. September 1991.
- Cook, Richard. Project Sectorial de l'Elevage au Mali: Planning Meeting. October 1991.
- Christophersen, Kjell. Natural Resource Economic Analysis. January 1992.
- Cashman, Martha and Kristen Rens. Preliminary Assessment of Bamako Milk Sector. January 1992.
- Bloch, Peter. Economic Analysis. February 1992.
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**ANNEX IV**  
**BUDGET SUMMARY**

Budget Category	Total Expenditure
Salaries and Wages	\$ 97,181.14
Fringe Benefits	\$ 16,183.29
Travel	\$ 93,941.08
Equipment and Supplies	\$ 94,552.40
Other Direct Costs	\$ 90,206.57
Indirect Costs/Fee (The Mitchell Group)	\$ 118,343.66
<b>Grand Total</b>	<b>\$ 510,408.14</b>

**Expenditures by Historically Black Colleges and Universities and 8A Subcontractors**

Insitutions	Volume of Business	As % of Total Expenditures
The Mitchell Group and Virginia State University	\$ 53, 505	10.5%

(The Mitchell Group and Virginia State University) = \$53,505 or 10.5%