

PN-ARU-539
ISN: 94259

SOCIO-ECONOMIC PROFILE
OF
SOUTH WAZIRISTAN AGENCY

Prepared for the Planning
and Development
Department of NWFP by:

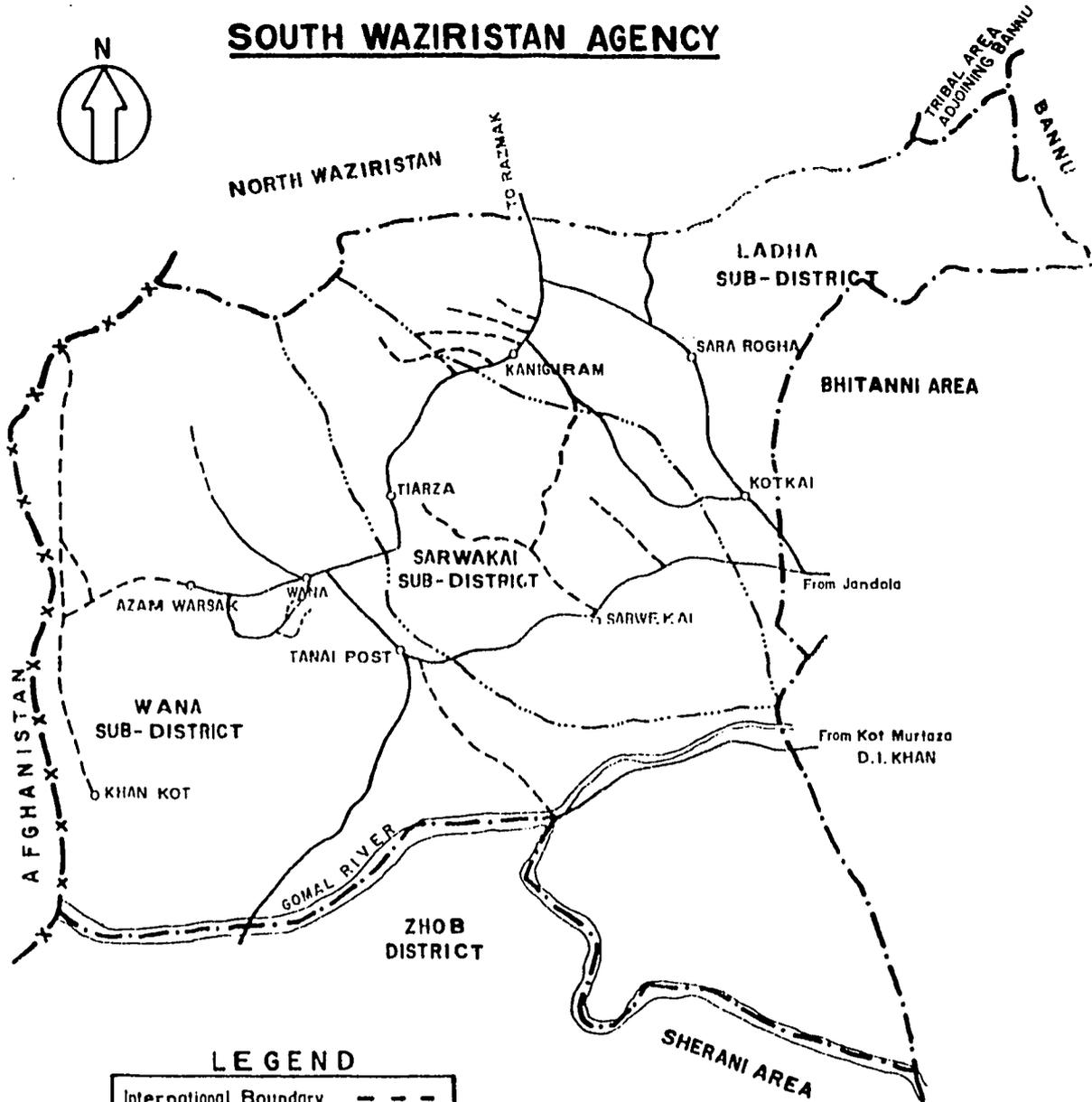
Dr. Lynn Carter, senior
researcher and Mr.
Shahzad Reza, research
assistant, USAID

December 1990

- Final Version -

WP51:SWAREP-1:zi*

SOUTH WAZIRISTAN AGENCY



LEGEND

International Boundary	---
Agency Boundary	-.-.-.-
Subdistrict Boundary
Metalled Road	————
Shingled Road	-----

SCALE 1: 666,666

Kilometres 5 0 5 10 15 Kilometres



EXECUTIVE SUMMARY

Despite considerable improvements in the road network in the last fifteen years, SWA remains fairly isolated from major markets and higher value services (technical institutes, universities, and sophisticated medical care). Access to a range of more common goods (agricultural inputs, seed, and agrochemicals) and services (middle schools/high schools and BHUs) also remains problematic although the government has been making serious efforts to expand the availability of both. The increase in the provision of facilities and services has at this point outpaced the line agencies' ability to provide adequate staff, supervise field staff and bear the recurrent costs. Owing to isolation and the lack of security in some areas, it is difficult to recruit and supervise government personnel. Quality is an issue with respect to many services.

GEOGRAPHY

South Waziristan Agency is the largest in size of all the FATAs. North Waziristan and D.I.Khan bound it on the north and east respectively, while Balochistan lies to the south and Afghanistan to the west of the Agency. The area consists of rugged rocky terrain with several peaks over 8000 feet. Arable land is in short supply, so narrow valleys are intensively farmed. The major river is the Gomal which lies on east-west axis. The Shahur river and Tank Zam flow through portions of the northeastern and eastern parts of the agency. Major plains are the Wana, Zarmilan, Spin and Barwand plains, of which the Wana plain is the richest in ground and surface water potential.

There has been no reliable reporting of rainfall and temperature since the early 1970s. According to older data, most of the Agency receives mean annual rainfall of only 10-15 inches, while a small piece in the south eastern corner receives less than 10 inches annually. The western part of the Agency receives more precipitation in winter than in summer, while this is reversed in the eastern portion. The Agency generally is cold in winter (with snow in some places) and pleasant in summer.

ADMINISTRATION AND ECONOMY

The Agency is under the administration of the Political Agent. Its area is administratively divided into 3 subdivisions, namely WANA, LADHA, and SARWAKAI. Two subdivisions have one APA each, while there is an APO for Sarwakai. The subdivisions are further subdivided into six tehsils, with a tehsildar for each. There are two major tribes, Wazirs and Mahsuds. Wazirs live in Wana subdivision, while Mahsuds occupy Sarwakai and Ladha

subdivisions. These two tribes have been rivals since the days of the Raj, and this rivalry has at times created serious problems for the Agency administration.

Almost all areas in South Waziristan Agency and particularly in Mahsud territory are politically unstable. Mid and senior level government officers generally live and work within guarded camps and do not travel without guards. The area bordering Afghanistan and North Waziristan is completely inaccessible. Law and order remains the top priority, and all development activities are carried through the Political Agent.

There are no indicators which tell us about the state of economic activity. However, agriculture, remittances and smuggling can be assumed to be the economic mainstays. Due to the scarcity of agricultural land, men have long migrated out of the Agency to find work. In the 1970s, many sought employment in the Arab Gulf; but during the 1980s, opportunities for unskilled labor became more limited, and many who might have liked to work in the Gulf sought employment in Pakistan's major cities instead. The income which has been earned from remittances has been and still is spent mostly on non productive ventures. However private tube wells drilled in the Wana plain and purchase of tractors may have been among the few productive uses of remittances. Agency inhabitants have also been buying land in settled areas of DI Khan. Bazaars by order of importance are Adda Mughal (Wana), Angoor Adda, Makcen and Kaniguran/Sam.

POPULATION

According to the last population census, the population of South Waziristan was 309,454 in 1981. Population density was 46.7 per square kilometer, which is the lowest in FATA. Population density is, however, considerably higher than this average in Ladha subdivision, and below the average in Wana subdivision. Given the mountainous terrain and scarcity of agricultural land, overall density is not a very useful figure. The population tends to be clustered in those limited areas where there is agricultural land and water. In 1981, there were 10.6 persons per cultivated acre, or far more persons than in Kurram Agency with its richer agricultural base.

In 1981, only 7.04% of all persons over the age of ten years were literate. Male literacy was of course higher and stood at 11.76%, while the female literacy rate was only 0.6% for the same age group. Literacy is highest in Tiarza tehsil and lowest in Wana, suggesting perhaps that there may be greater interest in education among the Mahsuds.

REFUGEES

The number of registered refugees living in six camps is 57,884. All 6 camps are located in Wazir territory. There are also refugees living independently near Wana Camp, some of whom have purchased or leased land and built pucca houses. The refugee presence, along with their animals, has put a strain on the environment, but this is true to a lesser extent in South Waziristan than in other Agencies, where there are far more refugees. In summer, refugees living in the hotter plains flock to the Agency to escape the heat, putting more pressure on grazing land, fuel wood, water resources, and the like. Provision of health care to the refugees is problematic since it has proved difficult to recruit health professionals. Refugees do, however, make use of local health facilities. Drinking water supply is also a problem for some refugees.

LAND USE AND AGRICULTURE

Although, South Waziristan has the largest area among all FATA's, it has less actual cultivated land than any Agency except for Orakzai Agency. It has the smallest percentage of cultivated area relative to total area. Population pressure on the land is great, given mountainous terrain and limited surface water resources. This suggests a small agricultural base, with limited room for expansion. In addition, constant erosion is a serious problem.

Research turned up conflicting data regarding land use in the Agency. The total land area of South Waziristan was shown as having increased by 78% in 1981-82 government statistics, while the cultivated area decreased by 55% from the previous year's estimates. Forest and fallow area also showed sharp drops. This was despite the fact that no major territorial additions to the Agency's area took place at this time. Any reliance on land use estimates would be unwise. Keeping in mind the mountainous terrain and limited surface water resources, the main areas of future agricultural development will probably be on the few small plains, provided ground water can be made available for irrigation without drawing down the aquifer.

With respect to the land holding pattern, small holders predominate, and most farms are fragmented. In 1980, 72% of land holdings were under 5 acres in size. The agriculture census of 1980 indicated that 87% of owner operated, 99% of owner cum tenant, and 100% of tenant operated farms were fragmented into at least two pieces.

Important crops in the Agency are wheat, maize, fruit and vegetables. The sowing seasons are the Rabi and Kharif. Not all farmers, of course, are able to grow two crops per year. Wheat is the major crop, planted in 1980 on about 42% of total cropped area. Maize is second in importance and was sown on 32% of total cropped area in 1980. The importance of vegetables and fruits has grown during the 1980s.

As in other parts of FATA, access and ability to pay for improved seeds are problematic. Farmers must travel to Lahore and Faisalabad for certified seeds (grain and vegetable), and this increases their costs substantially. The Agriculture Department sells a limited amount of grain seed, fertilizer and agro-chemicals. Fertilizer is also available in Agency bazaars, but its use is limited and where applied, the application is likely to be far less than optimal. Agro-chemicals are even less used than fertilizers. Many improvements are also needed in farming practices.

Investment in agriculture (as opposed to irrigation) has been minimal over the years. The Agriculture Directorate is badly under-staffed in South Waziristan, relative even to other Agencies such as Kurram and North Waziristan. The EADA is responsible for the two FRs as well as the Agency. The Department manages a large number of very small programs with very limited manpower. The impact of such small programs is probably slight. The Department does place some emphasis on fruit crops, which is useful, but currently does little to promote vegetable production.

IRRIGATION

The Agency as a whole receives little rainfall. This makes irrigation critical to growing any crops other than low yielding barrani grains. Considerable attention has been given to the development of irrigation facilities in South Waziristan. The Local Government Department has been working on the improvement of surface irrigation facilities in the Agency, but most schemes (surface and ground water) are implemented by FATA-DC. The Corporation appears to have completed work on 75 surface irrigation schemes with an average cost per scheme of Rs. 1.434 millions. Two of the completed schemes were funded by USAID.

Eighty-nine test wells have been drilled by FATA-DC as of autumn 1988. It was very difficult for the researchers to determine the number of functioning, abandoned, and out-of-order tubewells, because research turned up conflicting totals. One factor to be kept in mind is that the tubewell pumps appear to be turned on for fewer hours per day than anticipated, which means less land and fewer families benefit. This may be a temporary phenomenon,

due to land and/or water rights disputes, or it may be due to load shedding or other factors. The ground water program could benefit from an evaluation to determine if actual benefits justify the heavy investments and operating costs which are carried by the government.

Work on karezes is primarily handled by share-holders. There are approximately 29 karezes on the Wana plain. FATA-DC and USAID completed a scheme for rehabilitation of one collapsed karez and construction of lined channels, serving the orchard growing village of Dubkot in Wana.

Small dams are a relatively new but promising area. However, the design of small dams may be relatively difficult due to the lack of stream and rainfall gauges. FATA-DC is currently investigating a number of dam sites.

Despite huge losses due to erosion every year, flood protection is not given adequate attention. The Local Government and Rural Development Department bears the main burden of investment in flood protection, but undertakes only small schemes and in some years, due to funding or other problems, it constructs very few schemes. It has no replacement program that would permit reconstruction of those bunds that have outlived their useful life.

LIVESTOCK

The influx of refugees has meant that the number of animals in the Agency has increased since the last animal census in 1980. This is perhaps particularly true for sheep and goats. The scarce amount of grazing land, taken together with the Afghan refugee animal population, has created problems for animal grazing. Many living in the Zarmilan plain take their flocks to Punjab in the winter, while those from D.I. Khan come to South Waziristan Agency in summer.

South Waziristan lags behind North Waziristan Agency with respect to animal health services. There are three hospitals each with one veterinarian. There are also 26 dispensaries and centers, each having one compounder. The hospital cum artificial insemination center at Jandola also serves the Mahsud population in South Waziristan. There is only one insemination center in the Agency, which is located in Wana. Use of these facilities appear to be good. Afghan refugees also rely on them. It appears that the Department places less emphasis on animal production than might be desirable. The artificial insemination program needs to be extended to subdivisions other than Wana in order to improve animal production.

FORESTRY

Deforestation and over-grazing are problems in South Waziristan as elsewhere in FATA. There are still forested areas in Birmil and the hills north of Ladha, but logging operations are continuing. Great need exists for the improvement of forestry in the area, but the Department is short of resources to embark upon an adequate program.

There appear to be 25 block plantations on 597 acres, which represents a very low level of effort. No activity by the Department has been carried out to promote range management or erosion control. The Department also has one mulberry nursery to support its sericulture efforts, but this program is very small and in some difficulty.

COMMUNICATIONS

As of June 1989, the C&W Department reported 343.15 km. of paved roads and 316.48 km. of shingled roads. The main access roads to the Agency enter from Jandola in the east, North Waziristan in the north, and Balochistan in the south west. All three roads are paved. The main entry point from Afghanistan to the Agency is via Angoor Adda in Birmil in the west. There are two roads from Jandola. One turns northwest and connects with the Wana-Torwam-Razmak road at Makeen. This is 40 miles long. The road was originally paved, but has seriously deteriorated. While travelling on this road, security is a problem. The second road reaches Wana after 50 miles, passing through Chagmalai and Sarwakai, while moving in southwesterly direction. This is the most heavily trafficked road and the Agency's primary commercial route. The road from Razmak to Wana through Makeen and Kaniguram is also paved. However, it is badly damaged in parts. Travelling on this road is also sometimes dangerous. If security improves, this road can serve as a primary commercial route. The road from Gul Katch in the southwest approaches Wana through Toi Khulla. Parts of the road are dangerous. The road from Afghanistan enters from Angoor Adda, runs along the border due south to Khan Kot, where a Kacha track continues to Gul Katch.

EDUCATION

According to 1981 census data and primary school enrollment data, the male participation rate in primary education was roughly 27% in 1980-81. This is much lower than the male primary participation rate of 49% in Kurram for the same period, and the 54% national rate in 1978. The female primary participation rate in the Agency was less than one percent in 1980-81.

Progress has been made since then. Assuming a 3.1% population growth rate per annum, in 1984-85 the primary participation rate for boys aged 5-9 years was around 37%, while around 43.5% of the age-relevant group of boys were enrolled in primary schools during 86-87. Female primary school enrollment doubled from 1980-81 to 1984-85. However, the participation rate still did not exceed 1%.

Middle school enrollment in South Waziristan lags far behind that of North Waziristan. In 1981, only 4% of boys aged 10-14 years were enrolled in middle school. This compares with a 23% boys' middle school participation rate in North Waziristan. Assuming a 3.1% annual growth rate, the boys' middle school participation rate in South Waziristan during 1984-85 was roughly 5.4%. There are two schools offering girls' middle classes, one a middle school and the other is the high school. Both of these are at Wana so female participation in middle school is low. Only 2% of boys aged 15 and 16 were enrolled in high school in 1981. The male high school participation rate increased to 4.4% in 1986-87. With respect to girls, there is only one girls high school in the Agency, and enrollment in it is negligible.

Attrition (due to exam failure, lack of interest or problems with access to a school of the next level) remains a major problem in the Agency and is a reflection in part of the low quality of many schools. Usually about a quarter of primary school male students who start first class are still in the school by fourth class. Students continue to drop out at every grade. The attrition rate for girls is substantially higher than that for boys.

HEALTH

There exists a network of 54 health facilities of different kinds. Almost all referrals from lower level facilities are to hospitals and physicians outside the Agency or to Wana civil hospital. Among the 5 civil hospitals, only the hospital at Wana admits patients. The civil hospital at Wana also sees 26% of the Agency outpatient load. This is the only civil hospital in the Agency which is adequately provided with physicians, ancillary health professionals, and equipment. It appears to have the only lab assistant in the Agency. Of the 22 doctors assigned to the Agency, 17 work at Wana civil hospital. Most of the BHUs do not have an MD and none has a LHV, so BHUs function at a lower level than intended. EPI staffing and facilities are weak, and the program is obliged to rely heavily on outreach and mobile teams which are difficult to monitor. There are few fixed EPI facilities. There appear to be problems at many rural health facilities with serious staff absenteeism. In part, this is

because it is difficult for the Agency Surgeon's office to supervise far-flung facilities with inadequate supervisory staff and transport.

ELECTRIFICATION

WAPDA since its inception has electrified about 115 villages in South Waziristan Agency. It counts 8,453 legal connections. Though the charges for electricity for these households are kept very low, users still decline to pay their bills. Total arrears from non-payment of Agency electricity bills amounted to Rs.17 million in 1989. In addition, there are about 9551 illegal connections.

Most of Sarwakai tehsil and the northwestern part of Ladha subdivision have not been included in the electricity grid as yet.

INVESTMENT

South Waziristan Agency has received a larger share of development investment than any other Agency. The overall level of investment showed a steady growth until 1986-87. Since then investment has fallen.

The Communication and Works Department has received the lion's share of Agency ADP investment over time. This is a reflection both of the cost of building roads in often difficult terrain and the great need to reduce the Agency's isolation. Until 1983-84, C&W generally received over 40% of the annual ADP. This share has slowly declined. FATA-DC water resource development investment ranks second in terms of total investment. Education ranks third. Although investment in education has increased over the years, this is from a very low base. Electrification ranks fifth at Rs. 73.34 million of investment since its inception. Health investment ranks sixth in total amount. Health has been receiving an increasing share of investment each year but it still receives less than 10% of total annual investment funds. Given the priority accorded to irrigation, it seems unfortunate to neglect agriculture by investing so little money in this critical sector.

TABLE OF CONTENTS

Executive Summary

Table of Contents

Table and Figures

Preface	i
Introduction to the Maps	ii
Acronyms	v
I. Geography.....	1
II. Administration and Economy.....	6
III. Population.....	11
IV. Refugees.....	16
V. Land Use.....	19
VI. Agriculture.....	22
VII. Irrigation, Flood Protection and Potable Water.....	43
VIII. Animal Husbandry.....	55
IX. Forestry.....	59
X. Communications.....	62
XI. Education.....	66
XII. Health.....	85
XIII. Electrification.....	112
XIV. Investment.....	113
Appendix-A	Using Enrollment Data Published by the Bureau of Statistics
Appendix-B	A note on Agriculture Statistics
Appendix-C	Sites Visited by the Research Team in South Waziristan

TABLES AND FIGURES

FIG	TITLE
Frontispiece	Map of the Agency
I.1	The NW Frontier: Drainage and main river systems
I.2	Tribal areas, mean annual rainfall
I.3	Climatic regions in NWFP
I.4	Wana rainfall in inches
I.5	Mean min. and max. temperatures in Fahrenheit
III.1	Population density per square km.
III.2	Population per cultivated acre
IV.1	Refugee camps and population
IV.2	Location of refugee camps
V.1	Estimates of land utilization in South Waziristan
V.2	Cultivated land in South Waziristan
VI.1	Type of farm, number of farms and cultivated acres
VI.2	Farm fragmentation by number of farms
VI.3	Farm fragmentation by area (acres)
VI.4	Timing of sowing and harvesting of important crops in South Waziristan
VI.5	Wheat acreage and yields
VI.6	Maize acreage and yields
VI.7	Estimates of Vegetable acreage and production
VI.8	Estimates of fruit acreage and production
VI.9	Rice acreage and production

- VI.10 Agriculture staff and nurseries
- VI.11 Percentage of owner-operated farm households in debt by size of farms
- VII.1 FATA-DC surface irrigation schemes
- VII.2 Locations of PHED and FATA-DC potable water schemes
- VIII.1 Animal Husbandry facilities
- IX.1 Forestry nurseries and block plantations
- X.1 Class I, II, and III roads
- X.2 List of bridges
- XI.1 Female and Male enrollment in primary schools
- XI.2 Percentage change in enrollment for both boys and girls
- XI.3 & 4 Enrollment over time of boys starting school in 1977-78 and 1980-81.
- XI.5 Primary schools (Male and Female) and enrollments by subdivision
- XI.5-A Location of girls' schools
- XI.6 Male and Female enrollment in Middle schools
- XI.7 Enrollments and middle schools by subdivision
- XI.8 Male and female high school enrollment
- XI.9 Enrollments and high schools by subdivision
- XI.10 Boys' schools without buildings
- XI.11 Location and enrollments of Mosque schools
- XII.1 Health facilities
- XII.2 Status of Health Units visited by Agency Surgeon in Aug. and Sept. 1989.

- XII.3 Immunizations done in 1987 and 1988
- XII.4 Return rates for immunization
- XII.5 Return rates for Polio immunization
- XII.6 Light and heavy case load health facilities
- XIII.I Electricity grid
- XIV.1 Combined ADP, FATA-DC, and MNA/senator investment allocations for South Waziristan
- XIV.2 Investment trends over time
- XIV.3 Total sectoral allocations

Preface

This is the second in a series of profiles on four of the tribal agencies. The other three in the series cover Kurram, North Waziristan and Orakzai. Each profile is accompanied by a series of maps, more about which can be found in the following section.

The purpose of these profiles is to make available, in an integrated fashion, what is known (and equally, what is not known) about the resources, development achievements and prospects, and limitations (be they physical or man-made) in the concerned Agency. Because the information that has been collected and analyzed is designed to help development planners, a considerable level of detail is presented in the reports.

Research for this profile was carried out in late 1989 and early 1990. Some information was added and corrections made later in 1990.

With respect to completing the profile on South Waziristan, we would like once again to thank senior officials of the Planning and Development Department and the Home Department for sharing information and views, and for facilitating visits to the Agency. Line Agency staff in Peshawar, Tank and Wana gave generously of their time and tried to respond to what must at times have seemed like an unending series of requests.

Within USAID, we are particularly grateful to have had the help of Engineers Cheema and Ashraf, who shared their considerable knowledge of the Agency with us. We would also like to thank Mr. Ijaz Ali for helping us collect data during a field visit to Tank and Wana, and Ms. Rashida Khanum for making available information she had gathered concerning women's centers and girls' schools. We also benefitted greatly from the support, and sensible advice and comment of Mr. Tariq Durrani, the TADP Project Officer. Finally, we would like to record here the work of Mr. Khairullah, Ms. Shaheen Kauser, and Mr. AR Sharooki, who drew the maps of the Agency that accompany this report.

Dr. Lynn Carter
Senior Researcher
USAID
May 1991

Final Version

Introduction to the Maps

We relied on three sets of maps in drawing a new base map of South Waziristan Agency. Two sets were provided by the Survey of Pakistan: one on a scale of 1:250,000 and the other on a scale of 1:50,000. The third set was US-made and was on a scale of 1:250,000. We used both sets of 1:250,000 scale maps to draw an enlarged base map of 1:125,000 (or twice the size of the 1:250,000 map). The three sets of maps relied on information collected at different points in time, but all were old, and therefore somewhat out of date. The US map, for example, lacked major roads included on the Survey of Pakistan maps. Road completed in the last 10-15 years were also missing from the Survey of Pakistan maps. The team found it difficult to place new roads on the new 1:125,000 map accurately because C&W did not have adequate large scale maps from which we could work. Further complicating our efforts were disagreements about the precise locations of villages and areas. We often found that maps of different make (both published and sketch maps from the different line agencies) placed villages in different locations - perhaps on the other side of the track, on a different nullah, north or south of another village, and so on. There were many differences in village location in comparing the US and Survey of Pakistan maps. We checked and cross-checked village placement and, for this task, the 1:50,000 maps were invaluable. However, all the maps to which we had access were missing many, many villages. For resolving differences concerning location and for locating villages not included on any map, our only recourse was to turn to individuals knowledgeable about the Agency. This was particularly true for villages off the main roads. There were, of course, many parts of the Agency to which we could not travel, and time did not permit hunting for villages up and down the many algads, tois and nullahs of the area. We should therefore warn the reader that for several villages, placement on the map is only as accurate as the information of our informants and must generally be viewed as approximate rather than exact.

Those studying the maps will realize that they include part of North Waziristan and the Bhattani area (FR DI Khan). We found no map of a reasonable scale (and therefore accuracy) that included the northern boundary of the Agency, and therefore did not attempt to draw it on our map. It also took several weeks to find a map that showed the eastern boundary with FR DI Khan, so that boundary was drawn on our base map fairly late in this exercise. It is also of advantage to include Razmak and Jandola on the map because these are market towns, which also offer government services such as schools and health facilities, to neighboring Mahsuds actually living in South Waziristan.

The maps are as follows:

- 1) 1:125,000 base map with villages, roads, administrative divisions (not tehsils), elevation contours, rivers, tois, minerals and refugee camps.
- 2) 1:125,000 transparent overlay for the base map, showing elevation and vegetation shadings. This was taken directly from the US-made map, and no information was available to permit updating or amendment. The area of vegetation may have changed.
- 3) two 1:125,000 transparent overlays for the base map, one showing girls' schools and the other boys' schools as of October 1988. Primary, middle and high school sections are shown separately even if they are considered as part of the same school, to permit the viewer to understand the distribution of each level of education.
- 4) 1:125,000 transparent overlay for the base map, showing ground and surface water irrigation schemes. With respect to the placement of surface water schemes, sometimes the work occurs upstream from the village. When the exact location of the intake (for example) was known it was recorded on the map. When the exact site was not known, the scheme is marked by the village it serves.
- 5) 1:125,000 transparent overlay for the base map showing health facilities and potable water projects.
- 6) 1:125,000 transparent overlay for the base map showing agricultural facilities.
- 7) 1:125,000 transparent overlay for the base map showing forestry facilities.
- 8) 1:125,000 transparent overlay for the base map showing animal husbandry facilities.
- 9) 1:125,000 transparent overlay for the base map showing the electricity grid.
- 10) 1:125,000 transparent overlay for the base map showing roads under construction.

The team was not able to mark tehsils on the base map because we did not have sufficiently accurate information to permit us to do so. It was not possible to develop a land use map because the researchers lacked adequate materials from which to draw one. It was equally impossible to do a map showing the cropping pattern or irrigated/unirrigated land. It was also not possible to draw a population density map.

A decision was made not to mark planned projects on the map since plans can change and projects sometimes run into political difficulties. No distinction was made on the maps between projects under construction and projects completed, in order to keep the maps current a little longer. Projects under construction could be completed the week after the map was submitted, requiring changes in the map. Where appropriate, plans are mentioned in the narrative report. These maps will, in any case, require annual revision. New schools or the upgrading of existing schools, roads, health facilities, irrigation schemes, and the like will needed to be added, if the maps are to continue to be useful.

LIST OF
ACRONYMS

ADP	Annual Development Programme
APA	Assistant Political Agent
APO	Assistant Political Officer
C&W	Communication and Works Department
EADA	Extra Assistant Director of Agriculture
EXEN	Executive Engineer
FATA	Federally Administered Tribal Areas
FATA-DC	Federally Administered Tribal Areas Development Corporation
FR	Frontier Region
GOP	Government of Pakistan
LG&RDD	Local Government and Rural Development Department
MNA	Member, National Assembly
NWFP	Northwest Frontier Province
PA	Political Agent
PHED	Public Health Engineering Department
RTV	Refugee Tented Village
SDO	Sub-Divisional Officer
UNHCR	United Nations High Commission for Refugees
USAID	U.S. Agency for International Development
WAPDA	Water and Power Development Authority

I. GEOGRAPHY

A. Topography*

The highland area of North and South Waziristan together takes the shape of a somewhat irregular parallelogram 160 miles long and 60 miles wide. The elevation rises gradually moving to the west, until peaks of 10,000 feet are found at the Afghan border. The elevation continues to rise in a westerly direction until the watershed dividing the Indus basin and the Helmand basin is reached. There are no regular mountain alignments and hills appear to zig-zag in every direction. The northern and southern boundaries are formed by the Kurram River and the Gomal River respectively. Most of the rivers and streams in Waziristan are placed on a horizontal axis. They generally are flanked by hills which sometimes give way to allow the appearance of small valleys. Alluvial land borders even the narrowest of these valleys, which are invariably farmed, arable land being in very short supply. Usually, little water flows in Waziristan's streams. The beds generally are strewn with large rocks. In summer, with the rains, they become raging torrents. North and South Waziristan are divided by a mountain range which terminates in the Ghalimighar mountains. Tribal configurations as well as physical features determined this as the boundary.

South Waziristan is the largest of the tribal Agencies. It has an area of 6,619 sq. km. or 984,824 ha. Not surprisingly, South Waziristan lies to the south of North Waziristan. On the east side lies DI Khan; to the South, Balochistan; and to the West, Afghanistan. The tribal Agency shares with the Afghan province of Paktia a mountainous border of about 70 km. in length.

South Waziristan consists largely of rugged, rocky terrain with several peaks over 8000 feet. In the east of the Agency, the Babaghan mountain range continues to Jandola, then rises to Girni Sar and descends to the Gomal river valley above Murtaza, which is in DI Khan. In the South, as far as Khajuri Kach, the boundary is formed by hills south of the Gomal river, and then by the Gomal river itself, moving in a westward direction to Gomandi on the South Waziristan-Afghan border. The Marwatti range runs along the Afghan border. The hills for the most part are barren and treeless. On some of the higher ranges, such as the Shawal and Pir Ghal, fine forests used to exist but these have been decimated over the years.

*Much of the information in this section is taken from David Dichter's Excellent geography, The North West Frontier of West Pakistan: a Study in Regional Geography, Oxford: Clarendon Press, 1967.

The Gomal is the major river in the Agency and it lies on an east-west axis. The Gomal river valley and pass constitute the oldest trade route in the area, moving from DI Khan, through South Waziristan and Balochistan and then onto the Afghan plateau. The river rises in the Koh Nak range in Afghanistan and flows southeast. At Domandi, it is joined by the Kundar river, which also rises outside the Agency. The Gomal then runs east until it reaches Murtaza. Between Domandi and Murtaza, the Gomal receives on its north bank the waters of the Wana Toi at Toi Khula, and on its south bank, the Zhob at Khajuri Kach. This latter river, the Zhob, is the Gomal's most important tributary. The Gomal has a depth of between two and twenty feet and a width ranging from 20 to 100 yards. The Shahur river and Tank Zam drain portions of the north eastern and eastern parts of the Agency. Figure I.1 shows tribal Agency river systems and drainage.

The chief plains or valleys are the Wana plain, the Zarmilan which lies northeast of Domandi, the Bermand, and the Spin. The Wana plain, at 8476 acres, is the largest inter-mountain basin in the Agency and also one of the largest in FATA. It is part of the inter-mountain valley system of the Suliman range, and has been formed by the rich alluvial soils transported by streams and crossing the area. It lies to the west of the Mahsud highlands is 12 miles long and 8 miles wide. It slopes gently toward the southeast, with a gradient of about 81 feet per km. Its elevation ranges from 4300 to 5525 feet, while the mountains surrounding it range from 5525 feet to 7475 feet. The plain is actually divided into two smaller plains: the eastern part between Wana town and Azam Warsak village, and a second, narrow strip to the West between Azam Warsak village and the mountain ranges bordering Afghanistan.

The Wana plain is very rocky and is crossed by many nullahs. The principal torrent which crosses the plain is the Dhana, which is renamed the Wana Toi upon entering the plain. The headwaters of the Wana Toi and its tributaries lie in the mountains surrounding the plain. Other streams and nullahs crossing the plain are Kibbarai Algad, Dhana Khwar, Barara Nar, Khawargai Algad, Wucha Khwar, Gargura Algad, Khawat Khwar and Inzar Algad. Most of these are tributaries of the Wana Toi. All the streams leave the area through Wana Toi to the East of Wana town. Only the Wana Toi and Kibbarai Algad have perennial flows. The plain is potentially fertile and practically treeless except for orchard crops. Only a small part of it is under cultivation. The plain has a total catchment area of 600 sq. km., of which about 250 sq. km. is the actual basin area.

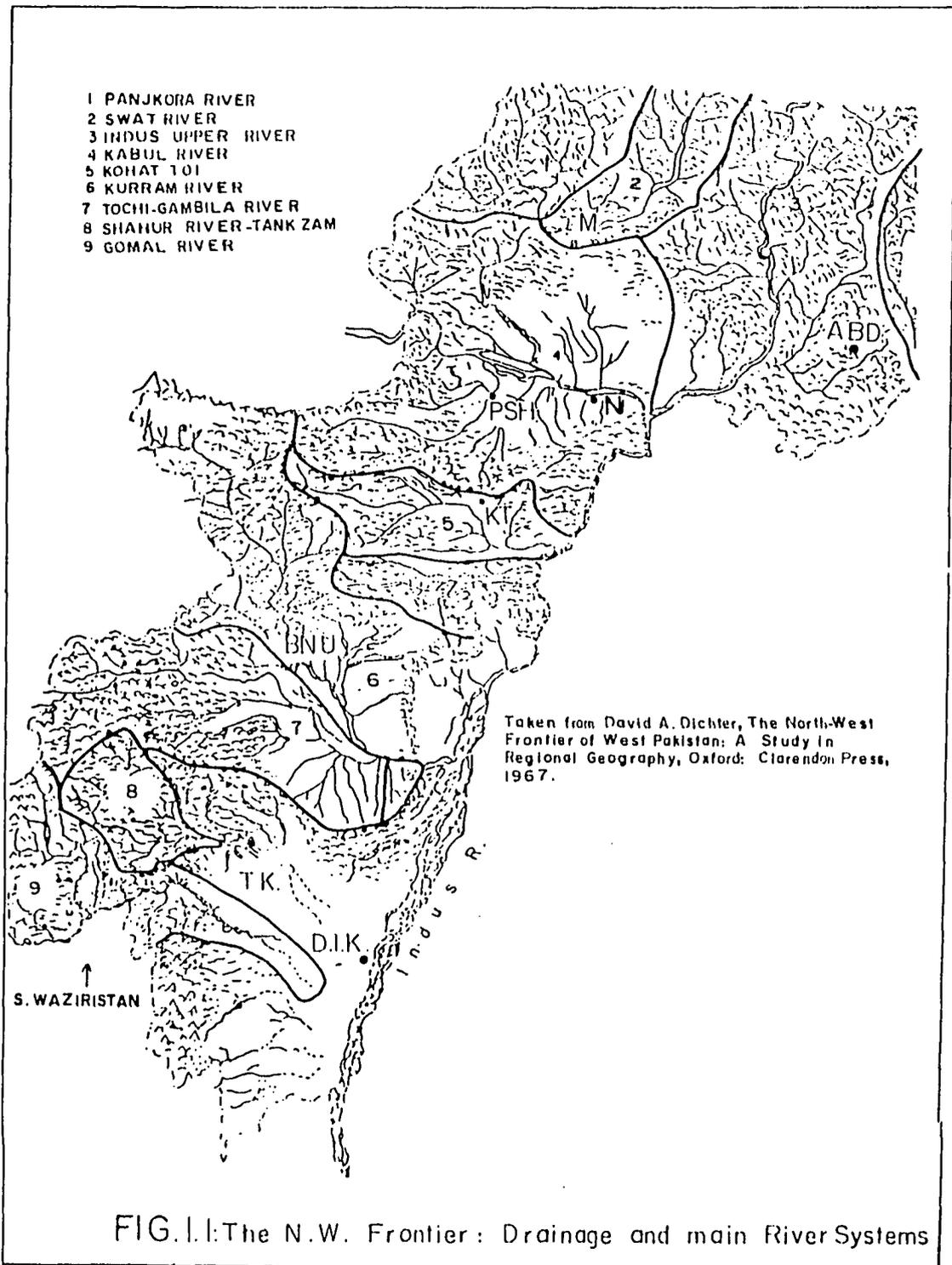


FIG. 1.1: The N.W. Frontier: Drainage and main River Systems

The eastern section is considered more promising for the development of land and water resources, as it is thought to have considerable ground water potential. Ground water is found under water table conditions in the northern part of the plain and under artesian conditions in the southeast. Most of the recharge of ground water is thought to occur in the northern and western portions of the plain. FATA-DC estimates that 20% of precipitation goes for recharge, while a recent WAPDA report, done in conjunction with a Dutch hydrogeological group, estimates, based on the known recharge in similar areas of NWFP, a recharge of around 5 %. In fact, the recharge is not known. There are karezes southwest of Wana, a growing number of public and private tubewells, and a number of dug wells.

The Spin plain lies to the southeast of Wana and covers an area of 50 sq. km., with a catchment area of 100 sq. km. This also is part of the Suliman range. The surrounding mountains crest at 3600 to 4000 feet above mean sea level, while the plain itself lies at an altitude of 2775 to 3025 feet above MSL. It slopes to the South at a gradient of 39 feet per kilometer. The plain stretches on either side of the Dargai Algad which flows north to south. The Suiwarai Algad borders the east side of the plain and the Lakai, the west. The Lakai has a perennial flow estimated at 6-8 cusecs. These streams enter the plain near Kaka Khel and flow south, leaving the area through a gorge along the Zhob road. These streams are part of the Gomal Zam drainage system. Along with their tributaries, the Algads have formed alluvial patches which are terraced for cultivation, especially at the higher elevations. Surface water is limited and is confined to the western side of the plain. The road from DI Khan to Zhob passes through the plain. The largest village is Kaka Khel. Only a small portion of the plain is cultivated, mostly along the paved road. Water is brought from the neighboring Wana toi, via a very long aqueduct/channel, which was built several years ago as one of FATA-DC's most ambitious irrigated projects to date.

The Zarmilan plain comprises an area 120 sq. km. and lies 80 km. southwest of Wana, in the southwest corner of the Agency. Its southern boundary is the Gomal river and its western, the Durand line. The plain lies at 1050 meters above MSL, and is part of the Suliman range. The eastern and western parts of the plain are level while the northern section slopes slightly southwards, with boulders on its surface. The plain is thinly populated, with about 2000 inhabitants in 1987. The majority of those live in the northern part of the plain, around Khan Kot. There is little cultivation due to low rainfall and lack of surface irrigation possibilities. Catchment sources for the plain include the Gomal river and the mountains to the West and

northwest since their gradient is steep. Water table depth ranges from 60 to 470 feet below the surface. It reaches maximum depth on the northeast side. In the northwest, the depth of the water table is 250 to 350 feet. The water table lies closest to the surface in the central part of the plain and is found at 70 to 125 feet in the north central portion. In the southeast, people rely on open wells and the river for drinking water. In the south and northwest they also rely on the river. In the central and northern areas, they rely on a spring coming from a mountain to the west of Khan Kot, but drinking water remains scarce. Ground water recharge probably occurs primarily via snowfall.

There are no rainfall and stream flow gauges in the Agency, which creates a problem for investigating and planning use of Agency water resources. It also makes it difficult for C&W to design bridges, LG&RD Department to design flood protection schemes, and FATA-DC to design surface irrigation schemes.

B. Climate

South Waziristan has an arid climate for the most part and receives little precipitation. The western portion bordering Afghanistan is likely to receive more rainfall than the eastern portion touching on DI Khan. Most of the Agency receives mean annual rainfall of 10-15 inches, while a small piece in the southeastern corner receives less than 10 inches annually. The Wana and Spin plains receive about 300mm or 12 " precipitation annually. The Zarmilan plain seldom receives rain but it does snow in winter. Winter and spring precipitation seldom fail, and winter precipitation includes snowfall. Snowfall, of course, gives greater recharge to the aquifer than would summer rains. Figure I.2 illustrates rainfall.

The Zarmilan plain experiences low velocity winds throughout the year.

It is cold in winter and pleasant in summer, except for small portions bordering DI Khan, which are hot in summer and mild in winter. December and January are the coldest months with temperatures falling below freezing. June, July and August are the hottest months with temperatures of up to 30 (and in some areas 35) degrees centigrade. The western portion of the Agency receives more precipitation in winter than in summer, while this is reversed in the eastern portion. Figure I.3 shows the various climatic regions based on rainfall probability and temperature.

The Meteorological Department has not maintained temperature or rain gauges in the Agency since 1971. The Directorate of Agriculture - FATA (extension) used to have a thermometer but it

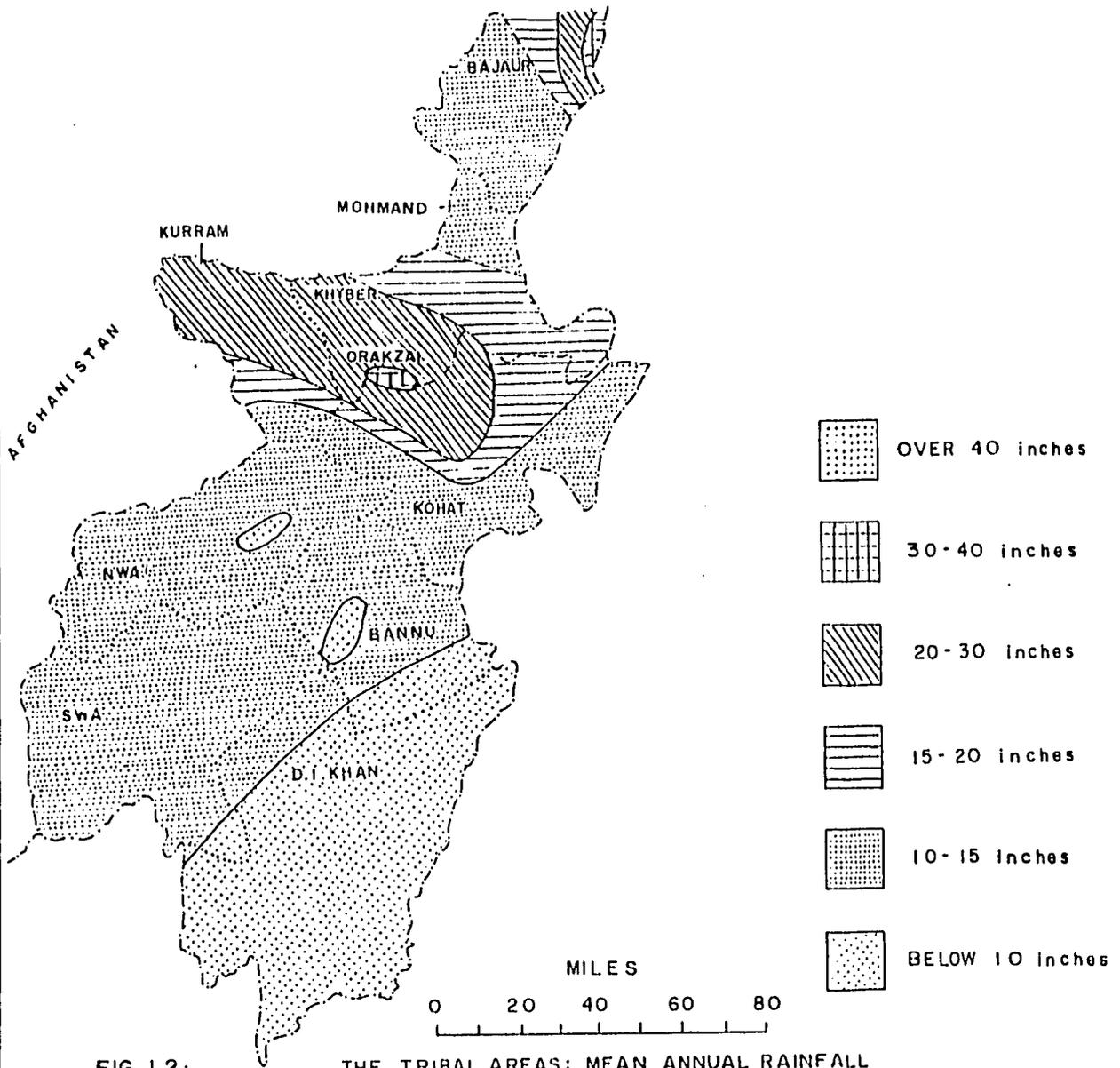
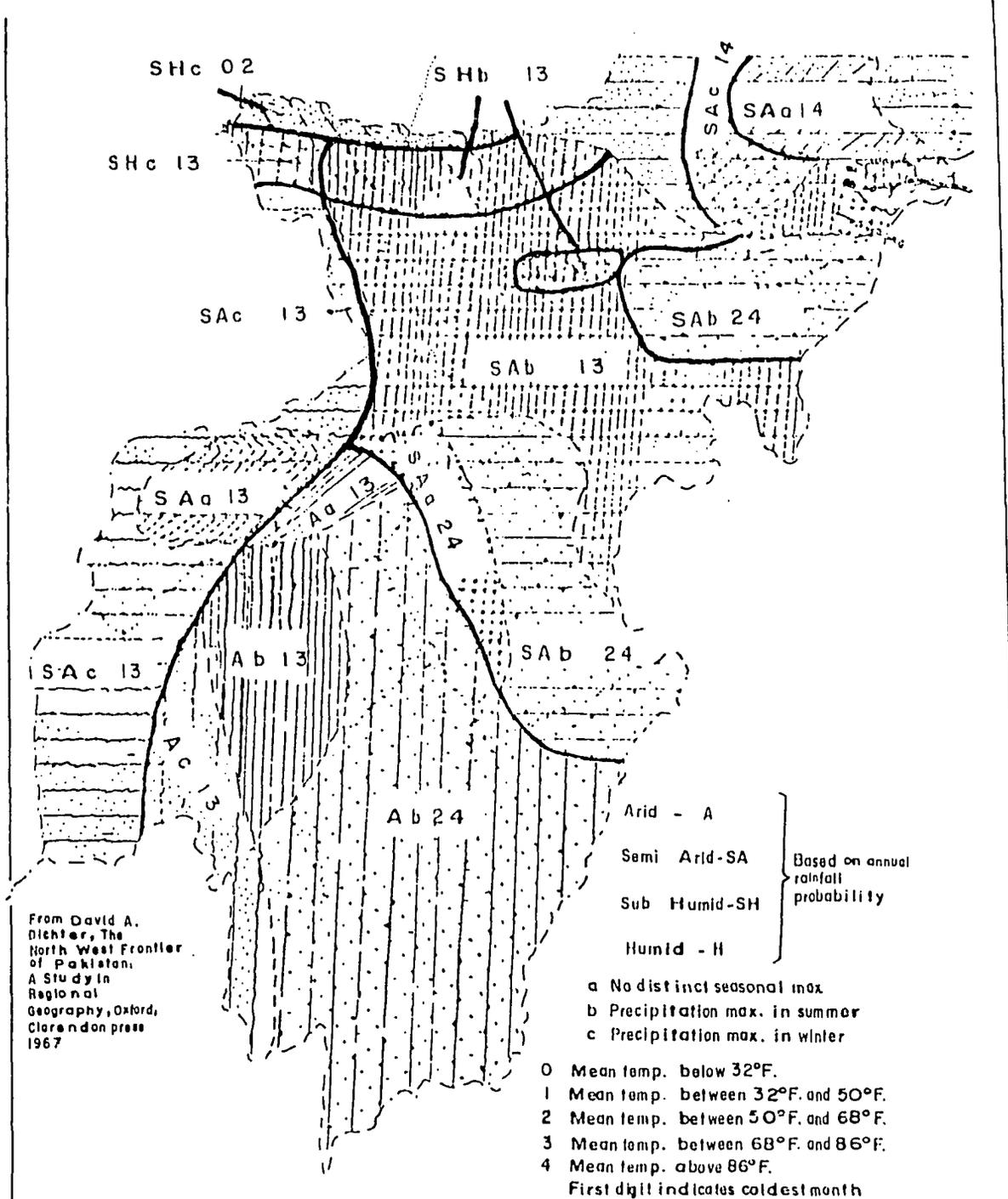


FIG. 1.2: THE TRIBAL AREAS: MEAN ANNUAL RAINFALL
 Taken from David A. Dichter, *The North-West Frontier of West Pakistan: A Study in Regional Geography*, Oxford: Clarendon Press, 1967.



From David A. Dichter, The North West Frontier of Pakistan. A Study in Regional Geography, Oxford, Clarendon press 1967

- Arid - A
 - Semi Arid - SA
 - Sub Humid - SH
 - Humid - H
- } Based on annual rainfall probability
- a No distinct seasonal max
 - b Precipitation max. in summer
 - c Precipitation max. in winter
- 0 Mean temp. below 32°F.
 - 1 Mean temp. between 32°F. and 50°F.
 - 2 Mean temp. between 50°F. and 68°F.
 - 3 Mean temp. between 68°F. and 86°F.
 - 4 Mean temp. above 86°F.
- First digit indicates coldest month
Second digit indicates warmest month

FIG-1-3: CLIMATIC REGIONS IN NWFP.

has long been broken; the Directorate does not have any rainfall gauges. FATA Agriculture Directorate staff make estimates of monthly rainfall and temperature averages but have no instruments to permit them to do this with any accuracy. The estimates they make are then published in FATA Development Statistics, as though the information has been derived scientifically. We have chosen not to present these data because they must be viewed as completely unreliable. Given the interest in drilling tubewells in various parts of the Agency, the placement of functioning rainfall and temperature gauges in different areas should be a priority. Tables I.4 and I.5 present old data on rainfall and temperature in Wana from the Meteorological Department. There is little reason to think that the patterns would be significantly different now, except that extensive deforestation could have an effect on reducing rainfall.

C. Minerals

Iron traditionally was smelted in the Agency, and is especially found in the hills around Makin. Monstuart Elphinstone, a traveller in the tribal areas in the Nineteenth Century, noted that Wazir territory abounded in iron ore, and that local tribesmen made weapons from the ore and marketed these weapons in the plains.* Geologically significant deposits of copper are found at Spin Kamr; of lead at Habit Khel; and of asbestos at Kanigurum. It is not clear if these deposits could be considered as commercially viable ones - they are not in the most accessible parts of the Agency.

D. Soils

On the Wana plain, soil texture varies from sand to clay, but medium-textured soils predominate. All the soils are calcareous, but surface salinity is not generally visible except along the eroded edges of the escarpment, which are not farmed. Soils on the plain are deficient in nitrogen and organic matter. The amount of phosphorous is low. Potassium is adequate. Average soils pH ranges from 7.8 to 8.4.

The Spin plain is composed of alluvial piedmont deposits and consists primarily of loamy sediments. Its soils are medium textured and affected by varying degrees of salinity, hence its name "Spin" or white. Uncultivated areas are often covered by scanty vegetation, reflecting this salinity.

*Monstuart Elphinstone, An Account of the Kingdom of Caubul, vol. II, London: Oxford University Press, first published 1815, p. 79.

TABLE I.4

	RAIN FALL IN INCHES												YEARLY TOTAL
	WANA												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1960	1.26	4.24	4.29	3.29	0.40	0.45	1.00	0.70	0.80	0.00	0.00	0.84	17.27
1961	1.23	1.24	1.24	5.40	1.62	0.95	1.90	0.65	0.48	0.00	1.00	0.30	16.01
1962	0.00	5.89	5.89	0.90	0.65	2.15	2.69	0.00	1.12	0.37	0.00	0.70	20.36
1963	0.00	0.71	3.93	5.39	9.31	0.08	0.67	1.15	0.96	0.00	0.37	0.50	23.07
1964	1.81	1.96	1.70	0.50	0.19	0.53	4.04	1.68	0.45	0.00	0.17	0.34	13.37
1965	1.52	0.72	0.99	3.68	1.70	0.11	2.08	1.81	0.00	0.00	0.63	1.14	14.38
1966	0.00	3.01	0.79	3.65	0.20	0.72	1.16	0.35	0.41	1.50	0.00	0.00	11.79
1967	0.00	0.92	3.09	2.24	0.20	0.43	1.00	1.62	0.03	0.16	0.50	0.00	10.19
1968	2.88	1.96	0.62	1.41	0.50	1.74	1.53	0.18	0.00	0.00	0.00	0.46	11.28
1969	0.00	1.07	0.52	0.44	0.29	0.45	0.35	0.95	0.10	0.51	0.30	0.00	4.98
1970	2.20	1.20	2.35	0.60	0.30	0.00	1.60	2.75	0.00	0.00	0.00	0.10	11.10
1971	0.00	1.90	0.45	0.00	0.67	1.25	2.56	0.65	1.35	0.00	0.50	0.00	9.33
AVG:	0.80	1.72	1.80	2.02	1.30	0.70	1.63	0.98	0.41	0.21	0.29	0.30	12.16

TABLE I.5

MEAN MAXIMUM AND MINIMUM TEMPERATURES IN FAHRENHEIT

MONTH	1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		AVERAGE		
	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MIN	MAX									
JANUARY	27.0	55.1	23.6	55.4	58.5	76.9	60.5	72.8	45.7	72.5	55.6	72.5	62.7					52.3			55.8	71.5	59.9	75.0	57.6	26.6	56.3
FEBRUARY	37.1	56.3	47.3	53.5	54.0	59.2	52.3	72.8	57.0	73.5	57.4	73.8	61.6		61.2					56.1	73.6	62.5	79.3	56.4	36.5	59.6	
MARCH	32.5	51.5	43.1	50.6	42.4	66.6	41.6	66.2	44.6	71.6	40.5	66.5	60.8		64.6					76.1	72.3	65.1	82.6	68.2	41.3	64.2	
APRIL	47.4	72.2	45.5	73.1	51.4	78.2	52.8	75.6	52.6	79.5		75.7			72.0					79.2	74.6	62.5			50.9	74.4	
MAY	65.9	89.2	68.3	89.3	69.5	86.8	62.8	82.8	58.2	83.5	56.2	83.1	86.8							85.5	82.7	82.1	83.0	80.1	59.3	87.5	
JUNE	86.9	107.9	95.2	107.1	97.3	109.8	97.9	106.2	93.0	106.8	96.1	105.2	95.2		96.8					97.3	109.9	97.3	113.2	94.9	65.7	105.2	
JULY	92.3	112.6	92.6	110.3	92.6	112.5	95.2	110.3	90.5	109.4	102.7	109.3	89.3		93.2					93.1	115.6	112.1	111.2	91.9	72.2	92.6	
AUGUST	92.9	110.3	92.2	111.4	93.3	110.7	92.0	110.4	91.4	105.5	105.7	103.0	93.0		96.2					91.7	109.4	91.4	111.9	91.0	70.1	91.6	
SEPTEMBER	90.5	107.6	91.1	101.3	86.3	102.0	88.5	102.6	85.2	108.8	89.9	100.0	90.0		90.0					92.3	103.7	89.4	109.7	86.0	62.3	89.2	
OCTOBER	81.6	106.3	81.3	106.4	79.1	102.6	89.4	101.0	81.6	103.2		103.2			90.0					77.9	103.1	100.2	107.8	81.9	49.7	81.5	
NOVEMBER	67.6	100.6	65.7	105.4	70.0	100.0	86.4	103.2	67.9	100.9	100.9	100.9	86.9		86.9					73.3	100.0	70.5	112.3	86.6	37.6	69.1	
DECEMBER	62.0	100.3	57.8	109.0	57.6	109.6	60.7	107.8	57.1	107.3	106.1	106.1	86.8		84.9					58.4	103.0	63.5	102.2	85.9	29.5	59.8	

BEST AVAILABLE COPY

The Zarmilan plain is covered by a thick pile of sub-recent unconsolidated alluvial deposits. The composition of the deposits are a mix of boulders and gravel, sand, clay and silt. In the eastern and southern portions, the surface consists of fine grained clay and silt with patches of medium grained sand and pebbles. In the northwest and north, there are boulders and the soil is sandy loam. In the southwest, the soil varies from medium to coarse texture, with an increasing thickness of gravel with pebbles and boulders.

The Birmal plain, northwest of Wana, has soil compositions ranging from loam to sandy loam.

Soils in the hilly areas of Ladha and Sarwakai subdivisions consist of clayey loam and loam.

II. ADMINISTRATION AND ECONOMY

A. Administration

Even in the rather special context of the tribal areas, Waziristan has stood apart, both in the intransigence of its peoples and the risk attached to government service. During the 1930s, 28 battalions were stationed in Waziristan, more than in the rest of the Subcontinent. Raids, murder, kidnapping, cattle rustling, and more minor offenses such as telegraph wire cutting were common under the Raj, despite British attempts to buy off the tribes. In some bad years, as many as 100 dead and many more wounded resulted from such clashes. As the anthropologist and former Political Agent Akbar S. Ahmed has pointed out, the rivalry between the two major tribal groupings, Mahsuds and Wazirs, prevented them from joining forces against the British (and later, against the GOP Administration). Each tribe informed on the other, in order to prevent the ambitions of its rival from being realized. In the 1970s problems between Mahsuds and Wazirs, and Wazirs and the Administration escalated, as the Wazirs lobbied for a separate Agency. The conflict resulted in the destruction of the Wana bazaar and the arrest of Mullah Noor Muhammed, who had become the primary political leader of the Wazirs. While the area became more tractable in the 1980s, it is still a difficult one and the potential for further serious trouble lies dormant.

In 1896, South Waziristan became a political Agency, following the demarkation of the border with Afghanistan. Because Mahsuds and Wazirs traditionally believed that there were three times as many Mahsuds as Wazirs, it has long been customary to divide government benefits by the formula of three for the Mahsuds to one for the Wazirs. The Political Agent and some senior staff therefore spend eight months of the year in Tank, which is easily accessible to Mahsuds, and the remaining four months (the hotter summer months) in Wana, a Wazir area. It is also easier to keep an eye on Mahsud activities from Tank.

There are three administrative subdivisions: Ladha in the north; Wana in the south; and Sarwakai or Jandola subdivision (even though Jandola, properly speaking, is outside the Agency) in the east. There were at the time of the 1980 Census six tehsils: Ladha, Razmak, Sararogha, Sarwakai, Tiarza, and Wana. Since that time, the number of tehsils has increased to eight, with Wana tehsil being split into three tehsils, Birmal in the northwest, Wana, and Toi Khula in the south. This change was purportedly made because of the increase in population in the area but perhaps also had something to do with political

pressures. The Political Agent and both APAs are based in Wana in summer, with one APA for the Wana subdistrict and one for Ladha. There is also an APO for Sarwakai. He is permanently based in Tank. In winter, the APA for Ladha is based at Tank, as is the Political Agent. The APA for Wana subdivision stays in Wana. There are tehsildars in each tehsil.

Line agencies and the Political Agent report to their separate offices in DI Khan. Several line agencies seem permanently based in Tank, with more junior staff in Wana. Some are based in Wana.

One area in the northwest of the Agency bordering North Waziristan and Afghanistan is considered completely inaccessible. Other areas, particularly in Mahsud territory, are unstable, and government officials do not feel comfortable travelling in them. This can create difficulties since an understanding has arisen that roughly 3/4 of the development projects should go to Mahsuds since they outnumber or are thought to outnumber Wazirs by a factor of 3 to 1. It appears to be substantially easier to work in the much smaller and generally more accessible Wazir territory.

Mid and senior-level government officials posted to the Agency live and frequently work within guarded camps. They do not travel without armed guards. Each line agency now employs its own guards to accompany employees working in the field.

The South Waziristan Scouts consist of about 4,000 tribal soldiers under an army colonel headquartered at Wana. The Political Agent directly controls the force of about 3,000 khassadars.

B. Economy

1. General Factors

As with Kurram Agency, there are no indicators that tell us much about economic life in South Waziristan. Agriculture, smuggling, and remittances are the economic mainstays. Much of the cropped acreage is given over to subsistence crops. There no doubt is some poppy cultivation, and a growing interest in horticulture crops. As of the early 1980s, according the Akbar S. Ahmed, an anthropologist and former political agent of South Waziristan, approximately 20,000 to 30,000 Agency men were working outside the Agency. Opportunities for migration abroad for work are now very limited for the largely unskilled population, so males seek employment in Pakistan's major urban areas, but with much less

satisfactory remuneration. According to the Political Agent, many internal migrants have taken their families with them to urban areas. As elsewhere in the tribal areas, remittances have been invested in marriages, building Pukka houses, buying land in DI Khan, vehicles and perhaps tractors, setting up a shop, and consumer goods such as televisions. Opportunities for productive investment, except in agriculture, are limited. The number of private tubewells being drilled in the Wana plain may reflect one productive use of remittances, but with uncertain impact on the water table.

It appears that sufficient numbers, particularly of Mahsuds, have purchased and are farming land in the DI Khan area that local people are becoming somewhat alarmed. The GOP encouraged tribesmen to settle in this area by selling land at nominal prices, according to Akbar S. Ahmad. This was a clever policy since it strengthened links between tribesmen and the state and since it gave the government more means to apply pressure to errant tribes. However, people native to DI Khan do not like the Agency tribesmen, finding them aggressive and pushy. They resent the virtual takeover of Tank and increasingly DI Khan. Over the longer term, if South Waziristan families continue to move to this area to take up farming, there may be a potential for clashes with the local population.

Mahsuds appear to control a major share of the truck trade between Karachi and Tank, and many, many Mahsuds are said to live in Karachi.

The timber trade is an important factor in economic life. The Political Agents issues permits for both charcoal and timber, with 3/4 of the permits sold to Mahsuds and 1/4 to Wazirs. This, according to Akbar S. Ahmed, has been a source of irritation to the Wazirs since the main logging area lies in Birmal, in Wazir territory. Those living in the barren Zarmilan plain are also engaged in the timber trade.

Virtually nothing, with the exception of mazri or dwarf palm products is made or manufactured in the Agency. In the late 1970s, FATA-DC set up a leather tannery and a footwear factory at neighboring Jandola, in the hope of providing skills training and employment to locals. Both factories closed in 1982. The shoe factory then re-opened with orders from Afghan refugees, but closed yet again in May 1985. The two together employed almost 300 people. Operating losses in 1988 exceeded Rs. 29 million, while the original investment was around Rs. 28 million. Like similar attempts in other Agencies, these factories seem to have failed because of the lack of skilled manpower and managers; the lack of raw materials and the cost of getting them to the site;

and distance from markets. Various moves have been made to sell some of these units to the private sector, but at least some officials seem to be of two minds and no decision has actually been made to sell any of the failed units to private investors.

2. Bazaars

The main bazaar, the Adda Mughal Khel, which consisted of about 400 shops outside Wana camp, was destroyed in 1976. Since then the "Standing-up Bazaar," situated off the main road into Wana has grown. It serves mostly the surrounding Wazir and refugee population. The bazaar has grown substantially in the last decade, primarily because of the presence of refugees, but no doubt also because of the availability of cash remittances. A census of shops in the bazaar in 1987, carried out by Dr. Richard English, a UNHCR Territorial Officer, showed a total of 750 shops, 61% of which were owned by refugees. There are two refugee camps just outside of Wana, while the other three camps housing registered refugees are in neighboring areas.

The Wana bazaar is much smaller than the bazaars at Miranshah in North Waziristan and Sadda in Kurram Agency. The bazaar at Sadda in Kurram has grown primarily as the result of the refugee influx - there are many living in the immediate area of the town; while Miranshah, although it too has grown because of the refugee presence, has long been an important bazaar. Of the shops in Wana in 1987, 44% dealt in some fashion with the provision of food. One shop sold fertilizer, 5 sold tools, 6 were smithies, 5 were machine shops, and 2 did welding. Eighty-four shops were concerned with vehicle repair and maintenance. According to recent information, there are repairmen who can fix pumps and tractors. There are more shops selling fertilizer now. There are also a number selling agro-chemicals. Still, many agricultural inputs are unavailable, and farmers must travel to Tank or DI Khan, and often farther afield to purchase needed items.

Angoor Ada is probably the second ranking bazaar in terms of numbers and varieties of shops. This is largely because it is serving refugees settled nearby and substantial cross-border traffic.

Most individuals living in Sarwakai tehsil would travel to neighboring Wana or to Tank and DI Khan to buy or sell goods.

For the Mahsuds, those living near Jandola would find it easiest to travel to Tank and DI Khan. Jandola does not appear to offer much of a bazaar, nor does Sararogha. People living in Ladha

subdivision might go to Wana to purchase goods but are probably more likely to travel to Tank and DI Khan, or beyond. There are no sizable bazaars in the northern part of the Agency. Kanigurum/Sam might rank third or fourth after Wana, Angoor Ada, and possibly the point near Makin at the juncture of the road from Wana and the road from Jandola-Sararogha.

III. POPULATION

A. Government Census Data

The 1981 Census counted the population of South Waziristan at 309,454, divided as follows among the six tehsils:

● Ladha	132,756
● Razmak	24,238
● Sararogha	21,355
● Sarwekai	32,676
● Tiarza	22,207
● Wana	76,222

These estimates must be viewed as approximate since the Census was obliged to rely largely on the estimates of maliks, which it then tried to adjust through some limited sample surveys in accessible parts of the tribal areas. According to these data, Ladha tehsil, a not particularly big area geographically, had 43% of the total Agency population. Wana had 24.6% of the Agency population but was a very large tehsil in area - it has now been split into three tehsils (Birmal, Zarmilan, and Wana).

The malaria program carried out a geographical reconnaissance survey of the Agency's population in 1989. Its estimates are as follows:

Sarwakai Subdivision	60,391
Ladha Subdivision	174,525
Wana Subdivision, excluding Birmal, Srakanda and Zarmilan	83,029

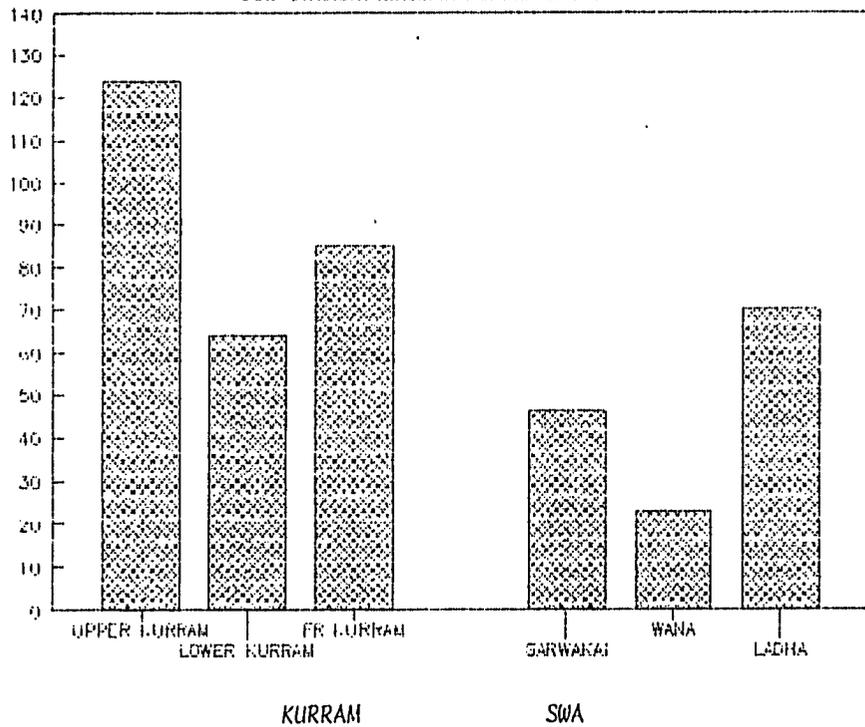
This would give the Agency an indigenous population now of over 320,000, with Ladha subdivision containing roughly 40-50% of the Agency's population. This tends to confirm the high population density of Ladha subdivision as a whole. According to Akbar S. Ahmed, this higher density is a reflection of the fact that the Mahsuds, while much larger in number than the Wazirs, occupy only about half the Agency territory. He estimates, based on the 1972 census, that the population density in Mahsud areas was 124 per square mile, while in Wazir areas it was 30 per square mile, a significant difference, making land pressures more serious in Mahsud areas.

The two largest towns are Kanigurum and Wana.

FIG. III.1

POPULATION DENSITY PER SQ. KM. BY

SUB-DIVISION/TEHSIL IN KURRAM & SWA



The population density in 1981 for South Waziristan was 46.7 per sq. km., which overall is one of the lowest in FATA. Given the rugged terrain and the inability of much of the land to support agriculture, this is not a very useful figure. The population tends to be more clustered than this reflects, inhabiting the few plains and narrow valleys that permit agriculture.

The sex ratio was 121.8 at the time of the Census. It is surprising to find so many more males, particularly given high out-migration by men to work abroad or in Pakistan's cities. What this suggests is under-counting of females and/or a high female mortality rate owing to either the lack of acceptance of health care services for females or the lack of such facilities. The difference between numbers of males and females was greatest in Sararogha tehsil and least in Sarwakai tehsil.

The population of males under the age of 15 was 82,623 in 1981. Assuming approximately as many girls (generally there would be more girls in this age range), roughly 53% of the population was under the age of 15, giving a very high dependency ratio in 1981. Because of the young age structure of the population, a larger percentage of the population would be dependant now. This represents a heavy economic burden.

Average household size for the Agency as a whole was 7.5 persons per household. The range, however, varied from 5.9 persons per household in Sararogha tehsil to 8.5 persons per household in Wana. These are not particularly large households by FATA standards.

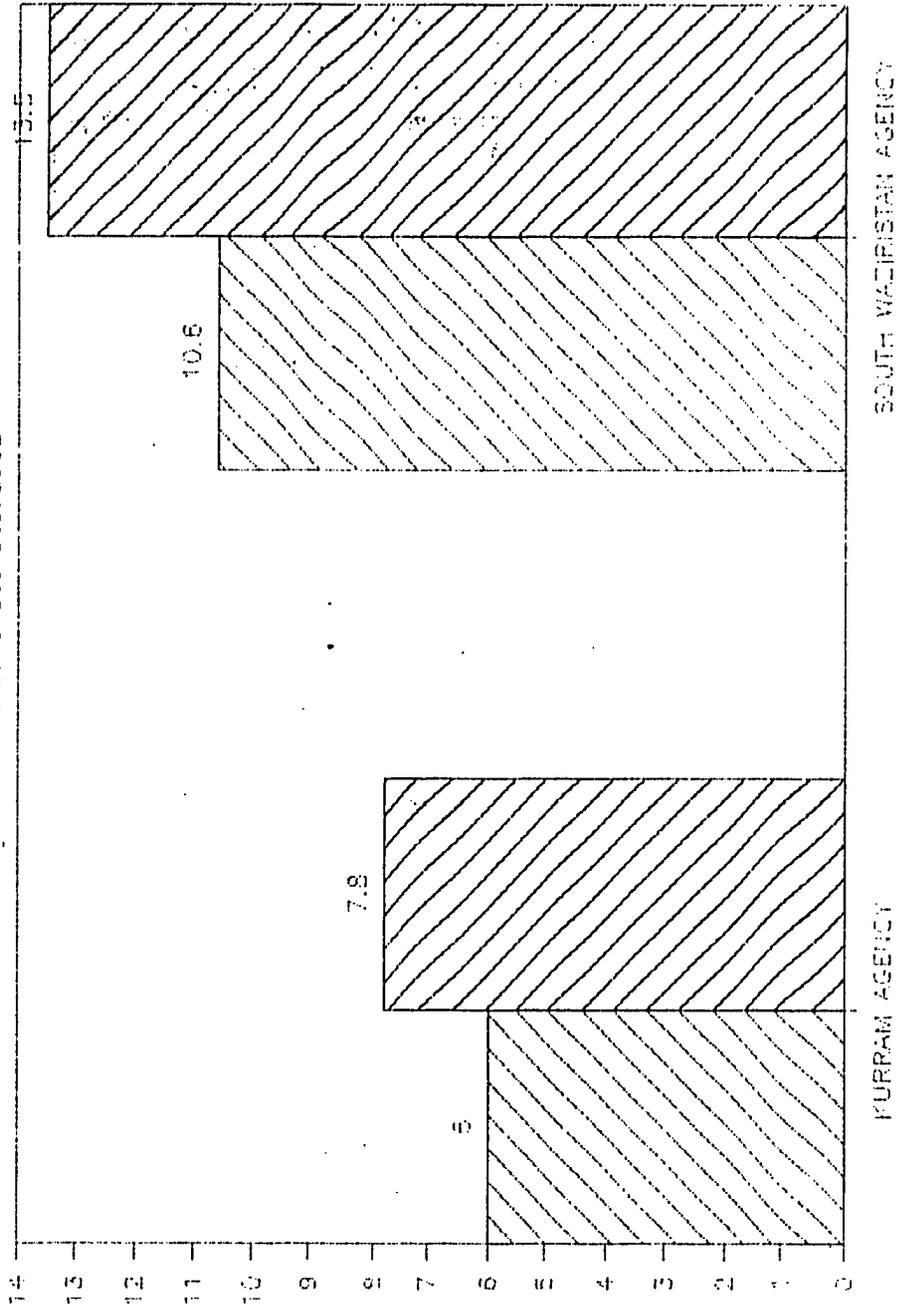
B. Population Growth

The 1972-81 intercensus average annual growth rate was recorded as 0.07 per cent. This is scarcely conceivable in an area where the exact fertility rate may not have been determined but where it is known to be very high. Infant mortality in a decade of expanding health services would not explain this very low percentage. Migration could account for some of it, but most of the migration has been of men seeking work. Families often are left behind. Migration would of course have some impact on fertility, and would tend to lower the growth rate but not to this extent. The likely explanation is to be found in a census methodology which relied on estimates of maliks in 1971 and on a combination of malik-provided estimates and sample surveys to permit adjustment of those estimates in 1981. The sample surveys during the latter census permitted a downward adjustment of the malik-provided population counts, thus giving a more accurate

FIG. III.2

POPULATION PER CULTIVATED ACRE

Using 1987-88 Land Use Statistics



BEST AVAILABLE DOCUMENT

Note: 1989 estimate uses 3.1% Annual Growth.

enumeration. The 1971 census, however, probably over-counted the population because the maliks either had political reasons for over-estimating those in their charge or simply had no experience in counting people.

Given that there is not a reliable estimate of intercensal growth in the last decade and no very clear idea of population increase in South Waziristan in this decade, it is difficult to draw any conclusions about what the population might be at this point in time. A number of factors suggest a relatively high growth rate. While migration is still be a factor limiting growth, opportunities for migration have contracted and many migrants have returned home.

The Census department has been using an average annual intercensal growth rate, both for the whole of Pakistan and for individual areas when data appear doubtful, of 3.1 per cent. While we have no idea of how close this rate might come to approximately real growth, we have used it here as a probable ceiling. Based on 3.1% annual growth, the indigenous population in 1989 would equal 395,060.

Data from the Malaria geographical reconnaissance survey in 1989 suggest a total growth rate of between 4 and 10% for the past 8 years, giving a population that might range from 320,000 to 340,000. This seems very low. If anywhere near accurate, it could suggest considerable migration of families to the settled areas and/or high infant and child mortality. It is difficult at this point to know how accurate the survey was.

In addition to the indigenous population, there is also a substantial but not (as in the instance of Kurram Agency) an overwhelming population of refugees. The number of registered refugees as of June 1989 was 57,884, and they live in six camps, all of which are located in Wazir territory. While there are unregistered refugees living in the Agency, no estimate of number was available. There is approximately 1 refugee per 7 or 8 indigenous persons. The refugees are however clustered in six camps and thus have an impact on density in the Wazir tribe-inhabited areas in the western portion of South Waziristan, where all the camps are.

C. Literacy

Literacy rates are low, as elsewhere in the tribal areas. The rate overall of persons over the age of ten is 7.04% literate. The male rate is of course higher at 11.76 % while the female rate is tiny at 0.6%. The literacy rate is highest in the tehsil

of Tiarza, where the male rate is 19.61% and the female rate .86% (rounded) for an overall total of 12.25%. Wana has the lowest literacy rate at 4.61% despite being the administrative center for the Agency in summer. This reflects a difference in attitude toward the value of education between Mahsuds and Wazirs. The poorer land base and higher population density in Mahsud areas may be responsible for their greater interest in education.

Only 6.6 % of the over-ten population in 1981 had completed primary school or higher. Of this population of 13,677, 52% had only completed the primary level. Only 27% went on to finish middle school. If we break this out by sex, only 0.6 percent of the females over ten years in 1981 completed primary school or a higher level, while the same is true of 11.2 percent of males over ten.

These statistics describe a poor human resource base, and one that is ill-equipped to move beyond agriculture and unskilled/semi-skilled trades and commerce.

D. Religious and Tribal Groups

The population is almost entirely Muslim. There is a small population of 2500 Christians in the Agency.

As noted, there are two main tribal groups: Mahsuds and Wazirs. The Mahsuds are completely contained within Agency boundaries (except for those who have now moved elsewhere), while the Wazirs are divided by the Durand line and the boundary between North and South Waziristan. The Mahsuds are also Wazirs. They used to be called the Mahsud Wazirs until perhaps some time in the Nineteenth Century, at which point they dropped the Wazir from their designation. The Wazirs were called the Darwish Khel until approximately the same period. The Mahsuds are the larger group, outnumbering the Wazirs by about 3 to 1. They inhabit the eastern half of the Agency while the Wazirs lay claim to the western portion. Tank is a major Mahsud center, while Bannu and DI Khan have gained large Wazir populations. DI Khan now seems to be gaining a very large Mahsud population as well.

There are three branches of the Mahsuds: Alizai, Shaman Khel and Bahlolzai. They have traditionally been dealt with separately by the Administration. Under the Raj, the Bahlolzai had a reputation as being the most troublesome of the three. The main Mahsud centers of population are in the villages around Kaniguram and Makin.

The Wazirs (Darwish Khel Wazirs) are divided into two clans: the Utmanzai who live mainly in North Waziristan and over the border in Afghanistan and the Ahmadzai around Wana and Shakai moving south toward the Gumal river.

The Dottanis are a tribe (once nomadic) living in the southern part of south Waziristan, crossing into Balochistan. They used to inhabit Wana but were driven out by the Wazirs and then they moved South. The Bhitannis, another tribal grouping, cross over into the Agency from DI Khan and Bannu. The British considered them more tractable than the Mahsuds, but the tractability came as much from the fact that they were enemies of the neighboring Mahsud tribe and were as interested as the British in preventing Mahsud raiding and incursions in their territory. The Ghaljis are a final small tribe living in the southeast corner of the Agency bordering Balochistan and Afghanistan.

Another group, called Urmurs, live in the area around Kaniguram. They constitute a separate ethnic group. They speak Pushto and Urmari, a Dardic (Nuristani) language, so they are presumably related to the peoples of Nuristan. There are only two other pockets of Urmurs, one in Logar province of Afghanistan and the other about ten miles southeast of Peshawar city. Only the Urmurs in Kaniguram have retained their original tongue, due primarily to the inaccessible nature of the area where they reside. In the late 1950s, the population of Urmurs in South Waziristan, according to Caroe, was approximately 3,000. The 1981 Census counted a little over 12,000 Urmurs and Sayyids living in the Urmur area. Many Sayyids speak Urmuri & live among the Urmurs. Traditionally, the Urmurs formed the trading community in the Kaniguram area.

IV. REFUGEES

Many of those refugees resident in the Agency came from Paktia via the Angoor Ada pass in the northwest, Zarmilana in the Southwest or via Miran Shah and Razmak. The population stabilized in 1986 when the Government of Pakistan began shifting new arrivals to Peshawar and Kohat. There has been only a small increase in registered refugees since then; they now number 57,884 and live in six camps, all of which are located in Wazir territory. There are no Refugee Tented Villages (RTVs) in Mahsud areas. There are also refugees living privately near Wana. These families have been allowed to stay but the local administration has refused to permit more refugees to take up residence near the town because space is limited. Camp locations seem to have been chosen primarily by refugee elders, with the GOP then legitimizing the choice and imposing limitations (as on the Wana plain) once space came to be an issue. The camps, named for local villages, and their populations are given in Table IV.1.

Table IV.1

Refugee Camps and Population

Camp	Number Families	Number Persons
Baghar	1621	9241
Srakandar	1400	7981
Azam Warsak	1473	9093
Zari Noor 1	1422	8788
Zari Noor 2	1634	11932
Zarmilana	1620	10849

The Zari Noor camps give a somewhat more planned appearance than the others, since specific allotments were given to families. The rest of the camps are more spread out, except at Zarmilana where space is limited. Most of the refugees have built katcha houses. Some wealthier refugees living outside the camps have purchased land, either on a free-hold or long lease basis, and have built pukka houses.

Most of the refugees are from Paktia and Paktika. Their links with the local population are strong - some families include both Pakistani and Afghan citizens, and many travelled back and forth across the border before the war. Many refugees still have family members on the Afghan side of the border. About 28% of the refugees are said to belong to the Karooti tribe, 11% to

Suleman Khel and 9-10% are Wazirs. Beginning in 1985, Persian and Pushto-speaking refugees from Kunduz, Baghlan and Balkh began to arrive, and there is now a significant Tajik minority among the refugees.

There is no evidence (early 1990) of whole families returning to Afghanistan. Travelling back and forth, with some members resident inside, remains the norm. Relations with the indigenous population are cordial.

In summer, the refugee population swells when those resident in DI Khan arrive to escape the intense heat. They scatter over the Mahsud & Wazir parts of the Agency. They pitch tents on barren hill sides and often obtain work in the orchards. In some areas, drinking water becomes a serious problem.

Permanently-resident refugees also obtain work as casual farm labor. Some also work as tenant farmers, but the number doing so has not been ascertained. This seems to be particularly true of those at Zarinoor and Pir Bagh. Refugees are somewhat involved in the transport business, but numbers of vehicles owned are not known. They are also heavily involved in commerce.

There are three 500 MT binishells providing storage for refugee food stuffs. There is also a concrete warehouse at Zarinoor and Katcha storage facilities at Baghar and Srakanda. Since the camp storage facilities are on land loaned by locals, the locals will take over the warehouses at such a time as the refugees go home.

Health care for the refugees is problematic because it has proved difficult to recruit staff to serve in South Waziristan. Additional staff come from DI Khan in summer to help serve the needs of summer migrant refugees. The shortage of staff and facilities places a burden on local health facilities, particularly in Wana tehsil. There are two BHUs in concrete buildings.

Water can be a limited resource. Many refugees take water from springs or karezes. A tubewell with a piped water scheme has been completed for Zari Noor but due to frequent electricity cuts, it does not always provide a satisfactory supply of water. Sixteen shallow wells have been improved at the Azam Warsak and Zarinoor camps. Two tubewells has also been installed in Zarmilan, one of which was drilled by FATA-DC and turned over to UNHCR.

Fuel is also scarce. The UNHCR allotment of kerosene does not suffice, particularly in winter, for cooking and heating needs. Most firewood sold in the Agency comes from Afghanistan, and

there are refugees who are involved in its trade. The indigenous population depends on this firewood as well, since the hillsides of the Agency are all but denuded. Refugees living in Zarmilana have a very difficult time buying firewood now because they have been prohibited from buying it in the Wana market. This is because the wood is in such short supply for the indigenous population.

Most of the schools established for refugee children are in tents; two in Zarinoor are in pucca buildings.

A mobile veterinary unit with four staff serves the refuge animal population.

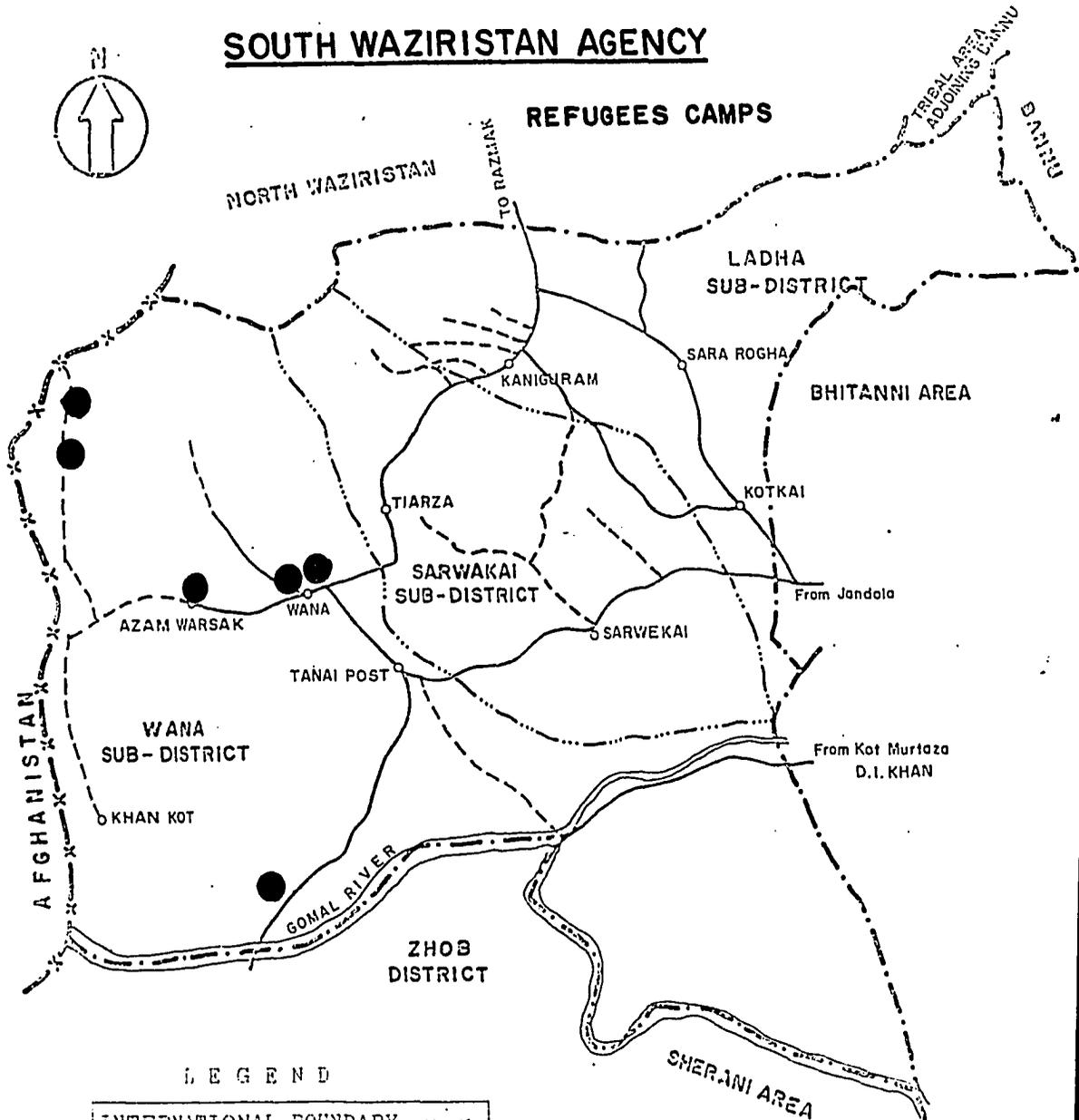
A fruit tree distribution program began in 1988 but, according to one source, the distribution was poorly managed with the consequence that a large portion of the trees have not survived.

Whatever environmental damage and strain has been caused by the presence of the refugees, the large numbers living in the Agencies have increased local markets for fruit, vegetables, fodder and other food items. At the point that large numbers of refugees begin to return home, Agency farmers raising cash crops may need assistance in seeking other markets for their products. It may be that a market will be created across the border, at least until such a time as Afghans start growing vegetables and, in the longer term, get new orchards into production. While Afghanistan still exports fruit to Pakistan, it does not do so at the pre-war level. At such a time as peace comes to Afghanistan, competition from Afghan fruit may start to threaten the market share gained by tribal Agency fruit in markets such as Peshawar.

Table IV.2 shows the locations of refugee camps.

Table IV.2

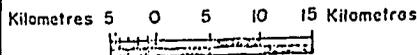
SOUTH WAZIRISTAN AGENCY



LEGEND

INTERNATIONAL BOUNDARY	-x-x-
TRIAL BOUNDARY	- - - -
SUB-DIVISION BOUNDARY	- · - · - ·
METALLED ROAD	—————
SHINGLED ROAD	-----
REFUGEES CAMPS:	
1,000 - 2,000	●
5,000 - 9,000	●
9,001 - 18,000	●

SCALE 1:666,666



V. LAND USE

In FATA generally, difficult topography and limited water availability result in limited arable land. This is particularly true of South Waziristan, which is thought to possess only 1.2% of cultivated acreage in FATA. While the Agency is the largest in total area, it has the smallest percentage of cultivated area relative to total area, and only Orakzai Agency has less actual cultivated land.

Monstuart Elphinstone, who travelled in many tribal areas in the early Nineteenth Century, commented that Wazir territory consisted mostly of mountains covered with pine forests that contained some clear and cultivated spots. He added that the lower hills were either bare or covered with brush and low trees.* The forests have, for the most part, disappeared.

As with Kurram Agency, research turned up conflicting data regarding Agency land utilization. Table V.1 presents four estimates, three drawn from the same source but from different years. The fourth presents estimates drawn from the Agriculture Census in 1980. This Census was actually a sample survey, and questions regarding sampling and enumerator errors must be raised given limited or no access to many areas. Changes over time could account for some differences in the estimates, and variable weather conditions could make a considerable difference in fallow area, for example, from one year to another. However, the very great range between estimates makes it difficult to evaluate land use, and causes the reader wonder if any of the estimates bear any relation to reality.

The first three estimates are drawn from the FATA Agriculture Directorate and were re-published in FATA Development Statistics. These estimates are drawn from three years, 1974-75, 1981-82, and 1987-88. The year 1981-82 was selected because in that year land use statistics show a dramatic change for several tribal agencies, including Kurram, South Waziristan and North Waziristan. In the 1981-82 statistics, the total land area of South Waziristan was shown as having increased by 78%, while the cultivated area decreased by 55% from the previous year's estimates. Fallow and forest area also showed sharp drops. No major additions to tribal territory are known to have occurred at this time; the government would have been very reluctant to allow settled area (or semi-settled in the case of the FRs) to revert to tribal area. The fact that total area is shown to have increased while cultivated and forest area declined, suggests

 *Monstuart Elphinstone, An Account of the Kingdom of Caubul, vol. II, London: Oxford University Press, first published 1815, p. 79.

TABLE V.1

ESTIMATES OF LAND UTILIZATION
IN SOUTH WAZIRISTAN

	FATA DEVELOPMENT STATISTICS 1974-75	FATA DEVELOPMENT STATISTICS 1981-82	FATA DEVELOPMENT STATISTICS 1987-88	1980 AGRICULTURE CENSUS
TOTAL AREA	5,527 sq. km. or 1,365,722 acres	9,848 sq. km. or 2,433,500 acres	9,848 sq. km. or 2,433,500 acres†	
CULTIVATED AREA	64,461 acres	29,158 acres	29,158 acres	45,025 acres
SOWN AREA	30,500 acres	26,193 acres	28,281 acres	36,066 acres
IRRIGATED AREA	?	21,745 acres	21,745 acres	32,563 acres
FALLOW AREA	33,981 acres	2,965 acres	877 acres	8,958 acres
CROPPED AREA	43,962 acres	29,158 acres	42,983 acres	50,307 acres
AREA SOWN MORE THAN ONCE	13,460 acres	2,965 acres	14,702 acres	14,232 acres
FOREST	119,001 acres	686 acres	1,841 acres	
CULTURABLE WASTE	17,579 acres	213,742 acres	212,585 acres	
UNAVAILABLE FOR CULTIVATION	1,005,414 acres	2,169,916 acres	2,189,916 acres	

BEST AVAILABLE DOCUMENT

that new data became available. However, the new data seem somewhat suspect.* It seems unlikely, for example, that in 1981-82, the cropped area would be identical to the cultivated area. Cropped area is usually at least somewhat larger than cultivated area because of heavy reliance on irrigation which often permits double cropping.

Some of the estimates for South Waziristan made in 1981-82 have been repeated every year since, meaning that current estimates of cultivated land and irrigated land are out-of-date. Private and public sector investment in irrigation has permitted a considerable amount of new land to be brought into production. Land scarcity and escalating prices have also meant that land once viewed as marginal might now be farmed, particularly in a year with good rainfall.

The fourth estimate, shown in the last column, is from the 1980 Agriculture Census. Its estimates of cultivated and sown areas are much higher than recent estimates found in FATA Development Statistics. This is peculiar indeed and suggests either that cultivated and cropped area are badly underestimated in FATA Development Statistics or badly overestimated by the Census. If those farmers interviewed in the Census were asked to report on the size of the ares they farmed, as opposed to enumerators making objective measurements, then there may well have been over-reporting in the Census. Sampling and other enumerator errors are also possible.

It is difficult to weigh these various estimates but one way to do this is to look at the relative proportions of fallow, single cropped and double cropped acreage to see if the picture they form of South Waziristan agriculture makes sense. This has been done in Table VI.2. The 1987-88 estimate appears to make the most sense, although with 74% of the land irrigated, one might expect a higher percentage of double-cropped land. It is possible that poor rainfall accounted for the low estimates of double cropped land in the three earlier years, or the high estimates of fallow land in 1974-75 and 1980, although the 1974-75 estimate of 53% of the cultivated land lying fallow stretches credulity. Although the 1987-88 data appear the most realistic, it is useful to keep in mind that since the estimate for cultivated area has not changed since 1981-82 and therefore does not reflect new acreage brought into production, then the estimates for sown, cropped and fallow acreage, although they have changed since 1981-82, must be suspect since they use the recorded cultivated area as a base.

*The new statistics for Kurram Agency from the same year are also questionable: the area sown shows only a tiny increase while most of the new acreage recorded (almost 10,000 ha.) is categorized as fallow land.

TABLE V .2

CULTIVATED LAND IN SOUTH WAZIRISTAN

Percentages of:	1974-75	1980	1981-82	1987-88
Irrigated Land	Unknown	72%	75%	75%
Double Cropped	21%	32%	10%	50%
Single cropped	26%	48%	80%	47%
Fallow	53%	20%	10%	3%

When the acreage for various (but not all) crops planted in 1987-88 is added, cropped area totals 45,046 acres. This suggests that the reported cropped area of 42,983 acres for that year is an underestimate, or that the acreage under various crops was over-estimated by the Agriculture Directorate FATA.

While we may lack precise numbers, we do know that South Waziristan, because of its mountainous terrain and scarce surface water resources, has a limited agricultural base. The main areas of development in future will probably be on the few small plains, provided that ground water resources can be tapped for irrigation water without drawing down the aquifer.

VI. AGRICULTURE

A. Landholding Pattern

The 1980 Agriculture Census provides the only data available with respect to farm size and ownership. Given the lack of other statistics with which Census data can be compared, there is no easy way to determine the degree of reliability of Census information. Since Census data concerning cultivated and cropped acreage do not match with parallel data drawn from FATA Development Statistics for the same period (that is, they suggest a larger cropped and cultivated area), it could be unwise to rely too heavily on Census findings with respect to size of holdings and cultivated and cropped areas. In South Waziristan, the 1980 Agriculture Census reported on 19,220 farms with an estimated population of 197,966 or 63% of the Agency's total population. Its findings with respect to ownership are summarized below in Table VI.1.

Table VI.1

Type of Farm	Number of Farms	Number of Cultivated Acres
Owner-operated	16,385	37,641
Owner-cum-tenant	2,825	11,884
Tenant-operated	10	13

The second category of owner-cum-tenant includes farmers who farm some land they own and also a piece of land that they rent from someone else. Of the 11,884 acres farmed by those in this category, only 2,835 acres were rented or sharecropped. It seems safe to conclude, therefore, that tenancy is an insignificant phenomenon in South Waziristan and that the vast majority of farmers farm only or primarily land that they own. However, one development since the Census has been that some undeterminable number of refugees have become tenant farmers.

Holdings generally are small, and ownership appears relatively equal. Seventy-two percent of the farms were under five acres in size, and they held a total of 37% of the cultivated area. Another 26% of the farms were between five and twenty-five acres in size, and they collectively held 38% of the cultivated area. Only 2% of the farms were 25 acres or more in size, and they held almost 26% of the cultivated area. Farms also often own culturable wasteland and unculturable waste - this land is included in the above percentages concerning farm size but does

not figure as part of the cultivated farm area. This presentation may overstate a farmer's economic power - for example, a farmer may be listed as owning more than 25 acres, but he may only be able to farm 15 acres.

One of the oddest findings of the Agriculture Census with respect to South Waziristan in comparison to all other tribal agencies is the large amount of arable wasteland recorded by the Census to be owned by farms and not cultivated. The Census recorded that 6,400 farms in the Agency owned 33,939 acres of culturable wasteland. The Census further recorded the following:

18,808 working farms:	45,025 cultivated acres
	11,191 culturable waste acres
415 non-working farms:	22,748 culturable waste acres

"Culturable waste" should not here be read as fallow land, but rather it seems to represent land that could theoretically be farmed but never is. There appears to be no similar phenomenon in any of the other tribal agencies. For the working farms, 20% of their total arable land is not being cultivated. The non-working farms are perhaps the real surprise, along with the large amount of potentially arable land they own. Of these 415 non-working farms, 10 own a total of 22,500 acres of cultivable waste; so the other 405 farms together own only 248 acres of culturable waste (or less than one-half acre per farm). Much of this wasteland is probably used for grazing. Lack of water may be the main reason that this land lies uncultivated. The fact that this land is not leased to land-hungry small farms tends to suggest that a major resource necessary for bringing the land into cultivation is missing. Other explanations could include lack of labor, land that is less than fertile and would produce only marginal returns, and title disputes. Some over-reporting of acreage is possible if title disputes are responsible for any of the uncultivated but potentially culturable area, since two or more farms disputing territory could conceivably have reported owning the same piece of land. Over-reporting is also possible since the acreage was derived through farmer reporting and not a cadastral survey. Land records do not exist for the Agency.

This large acreage of culturable wasteland in the possession of Agency farms skews the cropping intensity figure for South Waziristan, making it at 57 one of the lowest in FATA. Since owner-operated farms had the largest amount of culturable but uncultivated land, the cropping intensity for owner-operated

farms was 53. For owner-cum-tenant and tenant-operated farms, the intensity was 92. If we include only those farms that actually do some farming, the cropping intensity for 1980 rises to 112. As might be expected, the smaller the farm, the more intensively cultivated it is.

As elsewhere in FATA, inheritance rules result in a downward tendency in farm size. The number of farms increases while the size of individual farms decreases. One component of this process is that a farmer may inherit more than one parcel of land and the pieces may not be contiguous. The farmer may lose time in moving from one plot to another, and the time and cost-efficiencies to be gained from owning/using agricultural machinery such as tractors may be significantly reduced. The 1980 Agriculture Census found that the majority of farms in South Waziristan were fragmented into two or more pieces. The Census found that 87% of the owner-operated farms surveyed, 99% of the owner-cum-tenant farms, and 100% of the tenant farms were fragmented. Of the owner-operated farms, less than 2% of their entire cultivated area was in single parcel farms. Tables VI.2 and VI.3 show the degree of fragmentation by number of farms and by farm area.

The limited amount of cultivated land, combined with a large farming population, means considerable pressure on available land. Population density per cultivated acre in 1980 was 10.6. Farm family population density per cultivated acre, based on Agriculture Census data was 7.

Average household size for all agricultural households (including households owning livestock but doing no farming) surveyed was 10.3 persons in 1980; for farming households alone, the average number of members was 10.6. In 1980, 138,795 individuals on surveyed farms were trying to support themselves on less than 5 acres of land. Of course, families may have had and no doubt required other sources of income: animals, a family member in a militia or government service, and/or a migrant earning a salary in the Gulf or Karachi. The impetus for migration with such a limited land base must be considerable. This may be upheld by the fact that average household size was smallest for households farming less than 1 acre. The Agriculture Census recorded that only 35% of farm family male members over the age of ten years worked full or part time on the family farm. The other 65% or approximately 62,160 males either were unemployed or worked elsewhere.* Of these 62,160 males, 1,200 worked on other farms,

 * These data seem incredible when the comparable figures for North Waziristan are 75.7% of male members working on the family farm, with the balance unemployed or working elsewhere.

FARM FRAGMENTATION BY NUMBER OF FARMS

(Thousands)

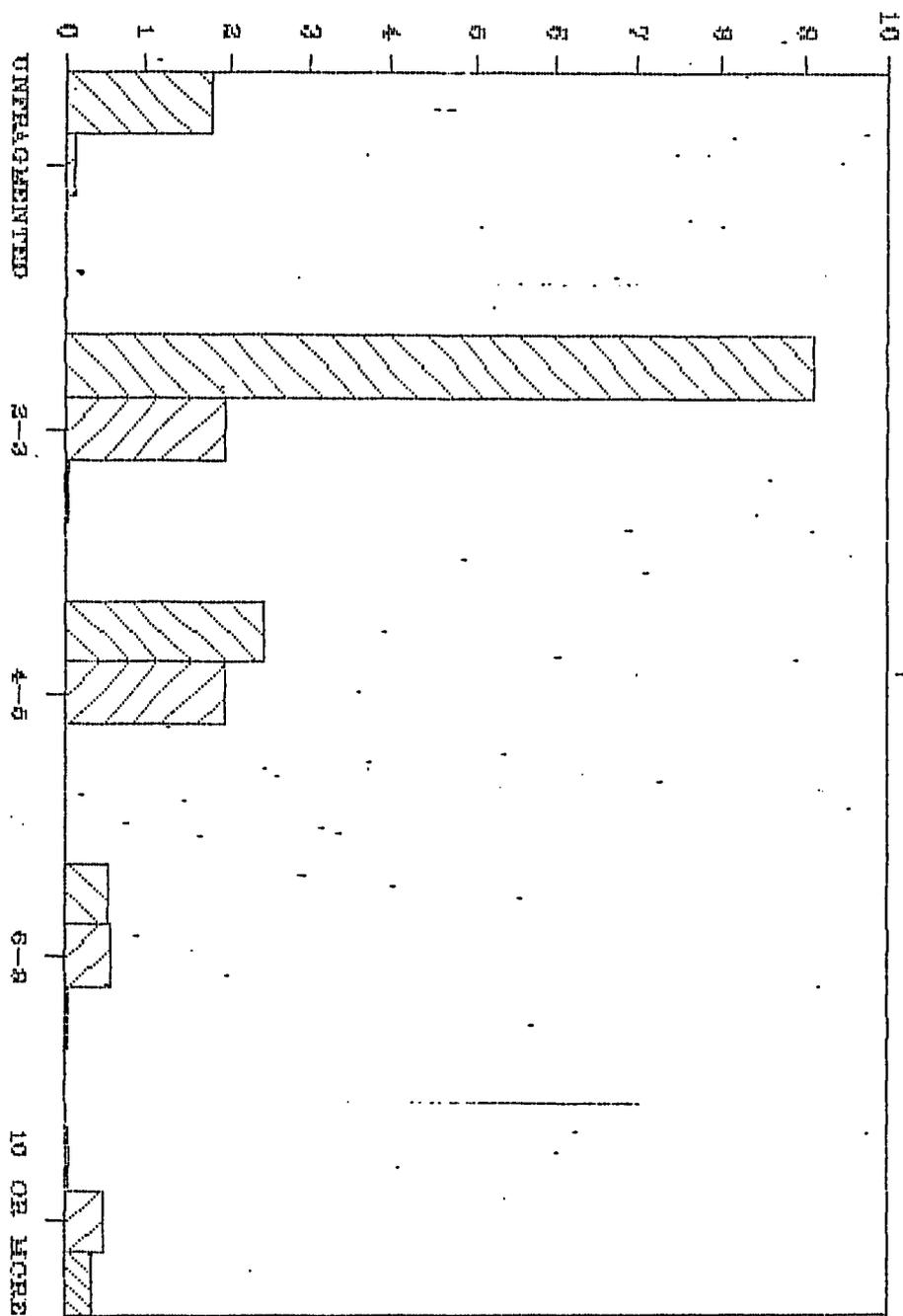


TABLE VI.2

 FARMS < 5 ACRES
 FARMS 6 - < 25 ACRES
 FARMS 25 & UP ACRES

FARM FRAGMENTATION BY AREA (ACRES)

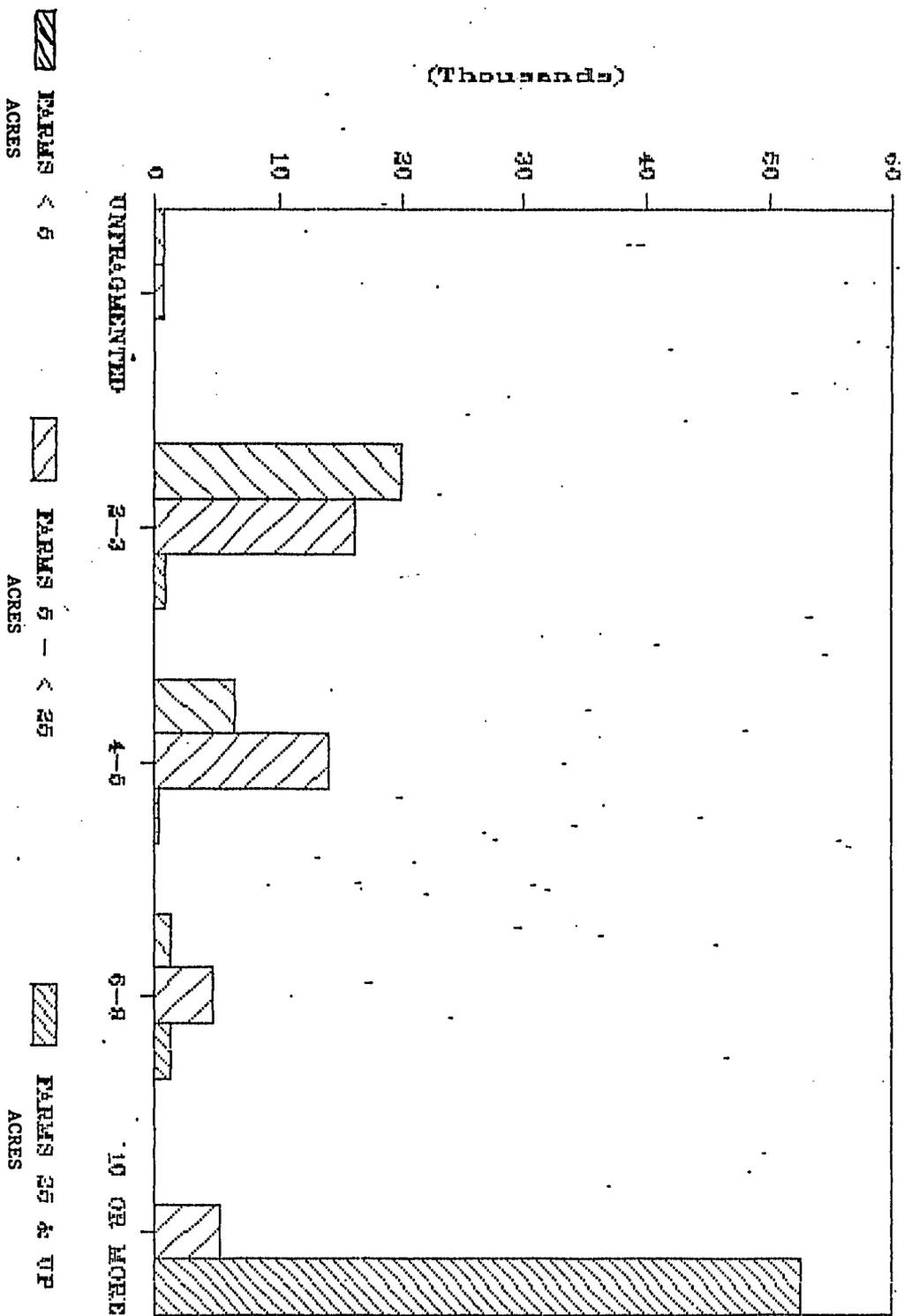


TABLE VI.3

BEST AVAILABLE COPY

while 10,500 were engaged primarily in non-agricultural work. What is not clear from the Census designation of "Family Members Engaged in Work of Other Households/Agencies Only" is whether an attempt was made to count migrants working outside FATA. As the Careful reader will notice above, there are 50,460 over-the-age-of-ten male farm family members not working on the family farm and not reported as employed elsewhere, so it is not clear that these statistics are at all accurate. They probably under-report outside employment.

Sixty-four percent of those males working off the family farm were from households farming less than 5 acres, while another 10% helped support households farming between 5 and less than 7.5 acres. A total of 1,900 individuals, of whom 1,400 were from households farming less than 5 acres, did agricultural work for other households. In other words, 21% of male farm household members over the age of ten and from households farming less than five acres held some form of outside employment.

B. General Description

Lands close to river and stream beds are generally well cultivated, when adequate water is present. Agriculture on the plains depends largely on rainfall except along nullah beds, where karezes exist or tubewells have been drilled. Some of the plains appear to offer good agricultural potential that is just beginning to be tapped, via the installation of tubewells. For example, FATA-DC and the consulting firm NESPAK suggested that in 1985 the cropped area of Wana plain consisted of 381 acres compared to 5510 acres of culturable waste. A similar estimate for the Spin plain gave the cropped area as 408 acres and the amount of culturable waste as 2842 acres. Lack of water is of course the main limitation, although some of the soils have a clayey texture and too much gravel to support good crops. Further investment in tubewells should depend on more precise calculations of the recharge to the aquifers below the plains, as well as perhaps in a detailed soil classification. Soil samples have been taken from some of the plains but a comprehensive survey would give a clearer idea of how much potential arable land there really is.

The Wana Toi is the main stream passing through the Wana plain. A narrow strip on both sides of the toi is farmed and irrigated via surface channels. A larger area along the left bank is irrigated by tubewells and karezes. Farmers on the plain raise wheat (primarily rain fed), maize, vegetables, apples and other tree crops, some almond and fodder. The installation of private and public tubewells in recent years has permitted considerable expansion of agricultural activities.

The Lakai nullah provides some surface irrigation on the Spin plain. Surface water is limited and confined to the western portion of the plain. Farmers raise wheat, maize, vegetables and fruit. Because the plain is at a low elevation, it is warmer than the Wana plain. Its climate is suitable for guava, citrus, apricot, pear, peach and plums according to one consultant. The largest FATA-DC built irrigation scheme in the Agency brings water from the Wana toi to a portion of the plain.

There is little agriculture on the Zarmilan plain, except where the Gomal river flows. The population supports itself through trading in firewood or out-migration for work.

On the Birmal plain, farmers are raising alfalfa, maize, potato, chillies, tomato, apples and apricots. Climatic and soil conditions on the plain make it suitable for tree crops.

C. Crops

1. Introduction

The 1905 Gazateer for NWFP recorded that the Agency was not able, with available arable land, to produce a sufficient grain crop to meet its own needs. The main crops at the turn of the century were wheat, barley, rice, maize and millet, grains which were often cut while green for fodder. Potatoes were introduced around the middle of the Nineteenth Century in the Kanigurum area.

Today the important crops are wheat, maize, fruit (primarily apples) and vegetables. Small amounts of rice are grown. While government statistics report a small amount of sugar cane in the Agency, local informants said that no sugar cane was grown. There are two main growing seasons, although some farmers raising vegetables and having well watered land will get three crops per year. The two main seasons are the Kharif and Rabi seasons. In 1980, in terms of acreage, they held almost equal importance. Not all farmers, of course, are able to sow even two crops per annum. Table VI.4 shows the sowing and harvest times of the crops of these two seasons. Many farmers with orchards are taking at least two crops per year since they often inter-crop orchard land, often with tomatoes or fodder.

Wheat is the major Rabi crop. In 1980, according to Agriculture Census data, 92% of the Rabi cropped area and 42% of the total cropped area of those farms surveyed were planted in wheat. Among the Kharif crops, maize predominates but the importance of vegetables has grown. In 1980, 68% of the kharif cropped area

TABLE VI.4

TIMING OF
IMPORTANT CROPS IN SOUTH WAZIRISTAN AGENCY

SEASON: KHARIF

Crop	Sown	Harvest
Rice	June	October-November
Maize	July	September
Tomato	March-April	July
Potato	March-April	July
Sugar Cane	March-April	November
Fodder*	July	September-October

SEASON: RABI

Crop	Sown	Harvest
Wheat	October-November	May-June
Fodder*	October	March-April

*Fodder is cut during the growing season to feed animals. Maize is also pulled for fodder, thereby reducing harvest yields.

and 32 % of the total cropped area were planted in maize. By 1980, vegetables had become an important crop in the Agency, even though they had just started to make inroads elsewhere in FATA. According to the Agriculture Census, vegetables in 1980 were planted on 22% of the Kharif cropped acreage, 3% of the Rabi cropped acreage and 12% of the total cropped acreage. The Census may also have over-estimated vegetable acreage.

The pattern has changed somewhat since 1980. Based on 1987-88 acreage estimates, wheat is now grown on 45% of the cropped acreage; maize on only 23% of the cropped acreage, indicating a decline in importance; vegetables on 8% of the cropped acreage; and fruit on 22% of the cropped acreage. The increase in importance in fruit is not surprising. The apparent decline in the proportion of vegetable acreage is questionable. It is of course very risky to compare the two sets of estimates because they recorded very different land use patterns. Based on the conclusions of knowledgeable individuals, it should be safe to say that wheat has held its own as the most important crop, while fruit and vegetable crops have over time become more and more popular with farmers. It may also be safe to conclude that maize is of lesser interest than it was a decade ago.

Common rotation patterns for irrigated land are as follows:

- Wheat - Maize
- Wheat - Tomatoes
- Potatoes - Wheat
- Maize - Fodder
- Wheat - Rice

On barani land, generally only one crop can be grown per annum unless the rainfall is both good and timely. Farmers will raise either wheat or corn. If they think they can get a second crop, they will grow wheat and corn or wheat and fodder.

A word of caution is perhaps needed here. South Waziristan is a non-reporting area for crops. Estimates of acreage and production are very, very crude, and may well be meaningless. Frequently, estimates of acreage or production for different crops are given as being the same, year after year. Agriculture staff in the Agency are few and have neither the time, means of transportation, nor the expertise to do crop estimation. There are also many places to which they cannot travel, owing to lack of security. What appears to happen is that they conjure up figures based on their impressions of cropping patterns in the limited areas that they do visit.

2. Wheat

Data drawn from different years regarding wheat acreage are inconsistent. The 1980 Agriculture Census reported 21,259 acres planted in wheat by its sample of farms while the FATA Agriculture Directorate recorded 13,309 acres of wheat in 1980-81. In one year, from 1983-84 to 1984-85, FATA Agriculture Directorate records show a big leap in wheat acreage, from 12,145 acres to 20,608 acres, with a 35% increase in irrigated acreage and a 290% increase in barani acreage. It is possible, of course, that precipitation in 1984-85 was very good, but still such a remarkable increase in barani acreage appears unlikely. In addition, rain fed wheat acreage has remained at the 1984-85 level ever since. Another possible explanation is that acreage was under reported prior to 1984-85, but no convincing answer could be provided as to how Directorate staff suddenly had the means to provide a more accurate estimate.

In 1983-84, barani acreage formed 13.5% of total wheat acreage while the balance was irrigated. From 1985-86, recorded statistics suggests that 36.9% of the acreage planted in wheat is rain fed. The proportion of rain fed wheat acreage has not changed since.

According to government statistics, wheat acreage has not changed since 1986-87. This may have been the last year in which an estimate was attempted.

South Waziristan is reported to plant 9% of the total wheat acreage of FATA and grow 8.6% of total production, but these estimates again must be viewed as unreliable.

Yields in South Waziristan appear to be lower than in Kurram Agency, and are therefore low in comparison with the rest of Pakistan. On irrigated land, average wheat yield is reported as 0.4 - 0.5 MT per acre. On rain fed land, yield drops to 0.35 MT per acre.

It is not clear how much of the wheat acreage is planted in improved varieties and how much in desi varieties. Agriculture staff at Wana commented that in the Wana plain the majority of farmers are growing improved varieties. The research team talked to some farmers who were growing Mexipak.

Table VI.5 shows acreage and yields since 1984-85. Again, the researchers feel compelled to warn the reader that the acreage estimates cannot be viewed as reliable. The yields may approach greater accuracy, although the Agriculture Directorate does not appear to organize crop cutting plots.

TABLE VI.5

WHEAT

<u>Year</u>	<u>Acreage in Acres</u>			<u>Yield in Tons/Acre</u>	
	<u>Irrig.</u>	<u>Unirrig.</u>	<u>Total</u>	<u>Irrig.</u>	<u>Unirrig.</u>
1974-75	8799	2301	11,100	.48 tons	.13 tons
1975-76	9600	1599	11,199	.44 "	.25 "
1976-77	9600	1599	11,199	.44 "	.25 "
1977-78	9600	1599	11,199	.48 "	.36 "
1978-79	9600	1601	11,201	.48 "	.36 "
1979-80	9884	1730	11,614	.48 "	.35 "
1980-81	9884	1977	11,861	.48 "	.35 "
1980 Census	19685	1574	21,259	.	.
1981-82	11614	1695	13,309	.4	.4
1982-83	11614	1695	13,309	.4	.4
1983-84	10504	1641	12,145	.4	.4
1984-85	12824	7512	20,336	.45	.35
1985-86	12849	7512	20,361	.45	.35
1986-87	12849	7487	20,336	.45	.35
1987-88	?	?	20,336	.48	?
1988-89	?	?	20,336	.41	?

3. Maize

FATA Agriculture Department recorded an increase in maize acreage in the late 1970s and a subsequent drop in 1982-83. Acreage has reportedly been stable since that time. The acreage estimate, in fact, has not changed since 1984-85, so it may not be very current. Since maize land is entirely or almost entirely irrigated, one might expect more farmers to be switching to cash crops such as tomatoes. Current maize acreage is said to be 10,378 acres. Most of the maize grown is a low yielding desi variety. Farmers reportedly are starting to show some interest in improved varieties, but considerable reluctance remains since improved varieties require more care and effort.

Yields, which should be slightly higher than wheat yields, are appreciably higher. Yields are consistently reported in the 0.7 MT per acre range. Again, it is not clear if new estimates are made annually or if old estimates are being repeated.

Table VI.6 shows acreage and yields since 1974-75.

4. Vegetables

Acreage estimates for recent years vary according to the source one consults for almost every vegetable crop. For some crops, the differences are not of any consequence; for tomato, the differences are substantial. Generally speaking, the estimates of acreage given by the Agriculture office in Wana were higher than those published in the annual publications Agriculture Statistics or in FATA Development Statistics. Table VI.7 lists the different estimates for important vegetable crops, using the heading "Peshawar" to indicate either published data from the two sources mentioned above or data provided directly by the FATA Agriculture Directorate Peshawar office. "Wana" is used in the table as short-hand for data provided by the Agriculture office in Wana.

Judging by acreage, tomato and potato are the main vegetable cash crops. Potato acreage appears to have remained relatively stable over the last five years, no doubt reflecting lower profits to be made, although it is particularly suitable for hilly areas. Potato is planted primarily during the Kharif season and mainly on irrigated land. If the Wana-provided estimates of tomato acreage are relatively accurate, farmer interest in this crop has increased dramatically in recent years. Interest in growing onions has increased to a small extent.

TABLE VI.6

S.W.A. MAIZE

Year	Acreage in Acres			Yield in Tons/Acre	
	<u>Irrig.</u>	<u>Unirrig.</u>	<u>Total</u>	<u>Irrig.</u>	<u>Unirrig.</u>
1974-75	8500	2501	11,001	.62	.41
1975-76	8500	2501	11,001	.63	.41
1976-77	8500	2501	11,001	.78	.38
1977-78	8500	2600	11,100	.78	.37
1978-79	9259	2990	12,249	.78	.37
1979-80	12602	-	12,602	.69	
1980-81	12602	-	12,602	.71	
1980 Census	15337	720	16,057	.	
1981-82	12602	-	12,602	.71	
1982-83	10378	-	10,378	.70	
1983-84	10131	-	10,131	.71	
1984-85	10378	-	10,378	.71	
1985-86	10378	-	10,378	.71	
1986-87	10378	-	10,378	.71	
1987-88	?				
1988-89	10378	-	10,378	.70	

TABLE VI.7

ESTIMATES OF VEGETABLE ACREAGE AND PRODUCTION

Crop	Potato		Tomato		Onion		Others [†]
	Acres	Tons	Acres	Tons	Acres	Tons	
1984-85*							
Wana	890	3765	544	365	15	24	509
Peshawar	927	3646	126	229	0	0	220
1985-86*							
Wana	922	3780	741	500	25	40	642
Peshawar	882	3765	198	350	99	500	605
1986-87							
Wana	924	3790	1903	1300	49	80	766
Peshawar	914	3755	321	650	99	460	741
1987-89							
Wana	927	3800	1927	1850	62	100	902
Peshawar	927	3800	494	1000	0	0	
1988-89							
Wana							
Peshawar	927	3770	1853	4350	445	2165	

*1984-5 and 1985-6 Peshawar estimates do not include any Kabi veg., for which no acreage is given in FATA Development Statistics.

Other crops include pumpkin, gourds, lady fingers, musk melon, tinda, brinjal and turnips.

BEST AVAILABLE COPY

There is a possibility that current estimates, whether provided by the Wana or Peshawar offices, of potato acreage are under-estimates. The 1980 Agriculture Census reported 4,263 acres under potato with 37% of farms in the Agency raising some potato. This is more than four times the current estimated acreage of potato so the discrepancy is fairly serious.

The Census recorded that 42% of all farms surveyed grew vegetables, including potato. The surveyed farms planted vegetables other than potato on 1569 acres in 1980. Acreage has no doubt increased in the last nine years. Vegetables are planted almost entirely on irrigated land.

Production estimates also vary since acreage estimates vary. However, yield per acre estimates are not consistent, making it difficult to determine how productive South Waziristan farmers are. For example, the Wana office estimates suggest a tomato crop yield of 2 tons per acre in 1986-87. The Peshawar-provided estimates suggest a yield of 0.7 tcns per acre for that same year. For 1985-86, the Wana estimates give a yield of 1.6 tons per acre, while the Peshawar estimates suggest a yield of 5.1 tons per acre. At this point in time, a few years after such estimates were made, it is impossible to reconcile the differences.

Potato is grown in hilly areas on both irrigated and rain fed land in Ladda, Bedan, Kanigurum, Ginimela, Spin Kamr, Wana, Sheki and Birmal. Farmers growing this crop are using improved varieties, but one consultant has recently noted that these use improper planting techniques. Potato is a new crop to many farmers, and they often have no real understanding of what is required to grow it. Diseases and pests (blight, green aphids and others) are a problem and reduce productivity.

Farmers all over the Agency grow tomato, but according to some consultants they are growing inferior varieties of tomato, ending up with small tomatoes of poor quality. Considerable tomato is grown in the Wana area. Planting generally is in July with harvest in September-October, producing tomatoes that are out of season and therefore fetch higher prices in the down districts. Farm management problems include plants that are not thinned and are too close to one another. Plants are often improperly staked, and again little weeding is done. Harvesting is often left until too late, so that the tomatoes reaching the market are soft and often bruised. The crop is affected by blight and leaf curling, caused by white flies.

One consultant, Mr. Rabi, estimates that about 10% of vegetable crops are consumed locally, while the other 90% are marketed

elsewhere. Potatoes are packed in 90 kg. gunny sacks for transport, while tomatoes are packed in 10 kg. crates. Harvests are sold to wholesalers in open auctions at local markets.

5. Orchard Crops

Apples are clearly the predominant fruit crop. Apricots and peaches have roughly equivalent importance but run a poor second to apples. Plums may figure fourth in terms of importance, but the statistics again cannot be deemed reliable. Several other fruit and nut crops are grown but on rather limited acreage and therefore have little, if any, commercial importance at this time.

The 1980 Agriculture Census gave an estimate of 439 acres planted in fruit by its sample of farms. This is a very low figure. Wana and Peshawar Agriculture Department Office-provided estimates for fruit acreage and production show the same kinds of variations as do vegetable crops. If anything, the differences are more extreme. Table VI.8 highlights these differences for some fruit crops. The most significant discrepancies concern apple, peach and plum acreage, and of course, therefore production. For example, in 1987-88, the Wana FATA Agriculture office reported 642 acres planted in peach trees, while the Peshawar FATA Agriculture Directorate reported 124 acres. With respect to apple, the acreage gap has narrowed over the past few years and for 1988-89, the Peshawar office reported the same acreage that Wana reported the previous year. However, a recent USAID consultant, Mr. Rabi, believes that apple acreage is underestimated.

The Peshawar office has shown declining acreage for plums and stable acreage for peaches since 1984-85, whereas Wana agriculture staff have indicated increasing acreage for both. Again, it is difficult to interpret such variable data.

It must be difficult to estimate peach acreage because, as Mr. Rabi reported, peach trees are planted as filler trees in apple groves. Orchards of peach trees are rare.

Yield estimates per acre are so different that no attempt can be made to analyze them. Based on data in Table VI.8, the following shows different yield estimates for two crops for a few years:

APPLE

1985-86

Wana	7.3 tons/acre
Peshawar	4 tons/acre

1984-85	
Wana	6.9 tons/acre
Peshawar	4.4 tons/acre

1986-87	
Wana	6.9 tons/acre
Peshawar	7.2 tons/acre

APRICOT

1984-85	
Wana	3.6 tons/acre
Peshawar	3.8 tons/acre

1985-86	
Wana	4.6 tons/acre
Peshawar	2.6 tons/acre

1986-87 and 1987-88	
Wana	3.6 tons/acre
Peshawar	6.3 tons/acre

Table VI.8 does not reflect acreage for some important tree crops, but includes them in the "other" category. Acreage figures for these from 1988-89 (Peshawar office) are given below:

Pomegranate	148 acres
Almond	395 acres
Walnut	99 acres
Pine Nuts	247 acres (1987-88, not listed 1988-89)
Pears	74 acres

Between 74 and 131 acres of mulberry trees are planted (data from Agriculture Statistics for 1986-87 and 1987-88), and a small amount of citrus is planted. Pistachio trees are also planted, but existing strains are not particularly well suited, according to Mr. Rabi, to the area. Melons are also grown.

As the consultant, Mr. Rabi reported, local varieties of apple are small, mature early and are of inferior quality. The trees are heavy bearing. They predominate because early harvest avoids attacks by codling moths and scales. Harvest starts in mid-July and concludes around the end of August. The improved varieties planted in South Waziristan - including red and golden delicious and amri - are so subject to such attacks because of later

TABLE VI.3

ESTIMATES OF FRUIT ACREAGE AND PRODUCTION

Crop	Apple		Apricot		Peaches		Plums		Others
	Acres	Tons	Acres	Tons	Acres	Tons	Acres	Tons	
1984-85									
Wana	6672	45900	494	1800	494	1600	272	990	667
Peshawar	3395	15247	395	1039	124	75	74	37	660
1985-86									
Wana	6919	50000	519	1996	618	2250	371	1350	741
Peshawar	6919	27900	395	1500	124	70	62	30	988
1986-87									
Wana	7186	49300	544	1980	618	2250	371	1350	840
Peshawar	6919	50000	395	2500	124	70	62	30	1085
1987-88									
Wana	7413	51000	544	1980	642	2340	395	1440	890
Peshawar	6919	50000	395	2500	124	70	62	30	1050
1988-89									
Wana									
Peshawar	7413	49985	445	3000	148	600	74	300	544

BEST AVAILABLE COPY

maturation that production is greatly reduced. Growers are cutting down groves of improved varieties and replacing them with indigenous varieties, with a consequent loss in quality and production potential. During a visit to Wana the last week of October, the research team found only poor quality apples in the market, and these were badly bruised and mushy. The best apples to be found, and even these were not particularly good, were Afghan-grown and had come from Kabul.

Orchard management often is poor. Farmers fail to weed the groves, giving pests a place to hide. Trees are often planted too close together, and pruning is not done. Other problems noted by Mr. Rabi include use of flood irrigation rather than the more appropriate basin irrigation, insufficient use of fertilizer due to high cost, no pruning, failure to thin fruit from the trees, and harvesting too late so that fruit reaching the market is over-ripe.

According to Mr. Rabi's recent consultancy report, much of the harvesting and marketing of apples in the Agency is handled by wholesalers. Owners of large orchards often sell the crop while still on the trees to wholesalers who then become responsible for picking and transporting the fruit from the farm. Sometimes farmers market the produce themselves. Owners of small orchards most often will bring their fruit to Wana and sell it at open auction to wholesalers. Fruit is often inadequately packed, leading to bruising. No sort of grading or sorting is carried out. Fruit is packed in 10 kg. crates. About 10% of the fruit is consumed locally, while the rest is sold elsewhere in Pakistan. According to one consultant, Dr. Zidan, a 16 kg. crate of red delicious apples in autumn 1989 earned Rs. 220-230.

No storage facilities exist in the Agency to permit fruit to be held until after the harvest glut. Whatever storage is attempted is done in underground pits.

6. Rice

The 1980 Agriculture Census found 380 farms in its sample planting 163 acres of rice. If we track FATA Agriculture Directorate estimates, it appears that there has been a small increase in rice acreage over the last fifteen years, from 200 acres in 1974-75 to 351 acres in 1988-89. Water is rarely available in such large quantities in South Waziristan as to permit it to be squandered on a crop that is as needy of water as is rice. Small pockets of rice cultivation are found along the major tois, such as the Wana toi. Rice is also grown around Kotkai and Jandola in the Sararogha area, and in Sarwakei and

Ladha tehsils. Those farmers who do grow a little rice do so for their own consumption. Local varieties predominate. Production in 1988-89 was estimated at 200 tons. Yields have consistently been recorded as 0.61 MT per acre, higher than they are in Kurram, where rice yields run from 0.52 - 0.59 MT per acre. Table VI.9 shows rice acreage, production and yields over time.

Table VI.9

RICE ACREAGE AND PRODUCTION

Year	Acreage in Acres	Production	Yield MT/Acre
1974-75	200	102	.51
1976-77	200	102	.51
1978-79	309	195	.63
1980-81	297	181	.61
1982-83	346	211	.61
1984-85	351	215	.61
1985-86	351	215	.61
1986-87	358	220	.61
1987-88	358	220	.61
1988-89	351	200	.61

7. Other Crops

The 1980 Census reported that 5% of its sample of farms raised fodder on 393 acres. More than 2/3 the acreage was planted during the Rabi season. Most of the acreage was irrigated. More recent estimates of fodder acreage do not appear to be available. Statistics are somewhat misleading here, because maize and other crops are thinned during the growing season to provide fodder for animals.

Pulses are not a significant crop in South Waziristan. The Census reported that only 20 farms were raising pulses on 11 acres of land.

C. Farm Power

Little credence can be given to government statistics on the Agency's tractor population since no tractor census has been done. In 1974-75, government statistics report that there were 10 tractors in the whole of the Agency, 9 of which were privately-owned. By 1980-81, there were reported to be 86

tractors. Of the 19,220 farms reported on the 1980 Agriculture Census, only 5% reported using tractors and not animal power on their land, while 70% reported using only animals. A further 23% reported using both. It is interesting to note that some very large farms reported using only animal power. Tractor use has certainly increased during this decade but it is not clear by how much. Data from 1986-87 show only 91 tractors, while Agriculture Directorate staff in the Agency give a current estimate of 121. This includes some but not all unregistered Afghan- and locally-owned tractors, of which there are many. Tractors are smuggled across the border from Afghanistan. Again, the estimate is unreliable because staff have no reasonable method by which to make one.

The one conclusion that can be drawn, regardless of whether there are 100 or 200 tractors, is that interest in using tractors has increased, and that many farmers pay the rental fee of 70 Rs per hour to have a tractor do their plowing. Tractors are also used to thresh wheat, as they are in Kurram Agency.

There are few threshers in the Agency. This remains an unfamiliar piece of machinery. Threshing is done with bullocks or by tractor.

There appear to be no rice hullers, but this comes as no surprise given very limited rice production.

D. Farm Labor

The 1980 Agriculture Census reported that only 178 farm households in its huge sample employed a total of 230 non-family laborers on a permanent basis. Approximately 2070 other individuals from farm and livestock-owning families obtained casual employment on farms, not all of which would have been in the Agency. Opportunities for casual farm labor have increased since that time, owing largely to orchards. A good portion of the current farm labor is provided by refugees, some of whom have previous experience raising fruit. Current wages range from 25-50 Rupees per day, depending on the agricultural season. Since the Agriculture Department is only permitted to pay 15 Rs per day, it has trouble employing farm laborers.

E. Agriculture Inputs and Services

1. Improved Seed

Access to and the ability to pay for improved seed are problematic all over FATA & NWFP. The Agriculture Development Authority has no sale points in South Waziristan, and no seed is commercially available. Farmers and FATA Agriculture Directorate staff both reported that farmers travel to Lahore or Faisalabad to buy improved seed. It takes eleven hours, non-stop, to reach Faisalabad by road, so the financial and opportunity costs for farmers are considerable, and serve to reduce interest in switching to more productive varieties. Some amount of improved seed is available in Tank and DI Khan but the prices were reported to be significantly higher than in Faisalabad.

The 1980 Agriculture Census reported that 63% of the area planted in wheat was planted in improved varieties. The main improved variety was and still is MexiPak, yields from which may have declined by now. As noted, almost all the maize planted is desi (local) and very low yielding.

Last year (1988) was the first time that Agriculture Directorate staff received wheat seed (PakiKasi) for sale, but this was limited to 100 bags, so it did not go very far. It was only sold from Wana. For the autumn 1989 season, staff have requested 300 bags and have deposited the required sum at DI Khan, but they were still waiting for the seed at the end of October. Since maize was then being harvested, fields were about to be prepared for wheat sowing and the seed was on the verge of being too late. Three hundred bags, however, is a very limited effort toward meeting farmer need, and can only help those farmers close to Wana.

In spring 1989, Agriculture staff sold 2000 kg. of maize seed (Azam variety) from Wana at Rs. 3.40 per kilo. However, the research team saw no improved maize growing in two days of driving around the Wana area.

2. Fertilizer

The 1980 Census reports that 26% of the owner-operated farms were using chemical fertilizer and manure, while 62% used manure only. The number using only chemical fertilizer was less than 1%. Curiously, the proportions for owner-cum-tenant farms are almost exactly the reverse: 65% used a combination of fertilizer and manure, while 33% used manure only. In the Census findings, large farms were more inclined to purchase some fertilizer than

small and medium-sized farms. Government statistics further reported that 142 MT of nitrogen were sold or distributed in 1981-82. Use of nitrogen has more than doubled since then, while a small amount of phosphates and potassium are used, but the amounts generally suggest that farmers find either access to fertilizer too difficult or the prices out of their reach. One consultant, Dr Zidan Abdel-Al, recently studying Agency agriculture reported that even farmers with potentially high earning orchards did not use fertilizer. Those who do use fertilizer use neither the right quantity nor type and are inclined to apply it at less than optimal times.

The Fertilizer Corporation does sell DAP and Urea at Wana, and staff reported that it is possible to buy chemical fertilizers and manure commercially elsewhere in the Agency. Animal manure is more expensive than chemical fertilizer and costs about 1000 Rs. per truckload. The Agriculture Directorate receives a very limited amount of fertilizer to sell from Wana. This year they received 600 bags of urea and no DAP. There appears to be a national shortage of the latter. The price last year for Urea was 127 Rs per bag. Staff do not know what price will be set this year (1989).

3. Agro-chemicals

One safe generalization is that agro-chemicals are even less used than fertilizer, because of substantially higher cost, more limited access and unfamiliarity. Again, even orchard owners are not making good use of agro-chemicals, and they stand to gain the most financially. The 1980 Agriculture Census reported that 56% of all owner-operated farms and 80% of all owner-cum-tenant farms were using pesticides but these figures seem ludicrously high and cannot be substantiated in conversations with those knowledgeable about Agency agriculture. If these percentages are accurate findings, then we may be tempted to conclude that the sample was biased in favor of better educated and wealthier farmers. These findings are also internally inconsistent with other Census findings which show fairly limited fruit and vegetable acreage, the only crops on which farmers might find it cost effective to use chemicals.

Reportedly, farmers in the Wana area wanting to use agrochemicals travel to Quetta, an 11 or 12 hour drive, to procure them. Agrochemicals seem not to be available locally or in Tank or DI Khan. Presumably they can be purchased in Faisalabad and Lahore.

The Wana Agriculture Directorate office rents power sprayers to local farmers. The office has 35 such sprayers which they loan for free. Farmers however must pay for the chemicals, of which

the department has a small stock. Department field assistants help the farmers use the sprayers properly. The Department also has distributed hand sprayers to sell at a 50% discount since 1980-81. Through 1988-89, 450 hand sprayers had been sold in the Agency. Staff believe that there is growing farmer interest in using agrochemicals on horticulture crops, and they would like to expand this program.

Up until 1985, the government did aerial spraying, which controlled pests to a considerable extent. It was then discontinued, perhaps initially on account of security but probably finally on account of cost, and was to be replaced by ground spraying carried out by farmers themselves. This has not worked, according to one consultant, Mr. Rabi, because farmers cannot afford the cost of either the equipment or the chemicals. Even the hand sprayers, at a 50% discount, are beyond the reach of many farmers, and the program has also been very limited in scale. Costs for the chemicals have increased substantially in recent years. Farmers also lack adequate knowledge of when and how to spray. Since the hand sprayers sold at a discount are small, they require frequent refilling. If the farmer is to catch all pests, he must remember exactly where he stopped when he went to refill the sprayer and start again in that place. He must also know what pesticides to use and when and how often, to address problems with particular pests or diseases. While Agriculture Directorate staff try to help, the plant protection staff are very few in number and without adequate transport.

4. FATA Agriculture Directorate (Extension)

The Extra Assistant Director of Agriculture (EADA) in the Agency has the following staff:

TITLE	LOCATION
Agriculture Officer	Wana
Agriculture Officer	Jandola
5 Field Assistants for Nurseries	Sarwakei Jandola Dabkot (Wana) Karazai (Wana) Raghzakai (Birmal)

12 Field Assistants for Extension Makin
 Sararogha
 Ladha
 Kotkai
 Sarwakei
 Jandola
 Sina Tira
 Mani Toi
 Potdigai
 Kaniguram
 Wana
 Spin

2 Field Assistants for Plant Protection Wana
 Jandola

6 Budders Sarwakei
 Jandola
 Dabkot
 Karazai (2)
 Raghzakai

There are also 3 field assistants and a budder at Drazinda in FR DI Khan, which comes under the jurisdiction of the EADA, Wana. The staff placed at Jandola work in the Bhattani area, also FR DI Khan, but seem to cover South Waziristan as well since Jandola is on the boundary of the Agency.

In 1983, the EADA has 2 Agricultural Officers and 17 Field Assistants, or 2 fewer Assistants than he has currently. Little progress then has been made in improving the staffing level, although the problem is as much with recruitment as approval for additional positions. Many of the Field Assistants are occupied with special projects, such as the nurseries, and do not have time for extension work.

The Department has two pickup trucks, one for the EADA and one for the Plant Protection Field Assistant at Wana. One motorcycle is used by the Agriculture Officer at Wana. Two motor cycles are sitting mostly unused at Wana. According to a clerk, they are not needed. Surely one motorcycle should be put at the disposal of Jandola staff, and the other perhaps at Drazinda where there are three staff.

The Directorate seems to be over-extended, particularly since it has responsibility for the two FRs. It is particularly short of senior Agriculture Officers - one consultant recommends the addition of four more such staff. Staff lack adequate means of

transport and allowances for travel, so activities are restricted to a small area. Apparently, the Governor has recently approved the recruitment of separate agricultural staff for the two FRs. Funding for these positions, however, must still be obtained.

5. Government Nurseries and Demonstration Plots

The Directorate owns no land in the Agency and can make no long term investments on the land it leases for fruit nurseries. There are no government farms, and the Directorate owns no tractors. There are 7 nurseries, each consisting of one to four acres, located as follows:

- Mixed fruit at Dabkot (Wana)
- Mixed fruit at Karazai (Wana)
- Pistachio at Karazai
- Mixed fruit at Sarwakei
- Mixed fruit at Jandola
- Mixed fruit at Raghzakai (Birmal)
- Mixed fruit at Drazinda (FR DI Khan-Shirani area)

The Directorate pays Rs. 1600 per acre per year to rent the land for these nurseries.

The Directorate sells primarily apple plants but also peaches, almonds, apricots and pistachio. Red and Golden Delicious varieties of apple sell at Rs. 2.50 per plant, while all other plants sell for 0.50 Rs. Total plants sold for the last few years are as follows:

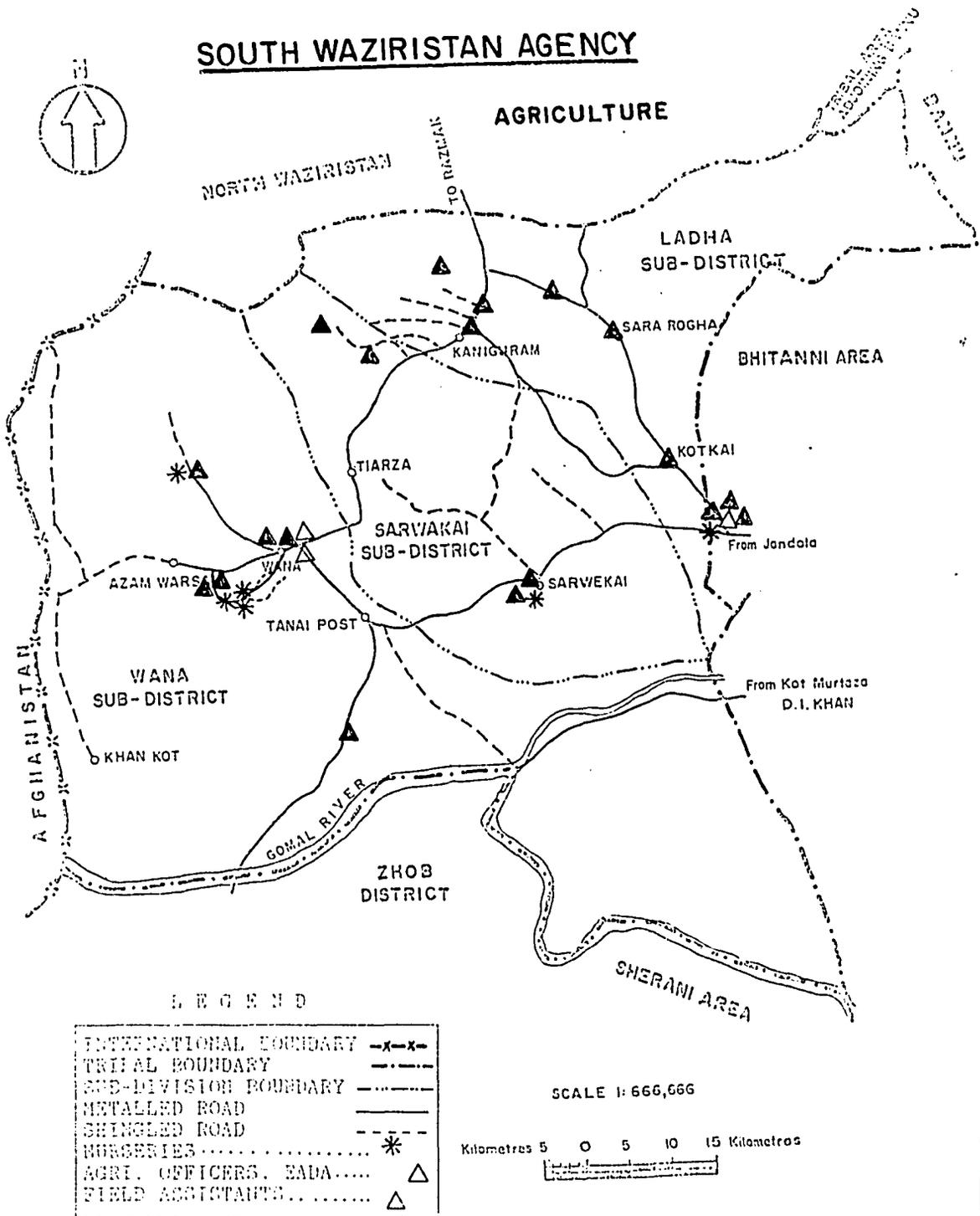
1986-87	52,100
1987-88	43,478 (including 5000 pistachio)
1988-89	53,544

There is great demand for fruit plants, and Directorate nurseries cannot meet that demand. Some private nurseries have sprung up in the Agency, and farmers are buying uncertified plants from these nurseries.

Some experimentation is underway with olives, grafting improved stock on to indigenous varieties, which are found mainly in the Dhana toi area. One nursery is experimenting with citrus.

The Department clearly and correctly puts emphasis on fruit crops. It unfortunately does no work with promoting better vegetable production, either via vegetable nurseries or demonstration plots. It does sponsor 2 vegetable and honey shows

SOUTH WAZIRISTAN AGENCY



BEST AVAILABLE COPY

per annum. This past year (1988-89) it planted 10 demonstration plots of improved maize and twelve of wheat, so efforts toward improving grain production are very limited. Last fiscal year (1987-88), the department planted a total of 36 demonstration plots; in previous years, 20 - 35 plots per annum were planted.

6. Credit

There are no formal institutional sources of credit in the Agency. This is because there is no mechanism through which banks could compel repayment of loans. There are also no land records so farmers cannot prove they have collateral. Any formal lending program would have to be prepared to write off substantial losses. Farmers borrow from relatives, tribal connections and shopkeepers. No recent data on farm household debt are available. The 1980 Agriculture Census tried to assess this. As one might expect, the smaller the amount of land farmed, the more likely the family working it is to be in debt. Table VI.11 shows the percentage of owner-operated farm households in debt by size of farm as of 1980:

Table VI. 11

FARM DEBT	
Farm Size	Percentage of Households in Debt
Less than 1 Acre	76%
1 to less than 2.5 Acres	29%
2.5 to less than 5 Acres	15%
5 to less than 7.5 Acres	24%
7.5 to less than 12.5 Acres	25%
12.5 to less than 25 Acres	20%

A larger percentage of households owning less than one acre report debt than in Kurram or North Waziristan Agencies. However, the percentage of households owning one acre or more and reporting debt are extremely low compared to these other two agencies. This may be because of the lack of sources of credit, or it could be there are fewer agricultural possibilities for which borrowing might make sense - limited surface water, and

little point in investing in improved inputs and farm machinery in the absence of water. Agriculture staff in the Agency also reported that farmers were extremely reluctant to borrow.

7. Land Levelling

An Assistant Agricultural Engineer is based at Tank, and he supervises both North and South Waziristan. He has a foreman under him. They supervise the work of 35 bulldozers, 24 of which are kept in Tank and are rented to local farmers. Since Tank is part of DI Khan, and since this office's responsibilities include FR DI Khan and the two Agencies already mentioned, it is not clear why most of the bulldozers are in Tank. There are 5 bulldozers at Wana, and none elsewhere in the Agency. Three of the five are manufactured by Komatsu and two by Fiat. Each bulldozer has a driver and greaser. There is no mechanic at Wana, nor are spare parts kept in stock there. The main workshop is at Tank. Through 1988-89, 4,297 hectares of land had been levelled in South Waziristan and FR DI Khan, and 301 km. roads built. Most of these targets must have been achieved in the area around Tank.

The D40 bulldozers rent for Rs. 101/hour (old bulldozer) and Rs. 150/hour (new). The D37s rent for Rs. 104/hour and the Fiats and Caterpillars for Rs. 95/hour. For the three months between July and September 1989, the bulldozers were rented for 7,639 hours or an average of 2,546 hours per month. This suggests that each bulldozer is working an average of 3 hours per day, assuming 23 work days per month. There may be too many bulldozers at Tank.

F. Agribusiness

Production of mats from mazri is the only agribusiness, and that is discussed in the Forestry section.

VII. IRRIGATION, FLOOD PROTECTION AND POTABLE WATER

Section I. on South Waziristan's geography reviewed some of the basics on Agency water resources. Research on ground water resources needs to continue if the tubewell drilling program continues or accelerates. Research on small dam possibilities is underway. Flood protection is a particularly important issue since much land bordering the Agency's many alghads and tois is lost each year during seasonal flooding.

A. Irrigation

As noted earlier, the Agency as a whole receives little rainfall. Irrigation is therefore critical to growing any crops other than low yielding barani grains. The 1980 Agriculture Censu suggested that 72 % of the cultivated area was irrigated. Other data from 1982 indicated that 74.6% of the cultivated area was irrigated. Surface channels have been built along the tois and alghads to harvest the sometimes adequate and sometimes intermittent supply of water. Karezes (perhaps 25-30) exist in a portion of the Wana plain, serving the area southwest of Wana camp. Finally, public and private tubewells have been sunk principally in the plains, although a few have been drilled in the northeast and northwest of the Agency. Private tubewells at this point seem largely confined to the large and productive Wana plain, but their uncontrolled sinking raises concerns about some future draw down of the water table.

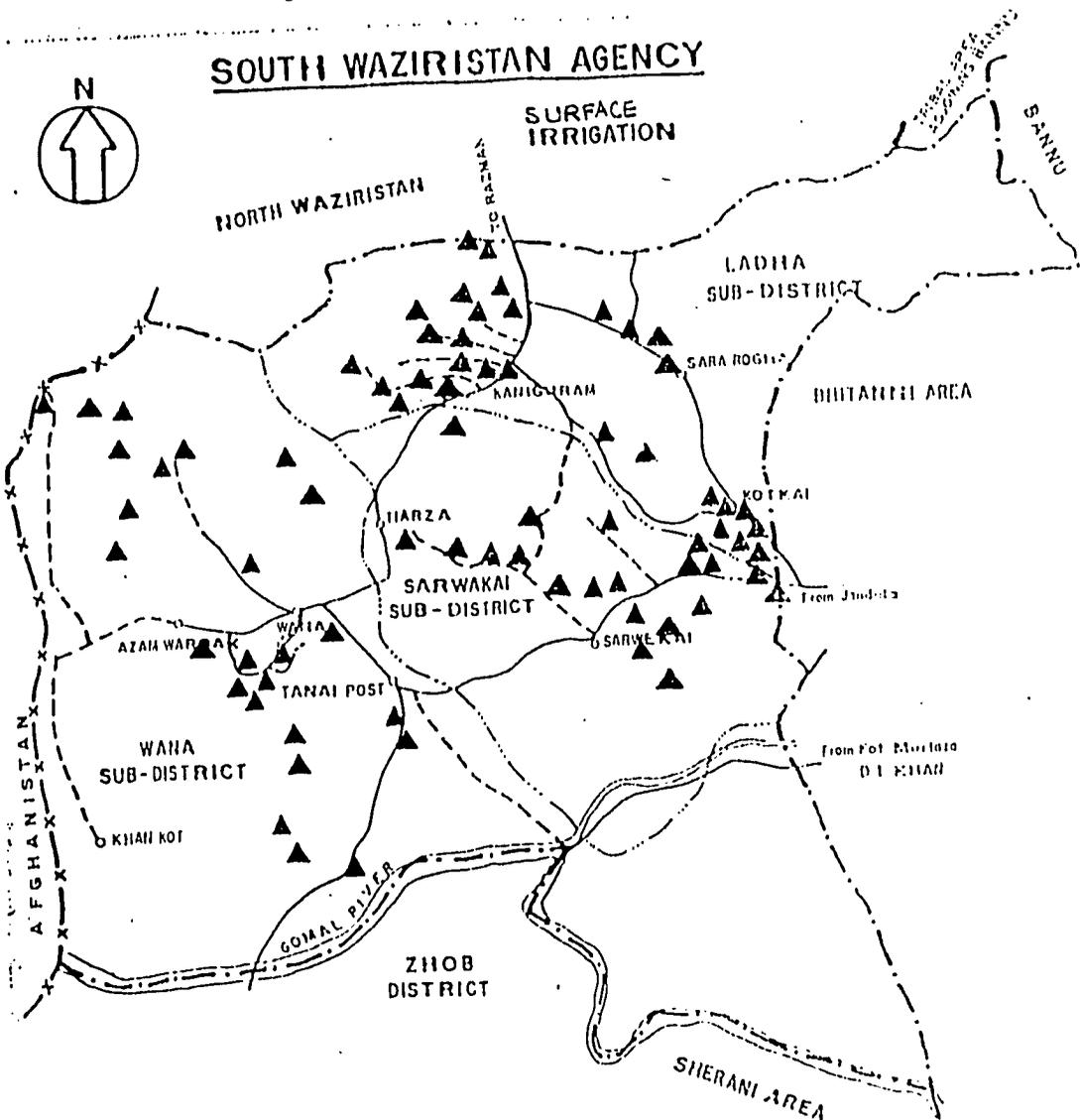
1. Surface Water Irrigation

Most intakes and channels, taking water from streams and rivers, are private initiatives. In many instances, the water flow is adequate to irrigate only a small amount of land, and sometimes the soil is not very good. Water loss from shallow, earthen channels may be significant, and diversions or intakes are often washed out or greatly damaged annually in the floods.

FATA-DC has been active since 1978-79 in improving irrigation systems in the Agency, by building more permanent diversions and sometimes lined channels. The Corporation appears to have completed work on 73 surface schemes. The number of farm families benefitting from these schemes was not available.

Staff prefer to construct new schemes, so as to bring new land under irrigation, as opposed to making improvements to already existing schemes. They believe that Wana subdivision offers the best possibilities for surface irrigation, with Ladha tehsil in second place. While water availability is good in Ladha, land that can be irrigated is scarce.

Fig. VII.1



LEGEND

International Boundary	-x-x-
Agency Boundary	- - - - -
Sub-district Boundary
Metalled Road	—————
Shingled Road	- - - - -
Irrigation Scheme	▲

SCALE 1:666,666

Kilometres 5 0 5 10 15 Kilometres

BEST AVAILABLE COPY

40-A

On a total of 69 schemes, FATA-DC spent almost Rs. 99 million, with an average per scheme cost of Rs. 1.434 million, or a little less than the average per scheme cost in Kurram Agency. However, in South Waziristan, schemes are likely to irrigate less land than in Kurram because of land and water limitations. The average surface scheme in Kurram Agency irrigated 372 new acres and improved or stabilized water flow to 772 previously cultivated acres, at a cost of Rs. 1.9 million, so while the average scheme is somewhat more expensive than in South Waziristan, far more land benefits from the water the scheme makes available. This makes schemes in South Waziristan less cost effective in general, but keeping people on the land and preventing an exodus to already crowded and troubled cities is an important consideration, even if it may not be easy to give a financial value to it.

FATA-DC statistics state that these 69 schemes have resulted in stabilizing or improving water availability to 17,440 acres already cultivated, with another 6,703 acres newly brought into production. The average amount of new acreage brought into production by these 69 schemes was 97 acres, giving an average per new acre cost of 14,787 Rupees. The average scheme also stabilizes water supply to 253 acres. If old acreage is included with new, the average per scheme cost per acre is Rs. 4,098. Staff say that their customary ceiling is Rs. 9000 - 10,000 per acre, but sometimes more expensive schemes are approved.

One of the most ambitious and imaginative FATA-DC schemes, now perhaps 15 years old, is the Spin plain irrigation scheme. This takes water from the Wana toi, a great distance away, and carries it via aqueduct and channel to a part of the Spin plain. Currently, water is being lost en route. The TADP project, funded by USAID, is investigating the possibility of improving the channels to conserve water and improve efficiency of this irrigation system.

The USAID-funded TADP project has completed work in conjunction with FATA-DC on three irrigation schemes. One is the Lower Tatal scheme on the Wana Toi south of Wana camp. This, at a cost of Rs. 5.223 million, is one of the most expensive irrigation schemes undertaken in the Agency and was completed in late 1987. The scheme irrigates 404 acres, with farmers in two villages benefitting. The area is ideal for orchards, although currently only a small amount of acreage is planted in fruit trees.

Another scheme was the substantial rehabilitation of a collapsed karez and the construction of lined channels serving the orchard-growing village of Dabkot, in the fertile belt south of Wana. Work on the scheme was recently completed. The scheme waters 56 acres, on which grain, vegetable and fruit crops are planted.

The third scheme is the intake and channels at Sarmogh Kach and Tiran Channel I. Work was recently completed at a cost of Rs. 2.797 million. Funding for other irrigation schemes is under review.

Many of the schemes also have a flood protection component, with spurs to protect scarce farm land.

A number of schemes were visited by the research team, including Dabkot Karez, Lower Tatai, Bora Katch, Dam Katchkai and Ghurlama. Local people often complained that FATA-DC carried out no maintenance to preserve irrigation structures and keep the systems functioning at maximum capacity. All systems, however, were found to be functioning relatively well. FATA-DC's position, with which the researchers have sympathy, is that local people carry at least some responsibility for maintaining the irrigation network that ensures their livelihood. In more than one instance, researchers saw major and minor channels silting up, reducing the flow of water to the land. Local people would then complain that FATA-DC should come dig the channels out, but since this demands no technical expertise, and only strong backs and shovels, it is difficult to see why the beneficiaries cannot organize this work themselves.

The Local Government and Rural Development Department (LG&RD) also carry out work on small scale surface irrigation schemes. A cumulative list of schemes with locations was not available. In recent years, the Department has undertaken the following:

- 1985-86 - 2 irrigation tanks,
200 rolling feet of water channels,
1 drain
- 1986-87 - 700 rolling feet of water channels,
- 1987-88 - 3,300 rolling feet of water channels

2. Tubewells

Well drilling started 1979. Since then, a total of 89 tube and test wells seem to have been drilled by FATA DC in the Agency (as of autumn 1988). Four more were underway and several were abandoned as of June 1989. About one-half of wells have been energized and are producing or should be producing water. The researchers had some difficulty determining the current number of functioning tubewells, out-of-order tubewells, test wells, and abandoned wells since the materials (including maps) made available by FATA-DC both in Tank and Peshawar sometimes gave

conflicting totals. Admittedly, some of the materials were of different dates; however, a monitoring report of October 1988 and a map of the same vintage did not agree. A map completed in the summer of 1989 conflicted with a monitoring report of August 1989. The major problem came in locating functioning tubewells and test wells that could potentially be converted on the Wana plain.

The main areas in which test wells have been sunk include the Wana plain (19 operating wells); Khaza Punga southwest of Wana camp (3 test wells which will become operational once the area is electrified in the near future); the Zarmilan plain (26 wells); the Barwand plain (12 wells operative and 4 awaiting conversion); the Spin plain (3 operating and 6 awaiting electrification); Umar Raghzai (7 test wells); 2 on the Shakki plain in Tiarza, one of which is currently being energized and the other of which awaits electrification; 1 at Zar Katch (northeast of the Barwand plain) with too little discharge for irrigation; and 1 operative tubewell at Postai south of the Barwand plain. These numbers do not include abandoned test or tubewells. Three additional tubewells with less discharge than expected have been converted to drinking water schemes, one at Wucha Dhana near Wana, one near Makin and one at Mal Khel, Sararogha. At Zar Katch and Spin, at least two test wells could be converted for drinking water. In Zarmilan, 25 wells remain as test wells and one tubewell was handed over to UNHCR to provide drinking water for the refugee camp in the area. Pumps are being installed and pump houses constructed at 17 of the Zarmilan test wells; then these wells must await electrification from WAPDA before they can become functional. Plans also exist to convert 4 test wells at Umar Raghzai, 3 at Khaza Punga, and 5 more in the Wana plain.

The plains are considered to offer the best potential for ground water development for irrigation purposes, since it is only on the plains that considerable amounts of new land can be brought into production via tapping ground water resources. The problem for future development is knowing the percentage of precipitation that goes for recharge of the aquifer. If the volume of the recharge is exceeded, then the water table will be drawn down, eventually using up a resource that should be preserved for future generations. While research is proceeding and water levels in the wells are monitored regularly, the exact amount of recharge does not appear to be known for any of these areas. The researchers heard or read estimates that ranged from 5% to 25% of the annual precipitation going for recharge of the aquifer. FATA-DC officials believe that the recharge in South Waziristan is closer to 25% than 5% but without detailed information on recharge and the aquifers that are being tapped, a conservative estimate might be more seemly than an optimistic one. A study

conducted in 1988 by WAPDA and the Dutch Institute of Applied Geoscience, entitled Hydrogeology and Groundwater Resources of the North-West Frontier Province, Pakistan recommended using the 5% recharge figure for planning purposes until a full scale assessment is carried out.

The number of farmers supposed to benefit from the irrigation water generally ranges from one to 25 farmers, with a few wells in the Wana plain benefiting a larger number of farmers. Six of the functioning tubewells benefit fewer than six farmers

One factor to be considered is that tubewells currently appear to irrigate relatively little land in the Agency. The average acreage irrigated by 18 tubewells in the Wana, Barwand and Spin plains was only 33 acres per tubewell, as reported in an October 1988 monitoring report. This appears to be consistent with information collected earlier in the year that showed that tubewell pumps were turned on between 3.5 and 13 hours per day (Wana plain maximum; Spin plain pumps averaged 10 hours of operation per day), depending on the time of year. This is considerably below the maximum possible of 20-22 hours per day of operation. This of course means that the tubewells produce less water than they are capable of producing. This might suggest that the number of beneficiary families is fewer than expected, and that the owner of the land on which the tubewell is sunk restricts access to water. Discussions with local individuals certainly confirmed that this was happening in more than one instance. Other constraints include load shedding and disputes regarding land and water rights. Perhaps one should question the cost - approximately Rs. 45 million in October 1988 - of a program that appears to bring little land into production and therefore to benefit relatively few families, particularly if the ground water development program continues or accelerates. One reply from concerned officials might be that the development of ground water resources is the only way to bring the potentially cultivable plains areas into agricultural production, thereby increasing the scarce land base. Certainly, a re-evaluation of acreage irrigated and families benefitting would be useful in determining future policy. However, these are very political issues, and ones in which FATA-DC officials might be understandably loathe to involve themselves.

KFW, the West German aid agency, has been investigating a tubewell development program for the Wana plain and other parts of the Agency since 1987 and reportedly is close to signing an agreement with FATA-DC. The original proposal made by FATA-DC was to develop 28 addition tubewells along with an additional number of test and observation wells in the Wana plain. This number has now been reduced, but the exact number has not been

shared. With respect to the Spin plain, a 1985 PC-1 prepared by NESPAK seemed to suggest that since the recharge and discharge of the aquifer appeared to be in balance (assuming 25% of annual precipitation went for recharge), the water table could not support additional tubewells. The report, however, went on to propose that 20 tubewells producing a total of 15 cusecs of water be sunk in the central part of the plain.

FATA-DC covers all running costs of the wells and is responsible for maintenance. Since the beneficiaries should see a substantial increase in income as a result of the tubewells, it would not be inappropriate to expect them to assume running and maintenance costs. However, there appears to be little point in asking them to assume such charges. They currently have little incentive to pay the WAPDA charges on their household electricity, so they would be equally unlikely to pay WAPDA for tubewell electricity. Pretending to turn the cost over to the beneficiaries would simply mean a larger outstanding total for WAPDA every year.

Tubewells are used as a source of drinking water as well as for irrigation, although the system may not be constructed so as to preserve the potability of the water.

There appear to be approximately 130 to 140 private tubewells in Wana, Kazha Punga, Zarinoor and Azam Warsak, all on the Wana plain. The owner first digs a hand dug well until he reaches water. Then an Afghan contractor is hired to bore the well by hand, hammering a casing into the ground. The casing is 2-4 inches wide, while it is usually 5 inches in the instance of FATA-DC drilled wells. It costs about Rs. 15,000 for these two procedures. The pump and motor cost an additional Rs. 25,000. The owner then applies to WAPDA for electrification, which generally requires a separate transformer. Electrification charges up to a cost of Rs. 30,000 are borne by WAPDA; any sum over that must be paid by the owner. The uncontrolled sinking of private tubewells in the plain, plus FATA-DC's plans for ground water development, raise concerns about possible depletion of the aquifer. A proper assessment of the Wana plain aquifers is needed.

3. Karezes

Work on karezes is primarily handled by the shareholders. It is estimated that there are 29 karezes in the area southwest of Wana, on the plain, producing a total of about 15 cusecs of water per day. These karezes seem to be 30-50 years old for the most part. Seemingly, little routine maintenance is carried out--perhaps because the owners do not have as much experience with

this form of irrigation as do people in Afghanistan. Owners seem to wait until portions of the karez have collapsed and the water supply has stopped or slowed to a trickle before bringing in Afghan specialists to dig out the underground channel. The researchers saw such work in progress at KhwashiKhel, a village off the Wana-Azam Warsak road that was purportedly served by a two mile karez. Six Afghans were digging out the lengthy collapsed portion and were charging Rs 250 per linear yard. FATA-DC and USAID recently completed a reconstruction of a significant portion of the very long and productive Dabkot karez.

One consideration is whether sinking additional tubewells will rob the karezes of water since both may draw on the same aquifer. Currently thinking appears to be that the karezes tap one aquifer and the tubewells another - the issue then becomes how permeable the karez aquifer is and whether the tubewells could succeed in pulling water from it to the aquifer that they tap.

4. Small Dams

This is a relatively new area of investigation for FATA-DC, and one that holds considerable promise, if funding can be procured. However, the lack of stream flow and rainfall gauges will make the design of small dams difficult. In South Waziristan, the following sites are under investigation:

a. Drabalai site near Azam Warsak on the edge of the Wana plain: a PC-1 pro forma has been prepared for this dam, at an estimated cost of Rs. 60 million. SAFRON, however, thinks that the cost is too great. Accordingly, FATA-DC has asked the consulting firm that prepared the PC-1 to re-estimate the cost.

b. Wuch Anghar site at Dargaipak nullah near the Spin plain: a PC-1 is being prepared by BAK Consultants.

c. Darga Algad near Gul Katch at the border with Balochistan: this is under investigation.

d. Two sites in Sarwakai have been under investigation but tribal/land disputes have brought the investigations to a halt. If the disputes can be resolved, research will continue. The sites are at Kar Tangi near Sarwakai scout post and Rogha Tangi near old Sarwakai village.

e. Sherana site in Sarwakai tehsil: this will be investigated only if the above-mentioned two cannot proceed.

In addition, FATA-DC has investigated a few other sites, but dams in those places were judged infeasible.

B. Flood Protection

Protection of scarce agricultural land bordering the Agency's many tois and nullahs is a major concern of farmers owning this land. Farmers often try to protect their land by building temporary bunds of loosely piled stone and brush. Since they know little if anything about appropriate design, these structures often do not do a very good job of serving the purpose for which they were intended. They are, by their very nature, temporary structures at best. The researchers saw some locally built bunds on the Dhana toi that stood parallel to the shore and were almost in the middle of the toi. Water flowed over and around them and was not diverted from the shore line.

FATA-DC formally designates only one of its schemes, at Torwam, as a flood protection scheme, but in fact several of its surface irrigation schemes have a flood protection component.

LG&RD is also involved in the construction of small flood protection bunds. Their job is hampered by the fact that flood and rainfall gauges do not exist so it is difficult to design bunds. Staff do not know if they are over-designing or under-designing the structures. The research team saw several bunds along the Wana toi. While the exact age of these bunds is not known, many were in a state of advanced deterioration, and some appeared to be poorly placed. In the Sararogha area, older bunds of 12-15 years of age were seen at Spinkai Raghai and Kotkai and they were no longer serving much of a purpose. A reasonable lifespan for a well built spur might be 10-15 years, so it is not a surprise to find that older ones require replacement. However, no replacement program appears to be in effect.

One two year old spur seen at Zariwan was badly built and needed to be replaced. Complaints about the quality of materials and construction were frequent. As is customary, contracts are let by LG&RD to locals who may have had little experience with any sort of construction. LG&RD has limited staff who can supervise contractors so the results - and the spur's lifespan - are often less than satisfactory.

LG&RD appears not to have a cumulative list of its efforts. This is critical to monitoring the bunds and deciding on a replacement schedule. The researchers were given yearly lists of achievements and targets for the past few years. Separate annual lists of schemes with locations were also given but these were ADP targets, and there was no way to determine which targets had been met. Because of this and the fact that these are very small scale projects, no mapping of the spurs was attempted. Accomplishments for the past few years are as follows:

- 1985-86 118 flood protection bunds,
 300 rolling feet of retaining walls
- 1986-87 14 flood protection bunds
- 1987-88 32 flood protection bunds
- 1988-89 40 flood protection bunds (target)

The TARGETS for the previous years were as follows:

- 1979-80 21 bunds
- 1980-81 11 bunds
- 1981-82 11 bunds
- 1982-83 38 bunds
- 1983-84 90 bunds
- 1984-85 139 bunds

It appears from the above targets and accomplishments that the heyday of LG&RD efforts in flood protection was in the mid-1980s. Efforts since that time have been relatively insignificant.

Construction of these bunds costs between Rs. 6,500 and Rs. 18,000, with the villagers contributing a small portion of the cost.

C. Staffing

FATA-DC staff serving the Agency consist of an Executive Engineer, who divides his time between Tank and Wana; an SDO permanently based at Wana and one at Jandola; 4 engineering technicians at Jandola and 5 at Wana; and 1 mechanical foreman and 3-4 mechanics at Wana, in the area where most of the tubewells are located. These staff serve the two FRs as well.

LG&RD is somewhat lightly staffed with an Assistant Director, an Assistant Engineer and 4 engineering technicians, as the professional/technical staff.

D. Potable Water Supply

The Public Health Engineering Department has been working in the Agency since 1975-76 and counts as completed 43 schemes as of June 1989. These schemes are located as follows:

- Ladha Subdivision: Tehsil Ladha 9 schemes
 Tehsil Sararogha 7 schemes
 Tehsil Razmak 2 schemes
- Jandola Subdivision: Tehsil Sarwakai 3 schemes
 Tehsil Tiarza 3 schemes
- Wana Subdivision: Tehsil Wana 11 schemes
 Tehsil Birmal 6 schemes
 Tehsil Toi Khulla 2 schemes

These are not 43 separate schemes. For example, providing potable water to the Agency headquarters of Wana has taken place in three separate phases, counted above as three schemes. A tubewell was drilled in 1976-77 (the first PHED activity in the Agency), and the system extended in 1980-81. An infiltration gallery was then added to supply more water to a new area of Wana in 1983-84. A few of the schemes counted above, therefore, consist of improvements to existing schemes and serve the same, although growing, population. One scheme was not a scheme per se but rather an investigation of water resources in Birmal tehsil.

PHED estimates the population being served with potable water through its schemes as being 91,117 in 1989, or an average of 2,169 individuals per scheme. Total costs for the schemes have equalled Rs. 32.417 million or USD 1.62 million, or an average of Rs. 755,140 per scheme.

Twenty-five of the schemes consist of tubewells with supply systems, which consist sometimes of stand posts, sometimes of community tanks and sometimes of house connections. Sometimes villagers install house or community connections that the system was not designed to accommodate. Such connections can create problems with the flow of water through the system, depriving recipients at points farthest from the source. Infiltration galleries supply 10 water systems, while springs supply the balance. Most systems depend on pumps and electricity to move the water to the supply points, but a few rely on gravity. Voltage fluctuations and loadshedding create considerable wear and tear on the pumps which, according to PHED staff, not infrequently burn out owing to the inattention of local system operators, who do not always bother to turn the pumps off during "brown-outs" or load-shedding. Of the five systems inspected by the researchers, the pump had broken or burned out on one, the system at Sararogha village.

Water supply schemes are built by contractors, almost always indigenous to the area in which the scheme is being constructed. Since many of these so-called "contractors" have little experience, this at times results in poor construction. Two of the three concrete tanks at Spinkai Raghzai, a new scheme, were leaking to such an extent that water could be seen trickling down the outside of the tanks. The mali who held the contract for construction claimed that the burden of paying various commissions to the number of parties involved in awarding him the contract left him with too little money to properly complete the work and make a profit for himself.

Major repairs must also be contracted out, and this significantly slows the process of completing repairs. PHED expects the beneficiaries to be responsible for maintenance and minor repairs and to that end employs (and of course pays the salaries of) a lineman on all schemes and an operator for tubewell-supplied schemes. While no formal training program exists for providing these individuals with operation and maintenance essentials, staff try informally to impart such knowledge. Unfortunately, local people often seem to feel that PHED should correct whatever goes wrong with the system, including leaking pipes and broken faucets on stand posts and community tanks. Leaking pipes were seen at Kotkai, an older scheme, and leaking or broken faucets were seen at more than one scheme.

Standing waste water around community tanks is a problem with some schemes. This was seen by the research team at Kotkai. Apparently, PHED does not design the schemes with drains to carry waste water away from the stand post or tank but expects the locals to install drains. At Spinkai Raghzai, the locals had done just this, and there was no problem with waste water. At Kotkai, the local people felt that PHED should install drains. The problem had existed for long enough that the concrete floor under the taps had disappeared and a considerable amount of dirty water consistently accumulated, thereby creating a health hazard.

Systems seen at Dabkot/Kuraz Kili and Bangiwala seemed to be functioning properly, and the construction appeared adequate. The source for both systems is a tubewell. The Bangiwala system, completed in 1986-87, consists of an elevated tank supplying 72 stand posts. Villagers complained that the operator did not operate the pump long enough to fill the 11,000 gallon tank, so water was only available once a day, just after he had run the pump for 2 hours. While this may be an inconvenience and perhaps does not allow villagers to take full advantage of the system, as designed, it does save on the scarce resource of electricity. Since villagers are not responsible for paying the electricity charges related to pumping water, conserving power is not generally a concern. PHED pays the electricity charges.

PHED also employs a chowkidar on each scheme, but this measure is not always sufficient to protect the schemes. Local individuals with grudges of different kinds sometimes damage the pipes or other parts of the systems. Random firing during celebrations and conflicts can also damage the systems.

PHED has no maintenance and repair staff, and their mobility is often limited owing to the lack of security in many areas. An SDO is placed at Wana with three engineering technicians under him and one mechanic. The SDO reports to the EXEN at DI Khan.

FATA-DC has converted three of its tube wells for drinking water - one at Makin, one at Mal Khel near Sararogha and one at Wucha Dhana near Wana. Beneficiaries for these three total 735, and the projects cost Rs. 3 million.

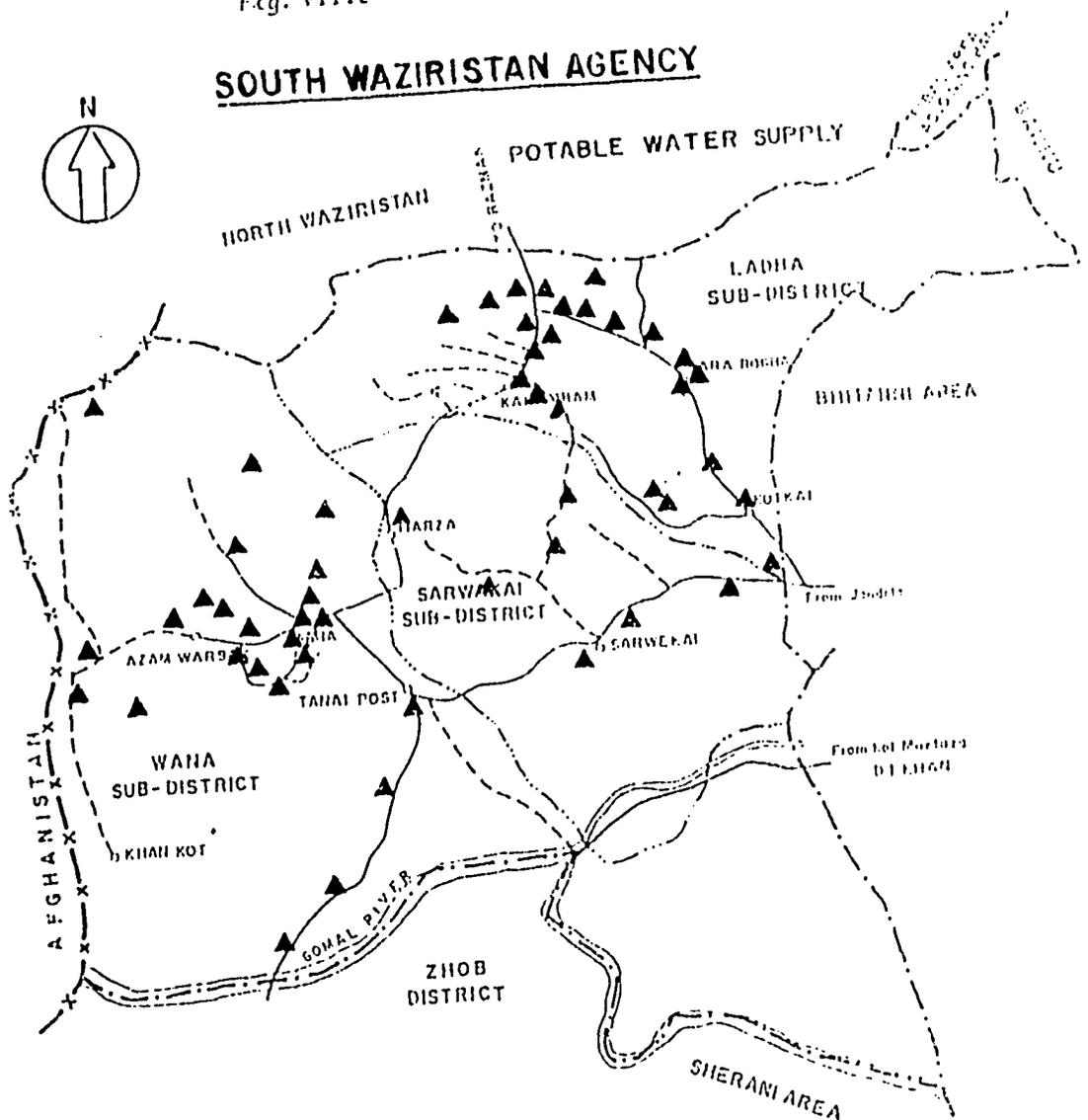
LG&RD has a limited involvement in small scale water supply projects. While again no cumulative list was available, it accomplished the following in the past few years:

- 1985-86 23 tanks, 1 well, 1 scheme
- 1986-87 4 tanks
- 1987-88 20 tanks, 1 well

The target for 1988-89 was 12 tanks.

Fig. VII.2

SOUTH WAZIRISTAN AGENCY



LEGEND

International Boundary	-x-x-
Agency Boundary	-.-.-
Sub-district Boundary	--- --
Metalled Road	———
Shingled Road	- - - -
Potable Water Supply	▲

SCALE 1:666,666

Kilometres 5 0 5 10 15
 Miles 5 0 5 10 15

VIII. ANIMAL HUSBANDRY

The animal population as recorded over the last 13 years by the Department of Livestock and Dairy Development is inconsistent:

	Livestock Dept. 1976	Livestock Dept. 1986
Cattle	102,692	117,612
Buffalo	90	34,423
Sheep	576,806	298,407
Goats	525,538	309,303
Equine	50,198	50,000
Camels	24,470	22,500
Poultry	453,884	558,000

These estimates must be viewed as very rough since there has never been the means or access to conduct a proper census or sample survey of animals. The 1986 livestock survey warned readers that the results for FATA needed to be taken with a grain of salt. Families in South Waziristan may depend on animals to a large extent to supplement their incomes because of the Agency's poorer agricultural base.

In comparing the 1976 and 1986 statistics, both from the same source, it seems odd that numbers of sheep and goats appear to have declined so substantially. One might expect a decline in camels, horses and mules, as roads improve and trucks replace pack animals. However, pack animals are heavily used to transport Afghan war materiel. The 1976 estimate for buffalo may be wrong, but the 1986 figure appears much too high. Buffalo cannot withstand cold, dry climates. They are found to some extent in the Dabkot area of the Wana plain.

Staff believe that the oxen population has remained stable, since the terrain makes tractor use difficult or impossible in many areas.

Many living on the barren Zarmilan plain take their flocks to the Punjab in the winter.

Women in the Agency do a certain amount of spinning and dying of wool. It is then sold to refugees who weave kelims, mainly for local use.

There are three animal hospitals, each with one veterinarian, at Wana, Ladha and Sarwakai. In addition, there is an artificial insemination center with one veterinarian attached to the hospital at Wana. There are 26 dispensaries and centers, served by compounders. There is also an animal hospital cum

insemination center at Jandola, to which Mahsuds in the area would go. Fig. VIII.1 shows facility locations. Facilities are under the supervision of the animal husbandry office at Tank, which is also responsible for the two FR DI Khans. The department is in the process of establishing a new veterinary center at Haji Darya Khan Kili, and is constructing a facility for the dispensary at Sararogha.

Sometimes animals are brought to the centers, sometimes the owners come alone and describe the symptoms, and sometimes staff are asked to make house calls. It can be difficult to move a sick buffalo, horse or cow; and herding a whole flock of sheep with parasites would be time consuming. Staff find it difficult to make house calls because they are without any means of transport or any budget to cover transportation costs. One of the veterinarians at the Wana hospital uses his private motorcycle to visit sick animals on the farm. Elsewhere, staff must rely on the concerned farmer to provide transport.

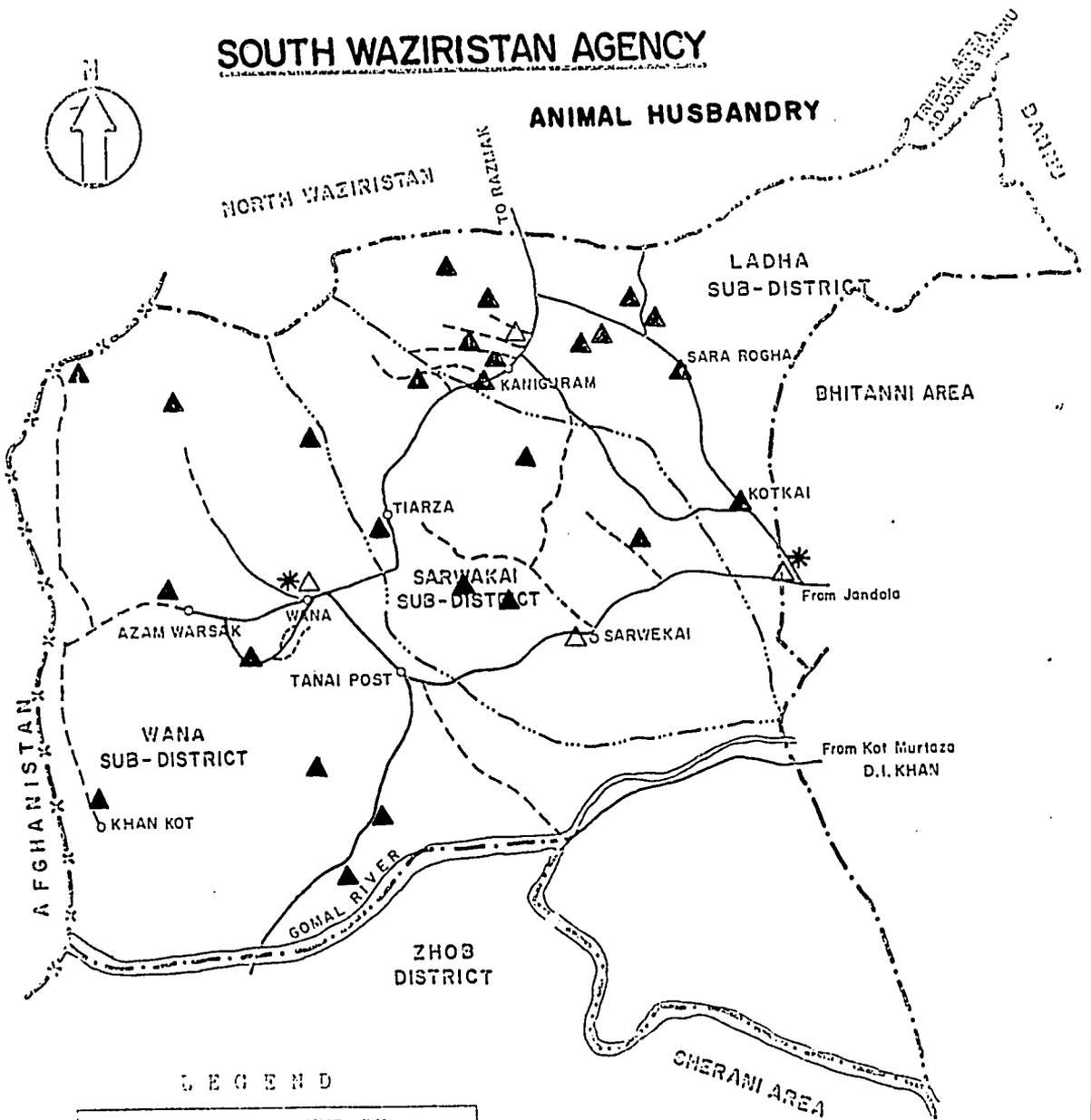
Once a diagnosis is made and a prescription written, owners are frequently sent to the bazaar to buy their own medicines, since the centers only receive a small supply. They are, however, adequately supplied with semen for artificial insemination.

These facilities treat refugee-owned animals as well as those owned by the indigenous population, since few services have been organized for the refugees. The proportion of refugee animals treated at Agency facilities increases in the summer, when refugees come from the hotter plains, bringing their animals with them. Refugee-owned animals seem to have infected locally-owned animals with some new diseases, although opinion about this was not consistent. These diseases may have existed to some extent before, but with greater animal density resulting from the refugee influx, diseases may spread more widely and more rapidly. Among the new diseases said to be striking Agency animals were pleural pneumonia (mostly goats and sheep), anthrax and perhaps some internal and external parasites.

The artificial insemination program was initially met with some reluctance by local people. This is one area where refugees may have had a positive impact in changing local attitudes, because they were early and eager participants in the program, and their enthusiasm, along with perceived results, eventually changed local opinions. Now over 1000 cows and buffalo are inseminated annually. While the only Agency center is at Wana, sometimes the inseminator visits Tiarza, and, as noted, those close to Jandola can take their animals to the facility there. Agency staff believe that the conception rate over the last six years the program has operated is in the vicinity of 60 - 70%. Sometimes animals must be inseminated twice. The resulting

FIG. VIII.1

SOUTH WAZIRISTAN AGENCY

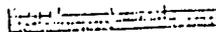


LEGEND

INTERNATIONAL BOUNDARY	-x-x-
TRIAL BOUNDARY	- - - - -
SUB-DIVISION BOUNDARY	- · - · -
METALLED ROAD	—————
SHINGLED ROAD	- - - - -
HOSPITALS	△
DISPENSARY CENTRES	▲
ARTIFICIAL INSEMINATION CENTRES	*

SCALE 1: 666,666

Kilometres 5 0 5 10 15 Kilometres



BEST AVAILABLE DOCUMENT

progeny, when grown, have greater body weight and produce more milk (provided of course that they are female) than the inseminated mother.

Vaccinations are an important part of the work of these facilities. Apparently, there are problems country-wide with an inadequate supply of vaccines and insufficient quality-control used in their production - these are problems that must affect the Agency as well. In 1988-89, 175,591 poultry were vaccinated, while 21,095 cattle, sheep and goats were vaccinated. Since 1981-82, the numbers of goats, sheep and cows vaccinated annually are oddly inconsistent, perhaps reflecting problems with vaccine supply:

1981-82	26,187
1982-83	2,624
1983-84	1,661
1984-85	11,350
1985-86	5,287
1986-87	16,195
1987-88	3,095
1988-89	21,095

Numbers of animals treated in Agency vet facilities in recent years are as follows:

	1986-87	1987-88	1988-89

Out-door Patients	92,369	91,268	
Castrations	17,297	43,484	
Owners supplied with medicines/prescriptions	58,827	62,671	
Inseminations	851	1,013	790
Drenched with anti-liver fluke	17,688	43,484	

South Waziristan facilities are treating far more out-door patients than Kurram and carry out more than six times as many castrations. They only perform one-quarter of the inseminations that Kurram does, perhaps because the only center is at Wana, and the number of inseminations performed slipped last year. This leaves much of the Agency out of easy reach. Kurram appears to be the better served with veterinary facilities. Kurram does have fewer dispensaries/centers but it is one-third the size of South Waziristan Agency. It has fewer animals and generally treats fewer animals. Both Agencies have four veterinarians, while Kurram has three artificial insemination centers. Kurram

staff have limited transport while those in South Waziristan have none. South Waziristan could probably benefit from at least one more veterinarian and another insemination center somewhere in Lahda subdivision. Staff would also like to open six dispensaries in the north-east corner of the Agency where there are many animals and no services.

Supervision of facilities must be very difficult with no transport. The Director also is based at Tank.

Emphasis is placed on the treatment of disease and to some extent, prevention. Improving production is a priority only in terms of the insemination program. However, in 1988-89, the department distributed 54 goat (beetal) bucks to help improve local herds. Many animals suffer from poor nutrition, with the result that animals are more subject to disease, and egg, milk and meat production is less than it could be.

Refugee-owned animals are discussed further in the section on refugees.

IX. FORESTRY

A. Re-forestation

As elsewhere in the frontier, over-grazing, de-forestation and resultant soil erosion are problems in South Waziristan. South Waziristan may have been better able to preserve some of its forest resources than some other agencies due to smaller numbers of refugees and inhospitable terrain combined with lack of roads. Much of the firewood sold in the Agency comes from Afghanistan. There are still fair numbers of trees in the Birmal area and to the north in Ladha (Badar and Shakai hills particularly) and Makin. Native species consist of Chir pine, Chalgoza (pine nut), pistachio, Akhroot, Kawoo, Phalai, and Gurgura. Around Dhana, there are wild olive trees.

The Department only has the resources to mount a very small and entirely inadequate program. Six one acre nurseries are maintained at Gadawai, Kaniguram, Baniwala, Sharkai, Barwand, and Wana. Among the seedlings planted are eucalyptus, poplar, Quetta ash *phelcensis*, Robinia, almond and others.

There appear to be 25 block plantations as of March 1990 (three older ones that still appear on department lists have been turned back over to the villages that own the land and are not counted as part of the 25), one of which is on Government-owned land at Zarinoor, near the Wana airstrip. Others will be turned over to local landowners when the trees are considered safely established. Among the species planted are the ones mentioned above. Reported total acreage for the plantations is 597 acres, which represents a very small effort. Fig. IX.1 shows the locations of nurseries and block plantations.

The Department is able to do very little to promote agro-forestry, despite the tremendous demand for firewood.

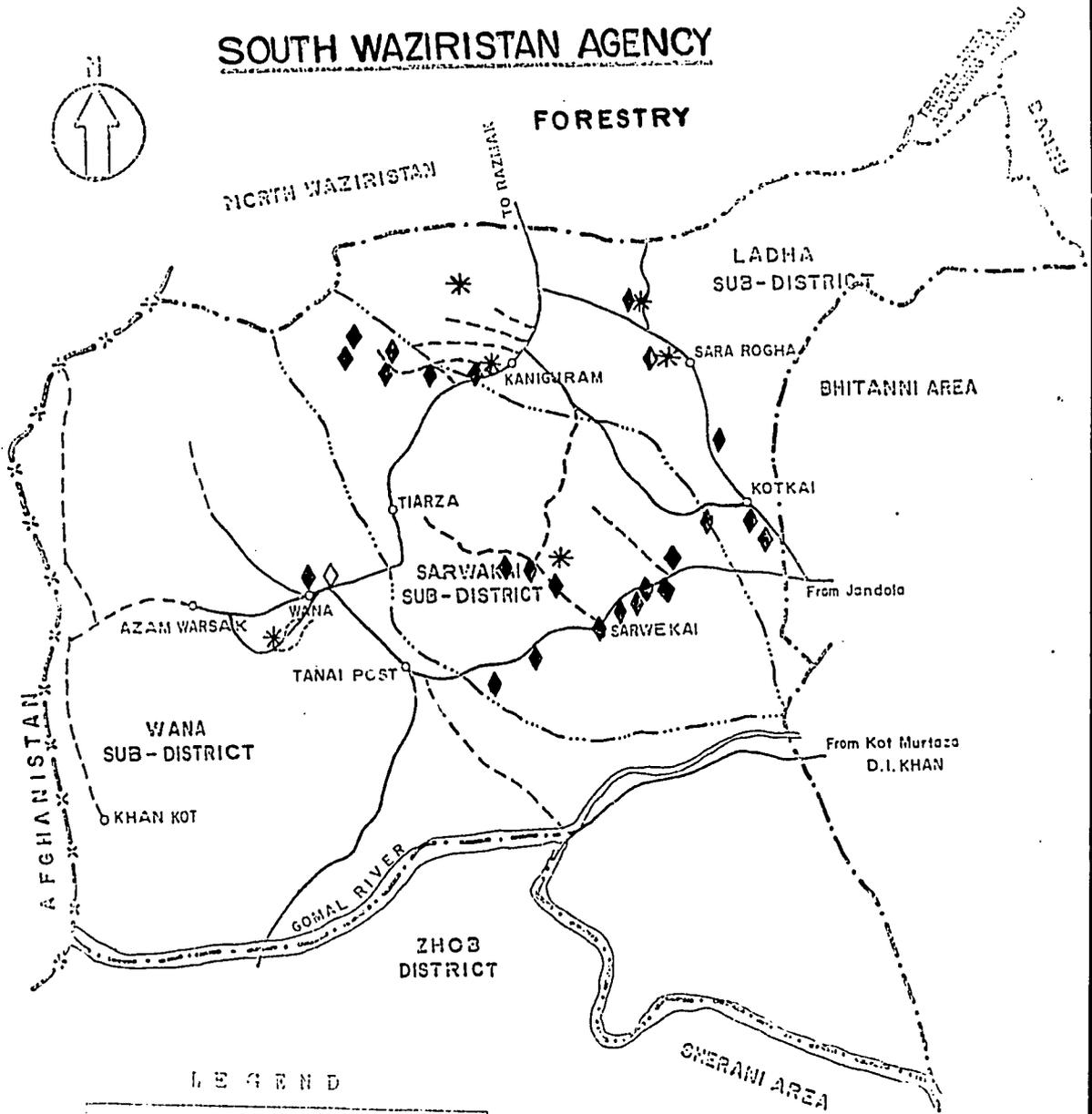
Two of the block plantations seen, one at Zarinoor and the other at Sararogha, seemed to be suffering from a lack of adequate water. The survival rate of the trees appeared to be fairly low.

Nothing is being done in rangeland management or erosion control.

Efforts are supervised by the Ranger and Deputy Ranger at Wana, four foresters (who are low level grade 5 staff) at Wana, Sararogha, Sarwakai and Ladha, and fourteen forestry guards. This is an inadequate staffing pattern for an sector that has increasing importance.

FIG. IX.1

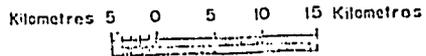
SOUTH WAZIRISTAN AGENCY



LEGEND

INTERNATIONAL BOUNDARY	-x-x-
TRIBAL BOUNDARY	- - - -
SUB-DIVISION BOUNDARY	- · - · -
METALLED ROAD	—————
SHINGLED ROAD	- - - - -
FOREST NURSERIES	*
SERICULTURE NURSERIES	◇
BLOCK PLANTATION	◆

SCALE 1: 666,666



BEST AVAILABLE COPY

B. Sericulture

The Forestry Department has had a small sericulture program in the Agency since 1981. It is manned by an SDO at Wana and four Grade 5 supervisors/silk yarn spinners: one at Makin, one at Ladha and two at Wana. The program runs a small 2.5 ganal mulberry nursery at Ashraf Khel in the Wana plain. Plants are sold for 10 paise, although prior to 1989, they were given away for free. Mature mulberry trees, the one essential for a silk production program, are found at Ashraf Khel and Ghwa Khwa on the Wana plain and in Ladha subdivision.

Silk worm eggs are imported from Japan or Korea. Again, prior to 1989, packets were given away for free. Now, the one-half ounce packets are sold for Rs. 150. In 1989, 47 families purchased packets - some reportedly re-sold the packets while others raised the worms. Each packet is supposed to produce 18 kg. of cocoons, provided proper care is taken of the worms. Staff do not seem to have a clear idea of how much production participants actually achieve - if it is much less than the theoretical possibility, than the resulting profit may not justify the labor and time costs involved. Most participants appear to sell their cocoons to the private sector at Bannu. They may receive a better price there. The Department itself purchased 90 kg. of cocoons from participants at the price of Rs. 160/kg. It then treats and spins the yarn, later sending the yarn to its provincial headquarters at Peshawar for sale.

If production per packet is close to the 18 kg. quoted by Department staff, then participants ought to be able to earn around 2000 Rs., minus egg costs and transportation to buy the seeds and sell the cocoons. It is possible that access to an adequate supply of mulberry leaves limits participation. This work also falls to the lot of women and children, and many women may already feel too over-worked to take on added responsibilities, even for a brief five to six week period. If the program could purchase worm eggs from which cocoons could be raised more than one time per year, it might be more worthwhile for families to invest in this activity.

Currently, it seems very costly for the government to run such a small program with so little local interest. Costs and benefits should be examined more closely. Resources invested in the program might be better invested elsewhere, particularly if participation cannot be substantially increased in the next couple of years. For the moment, South Waziristan seems to have little competitive advantage in the production of silk cocoons.

C. Mazri

Mazri is a dwarf palm traditionally used in the making of rope, mats and baskets. There is a limited amount of such production in South Waziristan. A considerable amount of mazri grows in a fairly large area around Sarwakai village.

X. COMMUNICATIONS

A. Roads

The main responsibility for constructing and maintaining roads rests with C&W. As of June 1989, C&W reported 343.15 km. (actual length) of paved roads and 316.48 km. (actual length) of shingled roads. Table X.1 presents Class I, II and III roads. The map at the beginning of the profile shows the location of roads.

Currently, the quickest way to reach the Agency from distant cities in Pakistan is to fly to DI Khan, and drive two hours to Jandola, a border post, and then another 2 hours if one's destination is Wana.

The main access roads to the Agency enter from Jandola (FR DI Khan) in the east, Razmak (North Waziristan) in the north, and Gul Katch (Baluchistan) in the south west. There are two roads from Jandola. One turns north west and connects with the Wana-Torwam-Razmak road at Makin. It is 40 miles from Jandola to Razmak. While the Jandola-Makin road was originally paved, its condition has deteriorated to such an extent that it is essentially now a katcha road along some of its stretches. All the causeways as far north as Bangiwala have disappeared. It has been very difficult to carry out maintenance on the road because the local population, while claiming to be desirous of road improvements, in fact has long made work on the road difficult and dangerous. Now the road requires reconstruction rather than maintenance. C&W has requested P&D to allocate Rs. 46.265 million for renovation of this road, but there are no funds in the ADP.

The second road from Jandola passes through Chagmalai, Sarwakai and Wana, moving in a south westerly direction. It is 50 miles long. This is the most heavily trafficked road in the Agency and is the route taken by those travelling to Wana from DI Khan and Tank, or vice-versa. It is paved and is one lane in some places and two lanes in others. In places the black topping is gone. Repairs and maintenance work are being carried out on the first 23 km. by C&W, beginning at Jandola. There is much remaining work to be done, especially since this is the Agency's primary commercial route. Many causeways have deteriorated badly, and at one point near Wana the road is collapsing into a ravine, forcing a substantial detour by sensible drivers. C&W has completed a feasibility study for construction/reconstruction of 8 bridges along this road and is waiting for approval/funding.

The road from Razmak to Makin-Iadha-Kaniguram-Torwam-Wana is also paved. An 8 mile section from Wadan in the north of the Agency

TABLE X.1

South Waziristan Roads as of June 1989

Sl. No.	Name	Distt	Classifi- cation	Total length of road	From	To	K.M. Metalled		Unmetalled
							B/Top surface	Metalled	Shingled
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
TRIBAL AREAS									
CLASS I ROADS									
1.	Bannu Isha Razmak Jandola Razmak D.I.Khan Road (Sec. from Shore Algad boundry of North & South Agency to Admn. Border).	S.W.A.	B/Top	61.14	122.88	-	183.44	61.14	-
2.		-do-	-do-	82.06	0	82.06	82.06	-	-
3.	Tanai Gulkach Road	-do-	-do-	39.42	0	39.42	39.42	-	-
4.	Wana Azam Warsak Road	-do-	-do-	12.92	0	12.92	12.92	-	-
Total:				195.54	-	-	195.54	-	-
CLASS II ROADS									
1.	Wana Kanigurram Tanda China Road	S.W.A.	B/Top	77.23	0	77.23	77.23	-	-
2.	Approach Road from Razmak Gate to Jandola Wana Road	-do-	-do-	5.63	0	5.63	5.63	-	-
3.	Wana Cantt. Road (within Wana Camp road)	-do-	-do-	6.43	0	6.43	6.43	-	-
4.	Road leading to and within Scout post Sarwakai Siplatoi and Chagmalai	-do-	-do-	2.03	0	2.03	2.03	-	-
5.	Kotkai Imar Raghza Shinkai to Sam Road	-do-	-do-	40.62	0	40.62	40.62	-	-
6.	Wana Sholam Road	-do-	-do-	2.81	0	2.81	2.81	-	-
7.	Deeba Sarwakai to Barwand via village Osspass to Tiarza	-do-	-do-	2.81	0	2.81	2.81	-	-
Total:				147.62	-	-	147.62	-	-

BEST AVAILABLE DOCUMENT

Sl. No.	Name	Distt	Classifi- cation	Total length of road	From	To	K.M.Metalled		Unmetalled
							B/Top surface	Metalled	Shingled
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

CLASS III ROADS

1.	Wana Inzar Road	S.W.A.	Shingled	28.96	0	28.96	-	-	28.96
2.	Wana Sholam Road	-do-	-do-	10.86	2.81	13.67	-	-	10.96
3.	Deeba Sarwakai to Barwand via village Osspass to Tiarza	-do-	-do-	27.35	0	27.35	-	-	27.35
4.	Ahmad wam to Shaktoi	-do-	-do-	40.22	0	40.22	-	-	40.22
5.	Azam Warsak Khan kot road	-do-	-do-	40.22	0	40.22	-	-	40.22
6.	Zallaisar Birmal Road	-do-	-do-	38.62	0	38.62	-	-	38.62
7.	Barwand Karama Road via Nano	-do-	-do-	43.44	0	43.44	-	-	43.44
8.	Makin (Wadan) Spin Kumar Road	-do-	-do-	18.40	0	18.40	-	-	18.40
9.	Kanigurram Manitol Road	-do-	-do-	26.55	0	26.55	-	-	26.55
10.	Sholam to Ihana Road	-do-	-do-	12.87	0	12.87	-	-	12.87
11.	Siplatoi to Nano via Agnbergai	-do-	-do-	15.00	0	15.00	-	-	15.00
12.	Sam to Mesap Mela via Murdar Algad	-do-	-do-	14.00	0	14.00	-	-	14.00
Total:				308.40	-	-	-	-	316.48
G.Total I. II:				659.63	-	343.15	-	-	316.48

SWA:TABLE1:zafer

BEST AVAILABLE DOCUMENT

104

to Makin is reported to be under construction. The section from Makin to Ladha is being widened and re-blacktopped. The section from Makin to Razmak is said to be in poor shape. Again, repairs and maintenance are difficult and sometimes dangerous to carry out on this road. Road blockages appear to be common. When this road is open, truckers apparently prefer to transport fruit and vegetable produce headed for Peshawar via this road to Razmak and then over to Bannu and north east to Peshawar. It cuts around 65 miles from the usual route via Sarwakai-Jandola-Tank. If security improves along this road, it will assume greater importance for commercial traffic. It takes 2-2.5 hours to drive the 48 miles from Wana to Razmak.

The third entry point, from Baluchistan, comes from Quetta and Zhob through Gul Katch, Toi Khulla and then to Wana. It takes 11-12 hours to drive from Quetta to Wana, and parts of the road are dangerous. The road is paved. This is the route generally taken by truckers transporting goods from Karachi to the Agency.

Another access road of sorts exists from Kot Murtaza in the east, following the southern or left bank of the Gomal river to what was once a dam site on the river planned by WAPDA. The road goes to the dam site at Khaguri Kach, and then turns northwest, connecting with the Jandola-Wana road at Kot Narai, north of the Spin plain. This road is paved along an initial portion to Khajuri Kach and then is shingled up to Kot Narai. The road is in contested territory (as far as Khajuri Kach, and then it is in Wazir lands) and is kept closed by the Administration. An important objective of the Wazirs in the 1970s was to open this road to provide them with more direct access through their own territory to the settled area. The Mahsuds also claim a portion of the road, and a recent shoot-out between Mahsuds and Wazirs left several dead. It is also said that the Mahsuds also do not wish to relinquish the pressure they can place on the Wazir community by obliging all Wana to settled area traffic to pass through Mahsud territory. Curiously, the road does not show up on C&W maps of the Agency, and the researchers discovered the existence of the road more or less by accident. This road does not figure in C&W maintenance plans, perhaps because government officials do not encourage or permit travel on this road, and the paved portion is reported to be deteriorating.

The main entry point from Afghanistan to the Agency is via Angorada in Birmal, following the road south past Srakanda, then east to Azam Warsak and Wana. This road is shingled. There is now a shingled road which connects this road with the Dhana-Wana road, which mostly follows the Dhana Toi. USAID is funding the black-topping of this road from Sholam to where it joins the Shin

Warsak-Wana road. USAID declined to fund blacktopping from Sholam to Dhana village further north because this would facilitate the efforts of logging operations in the area, further advancing deforestation.

The shingled road that starts at Angorada in Birmal runs almost due south to Khan Kot, along the Pak-Afghan border. There it stops but a katcha track (apparently not motorable) connects Khan Kot with Gul Katch.

Two new roads south of Wana are the Kari Kot-Shin Warsak road, that runs in an arc through a densely populated area with orchards, giving growers a good farm to market road; and the Karab Kot-Lower Tatai road which intersects the Wana - Gul Katch road and follows the Wana Toi for a considerable portion of its distance. Both are funded by USAID.

Wana connects with Torwam to the northeast via two roads, one that runs through Tiarza and another via Inzar China and Warzi Nariki. Both are blacktopped. The latter is the older road. C&W has proposed to construct a new bridge on the Wana-Tiarza-Ladha portion.

A road, once blacktopped but now reportedly in bad condition runs from Kotkai (South of Sararogha) northwest to Kanigurum and Sam. It runs for a considerable length along the Shinkai Toi. C&W has submitted a request to P&D Dept., NWFP for Rs. 40.417 million to carry out repair work on this road. As part of the work, C&W would like to construct two bridges. This road is bisected near Karama by a north-south shingled road (under construction) from Baddar Bridge No. 2, north of Kanigurum, to Nano. Nano in turn is currently being connected to Chagmalai southeast of it via a 9 mile shingled road. To the southwest, the road is being connected to Barwand and Sarwakai via a shingled/paved road that is under construction.

In the far northwest a shingled road is under construction from Wadan to Spin Kamr. In the northeast, a shingled road runs from Ahmadwam to Shoktai, providing limited access to the Shabi Khel area. In general, this region is not well served by roads. The Agency's north west section also has relatively poor access, although shingled roads linking the area to the Makin-Torwam road have been built in recent years. One to Manitoi is completed. Another up the Murdar Algad is under construction, as is one to Patwela.

The area south west of Wana is hardly served by roads, and the south eastern area between the Jandola-Tanai road and the Kot Murtaza-Khajuri Katch road has no links to either road. In addition, south of the latter road to the border of the Agency with the Shirani area, there are no roads.

Most bridges in the Agency were built in the 1920s and 1930s and are not in good condition. One recently built bridge (1987) is the Chagmalai nullah bridge. Three others are under construction (Badar I, Badar II and Torwam). See Table X.2 for a list of bridges in the Agency.

In sum, while considerable progress has been made in an area where terrain and populace are often inhospitable, many of those roads that do exist seem to be in poor condition and badly in need of repair (unless they are new), while many areas are poorly served by road links.

LG&RD is involved in the construction and improvement of short katcha and more rarely shingled roads. Generally, the roads vary from 2 to 7 km in length. No cumulative list of activities in this area was available. The target in 1988-89 was only one km. of road. In 1987-88, LG&RD constructed 13.2 km. of roads and two small bridges. In 1986-87, the Department built 12.44 km. of roads. In 1985-86, accomplishments in the sector amounted to the construction of one culvert. LG&RD's funding would appear to be somewhat erratic, allowing it to undertake substantial programs in some years and to do almost nothing in other years. This is true for the other sectors in which it works as well.

B. Air

There is no commercial air service to the Agency. There is an old British-built concrete air strip at Wana, which appears serviceable but probably requires some sort of repair work. There is a hanger at some distance from the strip in Wana camp. Given the fighting across the border, the heavy weaponry available throughout Pakistan, including the Agency, and local disputes, initiating air service would probably present risks that the government prefers to avoid. However, air service would be a boon to high value cash crop growers, those trying to reach the Agency on business from Peshawar or Islamabad, or those in the Agency wishing to reach major cities in a timely fashion.

C. Telephone, Telegraph and Post Offices

The publication FATA Statistics records 18 post offices in the Agency in 1986-87. There is a telegraph office at Wana. The first public call box was installed in Wana in 1981-82. In 1984-85 the first government office and private connections were installed, again in Wana. There were 84 telephone connections as of 1986-87, presumably all in Wana. This is very slow progress relative to North Waziristan where there are over 600 telephone connections.

TABLE XI.2

Sl. No.	Name of Road.	Name of Bridges/ Location	Year of (Construction)	Stream
I.	Mana Kanigurram Tauda China Road (Mana Tizrza Ladha Road).	1. Tiarza Bridge in K.M.3	1936	Not Known
		2. Baddar Bridge No. 11 in KM 61	1935	-do-
		3. Maidan Bridge K.M. 66	1936	-do-
		4. Chundai Bridge K.M. 68	-do-	-do-
II.	Jandola Sararogha Razmak Road.	5. Jandola Bridge K.M. 120	1933	-do-
		6. Korkai Bridge K.M. 130	1929	-do-
		7. Inzar Bridge K.M. 130/97	Not known.	-do-
		8. Ajza Pal Bridge K.M. 149	1925	-do-
		9. Ahmadwan Bridge K.M. 150/84	1930	-do-
		10. Bhangi Mala Bridge K.M. 152	Not known	-do-
		11. Kaza Kach Bridge K.M.156/50	1930	-do-
		12. Janjal Bridge in K.M. 160/50	1930	-do-
III.	Jandola Mana Road	13. Chagmalai Bridge K.M. 9/60	1987	Chagmalai Algad.
		14. Spara Zavar Bridge K.M. 14/48	Not known	Not known.
		15. Siplatoi Bridge K.M. 15	1989	Siplatoi Algad
		16. Sara Chauda Bridge K.M. 42	Not known	Not known
		17. Dargai Bridge K.M. 52	1928	-do-
		18. Zinda Pal Bridge K.H. 52/50	1929	-do-
		19. Tar Khike Bridge K.H. 57	1929	-do-
		20. Kam Tarkhike Bridge K.H. 58	1929	-do-
		21. Tanai skew Bridge K.M. 61	1929	-do-
		22. Sanzala Bridge K.M. 62	1929	-do-
		23. Tiarza Bridge K.H. 75/40	1929	-do-
		24. Mana Toi 1st Bridge K.M. 76/60	1930	Not known
		25. Mana Toi 2nd Bridge K.H. 78/40	1930	-do-

IV. Tanai Gulkatch 26. Toi Khullah Bridge K.M. 21 1989 Toi Khullah
Road

NAME OF BRIDGES UNDER CONSTRUCTION

I. Wana Tiarza Ladha 1. Toorwan Bridge K.M. 29/28
Road 2. Baddar No. 1 Bridge K.M. 65/24
3. Baddar No. III Bridge K.M. 60

6 -B

BEST AVAILABLE DOCUMENT

109

XI. EDUCATION

A. Note on Data Sources

As with data for Kurram Agency, school enrollment statistics provided to the Bureau of Statistics and published in FATA Development Statistics count students by the type of school they attend (primary, middle or high school), rather than by class and level. So a student enrolled in the second class in a middle school is counted as a middle school student and not as a primary level student. While these data are accurate for what they describe - enrollment in SCHOOLS as opposed to BY LEVEL, they do not help us derive reasonably accurate participation or completion rates for the different levels of schooling. Because most middle and high schools in FATA appear to include lower classes, using the enrollment figures provided in FATA Development Statistics leads to primary participation rates that are too low and high school level participation rates that are grossly inflated. The middle level participation rates derived from these data may be too high or too low, depending on the numbers of middle level students counted as attending a high school and the numbers of primary students counted as enrolled in a middle school. Appendix A comments further on problems inherent in using these enrollment figures.

We have chosen to use enrollment data provided on a per class basis by FATA Education Department staff in Tank and Peshawar. Some recent data were also provided by class and by school. Counting students according to the class in which they were enrolled made it possible for us to estimate more accurately participation and completion rates and to look at attrition from one class to the next.

It should, however, be noted that the researchers had considerable difficulty establishing the number of schools (primary schools in particular) and enrollments by class over time. Lists for different years consistently contradicted one another - schools included on one list might be omitted from another (more recent) list or schools might be listed as belonging to different tehsils. For some years, enrollments of primary level students attending middle or high schools were not given and could not be recovered. For one year, primary, middle and high school level enrollments in high schools were not available. For some schools, enrollments showed considerable inconsistency, with barely conceivable increases or decreases from one class to the next, or from one year to the next.

Some lists did not give the tehsil in which the school resided, making it very difficult to reconcile lists. When a school

appeared in different tehsils on two lists, it was difficult to tell whether we were talking about two schools with the same name or one school that had been placed correctly on one list and incorrectly on another. Since many schools appear to be called after the malik who requested the school, the process of locating schools was difficult even when the researcher knew the tehsil; without the tehsil, the difficulty was greatly compounded. We have done the best we could to reconcile the various lists we compared and to derive reasonably accurate enrollment figures for recent years. For earlier years, we were obliged to rely to some extent on cumulative by class enrollments and school counts provided by the FATA Education Department in Peshawar. The Tank office appeared to have these data only in their rawest state and there was little hope of interpreting it so many years after the fact. The Peshawar counts were obviously based on field-provided data, the accuracy of which may not be certain, but at least enrollments were smaller and schools fewer in the 1970s and early 1980s, perhaps permitting more correct counts.

It is perhaps worth reminding readers that enrollments can fluctuate considerably throughout the year. While the Department has rules on when enrollments can take place and how re-enrollments should be handled, in practice school staff are required to be flexible. For example, the researchers encountered one student who dropped out in second class only to re-enroll in fourth class the following year - such anomalies may not be all that rare. The anomalies occur in part because teachers are subject to local pressures, and perhaps also because of turn over in staff and poor record keeping. Other examples encountered include a student formally enrolled in first class when he had passed the second class exams the previous year and was actually attending third class, and a student formally enrolled in second class but actually attending fourth class. This inexactitude in record keeping, which may be most problematic at the primary level, casts doubt on enrollment figures for all years.

At the several schools visited, it was rare to find attendance being taken and recorded. While a rule stipulates that children should be dropped from the enrollment rolls following six days of unexplained absence, in fact children often cannot be dropped owing to parental pressures. Children drop out and rejoin school at any time they like, creating a problem for teachers because even students within the same class will be at very different levels owing to absenteeism. Most of the schools visited seemed to have a considerable problem with absenteeism, if attendance on the day researchers visited is a valid indicator. Attendance at several schools was in the 50% of enrollment range. Teacher

absenteeism may also be a problem: at one high school visited, six of the 14 middle and high school teachers were absent on the day of the visit, while at another middle school, 9 out of 12 teachers were absent. Teacher absenteeism of this magnitude may suggest a chronic and serious problem. Discipline may be a problem in some schools: at one middle school visited, no classes were in session and students were standing around chatting.

Another problem appears to be a certain incidence of automatic promotion. A child is passed to the next grade regardless of (real) exam results or comprehension of the year's work, because his or her parents insist on the promotion.

In 1947, there were only eight schools in the whole of the Agency. By 1980, there were over 200. The principle of Nikkat is observed in the placement of schools, with 3/4 placed in Mahsud areas and 1/4 in Wazir areas. Many of the Wazir area schools are near Wana.

The medium of instruction, even in primary school, appears to be primarily Urdu. Sources say that this is mainly because the Pushto textbooks in use in the settled areas of NWFP are written in the Yusufzai dialect, which is not the dialect in use in the Agency. In addition, many of the teachers are Hindko speakers from DI Khan and accordingly either do not speak Pushto or are not very comfortable in that language. It is unfortunate that at least for the first few years of primary school, children cannot study in their mother tongue. While the use of Urdu is helpful for those who pursue their education to higher levels and helps serve the objective of national integration, it probably also contributes to the very high attrition rates in the early years of primary school. Specialists seem to agree that it is preferable to teach children to read and write first in their mother tongue.

B. Primary Education

Most primary schools in the Agency run through fourth class. A few schools do include fifth class. For the purpose of our discussion here, any calculations made here for primary school include first through fourth class. Fifth class is included in the review of middle schools, since most students wanting to attend fifth class would have to switch to a middle school at the conclusion of fourth class. Many would not have access to a middle school at a reasonable distance from their village and thus their education would come to an end.

TABLE XI.1

MALE ENROLLMENT IN PRIMARY SCHOOL

CLASS	I	II	III	IV	TOTAL	%AGE CHANGE IN ENROLN.
1977-78	3,101	2,171	719	593	6,584	-
1978-79	3,502	2,482	807	737	7,528	14.34
1979-80	3,724	2,502	871	796	7,893	4.85
1980-81	3,900	2,721	892	816	8,329	5.52
1981-82	4,080	2,871	901	862	8,714	4.62
1982-83	4,131	3,109	925	900	9,065	4.03
1983-84	4,529	3,304	1,090	918	9,837	8.52
1984-85	5,890	4,359	1,380	1,106	12,735	29.46
1985-86*	3,201	833	722	472	5,228	-58.95
1986-87**	9,489	2,586	2,011	1,420	15,506	196.60
1987-88***	4,392	1,362	1,008	886	7,648	-50.68
1988-89	6,560	2,443	2,060	1,982	13,045	70.57

* Missing primary level enrollment in middle schools

** Unusually high class I enrollment

*** Missing primary level enrollment in high schools

FEMALE ENROLLMENT IN PRIMARY SCHOOL

CLASS CHANGE ENROLLMENT	I	II	III	IV	TOTAL	%AGE CHANGE IN ENROLLMENT
1977-78	142	31	5	-	178	-
1978-79	155	37	6	-	198	11.24
1979-80	160	40	8	-	208	5.05
1980-81	179	30	10	-	219	5.29
1981-82	162	40	12	1	215	-1.83
1982-83	190	50	11	2	253	17.67
1983-84	210	84	13	4	311	22.92
1984-85	315	30	9	6	360	15.76
1985-86	237	44	26	7	314	-12.78
1986-87	694	217	147	99	1,157	268.47
1987-88	376	35	8	1	420	-63.70
1988-89	399	37	9	4	449	6.90

* This is probably an error

** Missing enrollment of 5 Ladha GGPS

Using census data from 1981 and primary school enrollment data from 1980-81, it is possible to make some rough estimates of the rate of participation of children in the relevant age group. Approximately 27% of boys aged 5 to 9 years attended primary school in 1980-81. This is probably the maximum possible participation rate since nationally it is estimated that approximately 15% of the children attending a particular level are outside the appropriate age range - they are either younger than five or older than nine in this case. That would tend to reduce the participation rate of the age-relevant group. However, if we can take the 27% figure as approximately accurate, this compares with a male primary participation rate in Kurram Agency the same year of 49% and a national rate of 54% in 1978. For girls, the participation rate was less than one per cent in 1980-81. Normally, the Department does not count branch school enrollments in calculating total enrollments - these enrollments might have had some impact on raising the participation rates. Branch schools are unregularized schools to which a teacher has been seconded, usually from a nearby school. Tables XI.1 shows class-wise primary level enrollments for boys and girls over time. Enrollment of girls in unregularized branch schools is included in this table for the most recent years both because we were able to obtain the enrollments and because a considerable proportion of the girls are enrolled in the branch schools. Boys enrolled in branch primary schools are not included in the table, but the enrollment in 1988-89 was 769 in classes I - IV. There is one boys' branch school in Wana, 20 in Ladha and 11 in Sarwakai subdivision. There are another 4 boys' branch schools in Sarwakai, but they have no enrollment since no teachers have been detailed as yet. The department hopes this year (1989-90) to regularize 15 branch schools.

Progress has been made since 1980-81, both in terms of expanding opportunities by opening additional schools, and improving parental attitudes toward education. Assuming a 3.1% per annum growth rate, in 1984-85 the participation rate for boys aged 5 to 9 years was in the vicinity of 37%, a substantial increase in a short period of time. If the growth rate were higher than 3.1%, than the participation rate would drop. If the growth rate were lower, then the participation rate would be higher.

If the 1986-87 enrollment is relatively correct, then using the same annual growth rate, a maximum of around 43.5% of the age-relevant group of boys were enrolled in primary school. This again represents an admirable increase in primary educational coverage in a short period of time and a solid increase in opportunity.

Female primary school enrollment doubled from 1980-81 to 1984-85 but this was from a very low base of 219 girls enrolled in 1980-81. Although doubled, the participate rate for females was not more than 1%.

What we cannot allow for in making the above calculations is the number of schools whose students should not be counted because their schools did not function. Enrollments might be reported even though the school had been turned into a malik's hujra or guest house, although we cannot not claim to have encountered any cases of this. The other issue that it is difficult to address is the one of quality. The researchers visited a girls' primary school (with 30-odd girls enrolled) taught by the illiterate daughter of a malik. While those girls are naturally included in the enrollments, they are unlikely to be learning anything the Department wants them to learn. The Department seems not to keep a list of such problem schools - education therefore appears to be available in places that it is not. The researchers are not in a position to gauge the extent of such problems without visiting far more schools, and in more remote areas of the Agency, than was possible given time and security constraints. We note them here because, if at all widespread, they would reduce the participation rates estimated above. A greater problem is that such pretenses make it difficult to assess and meet education needs because they create a false picture concerning the quantity and quality of primary education available.

Four boys primary schools were reported to be closed owing to local disputes: Kham Rang in Wana subdivision; Mice Kot and Umer Khel in Ladha subdivision; and Shawan Rajin in Sarwakai subdivision.

It should perhaps be noted that while we were told that it was not uncommon to find girls attending boys' schools in villages where no girls' school existed, we saw only two girls attending the first grade class of one boys' school we visited. At the other boys' primary schools visited, no girls were in attendance.

Table XI.2 shows the substantial drop out rates as students move through primary school, until only about one quarter of the boys who started first class are still in school by fourth class. The biggest loss of male students seems to occur between second and third class. It could be useful to explore the reasons for this.

Table XI.2

<u>Percentage change in enrollment</u>					
<u>Boys in South Waziristan</u>					
	<u>from class I to II</u>	<u>II to III</u>	<u>III to IV</u>	<u>IV to V</u>	<u>V to VI</u>
1977-78---1978-79	(21.9)	(62.8)	2.5	(3.7)	(43.0)
1978-79---1979-80	(28.5)	(64.9)	(1.4)	(19.6)	(42.0)
1979-80---1980-81	(27.0)	(64.3)	(6.3)	(23.6)	(42.9)
1980-81---1981-82	(26.3)	(66.8)	(3.4)	(16.0)	(43.0)
1981-82---1982-83	(23.7)	(67.7)	(0.1)	(18.8)	(43.5)
1982-83---1983-84	(19.9)	(64.9)	(0.75)	(20.7)	(42.6)
1983-84---1984-85	(3.6)	(58.2)	1.46	4.3	(39.5)
1984-85---1985-86	--	--	--	--	(67.4)

	<u>from class VI to VII</u>	<u>VII to VIII</u>	<u>VIII to IX</u>	<u>IX to X</u>
1977-78---1978-79	(41.0)	(24.8)	(9.9)	(15.8)
1978-79---1979-80	(41.6)	(22.0)	(9.9)	(14.0)
1979-80---1980-81	(40.3)	(22.2)	(18.1)	(17.4)
1980-81---1981-82	(40.8)	(19.8)	(16.0)	(13.3)
1981-82---1982-83	(39.5)	(20.0)	(17.0)	(15.8)
1982-83---1983-84	(44.9)	(19.0)	(9.6)	(8.3)
1983-84---1984-85	(35.8)	(18.3)	(0.6)	(9.6)
1984-85---1985-86	(40.6)	(25.6)	5.07	28.8

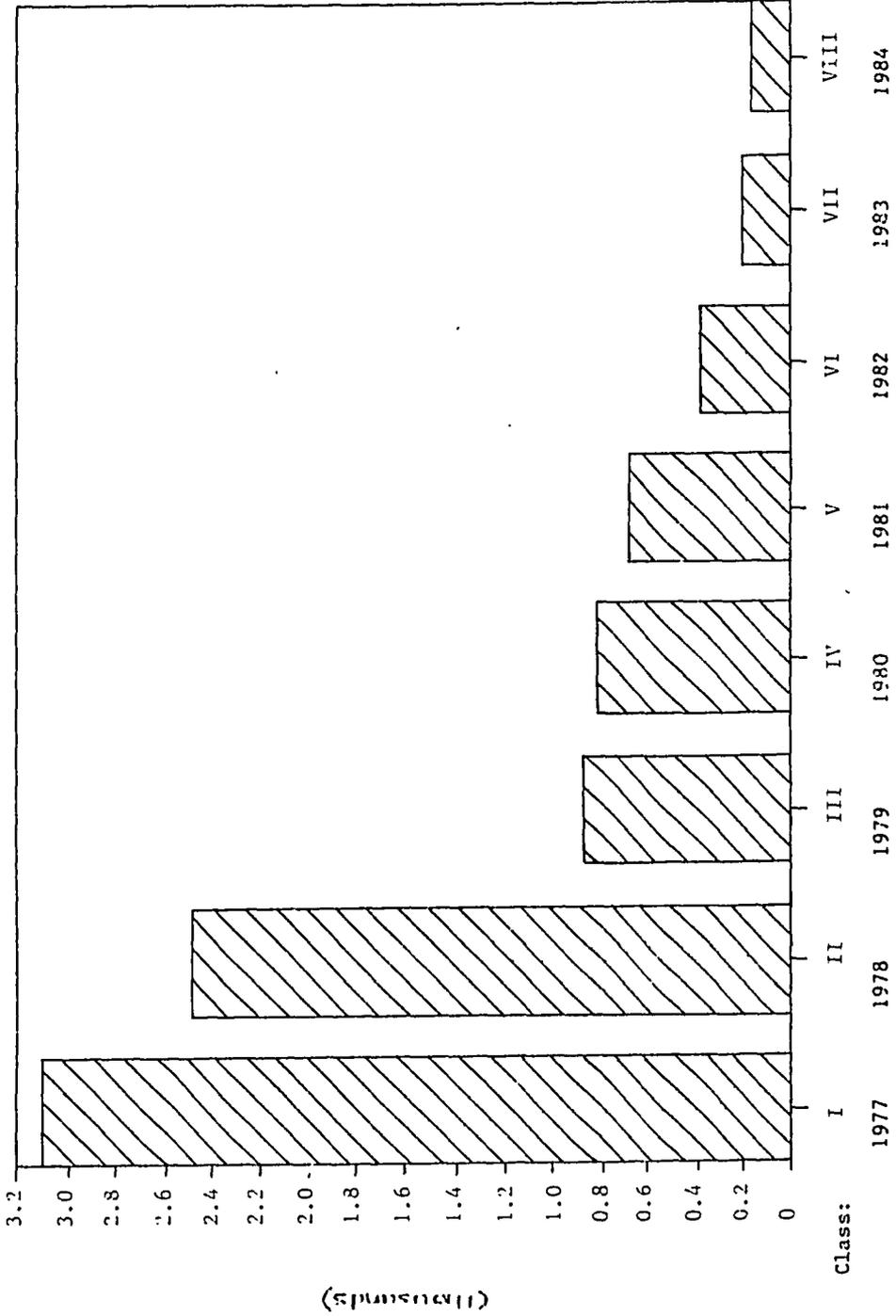
Percentage change in enrollment
Girls in South Waziristan

	<u>from class I to II</u>	<u>II to III</u>	<u>III to IV</u>	<u>IV to V</u>	<u>V to VI</u>
1980-81---1981-82	(77)	(60)	(90)	--	--
1981-82---1982-83	(69)	(72)	(83)	(100)	--
1982-83---1983-84	(55)	(74)	(63)	0	--
1983-84---1984-85	(85)	(89)	(53)	--	--

Children who drop out from or only complete second class will retain very little of what they have been taught. For girls, the attrition rates through primary school are substantially higher. Figures XI.3 and XI.4 illustrate attrition for two classes of boys, one starting in 1977-78 and the other beginning in 1980-81.

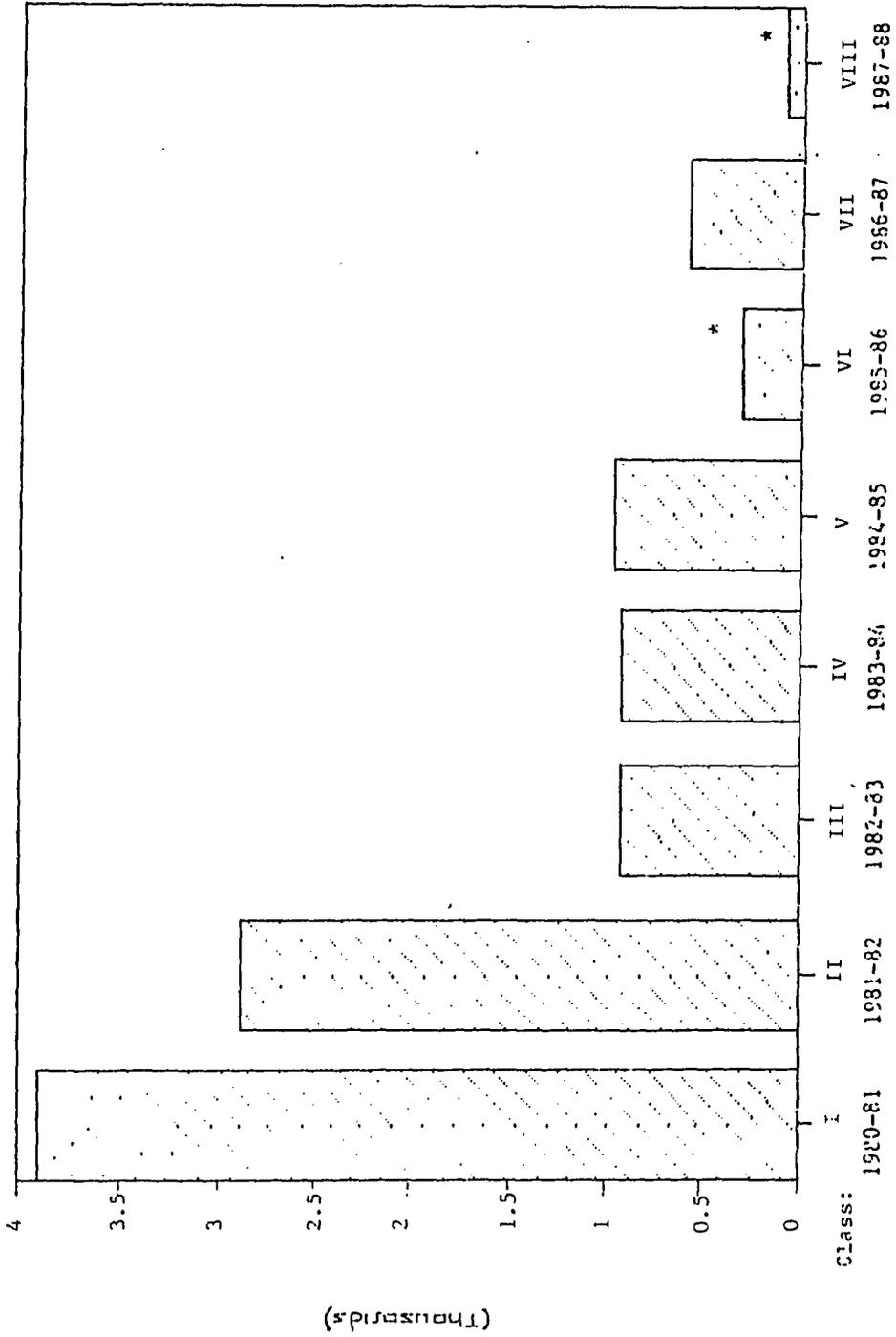
We do not have the kind of information that would permit us to look at primary school completion rates. We cannot do it by comparing fifth class with first class because not all children finishing fourth class would have access to a middle school. If we compare fourth class with first class, we then presume

ENROLLMENT OVER TIME OF BOYS STARTING SCHOOL IN 1977-78



71-A

ENROLLMENT OVER TIME OF BOYS STARTING SCHOOL IN 1980-81



* These enrollements appear to be in error

incorrectly that all the students in fourth class finished the year and passed the examinations. Obviously, some fourth class students drop out during the year or fail the exams and must repeat the grade. Still, if we compare fourth class with first class, we can say that the primary completion rate is below a certain maximum. In the case of boys enrolled in fourth class in 1984-85, the maximum completion rate was 27% of those who started first class in 1981-82. For girls, the maximum completion rate for those attending fourth class in 1984-85 was 3.7%.

Table XI.5 organizes primary schools and enrollments by subdivision, to allow us to look more closely at distribution. The map that follows shows the locations of girls' schools. It was not possible to put the very large number of boys' schools on such a small scale map.

Table XI.5

Primary Schools (Classes 1-4) and Enrollment
1988-89

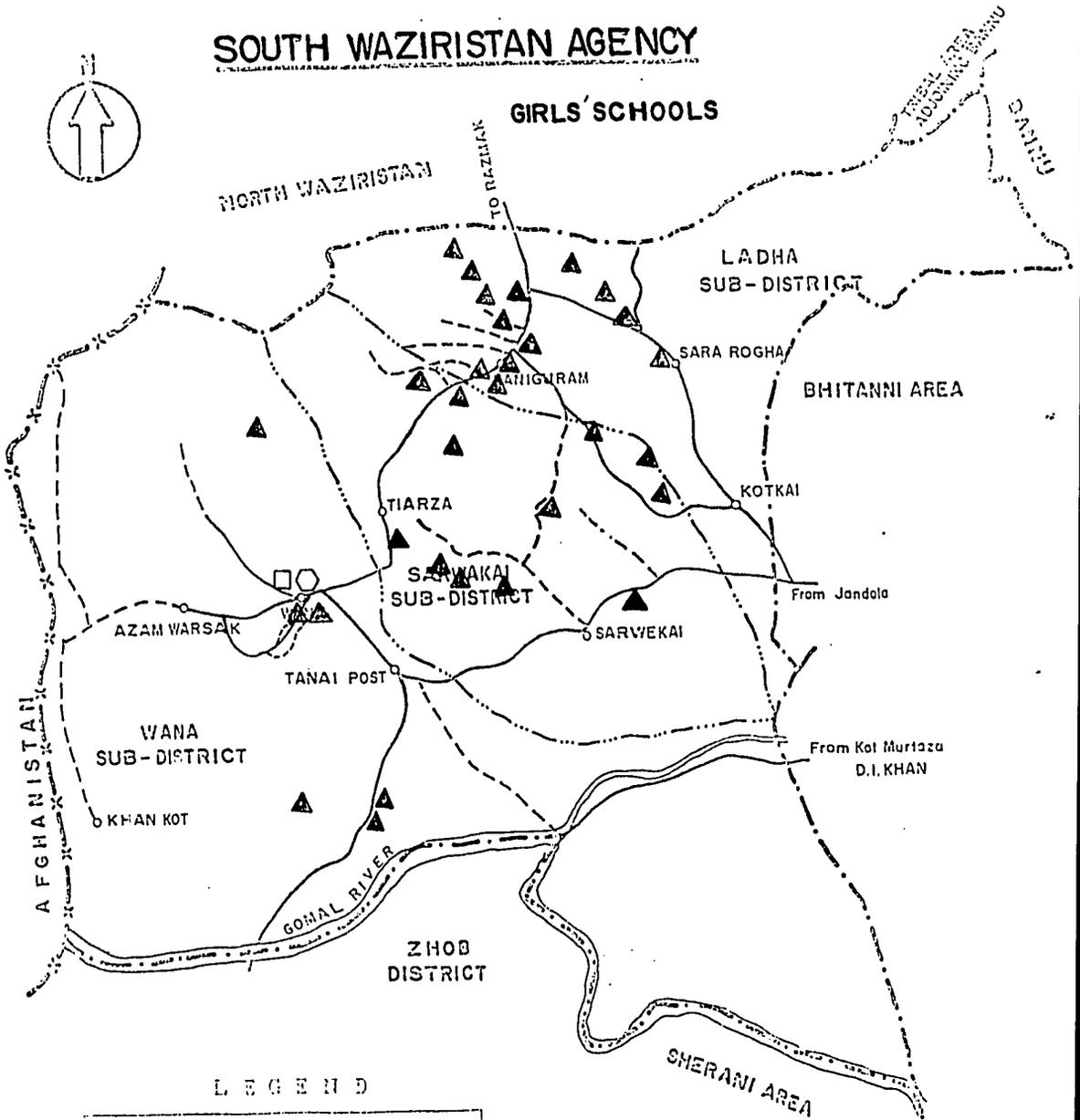
	Number of Schools	Number of Middle & High Schools w/ Primary Classes	Number of Students

WANA Subdiv.			
Boys	35	11	2632
Girls	6	2	79
TOTAL	41	13	2711
LADHA Subdiv.			
Boys	91	29	7265
Girls	18*	0	254
TOTAL	109	29	7519
SARWAKAI Subdiv.			
Boys	45	12	3157
Girls	7	0	116
TOTAL	52	12	3273
GRAND TOTAL	202	54	13503

*There is also one additional girls' school at the PA Colony, Tank.

FIG. XI.5 A

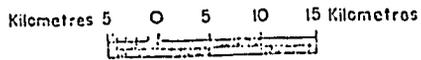
SOUTH WAZIRISTAN AGENCY



LEGEND

INTERNATIONAL BOUNDARY	---
TRIBAL BOUNDARY	- - - -
SUB-DIVISION BOUNDARY
METALLED ROAD	————
SHINGLED ROAD	- - - -
PRIMARY SCHOOLS	△
SECONDARY SCHOOLS	□
HIGH SCHOOLS	○

SCALE 1:666,666



In this table and in Table XI.1 (1988-89) female enrollments are undercounted owing to the following problem:

- o the researchers could not obtain enrollments for five girls' primary schools in Ladha;

In order to compare the three subdivisions in terms of progress in primary education, it is assumed here that each subdivision's proportion of the Agency's total population has remained roughly constant since the last population census. We show below the percentage of total Agency population and percentage of total primary students by subdivision:

Subdivision	% of Agency pop.	% of Students
Wana	24.6%	20.1%
Ladha	57.6%	55.7%
Sarwakai	17.7%	24.2%

In sum, educational access would appear to be relatively equal for the three subdivisions, based on their populations. It is not a surprise to find that accessible Sarwakai has a slightly higher percentage of primary students than its percentage of the population. The real surprise is that remote, insecure Ladha subdivision does not lag substantially behind the other two subdivisions.

One problem worth noting is that it seems to be fairly common to find substantial numbers of children under five years of age attending Class 1. Generally, they do not seem to be counted in the enrollments, or at least they were not being

counted in the enrollments of the schools the researchers visited. At one school on the day of the visit, 19 out of the 28 children attending were less than five years old. Their teacher estimated that on some days, 31 children under the age of five came to school, or far more than the 20 children of appropriate age who were enrolled. At one middle school, 120 children were enrolled and another 60 children under the age of five were attending - with only two class rooms available for classes one through 8. Teachers in the Agency, as in Kurram, say that it takes children two to three years to pass from first class to second class, in part because of the difficulty of the materials, but also no doubt in part because it is hard to learn in a class that may be swollen with children who are too young and with a teacher who is assigned to teach other grades as well.

In the schools visited, researchers observed classes where only a few of the students had books, and where more than half or almost all had books. It therefore is difficult to draw conclusions about the availability of books.

The Education Department has done much to increase the number of schools in the Agency. Many of these schools, however, have very low enrollments, leading some to question the cost-effectiveness of many of the schools. While it would certainly be useful to focus on planning priority areas for school establishment in future, the degree of fragmentation in South Waziristan society may require the placement of more schools than in other, more homogeneous areas. The number of schools closed due to local disputes is one result of this fragmentation. In addition, while attitudes toward the value of education are changing, in remote rural areas they will change slowly. These schools should all be better attended in ten years than they are now.

Now that FATA Education Department has established a considerable number of schools all around the Agency, it may be time to focus more on quality issues. No in-service training is available to teachers, teaching aids such as blackboards are in short supply, and there is inadequate supervision. There are only three school inspectors (one for Wana, one for Sarwakai and one for mosque schools) and one director of female education for the entire Agency, and all of them are sitting in Tank. A larger number of supervisory staff, who can also give on-the-job training to teachers is needed. Certainly, managerial issues related to continued school expansion with the same tiny staff need to be addressed.

C. Middle School

Most middle schools offer classes 1 through 8. Here we are counting students enrolled in classes five through eight as middle school students. Table XI.6 shows male and female enrollments over time.

Based on number of boys aged 10 to 14 years in 1981, no more than 4% of this eligible age group were enrolled in a middle school. In 1984-85, assuming 3.1% average annual growth from 1981, no more than 5.4% of the age-relevant group of boys was enrolled in middle school.

With respect to girls, statistics show that none attended middle school until 1983-84. This would appear to be in error since the girls' middle school at Dabkot opened in 1978, and the girls' high school at Wana has offered middle classes for a number of years. These, however, are the only two schools offering middle classes for females. Both are in Wana subdivision. Progress is badly needed in establishing middle schools for females.

Drop out rates again are significant with roughly one quarter of the boys enrolled in fifth class still enrolled by eighth class.

TABLE XI.6

MALE ENROLLMENT IN MIDDLE SCHOOLS

CLASS	V	VI	VII	VIII	TOTAL	%AGE CHANGE IN ENROLL.
1977-78	560	302	161	111	6,237	-
1978-79	571	315	177	121	6,552	5
1979-80	592	330	184	138	6,866	5
1980-81	608	338	197	143	7,443	8
1981-82	685	346	200	158	7,063	(5)
1982-83	700	380	209	160	8,467	20
1983-84	713	403	213	169	8,190	(3)
1984-85	958	431	258	174	9,960	22
1985-86	146	312	256	192	8,139	(18)
1986-87	1,043	713	590	447	7,233	(11)
1987-88*	563	235	276	98	4,440	(39)
1988-89	1,122	906	679	561	3,268	(26)

* Middle school enrollment in high schools not available

FEMALE ENROLLMENT IN MIDDLE SCHOOLS

CLASS	V	VI	VII	VIII	TOTAL
1977-78					0
1978-79					0
1979-80					0
1980-81					0
1981-82					0
1982-83					0
1983-84	2	2			4
1984-85	6	2	1		9
1985-86	1				1
1986-87	9	3	2	6	20
1987-88	2	1	2	4	9
1988-89	2	63	56	32	153

Plans are underway to upgrade the GPS at Azam Warsak to a middle school.

Table XI.7 presents enrollments and middle schools by subdivision.

Table XI.7

Middle Schools (Classes 5-8) and Enrollment
1988-89

	Number of Schools	Number of High Schools w/ Primary Classes	Number of Students

WANA Subdiv.			
Boys	8	3	732
Girls	1	1	153
TOTAL	9	4	885

	Number of Schools	Number of High Schools w/ Primary Classes	Number of Students

LADHA Subdiv.			
Boys	20	9	1925
Girls	0	0	
TOTAL	20	9	1925

SARWAKAI Subdiv.			
Boys	8	4	611
Girls	0	0	0
TOTAL	8	4	611

GRAND TOTAL	37	17	3421

Enrollments in each subdivision are slightly undercounted since the number of students attending class five in high schools was not available.

In comparing the subdivisions, access to middle schools appears to be relatively equal. Wana subdivision had 24.6% of the Agency's population in 1981 and in 1988-89 had 25.9% of the middle school students. Ladha subdivision had 57.6 % of the population and has approximately 56.3 % of the middle school students. Sarwakai had 17.7 % of the population in 1981 and now has 17.9% of the middle school students.

D. High School

High schools in the Agency offer classes one through 10. Here we are counting students enrolled in ninth and tenth class as high school students. Table XI.8 presents high school enrollments.

Based on the number of boys 15 and 16 years old in 1981, no more than 2% of the age-eligible group were enrolled in high school. For 1984-85, the equivalent percentage might be around 2.8% of the age-relevant group, and for 1986-87, 4.4%; so there is progress here but it is slow.

For boys, the attrition rate as they move from ninth to tenth class is not as remarkable as in previous years. This is because of a higher level of interest in education, demonstrated by the fact that they have made it to high school. In addition, they would not be enrolled in ninth class had they not had some sort of access to a high school.

Records show that the first girl enrolled in high school in 1984-85, but the high school at Wana was established prior to that. However, the headmistress of the high school recently affirmed that for the last decade or so, on average only one matriculate had graduated per year. Statistics do not seem to support even this tiny number of graduates. The Wana high school is the only one for females in the Agency. Its enrollment is dismally small, suggesting little parental interest.

Table XI.9 shows number of schools and enrollments by subdivision. The researchers were told by locals that the high school at Spinkai in Sarwakai tehsil has been closed for at least the last three years owing to opposition from the Draman Khel tribe. It is not included in the school count.

125

TABLE XI.8

MALE ENROLLMENT IN HIGH SCHOOL

CLASS	IX	X	TOTAL	%AGE CHANGE IN ENROLLMENT
1977-78	95	78	173	-
1978-79	100	80	180	4
1979-80	109	86	195	8
1980-81	113	90	203	4
1981-82	120	98	218	7
1982-83	131	101	232	6
1983-84	146	120	266	15
1984-85	168	132	300	13
1985-86	184	154	338	13
1986-87	259	237	496	47
1987-88*			0	
1988-89	331	340	671	

* High school enrollment not available

FEMALE ENROLLMENT IN HIGH SCHOOL

CLASS	IX	X	TOTAL
1977-78			0
1978-79			0
1979-80			0
1980-81			0
1981-82			0
1982-83			0
1983-84			0
1984-85	1		1
1985-86			0
1986-87			0
1987-88			0
1988-89	38	32	70

Table XI.9

High Schools (Classes 9-10) and Enrollment
1988-89

	Number of Schools	Number of Students

WANA Subdiv.		
Boys	3	227
Girls	1	70
TOTAL	4	297
LADHA Subdiv.		
Boys	9	366
SARWAKAI Subdiv.		
Boys	4	78
GRAND TOTAL	17	741

Access to a high school is not good no matter which subdivision one lives in. The serious drop in enrollment from eighth to ninth class is one indication of this. Interest in attending high school may also be low. Many of the students at the Wana high schools (both girls and boys) may be the children not of indigenous families but of government employees stationed for a set period of time in the Agency.

E. College

There are only two boys' colleges - one at Ladha and one at Wana. The Ladha college has 132 students. The Wana college has 157 students. There is no girls' college. Students who reach this level often prefer to study in the settled areas, where the colleges are probably better.

E. Teachers

Education Department staff say that there are no vacancies for PTC teachers. There are vacancies for SV and SET teachers.

Some say that teachers in the Agency, particularly if they are not from the Agency, tend overall to be less well qualified than their settled area colleagues. This may well be true since the best qualified would have a first chance to secure teaching posts in the safer and more desirable settled areas. Qualifications for female teachers are said to be a particular problem.

The lack of security is still an issue in the recruitment of teachers. In 1987, one teacher was kidnapped, and in 1988, two were kidnapped in separate incidents. All three were eventually released. While teachers in the Agency do receive a hardship allowance, many potential applicants may find that the material benefits do not compensate for the risk.

Even though middle and high school enrollments may be very low in individual schools, Department policy requires the assignment of a rather substantial number of teachers of different specializations. At one high school visited, there were 14 middle and high school teachers for 80 students. With substantial student absenteeism, an already favorable student:teacher ratio drops to 3 or 4 to 1. In such middle and high schools, some consideration should be given to reassigning some of the middle and high school level teachers to primary classes. Such a measure could help reduce attrition of primary students and boost their learning substantially. It would also not require any new resources.

F. Physical Facilities

Enrollments on a per school basis generally are small, so when a school building exists and is in relatively good repair, it is unlikely to be over-crowded. Per primary school enrollments tend to be much higher in Kurram, for example, leading to some problems with overcrowded schools in that Agency.

Several schools do not have buildings. Seventy-eight schools, including thirty-four branch schools, either do not have buildings or have buildings that are in such a state of advanced collapse that they cannot be used. Depending on enrollments and where these schools actually meet, some should receive priority for the construction of buildings. Table XI.10 lists schools without buildings.

A number of school buildings appear to be in very bad condition. Since most of these schools are not that old, it must be assumed that poor quality materials and construction techniques were used. The boys' high school at Wana is reported to be 50% collapsed, with a large portion of its 550 student enrollment sitting on the veranda. Apparently, there is an unused building lying on the grounds of the Wana boys' college. Perhaps education staff could look into using that building to accommodate some of the students now sitting on the veranda of the high school. The high school at Ladha, which enrolls

TABLE XI.10

List of Boys Schools without Buildings, 1988-89

Ladha Primary Schools

1. Narai Katch
2. Kalam Kat
3. Mizewam
4. Anrai Tangi
5. Shouzai Bandkhel
6. Shakari
7. Mice Khan kot
8. Trikh Talai
9. Mirwaz Kot
10. Wuchobai
11. Mlue Sarai
12. Dara Malik Shah
13. Wuch Dara
14. Palage Band Khel
15. Dawa Dara
16. Wuch wana
17. Dara Makin
18. Mandich Khullah
19. Band Khel
20. Bight Mish
21. Umer Khel
22. Laka Tizha
23. Zhai Malim Khel
24. Usman abad
25. Ragil Jan Kot
26. Patelai Sharkai
27. Sarwar Shah Kot
28. Murdar Algad
29. Spina Mela
30. Warza Shingi
31. Poi Khel shamrai

32. Ghmghurai shami
33. Jawakai
34. Margan Kalai
35. Walama longer khail
36. Serwek
37. Illah jan kot
38. Qallat Khan kot
39. Walama Faridai
40. Killali
41. Tarrai Faridai
42. Tarrai Marisai
43. Umer Serbeland
44. Chowdasai

Ladha Schools

45. Malik Mela
46. Chalwashtai
47. Masap Mela

Wana Primary Schools

48. Karab Kot
49. Talabanai
50. Taram
51. Sekach
52. Khan Rang

Sarwakai Primary Schools

53. Salimi Khel Tangi
54. Gazganrai
55. Magira
56. Allam Khunkhel
57. Tor wam
58. Chargulai
59. Gulgariai
60. Dir Gaterai
61. Badar Sharkai
62. Sanzala
63. Bader Zavar
64. Sher-dit kot
65. Nistal Tangi
66. Shawan Rajin

Middle Schools

67. Siplatoi

List of Schools with Collapsed Buildings

Ladha

1. Spina Mela
2. Tangi Potani
3. Mandich
4. Borakai
5. Suleman Shahi

Girls Primary Schools without Buildings

Sarwakai

1. Nano
2. Alta khan kot
3. Zahoor kot

Wana

1. Ujai Shaki

Ladha

1. Pir Sarwar Shah Kot
2. Kot Langai Khel
3. Wucha Khuara
4. Noor Nawaz Kot
5. Jalander Kot

450 students, is reported to have collapsed completely. The team visited the boys' middle school at Mandana, Sararogha tehsil, where only two of the four classrooms could be used and even those two were in very poor condition. There are 130 boys enrolled in classes one through eight with 12 teachers assigned. Forty-five of the students appeared to be meeting in the two used class rooms, while the rest sat on the veranda or in the open air. The primary school section of the boys high school at Chagmalai in Sarwakai tehsil has deteriorated so badly that it is not now in use. The portion of the building accommodating middle and high school sections is in use but is being damaged by constantly leaking water from the roof tank.

The researchers both saw and heard about a sufficient number of problems with school buildings that a detailed survey of conditions and repairs needed could be a useful first step toward addressing this problem. Something clearly needs to be done to improve the quality of new schools being built, as well as to restore old schools so that the initial investment is not lost in a relatively short period.

Not many schools provide separate quarters for teachers. This is particularly true of primary schools. None of the girls' primary schools have quarters attached. Female teachers often reside with the malik's family. For non-local men, arranging a place to live can be difficult. They may travel a considerable distance, or live in one of the school rooms. In Ladhra subdivision, the teachers' residence quarters at the following primary schools have collapsed: Zeriwam, Galgai Kot, and Kach Langer Khel. A hostel for students is currently under construction at the GHS at Shahoor.

G. Technical Education

There is no commercial training institute in South Waziristan. There is a building for a vocational training institute but the institute was not functioning as of October 1989. The researchers were told that plans were to open the institute soon. It will teach skills such as welding, plumbing, automotive repair, electricity and the like.

H. Alternative Education

One low cost program for extending primary education is the mosque school program. A PTC is assigned and a local Imam hired, and the children meet in the mosque. These schools do not go beyond fourth class and some do not offer all four classes. Currently, there are 32 mosque schools with a combined enrollment of 1,477. Table XI.11 shows locations and enrollments. Those schools with larger enrollments should perhaps be considered for regularization. Opinion of Agency personnel varied about the quality (and existence) of these schools and whether they can be considered in the same league as regular primary schools. Because they will probably never receive the same budgetary provisions as regular primary schools and cannot be candidates for upgrading, we have counted them here as a form of alternative education. There is only one supervisor for mosque schools scattered all over the Agency. Again, the staffing pattern means that supervision and upgrading of teacher skills is practically non-existent.

TABLE XI.1

MALE ENROLLMENT IN PRIMARY SCHOOL

CLASS	I	II	III	IV	TOTAL	%AGE CHANGE IN ENROLN.
1977-78	3,101	2,171	719	593	6,584	-
1978-79	3,502	2,482	807	737	7,528	14.34
1979-80	3,724	2,502	871	796	7,893	4.85
1980-81	3,900	2,721	892	816	8,329	5.52
1981-82	4,080	2,871	901	862	8,714	4.62
1982-83	4,131	3,109	925	900	9,065	4.03
1983-84	4,529	3,304	1,090	918	9,837	8.52
1984-85	5,890	4,359	1,380	1,106	12,735	29.46
1985-86*	3,201	833	722	472	5,228	-58.95
1986-87**	9,489	2,586	2,011	1,420	15,506	196.60
1987-88***	4,392	1,362	1,008	886	7,648	-50.68
1988-89	6,560	2,443	2,060	1,982	13,045	70.57

* Missing primary level enrollment in middle schools

** Unusually high class 1 enrollment

*** Missing primary level enrollment in high schools

FEMALE ENROLLMENT IN PRIMARY SCHOOL

CLASS	I	II	III	IV	TOTAL	%AGE CHANGE IN ENROLL.
1977-78	142	31	5	-	178	-
1978-79	155	37	6	-	198	11.24
1979-80	160	40	8	-	208	5.05
1980-81	179	30	10	-	219	5.29
1981-82	162	40	12	1	215	-1.83
1982-83	190	50	11	2	253	17.67
1983-84	210	84	13	4	311	22.92
1984-85	315	30	9	6	360	15.76
1985-86	237	44	26	7	314	-12.78
1986-87	694	217	147	99	1,157	268.47
1987-88	376	35	8	1	420	-63.70
1988-89	399	37	9	4	449	6.90

* This is probably an error

** Missing enrollment of 5 Ladha GGPS

FIG. XI.II

List of Mosque Primary Schools with Enrollment (1988-89)
Mosque Schools Ladha

	Ij	Is	II	III	IV	Total
1. Anrai Tangi	6	4	7	1	4	22
2. Sulemanzai Haubatkhel	5	2	8	1	1	16
3. Sararogha	18	7	3	5	1	34
4. Janata	15	19	8	7	2	51
5. Panza Barani Khel	12	8	18	3	2	43
6. Kat Kai	10	18	15	2	1	46
7. Khan Malik Kot	Enroll Missing but total given					15
8. Sultana	-do-					10
9. Kaniguram	-do-					11
10. Paında Jan Kot	-do-					15
11. Spin Mazak	-do-					16
12. Wucha Khwra	-do-					40

Mosque Schools Sarwakai

	Ij	Is	II	III	IV	Total
1. Dibba	7	4	7	4	6	28
2. Sanaullah Kot Khasora	7	6	3	5	2	23
3. Nazar Khel Tangi	3	8	2	1	4	18
4. Mishta	10	2	3	2	5	22
5. Lalizai	Enroll missing but total given					40

Mosque Schools Wana

	Ij	Is	II	III	IV	Total
1. Woucha Dhana	25	8	-	-	-	33
2. Shoalam Adda	7	11	25	31	22	96
3. Pir Mohammad Kot	41	43	45	33	29	191
4. Abdul Salam Kot	45	16	15	14	11	101
5. Adda Panga	20	30	27	14	13	104
6. Shaki Pina Khel Kot	28	10	-	-	-	38
7. Birmal	70	65	56	6	20	217
8. Khan Gai Kot	25	8	-	-	-	33
9. Azam Warsak	66	20	19	21	11	137
10. Tatai Datani	7	10	8	-	-	25
11. Toi Khullah	8	2	11	-	-	21
12. Sply Poran	7	6	5	-	-	18
13. War Ghar Dinar Khel	8	5	13	-	-	13

SWA-Tabl:zi*

There were 30 Nai Roshni schools (a condensed program for completing primary education for adolescents/adults), all attended by males, operating in South Waziristan in autumn 1987. These have now been closed, as they have been all over the country.

There are six women's centers supervised by the Agency Education Officer. These centers offer religious studies, literacy in Urdu, sewing and knitting. There is no curriculum, no materials or equipment, no training for the teachers, and apparently no supervision. The centers usually meet during school hours, in the girls' school, and use the same teacher - this is not ideal scheduling from the standpoint of either the children, the women or the school teacher. Only one woman is enrolled at the Wana center, which meets in the girls' high school. At Kanigurum, the center is not yet functioning. The third center, at Dabkot near Wana, is working relatively well with 25 women attending center sessions. The teacher at Dabkot is interested and energetic but requires training. Three centers, with a combined enrollment reported of 94 women, are located at Rabnawaz Kot, Nazir Jan Kot, and Mirbad Shah Kot. These three were not visited so the level at which they truly function could not be assessed. This appears to be a relatively low priority program that generates little interest in the office which maintains responsibility for it. Either more attention should be paid to the program to establish it on a firmer footing (i.e., curriculum developed, teachers trained, materials made available) or perhaps a decision should be taken to end the program.

XII. HEALTH

The Agency is provided with the following government facilities, in order from lowest to highest level of service:

- o 35 dispensaries, not all of which are functioning
- o 2 MCH Centers, neither of which is open
- o 11 BHUs, not all of which are functioning
- o 6 Hospitals, some of which no longer admit in-door patients

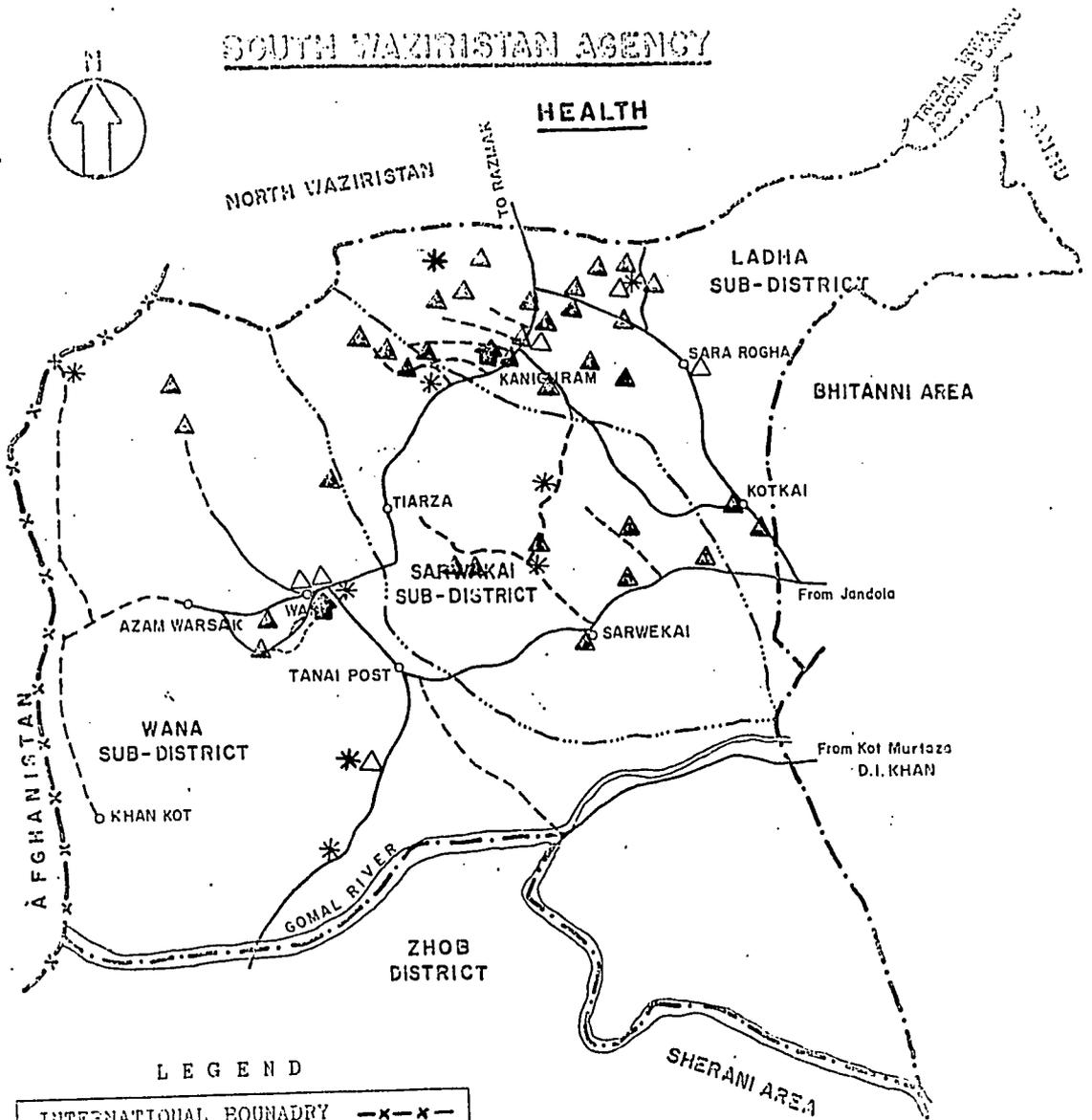
In addition, there are vaccinators attached at least in theory to nine of the above facilities, plus five mobile and outreach teams. Fig. XII.I shows facility locations.

The Agency Surgeon, and his deputy are responsible for supervising the above facilities. Owing to distances, lack of transportation and insecurity, it is difficult to supervise properly these far flung facilities, and stories were heard of BHUs being converted into hujras or guest houses for local maliks, and of health practitioners abandoning their posts for the greater remuneration brought by private practice. In fact, two dispensaries visited by the research team were not functioning, and at one the researcher was told that the compounder was currently engaged in private practice at a village not far distant from the dispensary. In August and September 1989, the Agency Surgeon visited almost all the facilities under his care. His honest report makes dismal reading. Of the 22 dispensaries he visited, 15 were closed on the day he visited (one of the 15 was found open on a later visit). At least four of the 15 had not functioned for some period of time. He visited 12 BHUs; 2 of these were new and not yet open, while a new facility was being built for a third, and staff had not been posted. Of the remaining 9, 6 were closed on the day of his visit, while a seventh was closed on one of the two visits he made to the facility. One of the six had been closed for two years.

Staffing skilled posts at rural health facilities in the Agency is very difficult. The number of vacancies for physicians is high. Yet the Wana Civil Hospital is well staffed and may even be over-staffed with Medical Officers (one for every 3.1 beds and 8.1 out-door patients daily, assuming 265 work days annually), given that there are also 6 compounders and a dental surgeon seeing patients. The clustering of physicians in Wana is perhaps explained by the fact that physicians generally resist rural postings, which are less comfortable, more isolated, and in the instance of South Waziristan, likely to be more dangerous. One

FIG. XII.1

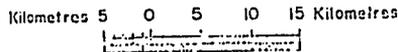
SOUTH WAZIRISTAN AGENCY



LEGEND

INTERNATIONAL BOUNDARY	-x-x-
TERRITORY BOUNDARY	-----
SUB-DIVISION BOUNDARY
METALLED ROAD	————
SHINGLED ROAD	-----
HOSPITALS	△
BASIC HEALTH UNITS	*
DISPENSARIES	◻
UCR UNITS	◻

SCALE 1: 666,666



result, however, is a less than ideal allocation of limited Agency health resources. In fact, Wana itself is not considered particularly safe after the 1989 kidnapping of a doctor from the Civil Hospital there and the 1990 kidnapping of an EPI team near Wana.

Recruiting female health professionals is perhaps most problematic. There are no Lady Health Visitors, and only the da'is at Wana civil hospital appear to have received any training (done informally by the female medical officer). There appear to be no formally qualified da'is. At most facilities, there is no one to supervise the work of these da'is, most of whom are simply local traditional midwives. They also appear not to take their employment very seriously. Often they do not come to work for months at a time. At Ladha hospital, the da'i posted has never even bothered to show up.

Lab technicians and radiographers, personnel essential to making proper diagnoses, are in very short supply. There are some xray technicians posted but no radiographers, who are better trained. There is only one lab assistant at Wanacivil hospital. The problem with staffing is something that only time and increased local educational opportunities (particularly for girls) will ameliorate. Improvements in security will, however, make it possible to attract larger number of trained personnel from the down districts. Since training for most categories of health personnel below the level of physician (LHVs, midwives, lab techs., etc.) exists at neighboring DI Khan or somewhat farther afield at DG Khan (medical technicians), that also may improve recruitment over time. There is also a new health technician training institutue at DI Khan.

The difficulties with staffing mean that a good referral system is hardly in place. Patients visiting a dispensary who need to be referred to a physician must be sent to a distant hospital, or out of the Agency. Generally, those who have the means to leave the Agency do so for serious complaints. There are hospitals at Tank and DI Khan, to which many would go out of necessity or preference.

The problem, as suggested above, however, is not simply with staff recruitment and posting, but with persuading personnel to fulfill their responsibilities in a professional manner. Staff absences from work appear to be frequent. Even when a facility is open, it may only be semi-functional owing to absences of key staff members. It seems clear that locally hired sweepers, water-carriers and chowkidars regard their salaries as owed to them regardless of whether they perform their jobs or not. Facilities often are dirty and poorly kept.

A. Dispensaries

Dispensaries in the Agency are generally staffed by a compounder and a da'i. A compounder takes a one year course after matriculation, so he requires good supervision and support. As noted, dispensary da'is are mostly untrained and not always in evidence. Dispensary locations are as follows:

Wana Subdivision:

Ghwa Khwa
Dabkot
Dhana

Ladha Subdivison:

Shakaai
Badar Gaga Khel
Challerai
Dowtoi
Kanigurum
Karrama
Makin
Mulam Khelzai
Manatoi
Maroobi
Masap Mela
Patwela
Sam
Shigga Shaktu
Zadrana
Bangiwala
Janata
Janjal
Kotkai
Mandana
Wallama
Spinkai

Sarwakai or Jandola Subdivision:

Chagmalai
Mishta Tangrai
Sina Tiza
Oss Pass
Sarwakai
Shahoor
Sipla Toi
Tang Tangri

The following dispensaries treated no outdoor patients in 1988 and so may have been or may still be closed:

Shakki
Dowtoi
Bangiwala

Shakki is being upgraded to a BHU - a new building was completed this summer while work on staff quarters was underway in autumn. Still, the Agency Surgeon found no staff present when he visited in September. The Agency Surgeon found that Dowtoi was functioning but not very well. He also found that the following had been closed for some period of time in August-September 1989:

Sina Tizha
Badder Gaga Khel
Maroobi
Bangiwala

In October, the Mandana dispensary was reported by locals to have been closed since April, with the compounder in private practice at Spinkai Raghzai. Of the five dispensaries the research team tried to visit two were closed, and no da'i was in evidence at any of them.

Dhana is the only dispensary to which a da'i has not been assigned.

The USAID-funded TADP project and the LG&RD Department are just completing construction of a new dispensary with separate residence quarters for a compounder at Ghula Khan Kot on the Dhana Toi. Presumably, a new compounder will be assigned after completion.

Equipment available at the three dispensaries found open by the research team was little, and the medicines few. Many patients were sent to the bazaar to buy their own medicines - this perhaps should not be viewed as a problem. People generally are willing to spend even scarce funds on health care, and it is useful to have them make a contribution. The three dispensaries seen did seem to have supplies of Oral Rehydration Solution, and the compounders noted that there were rarely problems with restocking packets. In any case, ORS packets can be purchased in the bazaar.

Standards of hygiene found in the three dispensaries visited by the research team were not ideal, and the buildings were in rather bad shape.

B. Basic Health Units

There are nine BHUs that were reported to be functioning. However, a list of out-door patients treated by facility records no patients treated by the Spin Kamr BHU in 1988. Two BHUs at Zarmilan and Srakanda, have been closed for some time. A new facility is under construction at Srakanda. At Zarmilan, the problem seems to be a local dispute over which individuals should be appointed to the Class IV posts attached to the dispensary. Until the dispute is resolved, there is little point in posting a Medical Technician.

Locations and staffing of the reportedly functioning units are as follows:

Wana Subdivision:

Tatai	Medical Technician Da'i
Toi Khulla	Medical Officer 1 Medical Technician 1 Compounder Da'i
Musa Nika	1 Medical Technician

Ladha Subdivision:

Shigga Warzakai	Medical Technician
Chalwishti	Medical Technician
Spin Kamr	2 Medical Technicians

Sarwakai Subdivision:

Nanu	2 Medical Technicians
Khaisora	2 Medical Technicians
Barwand	2 Compounders

All BHU's (by definition) should have a Lady Health Visitor, but none in the Agency do. There are seven vacancies for da'is - these vacancies may exist because of a preference to post trained TBAs to BHUs. All BHUs should have medical officers, but only one currently appears to have a physician posted. This is at Toi Khulla. Two years ago, Shigga Warzakai had a medical officer posted. Three of the BHUs should have a second technician but no candidate has been found for posting. These vacancies create a very weak BHU system, with little capacity to accept referrals from the dispensary level.

New BHUs are under construction at Kanigurum and Shakki, where dispensaries have been functioning. One at Umar Raghzai has been completed but is not yet staffed. Another BHU will be constructed at Postay. Strengthening of the BHU program is needed, yet staffing is likely to remain problematic, ending with these facilities functioning at a lower level than is generally expected of a BHU.

C. Hospitals

Hospital is a term that is used rather loosely in the Agency instance - only at Wana are the hospitals reasonably equipped and staffed to function as hospitals, and even then, as noted, they are not equipped to handle serious cases. Locations, numbers of beds, and staff are as follows:

Ashkar Kot	No beds	1 Medical Officer 2 Compounders 2 male orderlies
Ladha	2 female beds 8 male beds	1 Medical Officer 1 Dental Surgeon 3 Compounders 1 Lab Attendant 1 Da'i
Sararogha	No beds	1 Medical Officer 1 Dental Surgeon 2 Compounders
Spin	2 female beds 8 male beds	1 Medical Officer 2 Compounders 2 male orderlies
Wana TB Hospital	10 female beds 40 male beds	1 Medical Officer 1 Da'i 1 female orderly 1 Compounder 1 Lab Attendant
Wana Civil Hospital	25 female beds 25 male beds	15 male Medical Officers 1 female Medical Officer 1 Dental Surgeon 6 Compounders 2 OR Attendants 1 Lab Assistant 10 male orderlies 4 Da'is 1 compounder trained to run the blood bank

Two hospitals were visited, the one at Sararogha and the Wana civil hospital. It was on this visit that the team learned that the Sararogha hospital no longer admitted patients. Since no indoor patients were reported in 1988 for Spin or Sararogha, it is probably safe to conclude that they probably no longer admit patients either. With respect to Ashkar Kot, it is difficult to understand why this facility was upgraded from a dispensary to a hospital. It admits no patients. Its outdoor patient load in 1988 was 1,485, which is light compared to a number of other Agency facilities. Agency health administrators say that the upgrading is planned because the area is densely populated and remote from other hospitals. A new building is planned but the contracting process appears to have run into difficulties. At the moment, the "hospital" has been allocated one room in the high school. This no doubt helps explain the light case load.

The TB hospital appears inactive, with low bed utilization and very little outdoor patient care given in 1988. Of the hospitals, only the Wana Civil Hospital appears important as an indoor patient facility. The other hospitals are more important as out-door patient facilities and probably function more at the level at which BHUs are supposed to function.

There are no female nurses working at any of these facilities, and the only female orderly is at the TB hospital. Wana hospital appears to have the only Lab Assistant, while the others make do with lab attendants who lack formal training but who could have learned on the job. It is encouraging that there is at least one female physician in the Agency, but a vacancy exists for a second one, also at Wana civil hospital. There are also vacancies for 7 da'is.

Based on the number of beds, the Wana civil hospital, as noted earlier, is certainly adequately staffed with physicians, many of whom are said to maintain a private practice in town, a phenomenon which is common in Pakistan but which probably reduces the willingness of physicians to serve outside of larger towns. It is interesting to note that all the positions allotted for physicians in Wana are filled. These physicians constitute a powerful drawing factor, with the Wana Civil Hospital seeing 26% of all out-door patients in the Agency. Even with this heavy case load, given that the hospital also has 6 compounders, the hospital may have more physicians than it truly needs. In reviewing all facilities, physicians are located as follows:

Wana	- 17
Spin	- 1
Sararogha	- 1
Ladha	- 1
Ashkar Kot	- 1
Toi Khulla	- 1

Dental care is available at three sites - Ladha, Sararogha and Wana.

Tables XII.2 shows the status of a number of dispensaries, BHUs and hospitals as of August/September 1989

TABLE XII.2

STATUS OF HEALTH UNITS VISITED
BY AGENCY SURGEON IN
AUGUST & SEPTEMBER 1989

Dispensary	Facility Open	Condition of Building	OPD patient Register
Bader Gagakhel	No, all staff absent, dispensary does not function	None, taken over as Hujra.	
Bangiwala	No, does not function.		
Chagmalai	No, all staff absent		
Challarai	No, medical staff absent.	Bad, no water or electricity.	Inadequate
Dabkot	Yes, but only Compounder present.	Bad with roof caving in, no electricity or water.	Inadequate
Dawooti	No, compounder on leave.	Poor, no water or electricity	
Dhana	No	Bad, roof fallen in, no water and electricity.	
Ghwakhwa	Yes	Poor, 2 of 4 rooms taken over by others, no electricity or water.	Inadequate
Janjal	No		
Kaniguram	No, compounder on leave & Dai absent; open another day with compounder present	New BHU under construction	Not Available
Karama	No, all staff absent	Destroyed	

Dispensary	Facility Open	Condition of Building	OPD patient Register
Kotkai	No, all staff absent*	Poor & surrounded by rubbish	
Makin	Yes, but Dai absent 3-4 months.		
Mandana	No, all staff absent on 2 different days		
Maroobi	No, apparently does not function	Poor	
Mishta Tangai	Yes	Poor, no electricity or water	
Masap Mela	Yes, but only compounder present		
Patwela	No, all medical staff absent	Bad, no electricity or water	
Sam	Yes, appears to function properly	Well kept but in poor condition	Inadequate
Sarwakai	Yes but only Compounder present	Bad, with roofs leaking	Inadequate
Shahoor	No, all staff absent. Dai absent for 9 months		
Shinkai	Yes but only EPI vaccinator present		None
Sina Tizha	No, all staff absent, compounder comes occasionally to give injections		

* In October, we found the clinic functioning, perhaps with a new dispenser.

BHU	Facility Open	Condition of Building	OPD patient Register
-----	---------------	-----------------------	----------------------

Zarmilan	No, closed last 2 years owing to local dispute over hiring class IV employees.		
----------	--	--	--

Hospital	Facility Open	Condition of Building	OPD patient Register
----------	---------------	-----------------------	----------------------

Asghar Kot	Yes, but several staff absent.		
------------	--------------------------------	--	--

		No building, doctors holds clinic at the high school.	
--	--	---	--

			Inadequate
--	--	--	------------

Ladha	Yes, but some staff absent, Dai absent since posting		
-------	--	--	--

		Dirty, staff complain unsafe	
--	--	------------------------------	--

Sararogha	Yes		
-----------	-----	--	--

		Dirty & badly maintained, shortage of water, must bring by donkey from a distance.	
--	--	--	--

Spin	Yes, but medical officer on leave & only one compounder present; EPI staff absent 3 months.		
------	---	--	--

		Bad with leaking roof, eroded floor, no water or electricity, only one of a quarters occupied.	
--	--	--	--

D. Maternal and Child Health Care

Pre-, peri- and post-natal services are offered to women by private da'is and government-employed da'is. One useful intervention could be to try to improve the training of the government-employed da'is who have not been trained. There are only two MCH Centers, one at Wana and the other at Kanigurum. Neither of these is functioning owing to an inability to recruit Lady Health Visitors. Da'is are assigned to each MCH Center but they do not appear to be working. Care is also available from the female physician at Wana Civil Hospital. However, the lack of trained female health practitioners affects both the quantity and quality of care for females in the Agency. Some women are reluctant to be seen by a male practitioner, particularly for certain kinds of problems; others will seek medical help, but a male practitioner will be limited in the kinds of examinations he can make.

No formally organized family planning services or advice are available in the Agency, and health facilities do not stock contraceptives.

1. Oral Rehydration Therapy for Diarrhea

Medical practitioners in the Agency have not yet been trained in the six day control of diarrheal disease sessions offered at Lady Reading and Khyber Hospitals in Peshawar. Plans were underway in late 1989 to schedule such training for South Waziristan staff in the not too distant future. Even if little activity is currently underway with respect to trying to reduce the incidence of diarrheal disease in the Agency, treatment of diarrhea via ORT is in general use in Agency health facilities, and this is encouraging. It is distributed through EPI technicians. Over a 22 month period (January 1988 to October 1989), 18,350 packets of ORS were distributed on an average of 834 per month. If we can assume that each case was treated with 2 packets of ORS, then 9,175 children received ORT during this period. There are 47 health facilities, not counting the TB hospital which would probably not be treating diarrhea. Each of these facilities on average then treated approximately 9 children per month with ORS. This is slightly higher than the average per facility over a recent six month period in Kurram Agency. Still, it seems rather low given the high incidence of diarrheal disease. The actual number of children treated with ORS at dispensaries and BHUs with ORS may be lower, since Wana civil hospital is by far the largest user of ORS. It should, however, be kept in mind that the case load for some of these health units is very low, sometimes with fewer than ten patients per day. In addition, a considerable amount of diarrhea is perhaps being treated with antibiotics. The third most prevalent disease diagnoses among out-door patients in 1988 was amoebic dysentery (16,659 cases), while another 3,491 were diagnosed with bacillary dysentery. Given the limited facilities for lab tests, amoeba may be over-diagnosed, and some of the diarrhea ascribed to amoeba may actually be due to other causes (a virus). The compounder at Ghwa Khwa reported that he treated 20-30 cases of diarrhea per month and

that most of the patients presenting with diarrhea were children. He accordingly should be using more than the average amount of ORS. The compounder at Kotkai in 1988 diagnosed 210 cases of diarrhea and 225 cases of dysentery (amoebic and bacillary). Ages unfortunately are not reported.

Ten thousand packets were distributed to EPI staff for further distribution in November 1989.

2. EPI Program

The supervisory staff for this program consist of one district Superintendent-Vaccination (DSV) and 2 FSVs (field supervisors). There are 3 senior EPI technicians (vaccinators) (another 5 posts are vacant) and 24 Jr. technicians, all of whom are male and are locally trained. Fixed EPI centers with one stationary vaccinator are attached to each of the hospitals at Ashkar Kot, Spin, Sararogha, Ladha and Wana; the BHU at Chalweshti; and the dispensary at Shinkai. Junior technicians are also assigned to the fixed centers but do outreach from them. There are two vehicles available for outreach - both seem to be based at Wana. There are also 15 motorcycles and 20 bicycles which are assigned on a monthly basis depending on what the outreach program for the month is.

Coverage at this writing is not particularly good. In recognition of this, the health authorities plan to open fixed centers at the following units:

- o BHUs at Birmal, Barwand, Shigga Warzakai, Spin Kamr and Khaisora (Tiarza)
- o Dispensary at Osspass

Presumably, junior technicians will have to be put in charge of these centers, since vacancies for the post of senior technician already exist. Supervision already seems to be difficult, with only two field supervisors. The post of Asstt. Superintendent is vacant. On the Agency Surgeon's visits to facilities in August and September 1989, the vaccinators were often absent without leave.

Outreach is also difficult. Even with more vehicles available, frequent problems with road blockages and lack of security in rural areas would make travel for mobile teams problematic. In the village of Ghwa Khwa, which is not far from Wana and which is not in an insecure area, we were told that the mobile team had not made any visits and that therefore none of the children had been vaccinated. If this statement is true and a village in the generally well-served and geographically accessible Wana plain is missing the benefits of vaccination, then we are far less likely to find the program operating in more remote areas of difficult terrain.

104

Immunizations done in 1987 and 1988 are presented in Table XII.3. We should note that we received three quite different lists, two from Wana and one from Peshawar. We chose to use the second list (the only one of the three to give ages) obtained directly from EPI staff in Wana, but since EPI staff report their totals to the Peshawar EPI office there should in fact be no discrepancy between lists obtained from each office.

To start with the figures that are easiest to interpret: few women have been vaccinated with tetanus toxoid. This is presumably because of a reluctance to be touched by male vaccinators. However, it may be worth noting that across the border in Paktya, the International Rescue Committee is having some success in vaccinating women using male vaccinators. If the program were to be presented differently and perhaps some promotion done, interest could increase.

The largest number of childhood immunizations given were of Polio I, then BCG for tuberculosis, then measles. The reason the numbers for these three are higher is because the three are given virtually any time after birth. The number of children receiving Polio I is equal to the number receiving DPT I and DT I. DT (Diphtheria and Tetanus) is given to children two and older who missed all or part of the DPT series but are no longer at risk from Pertussis (Whooping Cough) because of age. The number of children receiving DPT I, II and III increased greatly in 1988, while the number of DT I and II declined substantially. In 1987, Agency personnel may have mounted a great effort to immunize slightly older children who had missed part or all of the DPT/polio series.

The immunization of children under one year of age is poor relative to the number of those one year old and over receiving immunizations. More attention perhaps needs to be paid to immunizing children at the appropriate age.

Table XII.3

Immunizations1987

(Age months)	0-11	11-23	23-48	Total
Polio I :	6198	8200	14047	28445
Polio II :	4379	5363	10973	20715
Polio III :	3079	3954	—	7033
Booster :	—	383	663	1046
DPT I :	6198	8200	—	14398
DPT II :	4379	5363	--	9742
DPT III :	3079	3954	--	7033
Booster :	—	—	—	—
DT I :	—	—	14047	14047
DT II :	—	—	10973	19073
Booster :	—	—	663	663
BCG :	5826	7732	13822	27380
Measles :	4129	7803	13055	24987
Fully- Immunized*:	—	—	—	18006
TT I :	—	—	—	3021
TT II :	—	—	—	2153
Booster :	—	—	—	73

*/ All those children receiving DPT III or DT II.

Immunizations

(Age months)	<u>1988</u>			Total
	0-11	11-23	23-48	
Polio I :	8826	9544	8421	27291
Polio II :	7267	7437	6287	20991
Polio III :	6076	5882		11958
Booster :	—	412	154	566
DPT I :	8826	9544		18370
DPT II :	7267	7437	—	14704
DPT III :	6076	5882	—	11958
Booster :	—	—	—	—
DT I :	—	—	8921	8921
DT II :	—	—	6287	6287
Booster :	—	—	154	154
BCG :	8252	9103	8729	26084
Measles :	5485	8862	7483	21830
Fully- Immunized*:	—	—	—	18245
TT I :	—	—	—	4052
TT II :	—	—	—	3557
Booster :	—	—	—	48

* / All those children receiving DPT III or DT II.

The return rates for DPT and Polio II and III may indicate problems with mobile team scheduling as well as difficulty in persuading parents to bring their children to fixed facilities at later (and appropriate) times. Still, the return rates seem surprising high, given the small number of vaccinators, the lack of supervision owing to staff vacancies, the lack of transportation, the huge area to be covered, the difficulty of the terrain and the lack of security. The return rates for 1988 are substantially higher, yet the staffing pattern does not seem appreciably different. Table XII.4 illustrates return rates.

Table XII.4

	Percent Receiving Polio I also receiving Polio II		Percent Receiving Polio I also receiving Polio III	
	1987	1988	1987	1988
0-11 months	71%	82%	50%	69%
11-23 months	65%	78%	48%	62%
23-48 months	78%	75%	0	0

	Percent Receiving DPT I also receiving DPT II		Percent Receiving DPT I also receiving DPT III	
	1987	1988	1987	1988
0-11 months	71%	82%	50%	69%
11-23 months	65%	78%	48%	62%

In addition to the annual records for 1987 and 1988, monthly records for immunization were reviewed for the period January to September 1989. Since these were organized by month, it was possible to look at the number returning for the second and third immunizations when due (two months later for polio II and two months after polio II for polio III). Percentages over 100 represent children who have come for the next vaccination in the series past the due date. Table XII.5 presents the percentage of those who received polio I returning for polio II and the percentage of those receiving polio II returning for polio III.

These percentages seem very high.

Table XII.5

**Return Rates for Polio Immunization
January - September 1989**

Percent Receiving Polio I also receiving Polio II	Percent Receiving Polio II also receiving Polio III	
March	62%	84%
April	87%	109%
May	106%	72%
June	112%	84%
July	89%	103%
August	86%	88%
September	93%	117%

One aspect of the program that is somewhat curious is that the Wana Civil Hospital, despite carrying a heavy outdoor patient load, does relatively few immunizations. In 1988, 3.2% of those receiving Polio I; 2% of those receiving Polio II; and 1.6% of those receiving Polio III; and 4.1% of those receiving TT I.

E. Facility Utilization

Agency facilities treat indigenous persons and refugees. Most of the refugees would seek treatment in a Wana subdivision facility, but the summer influx of refugees from the down districts would mean that almost any facility might, in the warmer months, treat sick refugees.

1. In-Door Patients

The Wana Civil Hospital and Wana TB Hospital appear to be the only two facilities admitting patients. The TB Hospital admitted 61 patients in 1988 or 1.22 patients per bed. If we can assume a three week stay for each patient (TB admissions might run longer than average), bed utilization was 7%. Given that this facility sees even fewer out-door patients, we are obliged to wonder why it remains open. Bed utilization at the Wana Civil Hospital is fairly high. There were 1,940 admissions in 1988, or 40 patients per bed. If we can assume an average stay of 8 days, then overall bed utilization was 88%. The hospital admitted 32.9 female patients per bed, with a utilization rate of around 72%, based on an average stay of 8 days. There were also 44.7 male patients admitted per bed, giving a very high

utilization of 98%. It is possible that the TB hospital could have a useful life as a general male ward, attached to the Civil Hospital, given the already very high utilization of male beds at the latter facility.

It is interesting to note that in 1987, 2,536 patients were admitted to hospital. Thus, the number of in-door patients declined by almost 600 in 1988. This is a substantial drop. Medical Officers may have been inclined to send more patients out of the Agency in 1988 for diagnostic tests that could perhaps no longer be done in the Agency.

South Waziristan has fewer hospital beds per thousand of population than Kurram. The main problem is not the number of beds per se, but the concentration of beds in Wana.

2. Out-door Patients

A word of caution is in order before beginning this section. Outdoor patient records are often poorly kept and, in some instances, it would not be out of place to suspect that registers had been manufactured. For example, in the case of the dispensary of Baddar Gaga Khel, records for 1988 show a very high case load. When the Agency Surgeon visited the dispensary in autumn 1989, it was clear that the dispensary had not been functioning for some period of time. It is possible, of course, that something had happened between January and August 1989 that had rendered the dispensary non-functional. It is also possible that the dispensary had functioned on a marginal basis for some period of time, and that some creative license had been taken with the out-door patient registers for 1988. The same is true of the Maroobi dispensary - not functioning in August 1989 but with a very high case load reported in 1988. It is simply not possible to tell whether the numbers of patients reported have much bearing to the actual numbers seen, except in institutions where supervision is easier and more sophisticated, such as at the civil hospital in Wana.

In 1987, records show 136,275 out-door patients. In 1988, statistics seem to indicate that there were 131,035 out door patients. If we subtract the 26% treated in 1988 at the Wana Civil Hospital, then 96,651 patients received treatment in 42 facilities known to be treating out door patients that year. This averages 8.7 patients per day per facility if we can assume 265 working days per year. Excluding Wana, the case load ranges from 1.9 patients per day at the Chagmalai dispensary to 16.9 patients per day at the Sam dispensary to 24.4 patients per day at the Sararogha hospital, the busiest facility after the Wana Civil Hospital. Table XII.6 shows those facilities with the lightest and heaviest case loads in 1988. Those not mentioned carried patient loads somewhere in between the two extremes.

Table XII.6

Light and Heavy Caseload Facilities
1988

Facility	Annual Outdoor Patients

Light Case Load:	
TB Hospital, Wana	46
Chagmalai Dispensary	493
Walama Dispensary	903
Siplatoi Dispensary	1,119
Dabkot Dispensary	1,168
Dhana Dispensary	1,273
Sina Tizha Dispensary	1,276
Sarwakai Dispensary	1,345
Ashkar Kot Hospital	1,485
Heavy Case Load:	
Wana Hospital	34,384
Sararogha Hospital	6,465
Sam Dispensary	4,466
Nano dispensary	4,140
Shigga Warzakai BHU	3,764
Badder Gaga Khel Dispensary	3,480
Marobi Dispensary	3,095
Ladha Hospital	3,066
Kanigurum Dispensary	2,897

At the Dabkot dispensary, the compounder saw 194 patients in September 1989 or approximately 8 per day. On the day the researchers visited him, he saw 4 patients. The facility does not receive particularly heavy use because of the proximity of Wana civil hospital. At Ghwa Khwa dispensary on the Wana plain, the compounder treated 6 patients on the day we visited. At Kotkai near Jandola, the compounder said that he treated an average of 12 patients daily. The physician at Sararogha hospital said that the hospital saw 20-40 patients daily.

Some rural facilities clearly are little used. This may be because the staff are often or mostly absent. A light case load does not therefore necessarily suggest poor placement of a facility. It might also suggest that local political powers are making it difficult for the health unit to function, either by appropriating the building or in some other way interfering with the work. The Chagmalai dispensary can hardly be considered cost-effective, particularly since the village is in easy reach

of other facilities. It might be useful to consider upgrading the facilities at Sam and Nano to BHUs, given the patient load they carry. The Agency Surgeon also believes that the facility at Sam functions relatively well.

3. Distribution of Facilities

Areas that could benefit from the placement of a dispensary include Bomai (west of Wana) and the area south of Sarwakai. It is also important to try to open the centers at Zarmilan, Srakanda, and Umar Raghzai, whose people do not have access to any sort of facility.

F. Physical Structures

Overall, it would appear to be safe to conclude that many or most of the buildings housing health units are in poor or bad condition, with leaking and/or collapsing roofs, doors and windows missing, and walls deteriorating. In a few instances, the buildings have completely or virtually collapsed. To try to keep such buildings clean is no doubt a daunting task, but as discussed early, sweepers do not appear to be making much of an effort. It is rare to find a facility with water and electricity supplied - the Agency Surgeon properly places emphasis on the supply of these and is beginning to refuse to take over responsibility for new buildings which have not yet had water and electricity hooked up. Twenty-five of the dispensaries and 7 of the BHUs do not have access to potable water. Potable water projects exist in a number of villages with health units. PHED and the health authorities should work together to connect health units to the water system. In addition, villages in which there are health units but no potable water should be slated for potable water on a priority basis, with the health unit (and the school) to be hooked up directly to the water system. Dispensaries and BHUS generally lack large containers for storing water, and have no gas burner for boiling water. One compounder we spoke to relied on neighbors for boiling water, but this almost inevitably means that inadequate sterilization techniques are being followed. Since the compounders and technicians give injections, this creates potentially serious risks for the recipients. At one dispensary, the team saw disposable needles, being re-used because they were the only ones available, soaking in a small amount (not enough to cover) of spirits. Fortunately, this particular compounder was only injecting streptomycin (used primarily for typhoid) and chloroquine for malaria so perhaps he was not giving many injections. Injecting chloroquine is a dubious practice - while the compounder may have run out of tablets, it would have been preferable to send people to the bazaar to buy chloroquine in tablet form. At Kotkai, the compounder had run out of needles.

157

Staff quarters are often not occupied and allowed to deteriorate - reportedly, this is because staff do not want to live in housing without water and electricity.

The cause for the rapid deterioration of buildings, a number of which are not that old, must again be found in the use of poor quality construction materials and techniques. In addition, maintenance is probably seldom if ever done so that a small leak becomes a big leak and eventually the roof caves in or the floor erodes.

G. Malaria Control Program

This is a vertical program, the staff of which are primarily stationed at Wana. There are 17 supervisors; the posts of Inspector and Assistant Superintendent are vacant, meaning that there is little supervision of the Supervisors who carry out case detection and are responsible for organizing spraying. The supervisors visit homes in assigned areas in order to detect both active and recent cases. They take blood smears of suspect cases and send them to Wana to be read. In affected areas, they organize annual spraying. In the case of an unexpected incidence of malaria, they carry out "focal spraying" in the affected area. Day laborers are hired at a daily wage of Rs. 25 to do the spraying under the supervision of the malaria supervisors.

Staff have no means of transport but rely on hired transport. This must limit coverage of parts of the Agency more remote from Wana.

H. Private Practitioners

The number and locations of appropriately trained private practitioners, who are not also in government employ, is not known. There are private labs in some of the larger towns, particularly Wana, but health department staff believe that these private labs are run by unqualified individuals and produce results of dubious value.

I. Disease Prevalence

In 1987, the most prevalent diseases among outdoor patients were as follows:

1. Diseases of the respiratory system except TB and pneumonia - 12.7 percent of patients

2. All forms of diarrhea (bacillary dysentery - 2.2%, amoebic dysentery - 1.8%, gastro-enteritis - 3.6%, ordinary diarrhea -4.6%) - 12.2% of all patients
3. Fever of Undetermined Origin - 8.2 %
4. Diseases of the digestive system except diarrhea, dysentery and tumors - 7 %
5. Diseases of the Nervous System - 6.4%
6. Injuries - 5.7 %
7. Diseases of the blood and spleen - 5.6 %

Another 4.3% of outpatients were treated for TB of the lungs, while 4% were diagnosed as having malaria. A rather high 3.5% of outdoor patients were treated for leprosy. There was a small incidence of whooping cough and typhoid fever. In 1987, 550 individuals seem to have been immunized against typhoid. No diphtheria is mentioned but it could be subsumed under another category.

No cholera was reported and yet 1500 people were immunized against cholera.

Incidence of disease among out-door patients in 1988 showed the following in terms of frequency of diagnosis:

1. Fever of Undetermined Origin (PUO) - 14,397 cases
2. Diseases of the Respiratory System - 14,170 cases (excluding pneumonia and TB)
3. All forms of diarrhea - 13,702 cases
4. Diseases of the digestive system excluding diarrhea, dysentery and tumors - 9,459 cases
5. Malaria - 8,999 cases
6. Diseases of the blood and spleen - 7,322 cases
7. Injuries - 5,804 cases
8. Diseases of the bone, joints, muscles - 56,94 cases
9. Diseases of the nervous system - 5,469 cases
10. Diseases of the nose - 4,462 cases

In comparing the two above-mentioned years, far less gastroenteritis was diagnosed in 1988 than in 1987 (551 cases compared to 4,912 in 1987). One thousand additional cases of bacillary dysentery were diagnosed in 1988. Statistically, one would expect the incidence of amoeba to be higher than bacillary dysentery but because bacillary dysentery makes people much sicker, more people suffering from this form of dysentery might seek medical help. Bacillary dysentery may also be somewhat easier to recognize without benefit of laboratory equipment. Typhoid increased somewhat in 1988 and whooping cough decreased substantially. Substantially more individuals (over 3,300 addition cases) were diagnosed with diseases of the nervous system in 1987 than in 1988. The larger share of these individuals probably reported with problems due to anxiety and emotional stress. More than half of those reporting with tetanus were fifteen years of age or older. No neo-natal tetanus cases seem to have been recorded. There were also some cases of diphtheria reported.

Malaria, while common in the Agency, is over-diagnosed, as it often is elsewhere. Less than 5% of the almost 57,000 slides read at the malarial lab in Wana were positive in 1988. Most of the cases diagnosed as malaria, particularly by health personnel with limited training and no lab facilities, would have been fevers due to viral or bacterial infections. Sixty-eight percent of the local slides diagnosed as positive in 1988 were falciparum malaria, which can be more difficult to treat. Ninety-eight percent of the refugee slides found positive were falciparum. In 1988 the malaria laboratory at Wana with one trained technician, read almost 53,000 slides. This comes to 200 slides per day assuming 265 work days in a year, or approximately 33 slides per hour. This would tax even the best technician. Curiously, the Agency Surgeon's office reported that this individual was reading only 50-60 slides per day, but this total does not tally with the annual total of slides read.

One of the difficulties in working with the various lists provided by both the Wana and Peshawar health facilities, on both a per facility and per diagnosis basis, was that some lists combine diseases into groups while others both group diseases and report on some specific diseases separately. It can therefore be difficult to compare various lists, and in fact there were major discrepancies between the Wana-provided list of patients by disease and the Peshawar-provided list of patients by facility and by disease. We used the latter list because it seemed more complete and better organized.

XIII. ELECTRIFICATION

WAPDA had extended the electricity grid to a total of 115 villages by autumn 1989. Plans for the 1989-90 fiscal year include bringing electricity to an additional 20 villages.

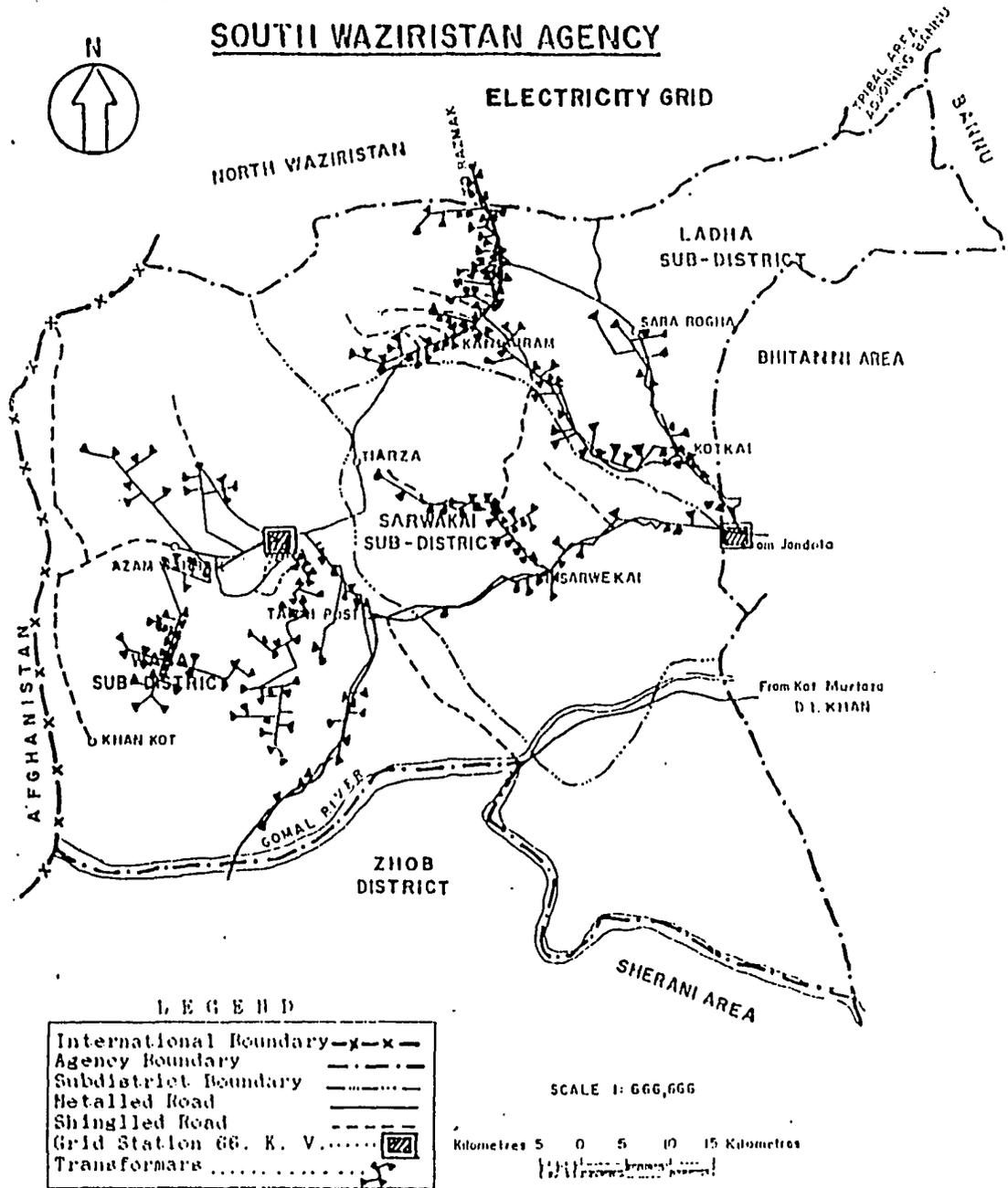
The Divisional Office is based at Tank, with a subdivisinal office at Wana and another one at Jandola. An SDO is in charge of each of the subdivisions. The Jandola office is also staffed by 6 line supervisors, 19 linemen, and 45 assistant linemen. The Wana office also has 6 line supervisors, 14 linemen, and 23 assistant linemen. The Jandola office appears to have more than the sanctioned number of linemen and assistant linemen, while Wana has fewer than the number sanctioned.

Loadshedding takes place for three to four hours daily in the Agency, throughout the year. There often is unscheduled loadshedding, owing to overloading of the feeder stations. The major grid station of 132 kv is at DI Khan. It feeds three feeder stations of 66 kv each at Tank, Jandola and Wana. WAPDA expects to complete a new 132 kv station in Tank in November 1989. This station will supply electricity to Tank and surrounding areas, freeing up more electricity for South Waziristan.

Households in the Agency are charged a flat rate of 50 Rs. per month. This is very low and in many instances amounts to a substantial subsidy. Even at that, many households do not pay their bills. Total arrears from non-payment of Agency electricity bills amount to Rs. 17 million. WAPDA is unable to cut off the electricity of delinquent households, so there is very little incentive for households to pay. In addition to non-payment of bills, there are more illegal connections in the Agency than there are legal ones. WAPDA counts 8,453 legal connections and 9551 illegal ones. These factors plus damage to the 221 transformers from random shooting at celebrations or during conflicts make providing electricity to the Agency a very costly endeavor, and one that will become increasingly costly over time.

Fig. XIII.1 shows the electricity grid.

Fig. XIII. 1



XIV. INVESTMENT IN DEVELOPMENT

A note of explanation is first needed here. It proved difficult to recover revised development allocation/expenditure figures for past years. We were able to obtain the revised (and therefore real) allocations only for 1988-89. We have therefore been obliged to rely on the initial development allocations, which are always published, and therefore readily available. Initial allocations may, in the instance of some line agencies or department, have little to do with what a department actually spends or can spend. The initial allocations show the level of commitment to particular sectors but not always the level of absorptive capacity.

Total development investment in the Agency since the early seventies has generally been high relative to other Agencies. For most sectors included in the ADP and for FATA-DC investment in irrigation water, South Waziristan ranks second in investment after Kurram Agency. South Waziristan has the second largest population among the tribal agencies and the largest area. It has less agricultural potential than Kurram and it is more costly to provide its population with services, because of the lowest population density of any of the tribal agencies.

Table XIV.1 shows combined ADP, FATA-DC and MNA/Senator investment allocations for South Waziristan since 1971-72. The overall level of investment showed a steady increase until 1986-87, with sharp increases in the first half of this decade. The combined allocation fell by 31% in 1988-89. This included sharp drops in most ADP sectors, as well as a 41% drop in the FATA-DC investment in water. The only areas which registered an increase were Public Health Engineering (PHED - potable water) and industry, with the latter under FATA-DC auspices. Table XIV.2 shows investment trends over time.

Table XIV.3 shows total sectoral allocations. While there has been a trend of increasing amounts for each sector until the past couple of years, there are no very clear trends with respect to the proportion of total investment earned by any one sector annually. Proportions gained by one sector or another from year to year fluctuate, perhaps suggesting shifting priorities and/or the political process of negotiating investment levels per Agency and per sector.

As with all the tribal agencies, communications is the sector that has received the largest amount of money. This reflects both the primary importance of infrastructure, the low state of development of road networks in the tribal areas twenty years ago, and the high costs of building roads. Until 1983-84, communications generally received over 40% of the annual ADP

163

allocation; since then its share has dropped. In 1988-89, it received 33% of ADP funds for the Agency.

FATA-DC's investment in developing water resources ranks second in funding. For most years, FATA-DC investment in this sector accounted for over 20% of total investment funds. In 1988-89, FATA-DC's investment in water accounted for 17% of all development funds. Investment peaked in 1985 and in 1988-89 was less than half of what it was in that year.

Education is the sector that ranks third in terms of ADP investment. While the total amount invested in education increased over time, there was not a sharp increase in the proportion of investment funds devoted to education until 1988-89, when education's share of ADP funds increased from 16% to 22%. This trend may or may not continue.

PP&H (including PHED) ranks fourth in terms of total investment funding since the early 1970s. The investment by PHED in potable water is particularly interesting, since this should be counted as part of the GOP investment in health. PHED has received the following allocations for work in S. Waziristan since 1982-83:

1982-83	1,638,000 Rs.
1983-84	1,812,000 Rs.
1984-85	2,239,000 Rs.
1985-86	4,515,000 Rs.
1987-88	5,524,000 Rs.
1988-89	5,796,000 Rs.

This is one area where funding has continued to increase. Investment in health care services, which ranks sixth in terms of total ADP investment in the Agency, has generally not been higher than 10%, except for two years when it went a bit above this. However, if the investments in health services and potable water are counted together, as they should be, then efforts to improve the population's health took 17% of total ADP investment in 1987-88 and 20% the previous fiscal year. In terms of investment in health care in all the tribal agencies, South Waziristan ranks second after Kurram.

Electrification ranks fifth in terms of total ADP investment since the 1970s. All the tribal agencies have received a similar level of investment in this sector.

FATA-DC investment in industrial ventures ranks seventh in terms of total investment in the Agency. South Waziristan has received more funds for industry than any other tribal agency or FR.

104

Total investment in agriculture ranks eighth, and is on the low side compared to the other tribal agencies. Kurram, Bajaur, Khyber and North Waziristan have all received more funds for agriculture. This is certainly a reflection of greater potential in the cases of Kurram and Bajaur. Except for one year when its share of ADP investment reached 6%, agriculture has never received more than 5% of ADP funds for South Waziristan in any year. The amount agriculture received in 1988-89 dropped sharply, from Rs. 3.088 million the previous year to Rs. 0.298 million that year, or only one-half of one percent of total ADP funds. These are very low shares given that agriculture is the Agency's major resource and earns most people in the Agency their livelihood. The considerable investment that is being made in developing irrigation facilities should justify a larger investment in related agricultural activities (extension, availability of improved inputs, promotion of mechanization, credit, land levelling and the like) to permit maximization of investment in water.

165

Table XIV.1

FATA-DC, P&D AND MNA/SENATOR
 YEAR/SECTORWISE ADP ALLOCATION
 Agency: SOUTH WAZIRISTAN

YEAR/SEC	AGRI	POWER	COMMUNI	HEALTH	EDUCAT	PP&H	INDUS	RURDEV	P&D	WATER	FOREST	RESDEV	MINERAL	TOTAL
1971-72														0.000
1972-73							0.600			0.290				0.890
1973-74							1.856			1.100				2.956
1974-75	0.098		3.850	1.266	3.489		2.547			4.700				15.950
1975-76	0.275		5.542	0.675	2.799	0.754	3.685			5.464				19.194
1976-77	0.085		10.992	0.260	5.982	2.225	6.955			5.289				31.788
1977-78	0.179		8.349	0.190	7.308	3.325	4.716			1.182				25.249
1978-79	0.814		8.877	3.022	6.743	3.256	1.349	0.568		3.124				27.753
1979-80	1.108		10.981	2.503	7.050	2.478	1.503			5.453				31.076
1980-81	0.549		17.856	1.923	4.312	2.194	1.152			7.669				35.555
1982182						0.970				7.673				8.643
1982-83	1.707	8.700	12.239	1.087	3.493	6.552		1.328		7.770				42.876
1983-84	3.008	7.136	20.500	2.500	6.101	7.941		1.684		15.467				64.337
1984-85	3.077	12.487	27.366	4.184	11.779	8.244		2.033		22.271				91.441
1985-86	3.559	12.526	33.683	4.719	11.232	7.276		1.582	1.950	33.412				109.939
1986-87	2.892	8.750	34.306	12.080	15.168	9.150		1.582	1.950	30.757				116.835
1987-88	3.088	12.041	37.394	9.679	14.064	10.636	0.060	1.668	1.949	22.803				113.382
1988-89	0.298	11.557	21.152	6.040	13.889	8.765	0.560	0.933		13.550	1.350			78.094
TOTAL	20.737	73.397	253.087	50.028	113.409	73.766	24.983	11.378	5.849	187.974	1.350	0.000	0.000	815.958

166

Table XIV.2

FATA-DC, P&D & MNA/SENATOR PROGRAM

RDP ALLOCATION in S.W.A 1971-89

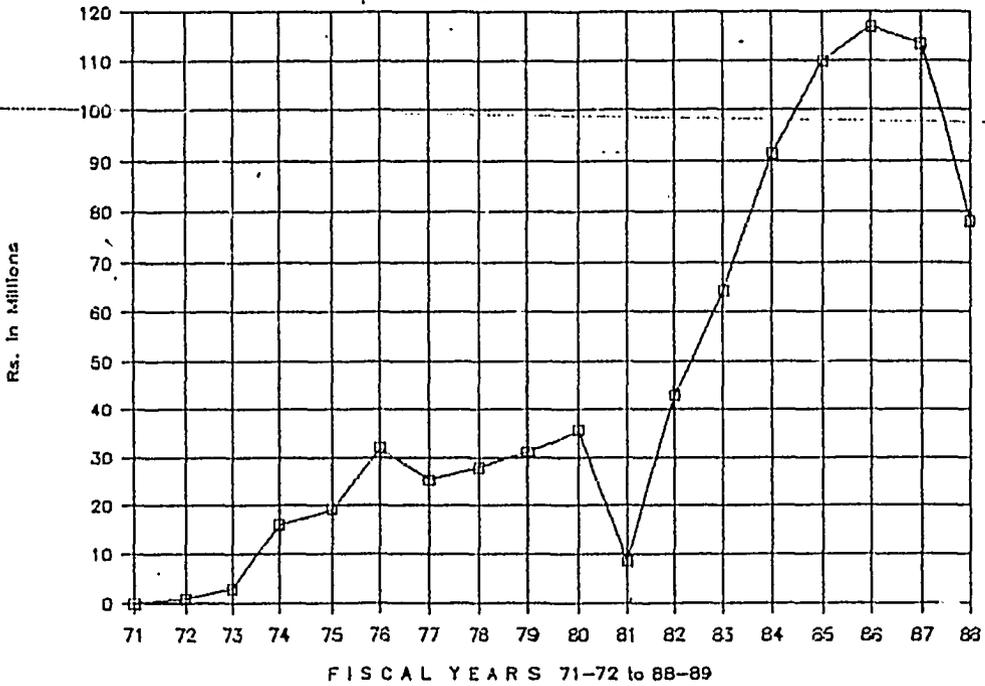
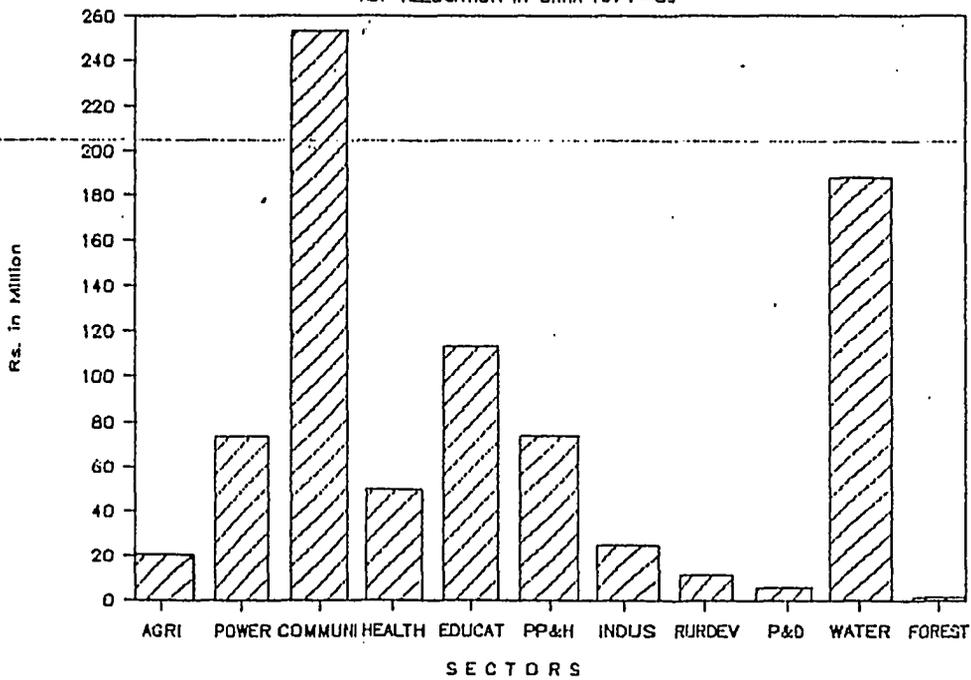


Table XIV.3

FATA-DC, P&D & MNA/SENATOR PROGRAM

ADP ALLOCATION in S.W.A 1971-89



APPENDIX A

USING ENROLLMENT DATA PUBLISHED BY THE BUREAU OF STATISTICS

Careful scrutiny of Kurram and South Waziristan enrollment data provided by the FATA Education Department to and published by the Bureau of Statistics in FATA Development Statistics led to the conclusion that enrollment is reported by type of school a child attends rather than the actual level at which he is enrolled. This conclusion was drawn for the following reasons:

1. In Kurram, from 1970-71 to 1979-80, girls are reported as enrolled in high school but there are none enrolled in middle school. This is unlikely since there would have to be middle level students to feed into high school classes. What this means is that there was one girls' high school, at Parachinar, and it included middle classes. The first "middle school" proper was not built until 1979-80. Because the high school remained better established, female high school enrollments are reported as higher than middle school enrollments through 1984-85. This is extremely unlikely. There will almost always be more females (and males) enrolled at the middle level than at the high school level.
2. In South Waziristan, we find much the same thing. No girls are reported to be enrolled in middle school until 1975-76 and none in primary school until 1973-74, but still girls are enrolled in high school from 1970-71. What this means is that until 1973-74, there was one girls' school, at Wana, and it offered first through tenth class, and yet all its students were counted as high school students. In 1973-74, the first girls' primary school was opened so statistics suddenly show girls enrolled in primary school. For the next two years, statistics show more girls enrolled in high school than enrolled in primary school. In 1975-76, the first separate girls' middle school was opened, so girls were then counted as enrolled in middle school.
3. From 1973-74 to 1983-84, more male students were reported as enrolled in high school in Kurram than enrolled in middle school. This again is very unlikely.
4. Using Bureau of Statistics data for Kurram for 198-81, we can derive the following participation rates, using 1980 census data:

Primary Level:	Overall - 10.3%
	Male - 19.4%
Middle Level:	Male - 9.7%
High School Level:	Male - 46.0%

This progression defies what we might realistically expect. The participation rate should drop, and drop significantly, moving from one level to the next. The high school participation rate of 46% makes no sense compared with a primary participation rate of 19.4%. It is also much higher than estimates for the national participation rate.

Using per class enrollment data provided by Kurram education staff, we derived the following participation rates:

Primary Level: Overall - 27%
Male - 49%

Middle Level: Male - 13%

High School Level: Male - 6%

These rates follow the sort of trend we might expect and while lower than national participation rates (not a surprise for FATA), they are more in line with them.

5. Using FATA Development Statistics enrollment data for South Waziristan for 1980-81, we can derive the following participation rates:

Primary Level: Male - 21%

Middle Level: Male - 10%

High School Level: Male - 31%

Again, the high school participation rate cannot be this high relative to the participation rates at the lower educational levels.

APPENDIX B

A NOTE ON AGRICULTURE STATISTICS

Agriculture data with respect to FATA are particularly prone to error. At best, the data are very approximate indicators of the actual situation "on the ground," and at worst, they can actually mislead planners. Agriculture staff in the tribal agencies are requested to submit estimates of land use, area under crops, and production and yields, but there are no departmental directives as to how they are supposed to do this. In fact, there is no way that they can make such estimates with any degree of accuracy. Land records do not exist for most of FATA, and the department has no survey or mapping capabilities. Therefore, staff must make these estimates "off the tops of their heads." They may have a sense that cultivated area is increasing, or that one crop is supplanting another, but statistics try to reflect the degree to which changes are taking place, and agriculture staff are being unduly taxed in being asked to estimate the degree. They can also miss an important trend, such as a new crop catching on with farmers.

Agriculture staff generally try not to deviate too much from the previous year's estimates lest their calculations be questioned. Thus they might show small increases in acreage but without any reliable means of determining that a 50 hectare or 75 hectare change has taken place in an area as large as South Waziristan. There appears to be a tendency to report increasing acreage under many crops, including grains. Of course, investment in irrigation development has permitted an increase in cultivated and cropped areas, and perhaps this is consistent with continually increasing acreage.

Crop yields are often reported to be the same, or almost the same, year after year, regardless of weather and other factors. While there are so many variable affecting crops that it is impossible to isolate the impact of rainfall on acreage and yield, an attempt was made to compare four consecutive years of good and bad rainfall with acreage and yield for a few crops for Kurram Agency:

	1984-5	1985-6	1986-7	1987-8
Rainfall	29.2"	21"	32.9"	29"
Wheat		Acreage Up; Yield same	Acreage same; Yield down	Acreage down; Yield down

Maize	Acreage Up; Yield up	Acreage down; Yield down	Acreage down Yield down
Barley	Acreage Up; Yield same	Acreage up; Yield down	Acreage down; Yield up

It is hard to see the impact rainfall might have had from these data.

There appears to be some consensus among those most familiar with agriculture in the tribal Agencies that there is considerable under-recording of virtually all acreage estimates, so that recorded production figures fall short of true production.

The one estimate that agriculture staff ought to be able to generate with some accuracy is yield, or at least the general range of yields. There are no crop cutting plots, and the demonstration plots do not reflect ordinary farm conditions, but staff could check with a sample of farmers from different areas at harvest. One USAID-funded consultant recently examining horticulture in Kurram felt that tomato yields were double what was being reported, and that potato yields were also substantially higher. Without having a better sense of the range of yields, it is difficult to know how successful farmers are at growing particular crops.

The quantitative data purporting to describe agriculture cannot be used for planning. It is perhaps a mistake to ask staff to make numerical estimates when it is recognized that currently there is no methodology available to them by which they could obtain reasonably accurate answers. Numbers tend to take on a life of their own and, even when people know they are unreliable, they use them in the absence of other information and with the assumption that the numbers must be reasonable approximations. However, example after example in the Kurram and South Waziristan profiles point to the fact that some of the approximations appear badly off the mark. Until methods of obtaining accurate quantitative data are available, it might be best to have field staff concentrate on collecting and using qualitative information.

Landsat analysis, cadastral surveys, or aerial photography are required to obtain an accurate picture of land use and land under particular crops, during the two main growing seasons. If these are not possible, then there are some methods through which some of the judgments of field staff might be partially corroborated. For example, one recent USAID consultant in Kurram arranged to have a count of three vegetable crops being transported out of the Agency, via Chappri, for ten days in August and ten days in

September, or during the harvest period. This produced results that suggests the tomato production might be four times the 1988-89 estimate made by agriculture staff; onion production 2 1/2 times the 1986-87 estimate (a more recent estimate was not located); and potato production 2 times the 1988-89 estimate. Acreage under these three crops would also be larger than recorded, since staff determine production primarily by dividing the acreage figure by the yield. Conducting similar exercises for other high value crops could help give a more accurate picture of the changing situation in agriculture. One problem, of course, with increasing the information collection and assessment responsibilities of staff is that staff are already stretched very thin, and it could be a mistake to assume that they could properly carry additional burdens. They would also require training in order to carry out such responsibilities thoroughly.

Appendix C

Sites Visited by the Research Team in South Waziristan
Oct 16-26, 1989

Animal Husbandry

Vet Dispensary, Murghband
Animal Hospital & A.I.Center, Wana.

Schools

Girls H.S, Wana
GGPS, Nazir Jankot
GPS, Gula Khankot (on Dhana Toi) (USAID funded)
GGMS, Dabkot
GMS, Dabkot
GMS, Mandana (near Jandola)
GHS, Chagmalai
GPS, Inzer
GPS, Murghband

Not open Boys H.S, Wana (Thurs12:30pm)

FATA-DC

Surface Irrig.:
Several schemes on Wana Toi,
including Tatai & Lower Tatai
Spin plain irrig. scheme (with aqueduct)
Schemes up Dhana Toi
Ziarat Kach (Sararogha) (also flood protection)
Ghurlama (") (" " ")

Tube Wells:

2 Wana plain

Karezeez:

Dubkot (USAID funded)

LG & RD

3 flood protection, Sararogha Tehsil.

Also saw private flood protection, irrigation schemes and
karezeez, Wana and Dhana areas

Health

2 hospitals, Wana & Sararogha
dispensary, Mandana (Sararogha)

dispensary, Kotkai (Sararogha)
 dispensary, Ghwakhwa (Wana)
 dispensary, Dabkot (Wana)

Not open: BHU, Umar Roghzai (new)
 Dispensary, Gula Khankot (new)

Forestry

2 block plantations, Sararogha & Wana plain

PHED drinking water schemes

4 in Sararogha tehsil (3 tubewells, 1 infiltration gallery:
 Tubewells at Bangiwala, Kotkai, Spinkai Raghzai, IG at
 Sararogha)
 Wana Toi at Spalipan
 Dabkot (tubewell)

Agriculture

1 fruit nursery, Wana plain

Roads (Major arteries)

Jandola	-	Wana via Sarwakei
Jandola	-	Sararogha
Wana	-	Dhana
Wana	-	Azam Warsak
Wana	-	Shin Warsak via Karikot
Karob Kot	-	Lower Tatai