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ASSISTANCE TO THE LEATHER INDUSTRY

SM/YEM/75/018

YEMEN ARAB REPUBLIC,

TERMINAL REPORT

Prepared for the Government
of the Yemen Arab Republic by the
United Nations Industrial Development Organization,
executing agency for the
United Nations Development Programme



United Nations Industrial Development Organization

United Nations Development Programme

ASSISTANCE TO THE LEATHER INDUSTRY

SM/YEM/75/013

YEMEN ARAB REPUBLIC

Project findings and recommendations

Prepared for the Government of the Yemen Arab Republic
by the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

Based on the work of Mohamed M. Abou El-Khair,
expert in the leather industry

United Nations Industrial Development Organization
Vienna, 1976

Explanatory notes

References to dollars (\$) are to United States dollars.

The monetary unit in the Yemen Arab Republic is the Yemeni Rial (YR1). During the period covered by the report, the value of the Rial in relation to the United States dollar was \$1 = YR1 4.55.

A full stop (.) is used to indicate decimals.

A comma (,) is used to distinguish thousands and millions.

References to "tons" are to metric tons.

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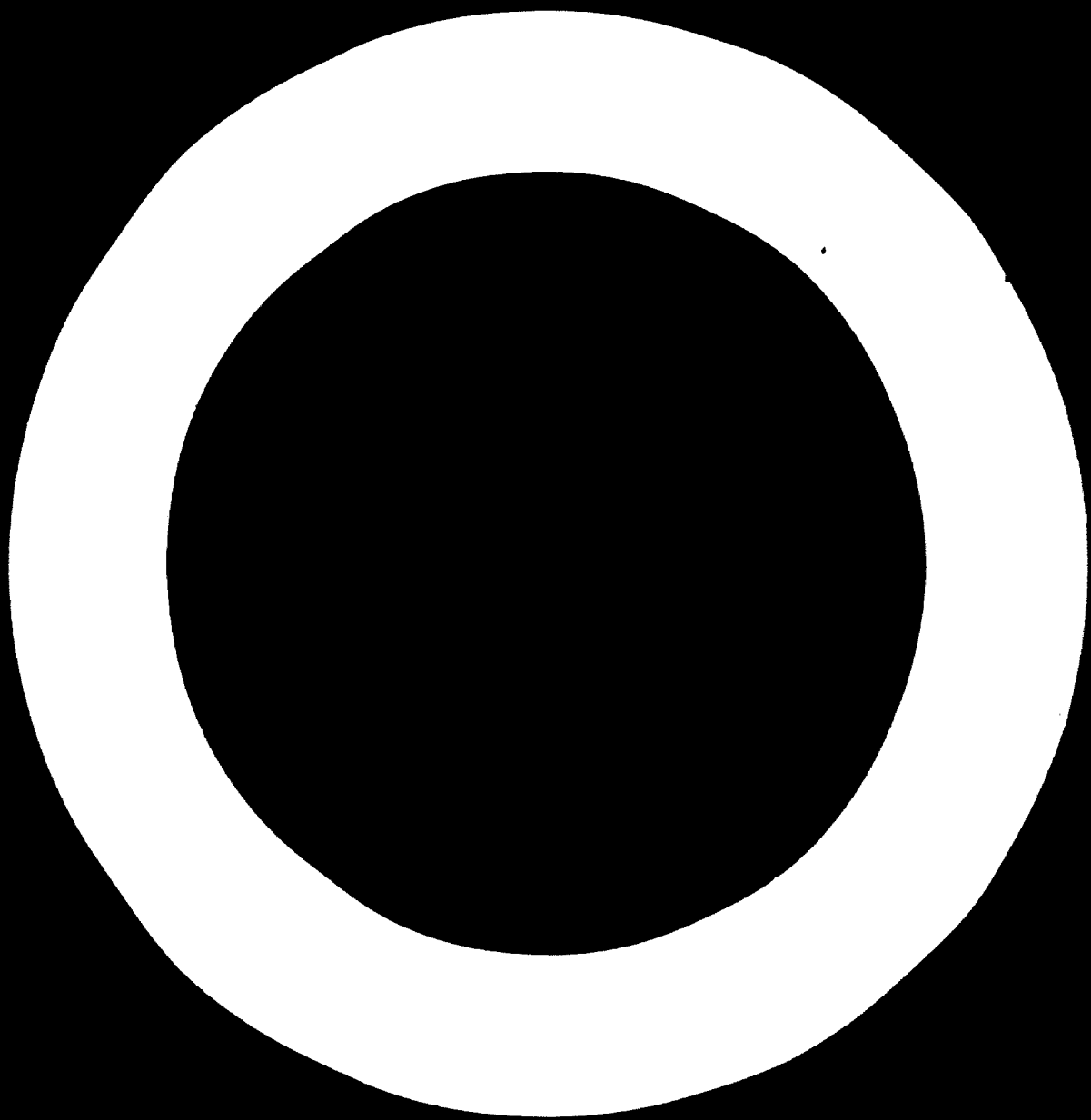
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ABSTRACT

The report covers a four-month mission, "Assistance to the Leather Industry, Yemen" (SM/YEM/75/013) carried out by an expert of the United Nations Industrial Development Organization (UNIDO), executing agency for the United Nations Development Programme (UNDP). The object of the mission was to study the domestic market for leather goods and prepare recommendations on the leather industry to be set up. The type and situation of raw hides and skins available in the country was thoroughly assessed, and their importance for the future of the industry was verified. It was found that there are domestic marketing prospects for leather foot-wear and certain specific leather goods, and export possibilities for semi-processed skins. There is an assured future for the expansion of the industry into the manufacture of finished leathers and leather goods from local raw material.

It was recommended that regional integrated semi-mechanized establishments to produce leather foot-wear and leather goods should be set up in the three main cities of Sana'a, Taiz and Hodaiedah to process the raw material available in the surrounding areas and to supply each city's requirements for foot-wear and leather goods. It was proposed that seven rural tanners around Sana'a should merge to form the base of a projected leather estate in the capital.

A short training course was given to those concerned with the establishment of the leather industry. The course provided the trainees with a basic minimum of information and encouraged them to act as a catalyst for the development of the industry. Further training abroad and locally was also recommended to supply the industry with the required skilled labour at all levels.



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INTRODUCTION

The Yemen Arab Republic (population six million) imports all its requirements of leather foot-wear and other leather goods for the domestic market. The country's wealth of hides and skins is meanwhile exported as raw material. The Government planned to encourage the domestic leather industry and has issued a licence to a business enterprise to set up a tannery. In order to achieve its objective, the Government requested the United Nations Development Programme (UNDP) to provide technical assistance in studying the domestic market for leather goods and to prepare recommendations on the leather industry, including recommendations on a training programme for nationals of the country.

The Government's official request for the project was submitted on 1 April 1975, and the project, "Assistance to the Leather Industry, Yemen" (SM/YEM/75/013) was approved on 8 May 1975. The United Nations Industrial Development Organization (UNIDO) was appointed as executing agency. An expert was assigned to carry out a four-month mission starting 25 February 1976. During his assignment he was attached to the Department of Industry of the Ministry of Economy. UNDP provided \$12,000 to finance the project.

The original job description (see annex 1) was appropriate in the light of the industry's situation at the time of the Government's request. Subsequently, there were marked changes, and new business enterprises obtained licences to set up leather industry establishments. The consultation service provided was therefore adjusted to meet the new situation, and considerable attention was given to training.

I. FINDINGS

Livestock

Agricultural activity accounts for 70% of the total national income of the Yemen Arab Republic, or YR1 3,306.6 million. Livestock farming is an important part of agricultural activity. The latest estimates of the livestock population of interest to the leather industry are as follows:

Cattle	900,000
Sheep	7,300,000
Goats	3,700,000

The cattle are short-horned Zebu, similar to some East-African types, with medium hump and low live weight. There are several distinct breeds of woolled and hair sheep; hair sheep seem to predominate. The different kinds of goats can be divided basically into long- and short-haired types.

The animals are very poorly fed, and the breeding system seems to be haphazard. The most common form of treatment for sick animals is branding with a hot iron or pushing a cord in and out of the skin with a metal skewer. The condition of the skins is unsatisfactory; the animals suffer from skin diseases and parasites. In general, a strong need is felt for an integrated programme to improve livestock and skin quality.

Hides and skins

Quantity

The estimated quantities of raw hides and skins in fresh and dry-salted condition available annually are as follows:

Cattle	200,000
Sheep	1,320,000
Goat	880,000

These estimates are based on a calculated offtake of 13% for cattle and 33% for sheep and goats, published statistics, and information gathered from various sources. The real figures are probably higher because the available statistics on slaughter-houses are unreliable, and 70% of the animals are slaughtered in the villages without proper records.

Quality

Cattle are flayed by untrained hands under bad conditions. As a result, the pattern is poor, and numerous holes and cuts are made. Sheep and goats are case flayed. The skins are salted in the cased form and then dried on the ground, exposed to the sun. Drying in this way leads to retention of water by the hair or wool cover and serious subsequent putrefaction. Exported skins, which are shipped in the dry-salted state, are not graded by quality. A very small proportion of the cattle hides could be converted into full-grain leather; most of them should be manufactured as corrected grain, owing to the poor quality of the grain side.

Weights and measures

For export purposes, hides and skins are roughly graded by weight. The following information on grading was obtained from exporters.

Table 1. Weight grades and dimensions of hides and skins

Kind of hide or skin	Weight grade	Average weight (kg/skin, dry salted)	Grade percentage	Dimensions: backbone length x maximum width (cm)
Cattle	a	9.0	20	120 x 65
	b	7.0	50	105 x 55
	c	3.5	30	70 x 45
Sheep	a	0.9	55	100 x 30
	b	0.8	33	75 x 25
	c	0.5	12	65 x 20
Goat	a	0.7	20	80 x 30
	b	0.6	65	75 x 25
	c	0.5	25	45 x 20

The predominance of light-weight cattle skins is a good argument for converting them into upper leathers. The very limited quantities of heavy hides available could be ignored: the projected tannery will not have machinery to produce sole leather.

Marketing

Hides and skins

The current prices of fresh hides and skins are very low compared with animal prices, as the following table shows.

Table 2. Prices of fresh skins

Species	Average price per animal (YR1)	Average price per fresh skin (YR1)	Skin price/animal price (as percentage)
Cattle	1,000	17.5	2
Sheep	145	6.5	4
Goats	60	4.0	7

Prices of fresh goat and sheep skins are relatively high because they are exported in larger quantities than cattle hides. The generally low prices of fresh skins could be due to:

- (a) The lack of attention to the animals during their life to keep their skins in good condition;
- (b) The incorrect flaying, handling and curing methods;
- (c) The absence of a leather industry in the country to utilize the raw hides and skins.

It is believed that the projected leather and leather products industry will help to raise the prices of fresh skins by better utilization of the raw material. Flaying and curing could perhaps be improved if the tannery rejects material of inferior quality. The Yemeni is a clever trader by nature; he will do his best to improve the quality of hides and skins if he realizes that the tannery will pay higher prices for goods of better quality.

Most of the country's production of hides and skins goes for export in the dry-salted state. Hides and skins rank third or fourth among exports.

The average export price was found to be \$600/ton for cattle skins, \$22/dozen for sheep skins and \$12/dozen for goat skins, f.o.b. Hodaiedah.

The general trend shows an increase in the value of exported raw hides and skins, with the exception of 1974 when the prices of hides and skins on the

international market declined (see following table). The main markets for exports of hides and skins from Yemen are Italy, Holland, Spain and Syria. Sheep and goat skins account for the major part of the country's exports of such goods.

Table B. Exports of raw hides and skins

Year	Quantity (tons)	Value (YR1)	Rate of increase in value ^a / (percent)	Unit price (YR1/ton)
1974	2,279	3,858,448	30	1,693
1973	2,298	5,472,385	68	2,381
1972	-	3,263,434	60	-
1971	-	2,040,000	71	-
1970	-	1,195,000	-	-

^a/ Calculated.

The rural tanneries around Sana'a and scattered around the country produce vegetable-tanned sheepskin shearlings, and cattle hides and skins for soles. Their finished goods are of inferior quality and are sold by the piece according to the size of leather. The average price for cattle sole leather is YR1 15 to 25 per piece and YR1 12 for sheep or goat shearlings. The seven tanneries around Sana'a are processing a total of 2,500 kg of dry-salted cattle hides and 1,000 kg of sheep skins monthly.

Negligible quantities of corrected-grain upper leather are imported and sold to small workshops for the manufacture of the uppers of locally produced sandals. The price is YR1 2.5/ft².

Foot-wear

Domestic production

The foot-wear produced in the country consists of plastic moccasins and slippers manufactured by two factories in Taiz and one in Sana'a (see table below). More than 50 per cent of the output is women's foot-wear.

All the output is consumed by the local market, and the producers are applying to the Department of Industry for permission to extend their factories to satisfy domestic requirements.

Table 4. Domestic foot-wear production

Factory	Annual production (pairs)	Type of product
Yemen Co. (Taiz)	540,500	Plastic men's and women's moccasins
Industrial Co. (Taiz)	648,000	Plastic slippers and sandals
Moen Co. (Sana'a)	216,000	Plastic moccasins and sandals
Total	1,404,500	

The average price of plastic foot-wear ranges from YR1 33 to 65 a dozen for moccasins, depending on size. The price of slippers is about YR1 37 a dozen. These prices are the factory prices plus five per cent for retailers. Cheaper slippers are also produced by scrap injection; they cost YR1 22 a dozen.

The only leather foot-wear produced in the country consists of negligible quantities of locally-made sandals produced by small workshops. They cost between YR1 20 and 25 a pair.

Imports

Leather foot-wear to meet the country's needs is imported from various sources. The following table shows the imports of leather foot-wear during the last 10 years, according to the published statistics available.

The rather low unit price calculated may be due to the inclusion of cheap imported plastic foot-wear.

Table 5. Imports of leather foot-wear, 1965-1975

Year	Quantity (pairs)	Rate of increase in quantity (per cent)	Value (YR1)	Rate of increase in value ^{a/} (per cent)	Unit price ^{a/} (YR1)
1975	1,714,349	21	19,862,112	58	11.6
1974	1,413,039	22	12,593,359	44	8.9
1973	1,159,012	1	8,743,076	62	7.5
1972	1,146,519	-	5,401,824	136	4.7
1970	-	-	2,290,000	21	-
1969	-	-	1,893,000	120	-
1966	-	-	867,000	109	-
1965	-	-	412,000	-	-

^{a/} Calculated.

Consumption

The general tendency is for the population of the main cities to wear shoes or slippers; the percentage of people who do not use foot-wear is quite small. On the basis of imported quantities of leather foot-wear, the per capita consumption was found to be 0.2, but this figure might include some of the plastic foot-wear imported and displayed by some shops. The actual per capita consumption of leather foot-wear might be even lower.

In the light of the increasing demand for leather foot-wear during the last three years, the annual rate of increase could be 15% for the next few years. This figure is supported by the following estimates:

- (a) An annual population growth of 2.4%;
- (b) An annual increase in national income of 6%;
- (c) An average rate of increase in the number of students attending school of 32% for the last three years;
- (d) An average rate of increase in the number of university students of 182% for the last three years.

On the basis of these figures, a demand of three million pairs of leather foot-wear by the year 1980 can be projected, in addition to the present consumption of plastic foot-wear. It should therefore be quite feasible to establish a leather foot-wear industry in the country.

Sales of foot-wear

Shoes are generally displayed in the main cities in shops with many other different types of merchandise. In Sana'a, three specialized shoe shops have opened recently. No system of price fixing is applied, but the average price in Sana'a is about five per cent higher than in Taiz, and prices in Hodaiedah are about five per cent lower than in Taiz.

The prices of imported leather foot-wear displayed in the shops are relatively very high, partly because of the high customs duties levied (30%). The price ranges are YR1 70 to 130 and YR1 40 to 80 for men's and women's imported leather foot-wear respectively.

Leather goods

Domestic production

The local production of leather goods consists of only two items. The first is the scabbard of the "Jambiah", a knife which forms part of the Yemeni national dress, and the second is a coat of vegetable-tanned sheep shearlings produced on a cottage scale. Owing to the very wide-spread use of these two items, there is considerable scope for improving the raw materials, productivity and quality.

Imports

Luggage is the first priority among the country's imports. This conclusion is supported by the following statistics.

Table 6. Imports of luggage

Year	Quantity	Rate of increase ^{a/} (per cent)	Value (YR1)	Rate of increase ^{a/} (per cent)
1974	82,357 ^{a/}	25	1,323,615	35
1973	65,886	25	982,464	67
1972	52,647	-	588,802	792
1970	-	-	66,000	-

^{a/} Calculated.

Most of the goods are made of plastic or synthetic material. It seems that the figures given also include limited quantities of plastic ladies' handbags, students' and other briefcases, purses and wallets. Traditional belts, with or without pockets, for carrying the scabbard of the Jambiah are also of interest, since they are imported and displayed by many shops. It was noticed that there is also a demand for men's and women's fashion belts, and watch-straps. Annex II shows the prices of various articles available on the domestic market.

Present and future demand

The sizable quantities of leather goods imported and the accelerating development of education show that there is a potential local market for the following leather goods:

- Travelling bags of all types
- Student's brief cases
- Inexpensive brief cases
- Ladies' handbags and purses
- Modified traditional scabbards, belts and shearling coats
- Fashion belts
- Watch-straps
- Wallets

The old and traditional attitudes of the country have started to attract groups of tourists. This opens up the possibility of developing and producing articles bearing the traditional stamp of the country to be sold to tourists as souvenirs.

The large quantities of raw goat and sheep skins available offers the possibility of converting the skins into leathers for manufacturing gloves and garments for export.

The leather and leather products industry

General considerations

Size and location of establishments

On the basis of the findings, it may be said with confidence that a leather and leather products industry could be established in the country. The projected

establishments should be regional and of moderate size rather than centralized large-scale ones, for the following reasons:

- (a) Transportation between the three main cities is difficult and expensive (transportation rate 150 YRl/ton);
- (b) The slaughter-houses in the three main cities (Sana'a, Taiz, Hodaidah) are not functioning, and there are therefore insufficient organized collection centres for raw hides and skins. Regional establishments would overcome this problem by acting as collection centres in addition to their main productive functions;
- (c) There is a shortage of the technology, managers and skilled labour that a large-scale centralized unit needs for production, management and operation;
- (d) Such establishments would provide production flexibility to meet the widely varying demand for different leather products;
- (e) Such establishments would contribute to the industrialization and development of each region;
- (f) Sophisticated machinery is inappropriate because of the lack of the necessary maintenance facilities and skilled labour.

The leather industry in the country could thus take the form of three integrated leather estates or centres in the three main cities. Each centre would comprise tannery, foot-wear and leather goods units.

Raw material characteristics

Since the cattle hides available are light and relatively small, they are converted into chrome-tanned uppers rather than vegetable-tanned sole leather. Because of the poor quality of the grain side and the characteristic cattle hump, the main product should be corrected grain sides for shoe uppers. The predominance of haired animals suggest that wool saving technology is unnecessary in the early stages of sheep skin processing.

Dividing the number of raw hides and skins available in the country by three provides a rough estimate of the raw material for each regional tannery and consequently determines their size and that of the associated foot-wear and leather goods units. The raw material available annually for each centre would thus be:

<u>Type</u>	<u>Number of skins</u>	<u>Dry salted weight</u>
Cattle	66,667	466,669
Sheep	440,000	352,000
Goat	<u>293,333</u>	<u>175,100</u>
Total	800,000	993,769

Water supply

A copious supply of suitable water is an essential factor to be considered when deciding on the location of a tannery. Since water availability is one of the main problems in the country, it would be more sensible to establish the industry in three moderate-size units rather than one large-scale tannery. Underground water is the only available source; amount and suitability both vary considerably. Annex III shows the hardness of twenty samples taken from different sources around each of the three main cities. The arithmetic mean and the standard deviation of water hardness in the three regions, expressed as mg/l calcium carbonate, were calculated. The results indicate that the water around Taiz is harder than around Sana'a and softer than around Hodaiedah. The hardness varies considerably, however, within each given region.

From the figures for the allocated capacity of each centre and the average dry salted weight of the different skins, it is estimated that the amount of water required for the tannery should be not less than 265 m³ a day. This figure is based on the assumption that 8 m³ are required to process 100 kg of dry salted skins into chrome-tanned finished leather. Where part of the output is to be exported in the pickled state, the amounts of water required would be reduced accordingly.

Types of leather processing

Cattle hides and skins should be processed into corrected-grain or full-grain chrome-tanned sides to satisfy the requirements of the projected shoe industry. Other varieties could be also produced for shoe upper leather (embossed leather, suede side, nappa or patent leather) according to market requirements. The processing of sheep and goat skins should start with pickling and wet-blues export. Export rejects could be processed into lining leathers for the projected shoe industry. At a later stage, the goat and sheep skins could be finished into garment, glove or washing leathers for export in the finished state or as manufactured leather goods.

Types of shoe processing

Cemented shoes with leather uppers, and synthetic unit soles and insoles are the most suitable for local conditions for the following reasons:

- (a) Leather soles will not be available from the projected local tanneries' production;
- (b) Productivity is higher and costs lower;
- (c) Technology is simple and training is easier;
- (d) Such shoes would be in harmony with present local market fashion trends.

For the projected shoe industry, machine lasting technology should not be applied, because it requires long training, high quality uppers, and maintenance, which will not be available in the earlier stages of production. Men's, women's and children's shoes would be processed in each shoe unit, and the moderate size of the unit will provide them with the flexibility to meet the current fashion.

The projected production of leather foot-wear could be considered for domestic consumption as an import substitute, since there is already a local market for foot-wear of all qualities. The synthetic unit soles should be produced locally by the plastic shoe manufacturers to supply the leather foot-wear producers.

Taiz region

A private enterprise has established the first modern tannery in the country. It is situated 15 km from Taiz and occupies a space of 2,000 m². The site has most of the required facilities, such as an adequate water supply, a proper draining system, a moderate temperature throughout the year, a supply of raw cattle hides and skins in nearby Ebb, and a nearby market for finished products in the city. The design of the building would allow its extension for finishing the leather and for establishing foot-wear and leather goods units. The tannery's machinery and installations comprise:

- One drum (about 2 x 3 m)
- Eight paddles
- Four soaking pits
- Two fleshing machines (working width 130 cm)
- Two unhairing machines (working width 120 cm)

Trial batches were produced by processing sheep and goat skins into pickled products as samples for export. It was noticed that the production flow is disturbed by the following factors:

- (a) Raw skins were supplied in the cased form. As a result, considerable time was wasted in ripping after soaking. In addition, the water retained

by the wool or hair cover inside the skins seriously affected their keeping properties. One way of overcoming this problem might be to try to persuade the raw skin suppliers to provide the skins in the opened form;

(b) The mechanical unhairing is not complete. It was recommended that the tannery should be equipped with beams and unhairing knives;

(c) There are too many paddles for the single drum available. Two additional drums (or, preferably, three smaller ones) will provide the proper balance and a marked increase in capacity.

The foreign manager is quite efficient, but the workers are completely untrained and uneducated. There is therefore a need for training in the country to provide trained local workers for this industry.

Hodaiedah region

Shammakh factory

This private enterprise intended to set up the tannery in Hodaiedah, where the average air temperature is 40°C from April till September. Such a high temperature seriously affects leather productivity, and there are other locations available with a more suitable climate. This was explained to the enterprise, and another location (in Biet El-Fakih, 60 km from Hodaiedah) was proposed, where the temperature is lower. Due to the relatively high degree of hardness of the water in this area (see annex III), the enterprise was advised to determine the water hardness and the well yield before deciding on the site of the tannery.

Offers were reviewed for machinery and equipment for the projected tannery and foot-wear units. They included highly sophisticated machinery which is not suited to local conditions, the characteristics of the raw skins and the type of production. There were considerable discussions on the subject with the representatives of the machinery producers and the enterprise manager. The project findings were considered as a guide to adapting the offers to fit local conditions.

Amana factory

The Government has issued a licence to this private enterprise to manufacture various types of leather goods, in Hodaiedah. The proposed types of product are: travelling bags, brief cases, students' brief cases, ladies'

handbags, and belts, made from synthetic imported material. Locally produced leather could also be used. Such products are in line with the market survey made as part of this project, with the exception of businessmen's brief cases, for which there is no market in the country and which are not competitive for export.

The enterprise was given advice regarding the tentative organization of the factory management, detailed types of products, and the machinery required for a semi-mechanized unit. The unit is feasible and the projected capacity will substitute a good portion of the country's exports of such goods.

Because of the existence of this factory, it is recommended that the Shammakh factory should plan to produce gloves or garments for export so as to avoid duplication.

Sana'a region

Around Sana'a there are seven rural tanneries producing vegetable-tanned sheep skin shearlings and cattle hides and skins for sale. The tanneries are located in residential areas and most of the owners are related to each other. The production technique is very primitive, yields are low, and quality is completely neglected. The tanneries are processing a total of 2,500 kg dry salted cattle hides and 1,000 kg of sheep skins a month. Some of them are also acting as raw skin suppliers to exporters and export for their own account. Any improvement or upgrading of these tanneries would be difficult at present owing to their non-economic size.

It was proposed to invite the owners of the tanneries to a meeting in the Department of Industry with a view to merging them into a single sizable unit to be supported by the Government. It was expected that the family relationships would facilitate the merger, and that the result would be a moderate size leather products centre in Sana'a, supplying the city's needs.

The tanners were approached and a meeting was held in the Ministry of Economy on 16 May 1976. It was attended by the Under-Secretary of State, representatives of the tanneries, and the staff of the Department of Industry. The tannery merger was appreciated by the Government, which showed a willingness to support the project by providing electrical and water supplies, constructing a junction to the main road, providing partial exemption from customs duties on imported machinery and equipment (7%) and full exemption from income tax and commercial profit tax during the first five years, and offering a loan at 7% interest.

A request was made to provide the rural tanners with a tentative estimate of the capital needed, a list of machinery suppliers to be contacted, and advice regarding the most suitable size and location of the projected establishment.

From the various locations available, the one shown on the map in annex IV was recommended because of its closeness to the main road, city and raw material supply. The location is near a good source of water and on high ground, and this would permit easy drainage which could be utilized for irrigating the adjacent lower area owned by the tanners.

It was found that the nearest well (in Heziaz, 16 km from Sana'a) yields 3.5 l/sec, which would satisfy the requirements of the tannery. Water samples were taken from the well and it was recommended that they should be sent for a water hardness determination.

Training

Counterparts

Since no chemists or engineers were available in the Department of Industry, a graduate in economy and industrial planning was recruited as a permanent national counterpart. He was fully familiarized with all phases of the project, and showed considerable interest in the subject and a good ability to absorb information from the expert.

Training course given

A short training course was given with the co-operation of the National Institute for Public Administration. The course consisted of nine lectures over a period of three weeks. It began on 8 May 1976 and covered the following topics:

- (a) The value of hides and skins in animal production;
- (b) The production and structure of raw hides and skins;
- (c) Leather production;
- (d) Shoe manufacture;
- (e) Standardization and quality control;
- (f) Leather goods manufacture.

There were 18 participants, 1 from the Department of Industry of the Ministry of the Economy, 14 from the rural tanneries around Sana'a, and 1 each from the Moen plastic shoe company in Sana'a, the Shammakh Company in Hodaiedah, and the Amana leather goods factory in Hodaiedah.

All the lectures were given by the expert in Arabic and were simplified so as to provide the participants with a minimum theoretical background with special reference to local conditions. Notes on the subject were also prepared in Arabic and distributed to the participants for reference. Slides prepared by the expert were also shown to clarify the various stages of manufacture and types of machinery.

The general trend in the country is to provide trainees with incentives in the form of bonuses. Despite the lack of funds for that purpose, the trainees made good contributions to the course and showed considerable persistence on attending the lectures. Their responses to the information given were not uniform because of big differences in their educational backgrounds. The training programme largely achieved its objective in that it attracted the trainees at different levels to act as a catalyst in developing the leather industry in the country and gave them the ability to absorb information from further training programmes.

Training envisaged

Training abroad

The bodies concerned are not familiar with the principles of industrialization of this important sector. The national counterpart should therefore participate in a training scheme abroad to provide the Department of Industry of the Ministry of Economy with trained staff to follow up this project and contribute to future projects in leather technology.

Training in the country

Discussions were held between the authorities, the UNIDO Senior industrial development field adviser and the expert regarding a proposal to set up a pilot demonstration centre for training in leather technology. It was suggested that the proposal might be considered under the second UNDP/UNIDO country programme.

It is evident that neither the managerial staff nor the skilled labour required for the leather industry are available in the country. The lack of foreign language skills among workers precludes the possibility of their training abroad. The establishment of the proposed centre would appear to be the best approach to the problem of providing the projected centres with skilled

labour at different levels. Training within the country also has the advantage that it provides the workers with training suited to local conditions.

The expert was informed that tentative agreement had been reached with the government authorities and that the details will be worked out in due course in consultation with all the bodies concerned.

II. RECOMMENDATIONS

1. The leather industry in the country should be established in the form of three regional centres in the three main cities (Sana'a, Taiz and Hodaiedah). Each centre should consist of a moderate scale tannery, and foot-wear and leather-goods units. The three proposed centres should act as collecting centres for raw hides from each region, using special enclosures adjacent to the tanneries.
2. There should be an integrated programme to improve the quality of live-stock skins.
3. The availability and suitability of the water supply should be examined carefully before deciding on tannery sites.
4. The estimated quantities of the raw hides and skins available for each unit should be the major factor in determining the size of the tanneries and associated foot-wear and leather-goods units.
5. In view of local conditions, the projected establishments should be semi-mechanized.
6. Most of the available cattle hides and skins, which are suitable for conversion into chrome-tanned sides for shoe uppers, should be processed as corrected grain rather than full grain leathers.
7. Leather goods should be manufactured for the domestic market in the following order of priority:
 - (a) Improved traditional scabbards and belts;
 - (b) Travelling bags of all types;
 - (c) Student briefcases;
 - (d) Ladies' handbags and purses;
 - (e) Fashion belts;
 - (f) Watch-straps;
 - (g) Wallets;
 - (h) Shearling coats.
8. Sheep and goat skins should be processed for export, initially pickled and later as wet-blues. Rejects should be finished as lining leather for the shoe industry. Subsequently, the considerable potential for manufacturing the skins as garment and glove leathers should be developed.

9. Each regional centre should include a moderate-sized unit able to produce men's, women's and children's shoes. The shoes should be of the cemented type with leather uppers and linings made from locally produced material. Unit soles and insoles of synthetic material should be imported. Because of local conditions, the shoes should be hand-lasted.

10. Special attention should be given to the merging of the rural tanners around Sana'a into a single sizable unit. Continuous government and multi-lateral support should be sought for all phases of setting up the projected unit. Technical assistance should also be requested to follow up the work of the present project, in the form of consultation services to the other regional enterprises.

11. The national counterpart should take a nine-month training course abroad in marketing and the fundamentals of the leather and leather products industry. The course should include three months of English and should concentrate on general aspects rather than specific fields of industry. (The Gottwaldov National Research Institute for the Shoe, Leather and Allied Industries in Czechoslovakia might be a suitable place for the course.)

12. A pilot demonstration centre should be set up in the country to train skilled labour for the projected industry. This project should be considered for inclusion in the next UNDP/UNIDO country programme.

Annex I

JOB DESCRIPTION

POST TITLE Expert in the leather industry

DURATION Four months with possibility of extension

DATE REQUIRED As soon as possible

DUTY STATION Sana'a with travel within the country

PURPOSE OF PROJECT To study the domestic market for leather goods in the light of a study of the proposed tannery, and prepare recommendations on the leather industry to be introduced in the country, including recommendations on a training programme for the nationals of the country.

DUTIES

The expert will be attached to the Department of Industry of the Ministry of Economy and, under the close supervision of the Team Leader of the Industrial Promotion and Advisory Unit, will be expected to:

1. Carry out a market survey of the present and projected domestic demand for leather goods of all types;
2. Examine the planned capacity of the proposed tannery including an examination of the machinery, equipment and technology to be used by the tannery, and suggest any necessary improvements to be introduced or additional machinery or equipment to be installed;
3. Assess the availability of raw skins in the country and suggest necessary measures to be taken to ensure a continuous supply of skins to the tannery;
4. Formulate detailed recommendations on the leather goods to be manufactured in the country on the basis of the proposed tannery and the domestic demand for such goods, indicating the priorities to be followed in producing such goods;
5. Prepare feasibility estimates for the production of the leather goods selected for local manufacturing and advise on the minimum economic unit or units to be established for such manufacture;
6. Work out a training programme for the nationals of the country to ensure that a trained local cadre will be continuously available for the proposed industry;
7. Train national counterparts in undertaking the above duties.

QUALIFICATIONS Leather technologist with a university degree in engineering; or equivalent, with considerable experience in leather tanning and the leather industry and in techno-economic studies.

LANGUAGE English, Arabic an asset

BACKGROUND
INFORMATION The Government of the Yemen Arab Republic has recently issued a licence to a business enterprise to set up a tannery. The tannery will be set up either in Hodaiedah or in Taiz. The decision on the location of the tannery is expected to be taken within two or three months. The machinery and equipment have already been delivered. At present there is no leather industry in the Yemen Arab Republic; consequently, the country imports all its requirements of leather foot-wear and other leather goods. The domestic market is believed to be reasonably large for these goods: the total population of the country is about 6 million people. The Government plans to encourage a domestic leather industry based mainly on the production of the proposed tannery. In order to realize this objective, the Government has requested assistance to enable a study to be made on the prospects of the leather industry in the Yemen Arab Republic, including an examination of the proposed tannery and the preparation of a training programme for the nationals of the country to ensure that a trained local cadre will be continuously available for the leather industry to be introduced. The services of an expert in the leather industry have therefore been requested to assist the Government in making the proposed study. If the prospects of the industry prove to be promising, the Government will ensure the investment follow-up, either by encouraging the private sector to make investments in this industry, or by obtaining bilateral assistance to help in setting it up.

Annex II

PRICES OF VARIOUS TYPES OF LEATHER
GOODS ON THE DOMESTIC MARKET

<u>Item</u>	<u>Unit price (YR1)</u>	
	<u>From</u>	<u>To</u>
Travelling bags (synthetic material):		
90 cm size	90	150
70 cm size	80	130
50 cm size	60	110
Shopping bags	20	30
Student brief cases (synthetic material)	10	25
Ordinary brief cases (fibreboard)	40	50
Ladies' handbags (synthetic material)	20	30
Ladies' handbags (leather)	40	50
Leather scabbard	15	30
Shearling coats	100	120
Fashion belts (synthetic material)	8	12
Fashion belts (leather)	17	30
Watch-straps (synthetic material)	5	7
Watch-straps (leather)	10	15
Wallets (synthetic material)	10	15
Wallets (leather)	15	25

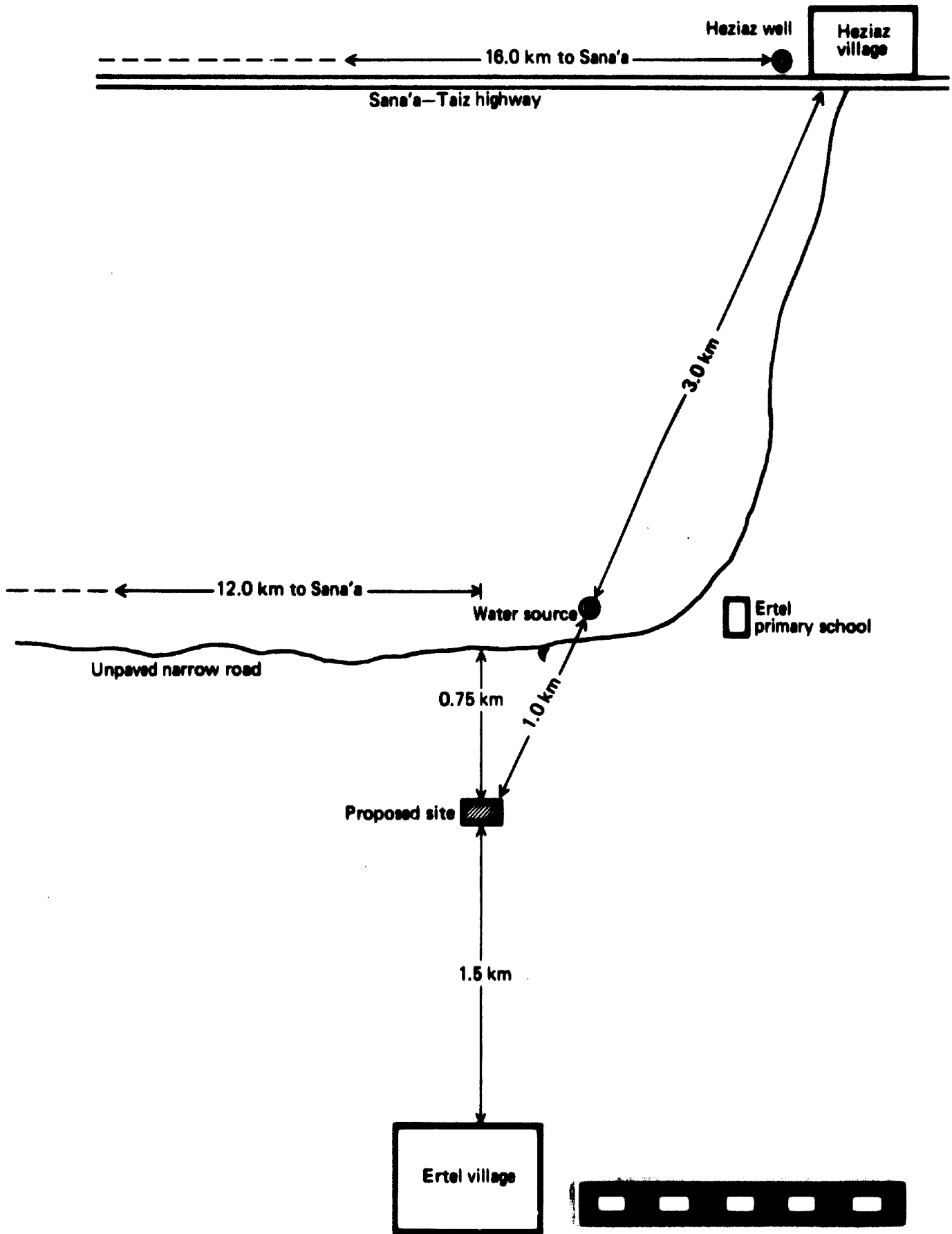
Annex III

WATER HARDNESS IN VARIOUS LOCATIONS
(mg/l calcium carbonate)

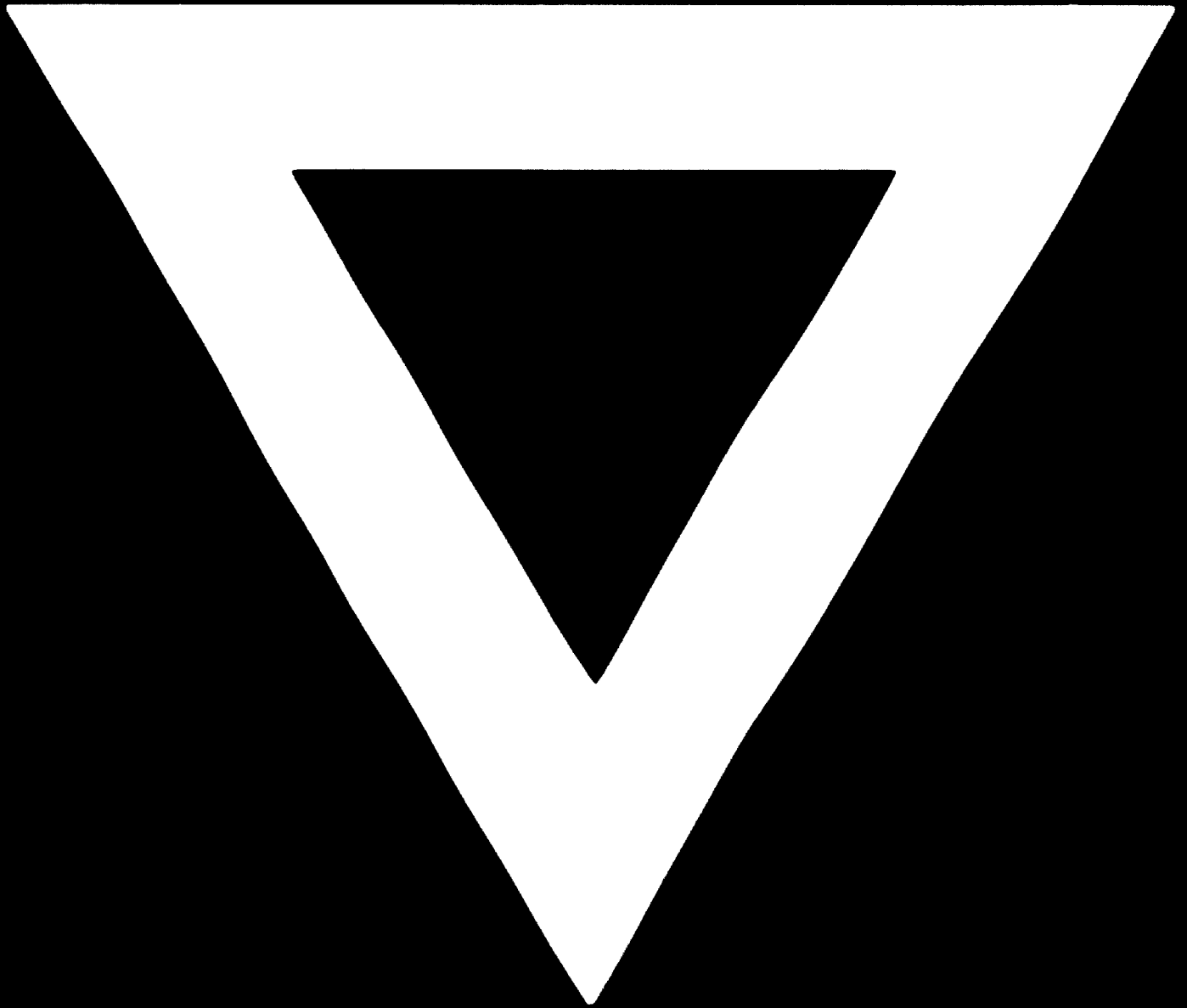
<u>Region Serial No.</u>	<u>Sana'a</u>	<u>Taiz</u>	<u>Hodaiedah</u>
1	230	1,020	819
2	6	250	991
3	16	160	725
4	180	1,200	290
5	160	600	321
6	350	160	239
7	180	420	370
8	38	180	300
9	160	375	13,100
10	180	430	13,300
11	16	894	1,120
12	34	980	5,000
13	16	1,080	4,300
14	190	1,030	775
15	130	1,080	1,335
16	320	1,040	471
17	140	930	1,335
18	340	1,070	235
19	330	610	208
20	<u>20</u>	<u>530</u>	<u>1,210</u>
Mean	152 ± 26	702 ± 81	2,322 ± 276

Annex IV

PROPOSED SITE OF SANA'A TANNERY



C-272



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