



**UNESCO-IHE**  
Institute for Water Education



# Codifying Spate Water Rights in Contested Basins in Afghanistan

## NIMRUZ SURVERY INFORMATION FY 2016

*Nimruz province has been called the stock of Asia due to significantly high production of wheat. Yet in the recent years, on account of increase in cultivation areas and lack of sufficient reservoirs, it is only one seasonal producer of crops.*

**IP: EPR SO**

Assisted by: IHE-UNESCO & Meta Meta

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*It is said that research is the path which guides us how to discover what we do not know and how to achieve what we do not have*

## Abstract

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### Strategic work progress

This reconnaissance research report is based on spate irrigation systems of Nimruz province, which includes extensive study of irrigation site visits and interviewing of different stakeholders for achieving the most suitable information regarding water sharing and distribution and conflict sources and resolutions of this area. It can be used for future decision making bodies and further development of irrigation areas in this specific province.

In order to deepen ourselves to key factors concerning watering system of farming plots, we widely interviewed people in charge of irrigation systems, farmers, mirabs and administrative staff of branch of ministry of energy and water of Nimruz province-of lands by prepared questionnaire that covered plenty of conflict sources and resolution possibilities. This part of our research was further explained by classification of outcome data from aforementioned sources and gathering information about irrigation land sizes and owners, which makes it easier for receiving overall image of system.

In addition to aforementioned information and probes, the existing materials of local branch of ministry of energy and water have been reviewed and considered in this part of researching, which can strengthen the current exploration of fact findings. Moreover, we did not hesitate to acquire main problems of people regarding of irrigation systems of farming lands, and also receive their suggestions for these issues from mirabs and local office staffs.

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## Research objective

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The purpose of this report is to study current condition of irrigation structures and systems of Nimruz province, and also to report existing and previous conflict over water distribution and its mechanism, which people and government implement in resolving it.

The outcomes expected from this reconnaissance research is overall spate irrigation structures of Nimruz province and this is the first step among other stages of study concerning irrigation areas of this province.

It is supposed to determine, hydrology of river, proposed projects in the area, flood patterns in study area and rivers, sociology of the area, tribal structure, recent history, agriculture, cultivated area under different crops with sources of irrigation, main crops, rangelands/pastures, main changes over a time period in above mentioned aspects. Information can be collected at district and provincial level and from other sources

In the main context of this research, we included different aspects of conflict existing and old one to find the best possible resolution in the future plans. This probe was based on local people, like farmers, local mirabs, and residents, and also staff from ministry of energy and water, like official mirabs, director of local branch of ministry of energy and water, conflict resolution manager, and other stakeholders. This diversity of ideas and suggestions help us in go through core conflict and its understanding. Additionally, occasional conflicts over water rights between Afghanistan and Iran, and the treaty of 1973 are noted here.

Furthermore, as the aim of the project required, we involved secondary data dealing with water characteristics in this contexts. We studied current trend of irrigation in Nimruz province, and noted specific information regarding irrigation areas, watering rules, flooding seasons, main crops, and other related matters.

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## Questionnaire

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### Formal and informal frame conflict resolution

- What are general rules regarding water sharing at different level of sub-basin?
- Who are the actors and organization managing water sharing at different level of sub-basin?
- What is the canal and infrastructure layout and water distribution infrastructure, and whether these facilitate or limit the occurrence of conflicts?
- What are the main types of conflicts over water sharing at different levels of the sub-basin?

### Processes of social interaction deployed on conflict resolution

- Who are the actors and organizations that are mobilized during conflict resolution processes? What role do they play and how do they interact?
- What are the different processes, modes and choices regarding decision making during resolution of conflicts over water sharing at different levels of the sub-basin? What factors explain these differences?

### Background and history of conflicts

- How was water sharing before the current conflict?
- Have there been similar conflicts in the past and were they satisfactorily resolved (or not)?
- Have there been tensions or conflicts not necessarily related to water between the different parties in the past?

### Decision making process

- During the conflict resolution process, what do people say? What actions/decisions do they take? And how do they justify them?

### Mobilization of actors and justifications During the conflict

- Who were the different actors involved along the conflict resolution process, and what were the sequences of their involvement?
- Who mobilized them? How did they justify their choice for involving this specific person (as compare to other possible actors)?



- What was the venue (location) where the meetings took place and who organized the meetings? - What did you hope that this actor would contribute in resolving the conflict?
- What characteristics of this actor made him the most acceptable person to help resolving this conflict at this specific point in the process? Why was it useful?
- What are the reasons for not involving other actors (CDC, DDA, provincial governors, PC, WMD, DAIL etc.) in this specific conflict?
- Do you think it would have been more or less effective to involve these actors instead of that one? Why?
- What problems might have emerged if you had involved another actor (mention some) at this specific point in the conflict?

### **Sanction Rules**

- Is there any formal/written rule regarding the sanctions over this specific type of defaulting related to this specific conflict?
- If there are no specific rules, why not?
- Have the rules been applied? If not, what were the reasons? What would have been the problem or issue if the rule had been applied strictly?

### **Justification regarding agreement over a decision**

- How was the final decision taken? Through what mode?
- Was each party satisfied with the final agreement? If not why would they agree? What are the risks if they do not agree with the group or actor that has taken the decision?

### **Rules need to be studied regard to water characteristics**

- What is done when there is excess water, and what is done when there is shortage to water?
- Any other rules regarding water characteristics?

### **Rules need to be studied with infrastructure of water**

- How the infrastructure scheme/activity is implemented? (Based on share of water, based on share of land, combination of both, any other method)
- What are rules regarding repair and maintenance of infrastructures?

- Who has to operate the scheme? (like mirabs) Under which terms and conditions?

### **Rules to be studied dealing with water user association**

- Is it needed to see whether rules and regulations exist for any particular water source? (Spate river) If yes then how? In written form or verbal form or both?
- If the rules exist where is the original documents? (with water user association, government, or copy with whom, like government department, ministry, or any other organization?)
- When this document was prepared, language, agreed by whom by that time?
- Is this document part of government law?
- Is this document followed by local water user association? And its member to access water rights, implemented, to resolve the issue? Any example of such use in the near past.
- Is the water distributed according to allocation agreed by group? This could be on the basis of tribe/clan, land ownership or allocated quota originally agreed.
- How much area is irrigated in first flash flow? With minimum and maximum figures?
- How the second and the third irrigation are done (if only applicable)?
- How water is distributed from main river? Through canal? Sub-canals? Or direct from the river to field/fields?
- How is the sequence of irrigation? First come first served basis, from upstream to downstream
- m, first left side or right side both simultaneously.
- How water is applied? On time basis or chance and provision of second and third term.
- Is there time allocated to each field or owner of field? Or it is based simply on filling of one field and then another? Is there depth rule of irrigation applied (meaning that how deep field is filled with water?)
- Is there any rule to raise embankment of field and by how much?
- How the water passes to downstream areas? Any rules to use for quantity of water in particular site, and then how much share of water to be left for downstream users?
- Which type of structure (s) is in place made to divert water from dry river to fields and how? (permanent, temporary, material used length, height, etc, use of any earth moving machinery, animal power, manually)
- Is there any time limit for such diversion of structure?
- How diversion structure is made? Individually, jointly, by proper water user association.

- The cost contribution for the structure among users? How much? How it is collected? By whom? How it is used? In case of nonpayment, noncooperation, how cost is recovered?
- Operational cost of water?
- Do rules apply these days? All stages? Where apply and where not apply?
- When rules are not applied then what is mechanism to handle such issue?
- How communication is done to share and exchange information about water?
- How is the resemblance of local rules and national water laws? Commonalities and contradictions between local laws and national laws.

Table 1; Field research and site visit schedule

<b>schedule</b>	
Date	Activities
<b>Monday(April 25)PM</b>	Travel from Kabul to Herat
<b>Tuesday(April 26)AM</b>	Travel from Herat to Nimruz, arrival in Nimruz, Interview with staff of ministry of energy and water, interview with some of Mirabs.
<b>Tuesday(April 26) PM</b>	Interview with Mirabs
<b>Wednesday(April 27)AM Holiday</b>	Computerizing, editing, making report of last interviews
<b>Wednesday(April 27)PM Holiday</b>	Arrangement of questionnaire, interview with director of Ministry of Energy and Water
<b>Thursday(April 28)AM</b>	Had sight visiting of Helmand river, seeing diversion of water from Helmand river to Lashkari canal, survey of sub-canals, capture photos of sight and sketch them.
<b>Thursday(April 28)PM</b>	Making report of sightseeing, collecting some secondary data
<b>Friday(April 29) Holiday</b>	Arrangement and preparing of achieved data for reporting
<b>Saturday(April 30)AM</b>	Field visit of Lashkari Canal and complete its survey, making sketches, and taking photos from Lashkari Canal
<b>Saturday(April 30)PM</b>	Cultivation area visiting and interview with formers, capture photos and sketch the cultivation area and sub canals, study of hierarchy of water distribution
<b>Sunday(May 1)AM</b>	Visit of Kang District of Nimruz province ,water sharing on there, main canal which people use, interview with Kang District mirabs, visit of farming lands
<b>Sunday(May 1)PM</b>	Arranging and making report of Kang district of Nimruz province.
<b>Monday(May 2) AM</b>	Collecting and arrangement of secondary data from Ministry of Energy and Water of Nimruz Province
<b>Tuesday(May 3)AM</b>	Travel from Nimruz to Herat.

## Nimruz Province <sup>1</sup>

Nimruz Province is located in south west of Afghanistan with area of 41356 km<sup>2</sup>. Its capital is Zaranj, and the main languages spoken by people here are Pashtu, Balochi, and Dari.

The population of Nimruz Province is approximately 156,600 settled people. There are also many Kuchi nomads who inhabit the province seasonally. The Baloch ethnic group form majority in the province followed by Pashtun, Brahui, Tajik, Uzbek, and Hazara. The Pashtun tribes are mostly Barakzai and Nurzai. Languages spoken in the province are Pashto, Dari, and Balochi, which is spoken by the Baloch tribes as their mother tongue.

*Table 2; Districts of Nimruz Province with their other characteristics*

District	Capital	Population	Area	Villages and ethnic groups
Zaranj	Zaranj	49851	755 km <sup>2</sup>	242 villages. 44% Baloch, 34% Pashtun, and 22% Tajik
Khash Rod		35381	5,766 km <sup>2</sup>	63 villages. 55% Pashtun, 20% Palo, 15% Brahawi, 10% Tajik
Kang		13514	1,250 km <sup>2</sup>	119 villages. 60% Pashtun, 25% Baloch, 15% Tajik
Chakhansur	Chakhansur	11165	9,699 km <sup>2</sup>	160 villages. Pashtun, Tajik, Baloch and Hazara
Chahar Burjak		8080	21,864 km <sup>2</sup>	65 villages. 88% Baloch, 10% Brahawi, 1% Pashtun, and 1% Tajik

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<sup>1</sup> [https://en.wikipedia.org/wiki/Nimruz\\_Province](https://en.wikipedia.org/wiki/Nimruz_Province)

## Administrative units of Nimroz province:<sup>2</sup>

Nimroz is located to the southwest of Afghanistan, sharing border with Iran and Pakistan. The province comprised six administrative units, including the provincial capital.

### 1 – Zaranj:

Zaranj is the capital city of Nimroz province. It shares border through Kang area with Iran, where many government departments, an airport, mineral water and plastic making factory were functioning. A small number of residents are associated with the profession of agriculture. Wheat, water melon and grain are among the main agriculture crops of Zaranj. Cement packing and mobile oil factories are also operating in the area. The Helmand River flows to Iran through the city.

### 2 – Dilaram District:

Dilaram is one of the remote districts of Nimroz. Located 214-kilometers to the north of Zaranj city, the district shares borders with Helmand and Farah provinces. The Kandahar-Herat highway passes through Dilaram district. A large number of people live in the district, but the total strength could not be ascertained. Residents of the district are associated with the profession of agriculture.

### 3 – Khashrod District:

Khashrod is located 110-kilometers to the north of the capital city. Sharing borders with Helmand and Farah provinces, the district is located on Zaranj-Dilaram highway. Agriculture is the main profession of the residents.

### 4 – Chakhansor District:

Chakhansor district is located 45- kilometers to the northeast of Zaranj city. It shares borders with the Bakwah district and provincial capital of Farah provinces. Agriculture is the main sources of revenue of the residents. Melon and water melon are being cultivated in the district.

### 5 – Kang District:

Kang is located 27-kilometers to the north of Zaranj city. The district shares border with Jowin district of Farah province and to the west with neighboring Iran. Residents are associated with the profession of agriculture.

### 6 – Chaharborjak District:

The Chaharborjak district is located 135-kilometers to the south of the provincial capital. The district shares border with Pakistan and Iran. The Kamal Khan Mega Dam is located in the district, which construction would help irrigate 80, 000 hectares of land and generate nine megawatts electricity. Residents are associated with the profession of agriculture with large

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<sup>2</sup> <http://www.elections.pajhwok.com/en/content/administrative-units-nimroz-province>

numbers of them are working in Kamal Khan project. The Helmand River flows through the district

AFGHANISTAN  
NIMROZ PROVINCE  
LAND COVER MAP



LEGEND

BOUNDARIES

- International
  - Province
  - District
- CENTERS
- Province
  - District
  - Village

- ROADS
- Primary
  - Secondary

- RIVERS
- Main
  - Seasonal

LAND COVER CLASSIFICATION 1993

- Settlements
- Fruit Trees
- Vineyards
- Gardens
- Irrigated: Intensively Cultivated (2 Crops/Year)
- Irrigated: Intensively Cultivated (1 Crop/Year)
- Irrigated: Intermittently Cultivated
- Rainfed Crops (flat lying areas)
- Rainfed Crops (sloping areas)
- Platach Forest
- Natural Forest (closed cover)
- Natural Forest (open cover)
- Degenerate Forests/High Shrubs
- Rangeland (grassland/forbs/low shrubs)
- Rock Outcrop / Bare Soil
- Sand Covered Areas
- Sand Dunes
- Marshland Permanently Inundated
- Marshland Seasonal
- Water Bodies
- Permanent Snow

SOURCES:

1- This Land Cover Map is based on interpretation of Landsat Thematic Mapper (TM) satellite imagery of Afghanistan, acquired in 1990 (full coverage) and 1993 (partial coverage). The interpretation was assisted through the use of KFA -1000 space photographs of various regions of Afghanistan, acquired from 1988 through to 1992.

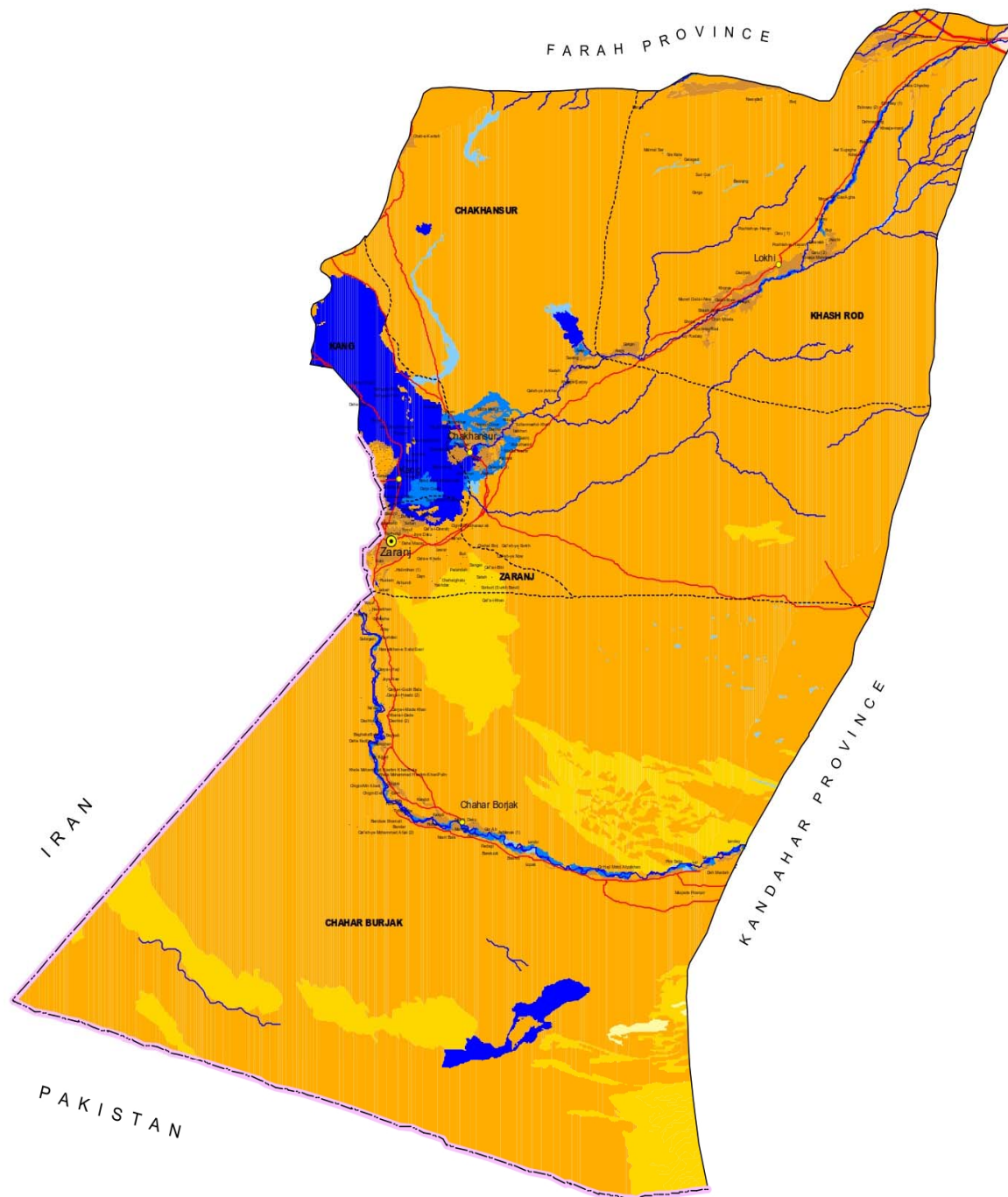
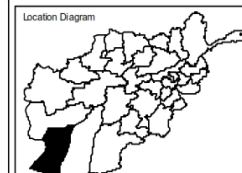
2- Topographic base used for this map is derived from National 1:100,000 scale topographic maps compiled by stereo photogrammetric method using aerial photographs acquired in the late 1950s. The projection of these topographic base maps is UTM, and the coverage of each map is 30 minutes of longitude by 20 minutes of latitude.

NOTE:

The boundaries and names on the maps do not imply of ficial endorsement or acceptance by the United Nations.

For further information contact AIMS  
e-mail: info@hic.org.pk

Location Diagram



Date: April 2002





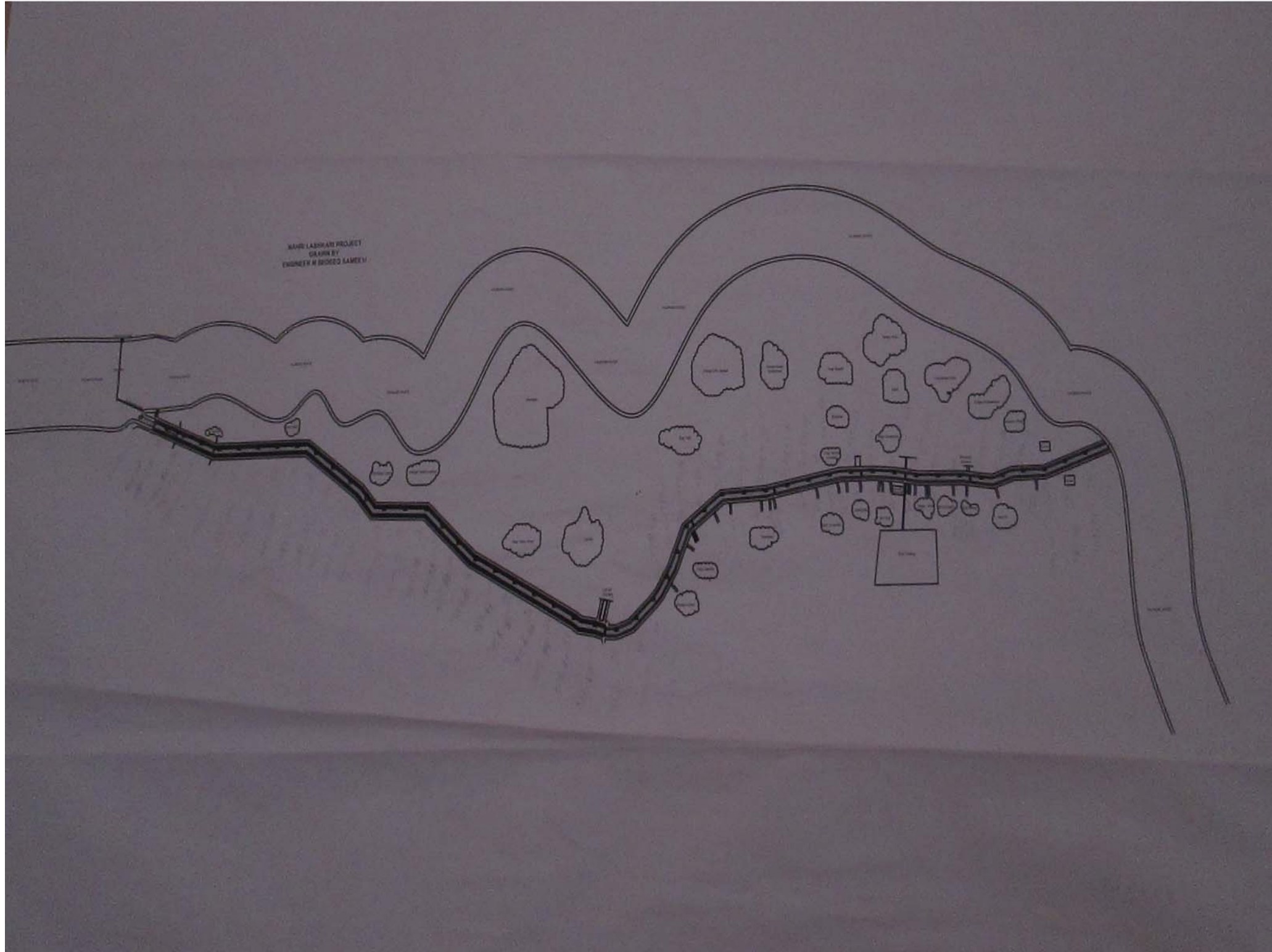


Figure 1; Top; Helmand River, Bottom; Lashkari Canal, which initiates and terminates in it with total length of 47km

Table 3; List of interviewee of local people ( Staff of Ministry of Energy and water not listed)

No.	Name	F/Name	Province	District	Village	Position
1	Mohammad Hussain	Dost Mohammad	Nimruz	Zaranj	Haji Dad Khawda	Farmer
2	Hamid	Haji Kawdidad	Nimruz	Zaranj	Haji Dad Khawda	Farmer
3	Shir Ahmad	Abdul Majid	Nimruz	Zaranj	Haji Dad Khawda	Farmer
4	Nasar Ahmad	Jangain	Nimruz	Zaranj	Gadar Khawaja	Farmer
5	Juma	Habibullah	Nimruz	Zaranj	Suradowk, Haji Alaqa Khan	Mirab, Farmer, People's representative
6	Abdul Qadar	Haji Ghosudin	Nimruz	Zaranj	Haji Ghosudin	Mirab (official)
7	Ghulam Farooq	Mohammad Umar	Nimruz	Zaranj	Paradi	Mirab of Lashkari Nahar and leader of Shura
8	Haji Amanullah	Haji Taj mohammad	Nimruz	Kang	Haji Amanullah	Mirab
9	Haji Sultan Ali	Mulah Hussain	Nimruz	Kang	Darwish	Mirab and Farmer

## Reconnaissance Research and Case Study

### Conflict resolution and cooperation over irrigation water sharing and social interaction deployed during conflict resolution process

In Zaranj district-people use Lashkary Canal for irrigation of their lands-there is not any specific rule regarding water distribution of water currently, and they achieve the different sizes of canals and amount of water. However, the farmers usually share the amount of water among each other according to their land area and reach to agreement in juis. From the past time up to now water was supposed to be distributed proportional to agricultural land. Nonetheless, people violate from this traditional custom, and also this is specially seeming to be performed by powerful individuals, and they make for themselves some illegal canals to get more water than they are supposed to. Nowadays, the local branch of ministry of energy and water has decided to apply the traditional method of water sharing which is based on the amount of area of land. According to this specific method (nitra), water is distributed proportional to area of agricultural area, and to be well prepared for application of this traditional rule, the new canal openings sand gates will be made of concreted and steel to control more the amount of water distributed to the farmers and land owners. Yet, in Kang district, the distribution of water is well arranged, which is managed by elders mirabs of that district. In this district, water is distributed proportional to land area, and for this purpose, they use a time period Mai which is equal to six hours for controlling amount of water.



Figure 2; Interviewing with Ghulam Farooq Paradi (Official Mirab of Zaranj District)



For distribution of water, there are mirabs who, in coordination with branch of ministry of energy and water, are the key actors for sharing and distributing water. There are six Mirabs in charge of organizing and managing water sharing in Zaranj (city center) and Kang districts of Nimruz province, which two of them are working officially and remaining of them are not working officially. Mirabs and conflict resolution manager from the branch of ministry of energy and water are actors in the conflict resolution processes. They play the role of mediator between conflicting parties. Mirabs receive the issues and solve them according to their judgement. In some cases, landowners accept mirabs judgement, but they act according to their own choice. Even in some situations, they refuse the judgement by telling that decision makers are working for a party. In case of unresolved conflicts, they refer it to administration office of province for getting the order and implementation of them. There are some processes regarding conflict resolution at different levels of river or canal system. The first option towards solving problems or conflicts is to convince unsatisfied water consumers which is performed by Mirabs, and in case of further conflicts there are referred to governmental office for discussing and solving the conflicts. Furthermore, in some situations the conflicts are presented to shura (people's gathering) and the final decision is made by unanimous vote of people.



*Figure 3; Initiation of Lashkari Canal (Left Side) which diverts water from Helmand river (Right Side)*

There is not any conflict on water sharing during seasons which have enough water for all lands. On the other hand, conflicts arise during dry seasons, and the main type of conflicts are



on sharing the amount of water between land owners, and differences in elevation of cultivation areas which forbids the watering of lands with high elevation to get sufficient water in comparison with low height land. The level of conflict is between districts and center of province. Some people, who are not satisfied with shared amount of water, open the gates illegally or even they destroy them sometimes.

In addition to human control over distribution and sharing of water, there are some structures have been implemented for regulation of it. There is one dam which has a control gate to control flow of water to Iran. In period of flooding, the gate is opened fully, and in the time of drought they close it to avoid water shortages. There are also gates in openings of canals for distributing water among the land owners and organizing water. However, some people destroy the control gates for achieving more water than their rights, and this happens usually in areas with low security.



*Figure 4; Regulator over Lashkari Canal for controlling flow of water during different seasons*

### **Background and History of Conflicts**

During presidency of Dawood Khan water was distributed by taking advantage of circular canals made from concrete. These structures are deteriorated or destroyed by passing of time, and fortunately these structures are replaced with made from concreted with steel gates at the beginning of these channels and are followed by earthen channels. In the past, there was not

any significant conflict over water sharing among consumers and water was shared in accordance with need of land users; however, in the recent years-probably since seven years ago due to increase in cultivated area, there is some shortage of water which generates these conflicts. Therefore, shortage of water and increase in farming lands are the sources of conflict which causes some prevailing bodies to make unlawful channels for irrigation.



*Figure 5; Circular canals constructed in Lashkari Canal during Dawood Khan presidency*

In the past the water was enough to irrigate all of farming lands and also, and the problem which nowadays these people are faced with dramatic increase in population and agricultural areas that current water cannot irrigate them well. The existing problem with deficiency of water can be solved by removing sediments from Nahari Lashkari and saving of flood water that can be used during drought season. There has been no major conflict other than water sharing except some minor problems in ownership of farming lands.

Nonetheless, in Kang district, the problems in sharing water seems to be significantly less than Zaranj district (center of province). In this area, water is distributed in the best manner by tossing a coin in receiving the turn to irrigate the water, and this is done by mirabs and shuras. People in this district must accept every decision made by mirabs and shura; otherwise they receive penalty, like depriving them from water. There is not any control gate to regulate water, and this situation engenders some minor conflicts between farmers-taking advantage of soil and mud obstacles to direct water where it is supposed to; nonetheless, there clashes are

not too noteworthy to be necessarily referred one of governmental offices for resolving. People in this area request for more water to irrigate their farming lands, and also installing control gates for distributing water among farmers.



*Figure 6; Distribution of water in Kang District. Unlike Zaranj, people do not have control gates for controlling amount of water, and they use such structures from clay or concrete for this purpose*

### **Mobilization of actors and justifications**

Mirabs and local administrative are involved in conflict resolution process, and majority of cases the solved the issue; however, there are some problems that cannot be solved by their involvement. Mirabs are selected by shura of land owners and local branch of ministry of energy and water. And they justify their decision by some special characteristics which differentiate them from the rest such as having recognition and reputation among the people, knowledge of the judgement, and work experience.

The meeting place for solving the conflicts are on the site of conflict; however, in cases of unresolved conflicts, they are discussed to conflict resolution administrator, and even to person in charge of local administration of ministry of energy and water. Furthermore, this Mirab thinks that this is a service for the society and it is beneficial for reconstruction and welfare of country.



*Figure 7; Site visit of Kang district with mirabs and ministry of energy and water staff*

### **Sanction rules**

Currently, water is distributed between Afghanistan and Iran according to 1973 Helmand River Water Treaty, which is the only agreement over water allocation Afghanistan implements. According to this treaty, from 140m<sup>3</sup>/s average flow of Helmand, Iran has the right to get 26m<sup>3</sup>/s. However, the flow of water in this river is not constant and changes widely. According to director of energy and water, journal of 2009 for water distribution law they control water sharing.

In Nimruz province, there is no document regarding problem solving. They take order from head of local administration of ministry of energy and water for solving conflicts. The reason behind not using any document currently that there is not available dealing with conflict resolution for ministry of energy and water. Besides, mirabs are accustomed to applying their experience for justification, and also problem is only with one season which has water and no



specific problem during other season. There was not any specific rule to be applied; however, it is believed applying rules strictly would have positive effects on conflict resolution.

#### **Justification regarding agreements over a decision**

The final decisions are made by Mirabs, and in cases of unaccepted decision, they refer it to local branch of ministry of energy and water and traditional shuras. In majority cases, the conflicting parties are satisfied. In some cases, there is unresolved conflict, the unsatisfied person has more power and wants to dominate the water sharing. Even they threaten life of staff in ministry of energy and water if they apply rules and regulations or they ban giving them water then they supposed to have. If the decision of shura is not applied, the unsatisfied person is responsible for outcome of further conflicts.

#### **Water characteristics and its sources in Nimruz Province**

Helmand river, which initiates from Sia Koh and Parwan Mountains range, passes through north of Kabul and drains in wetland of Iran. Its average flow is 140 m<sup>3</sup>/s; however, its flow changes from year to year and also from one month to another. According to the 1973 Helmand River Treaty, from this amount of water 22m<sup>3</sup>/s is the right of Iran plus 4m<sup>3</sup>/s for brotherly reasons of Afghanistan and Iran which their combinations is 26m<sup>3</sup>/s, and the remaining is used in Afghanistan; however, during floods Afghanistan does not have any structure to preserve water, and in order to avoid destruction of agricultural area they let the water pass to Iran more than the aforementioned amount. This problem engenders other issues like scarcity of water during dry seasons. People during dry seasons even buy water for drinking and using for other purposes. It is said that water is sustained in Iran during floods and it is used during other seasons. People of Nimruz have to buy infiltrated water from Iran due to unavailability of fresh ground water. Before reaching Sistan Wetlands of Iran, Helmand River

flows about 1150 km in Afghanistan, and it approximately irrigated 35000 hectares of



Figure 8; Helmand River path in Afghanistan and Iran

cultivation land in Nimruz Province last year, which about 18000 hectares of this area irrigated from Lashkari Canal.

This river provides abundant water from December to March due to winter and spring seasons' precipitation and this generally includes floods due to heavy rainfall that threaten life and property of residents. In order to avoid casualties from this natural phenomenon, the government asks Iran to open his gates to decrease risks. Because of this reason, farmers cannot use their rights over the water. However, in dry seasons, people close the gates at the end of Lashkari Canal. Additional, there is not any reservoir to save water for letter usage.

Therefore, people can cultivate only one season of year which there is enough water for irrigation.

Helmand river is the key source of water for Nimruz province which nearly provides water for majority of irrigation lands. Additionally, there is one major canal-Lashkari Canal-which diverts water from Helmand river for irrigating cultivation areas in Zaranj district and Kang district, and this canal has several minor sub-canals that vast majority sub-canals are used to water farms separately. These sub-canals divert water from main canal to cultivation areas, and the sequence of watering is from upstream to downstream-left side or right side priority does not exist-which creates problem for downstream water users due to highly watering of upstream lands and also day by day increase in farming lands. Moreover, the lands which has higher elevation then their neighborhood areas are usually faced with lack of usage from main canals and this is more challenging during shortage of water seasons. There is not any specific rule regarding time allocated, filling of area, and depth of land; furthermore, land users simply open their gates as they wish and close these as well. However, government wants to apply method of Nitra which is based on traditional water distribution proportional to size of farming land.

The main crops grown in this province are grains wheat and maize; vegetable, potato, and onion; fruits, grape, watermelon, and melon.

**Rules need to be studied with infrastructure of water**

As every infrastructure needs repairmen and maintenance, the Lashkari Canal is not an exception. After several years passing after its construction, sediments on its bottom disrupts passage of water, and water is moving in much smaller cross sectional area due to this problem. People agree that, nowadays, their major concern is removing sediments from this canal. In attempt to deal with this issue, they collected some amount of money from farmers and land owners proportional to their farming land size; however, not all of the people paid money for solving the issue. People believe that this issue needs to be addressed by



*Figure 9; Illegal gate built on Lashkari Canal's escape way*

government, since it needs vast amount of money. Additionally, people who get water from upstream do not face any problem, like shortage of water, and they neither participate in gatherings for conflict resolution nor in collection of money for sediments removal. Therefore, farmers and land owners who have less water and are dealing with such issues.

Conversely, in Kang district, mirabs and shuras get the land owners to pay for removing sediments and reconstruction of some structures. Individuals who do not follow the law face depriving from the water. It seems that in this area the traditional rules are applied strictly and people must accept them for maintenance of peace. Some other structures which depend on



one person or a smaller group of people, like building or repairing a control gate, are related to individuals themselves.



*Figure 10; Aerial view of Nahri Lashkari (Google Earth)*

**Rules to be studied dealing with water user association**

Currently, water user associations were not involved noteworthy in conflict resolution process of this province. The main activity that was performed by gathering of people last year by so-called water user associations was selecting mirabs for resolving issues and districting water among farmers. Therefore, these associations do not have active members to be involved in water sharing processes, and according to local people they do need any association.

Although last year, ministry of energy and water in Nimruz province initiated to arrange water user associations, participation of farmers and land owners in this assembly was negligible, and people did not show any interest in attending such associations. Their justification in this regard is that there is only one season which has water for use.



*Figure 12; Jui Araf, Dasht Khawabga initiates from Lashkari Canal and irrigates 100 hectare land*



*Figure 11; Sub-canal of Haji Ali Khan, Bainaz initiates from Lashkari Canal irrigates about 140 hectare land*



Figure 14; Sub-canal of Haji Alim, Shuraw initiates from Lashkari Canal and irrigates 357 hectare land



Figure 13; A control installed over Lashkari Canal for controlling flow of water to sub-canal; however the proprietor of jui welded the gate open to avoid its closing by mirabs to get more water than supposed to



Figure 16; Sub-canal of Haji Seyed Ahmad, Palour initiates from Lashkari Canal and irrigates 40 hectare of area



Figure 15; Sub-canal of Haji Rahatullah, Haji Abdul Rahman Ragi takes water from Lashkari Canal for irrigation of 216 hectare of area





Figure 18; Sub-canal of Haji Gulzar, Gumai gets water from Lashkari Canal and irrigates 197 hectare land



Figure 17; Sub-Canal of Haji Abdul Qayume Ghuljai, Saidak initiates from Lashkari Canal and irrigates 960 hectare cultivation area



Figure 20; Sub-Canal of Maldaran initiates from Lashkari Canal irrigates 405 land



Figure 19; Sub-Canal of 9 Haji Zaher, Sardasht initiates from Lashkari Canal irrigates 402 land





Figure 22; Sub-canal of Abdul Rahmand Chakarzai, Qharai Seyed Mohammad from Lashkari Canal waters 600 hectare of land



Figure 21; Sub-canal of Akhandzada Mohammad Umar, Haji Ghafoor Zoori gets water from Lashkari Canal irrigates 120 hectare of land



Figure 24; Sub-canal of Kalokhak from main canal If Lashkari irrigates 131 hectare area



Figure 23; Sub-canal of Haji Yaseen, Jui Amnient Mali irrigates 60 hectare area



Figure 26; Sub Canal of Ghasudin, Qharia Mohammad Hassan initiates from Lashkari Canal and irrigates 90 hectare o flan



Figure 25; Sub-canal of Haji Taher Arab gets water from Lashkari Canal irrigates 100 hectare area



Figure 28; Sub-canal of Mula Samad Nurzai irrigates 30 hectare



Figure 27; Sub-canal of Haji Aslam, Walid Darahi irrigates 200 hectare





Figure 31; Sub-canal of 18 Lal Khan, Zaman Khan, Saya Chashman irrigates 124 hectare area



Figure 29; Sub-canal of Dahmarda initiates from Lashkari Canal irrigates 120 hectare of cultivation area



Figure 30; Sub-canal of Marangi Dako initiates from Lashkari Canal and irrigates 4354 hectare of cultivation land



Figure 34; Sub-canal of Sawfi Noorali, Hassan Abad irrigates 600 area



Figure 33; Sub-canal of Shirabad irrigates 3482 hectare area



Figure 32; Sub-canal of Haji Mussa Khan, Jui Sarkhdak initiates from Lashkari Canal irrigates 1600 land





Figure 36; Sub-canal of Haji Khadadad, Nadali irrigates 80 hectare land



Figure 35; Sub-canal of Haji Sharif Baidal, Tajika irrigates 200 hectare (from Lashkari Canal)



Figure 38; Sub-canal of Haji Rasoul waladi Khadadad irrigates 50 hectare ( from Lashkari Canal)



Figure 37; Sub-canal of Najib, Naim, Qharia Mula Jamal Yausaf initiates from Lashkari Canal irrigates 182 hectare area



Figure 40; Sub-canal of Haji Qhadus, Haji Katab initiates from Lashkari Canal irrigates 42 hectare land



Figure 39; Sub-canal of Haji Halim Walidi Noorullah initiates from Lashkari Canal irrigates 240 hectare land



Figure 42; Sub-canal of Haji Abdul Qayume Ghuljai, Panjda initiates from Lashkari Canal irrigates 2800 hectare land



Figure 41; Sub-canal of Jui Haji Akhtar Noorzai initiates from Lashkari Canal irrigates 800 hectare cultivation area



Figure 43; Sub-canal of Mijar initiates from Lashkari Canal and irrigates 50 hectare area



Figure 44; Area in Zarang district cultivated wheat



Table 4; List of water users and area of irrigation from Nahri Lashkari

No.	Name of people use sub-canal for irrigation	Irrigation area (Jireeb)	Irrigation area (Hectare)
1	Joij Araf, Dasht Khawabga	500	100
2	Haji Ali Khan, Bainaz	700	140
3	Haji Alim, Shuraw	1785	357
4	Haji Seyed Ahmad, Palour	200	40
5	Haji Rahatullah, Haji Abdul Rahman Ragi	1080	216
6	Haji Gulzar, Gumai	987	197.4
7	Haji Abdul Qayume Ghuljai, Saidak	4800	960
8	Maldaran	2024	404.8
9	Haji Zaher, Sardasht	2010	402
10	Abdul Rahmand Chakarzai, Qharai Seyed Mohammad	3000	600
11	Akhandzada Mohammad Umar, Haji Ghafoor Zoori	600	120
12	Kalokhak	655	131
13	Haji Yaseen, Jui Amnient Mali	300	60
14	Jui Ghasudin, Qharia Mohammad Hassan	450	90
15	Haji Taher Arab	500	100
16	Mula Samad Nurzai	150	30
17	Haji Aslam, Walid Darahe	1000	200
18	Lal Khan, Zaman Khan, Saya Chashman	620	124
19	Dahmarda	600	120
20	Marangi Dako	21772	4354.4
21	Sawfi Noorali, Hassan Abad	3000	600
22	Shirabad	17411	3482.2
23	Haji Mussa Khan, Jui Sarkhdak	8000	1600
24	Haji Khadadad, Nadali	400	80
25	Haji Sharif Baidal, Tajika	1000	200
26	Haji Rasoul waladi Khadadad	250	50
27	Najib, Naim, Qharia Mula Jamal Yausaf	910	182
28	Haji Qhadus, Haji Katab	210	42
29	Haji Halim Walidi Noorullah	1200	240
30	Haji Abdul Qayume Ghuljai, Panjda	14000	2800
31	Jui Haji Akhtar Noorzai	4000	800
32	Mijar	250	50
	Total Area	94364	18872.8



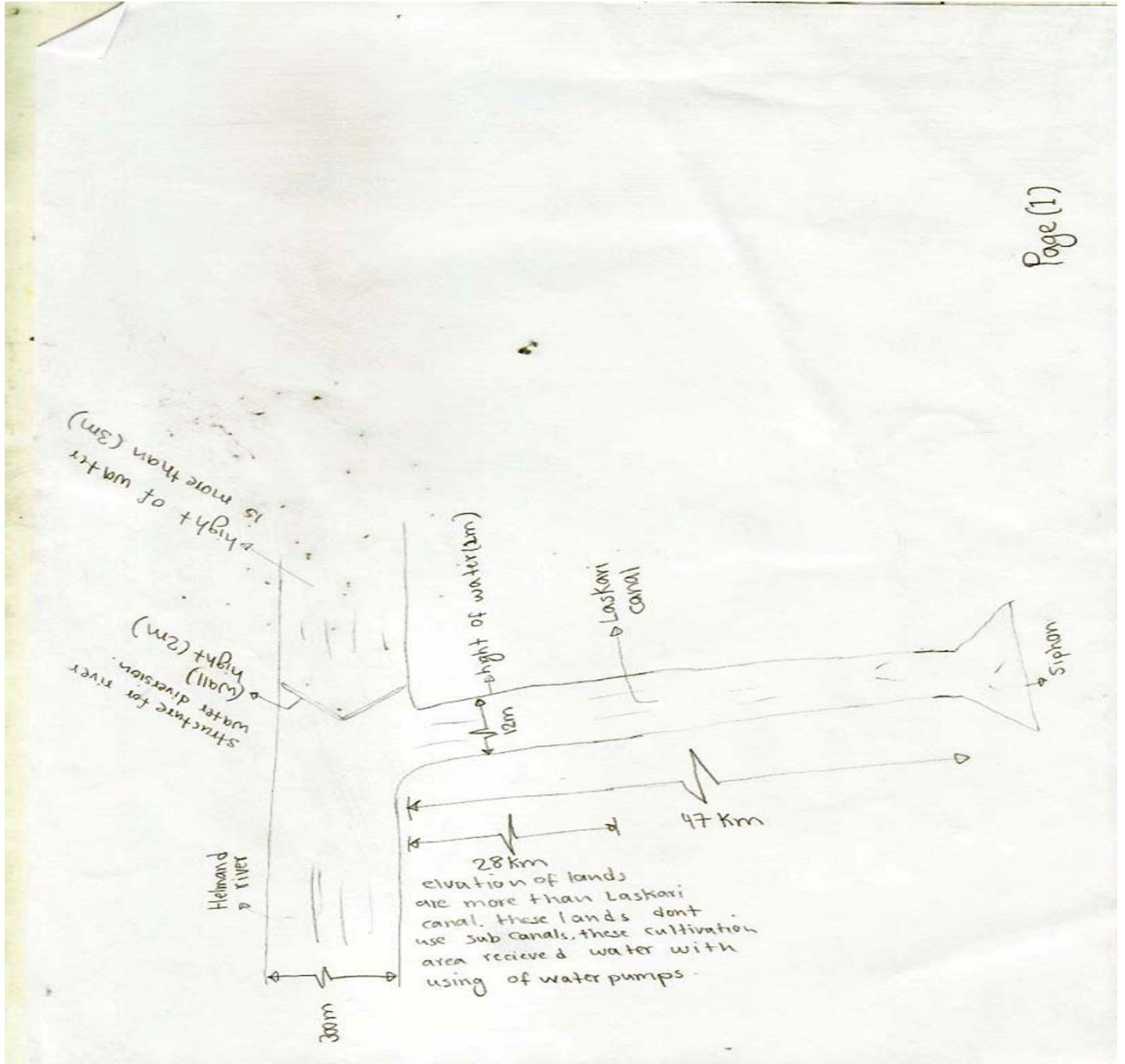


Figure 45; Site sketch distribution of water from Lashkari Canal to sub-canal 1

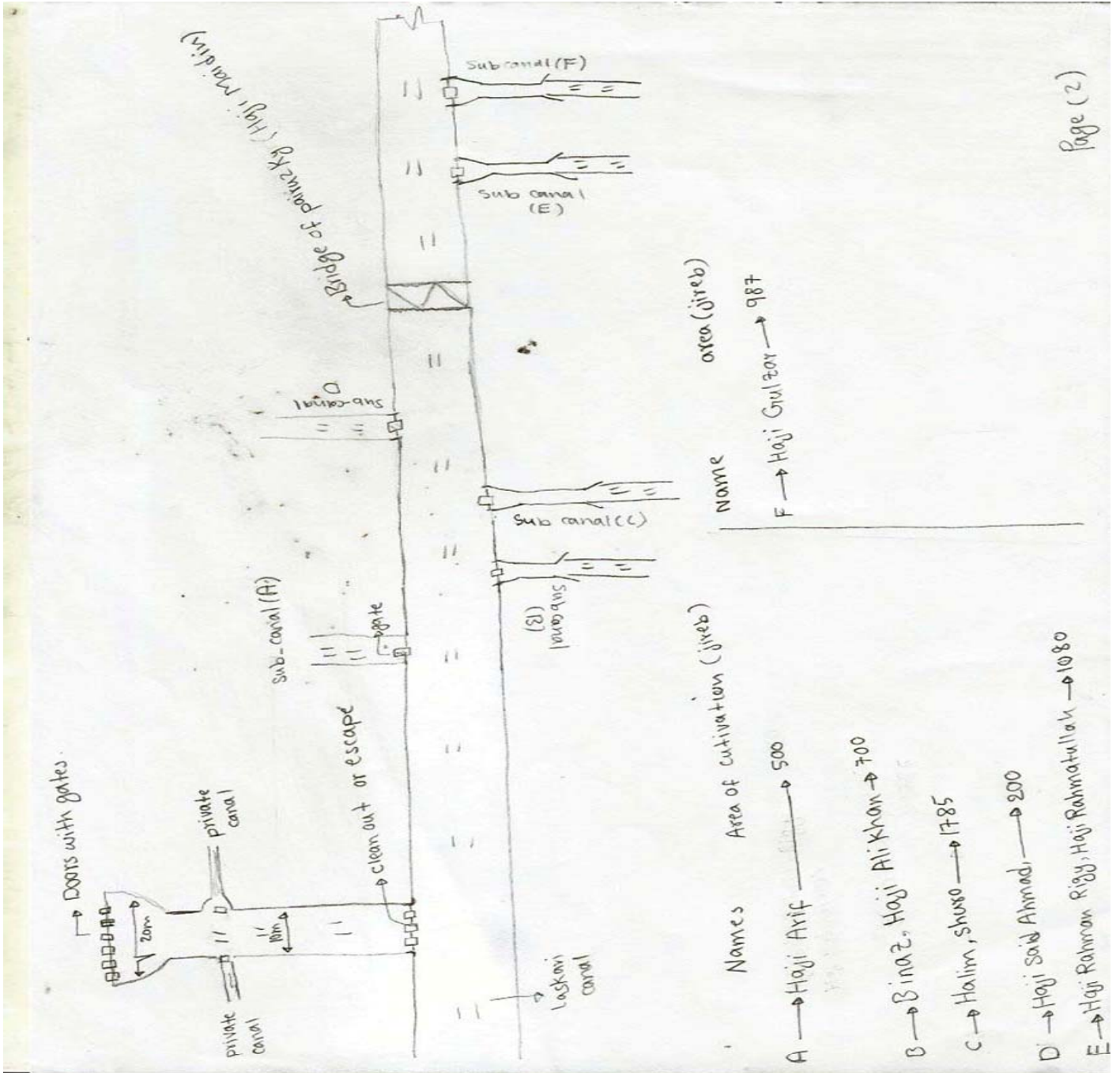


Figure 46; Site sketch distribution of water from Lashkari Canal to sub-canals 2

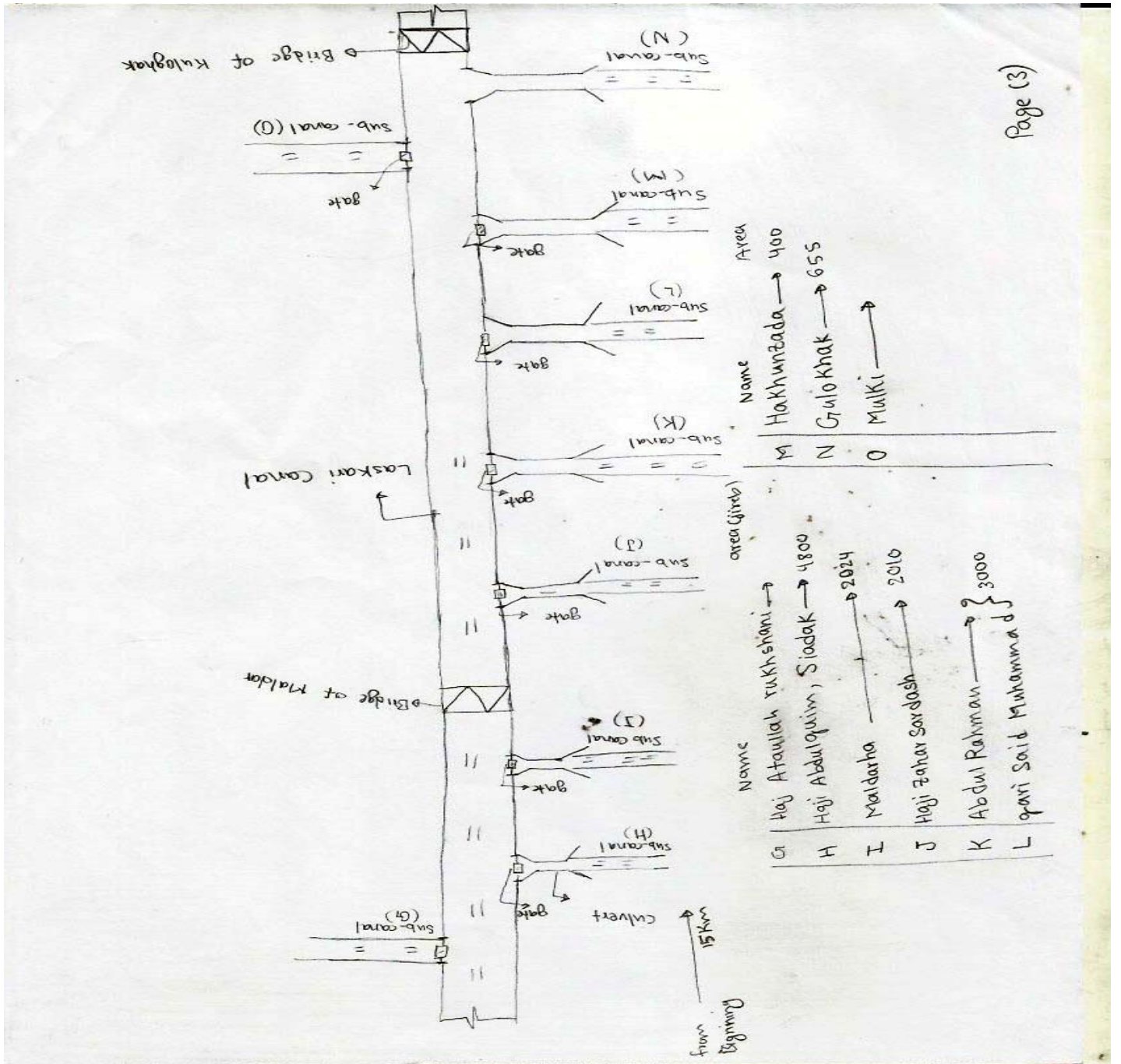


Figure 47; Site sketch distribution of water from Lashkari Canal to sub-canals 3



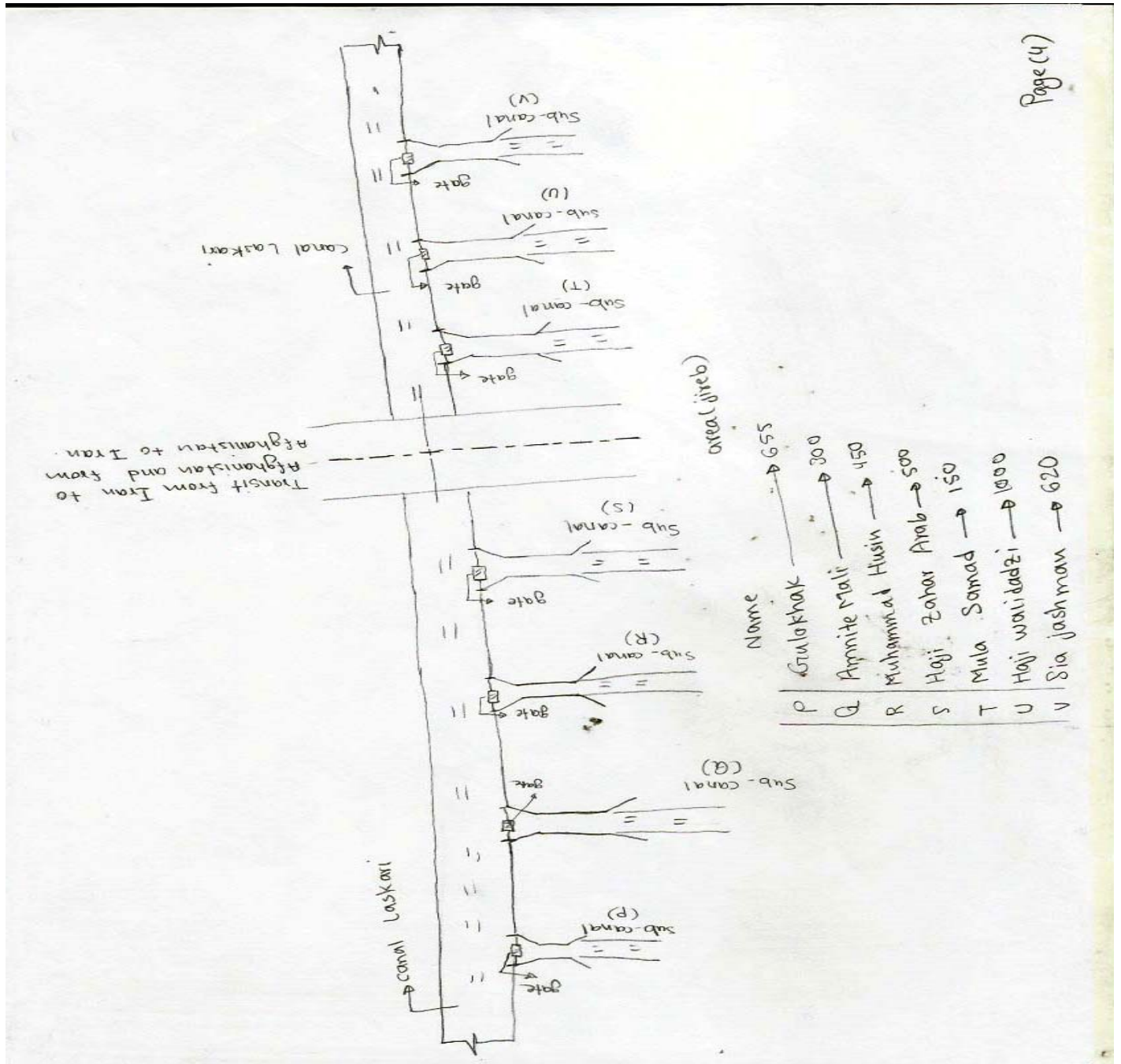
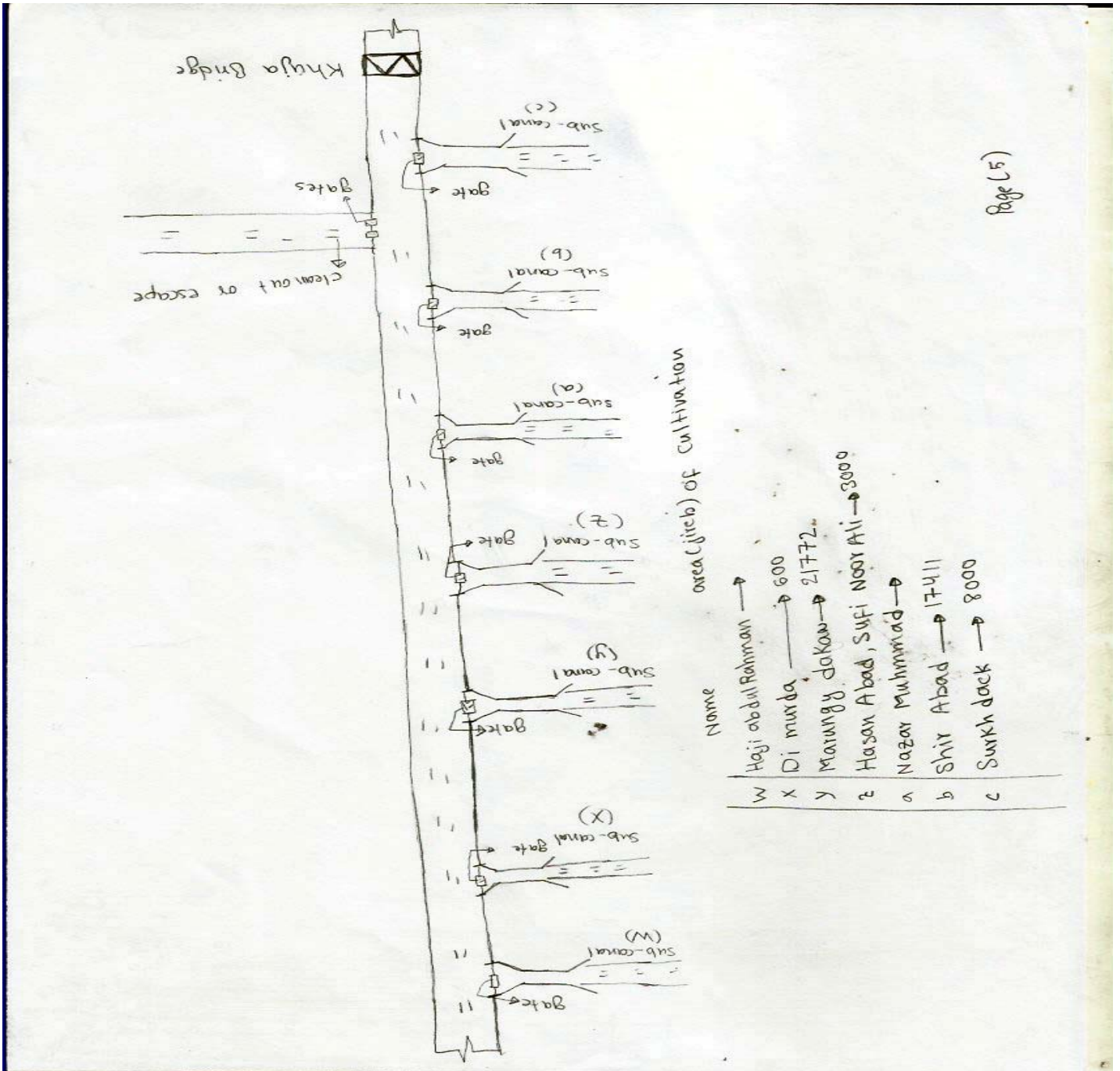


Figure 48; Site sketch distribution of water from Lashkari Canal to sub-canals 4



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Figure 49; Site sketch distribution of water from Lashkari Canal to sub-canals 5

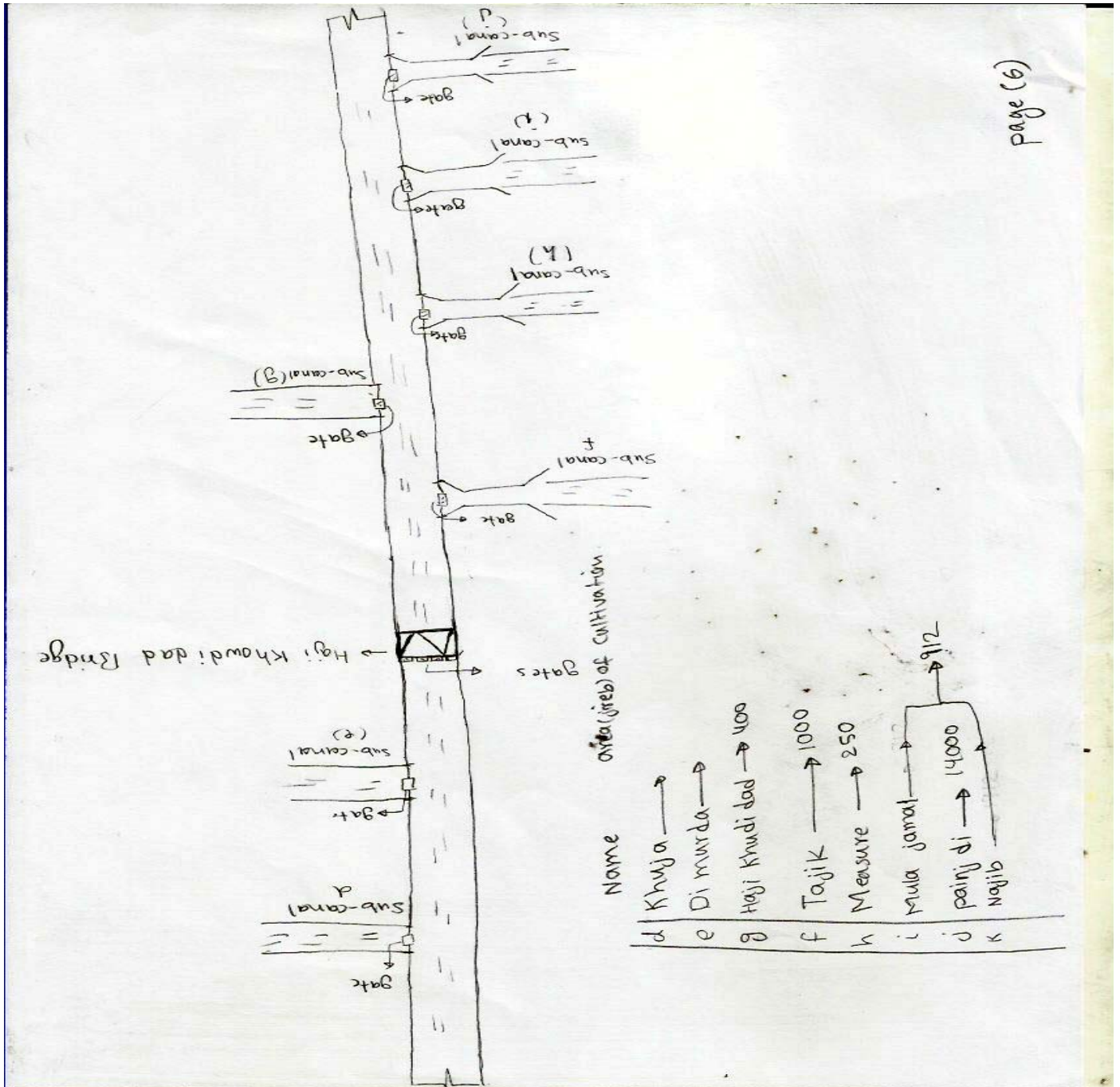


Figure 50; Site sketch distribution of water from Lashkari Canal to sub-canals 6



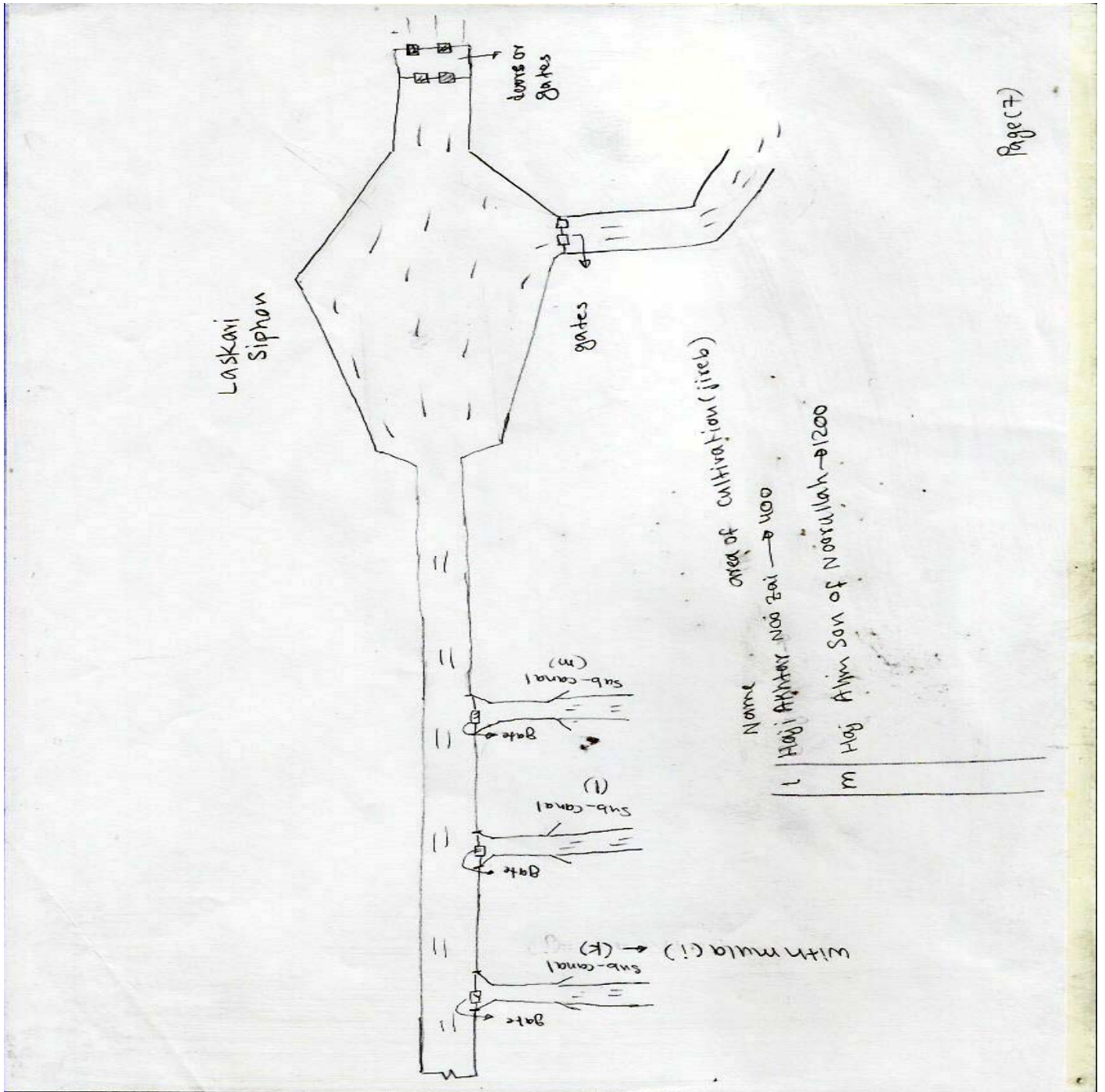


Figure 51; Site sketch distribution of water from Lashkari Canal to sub-canals 7

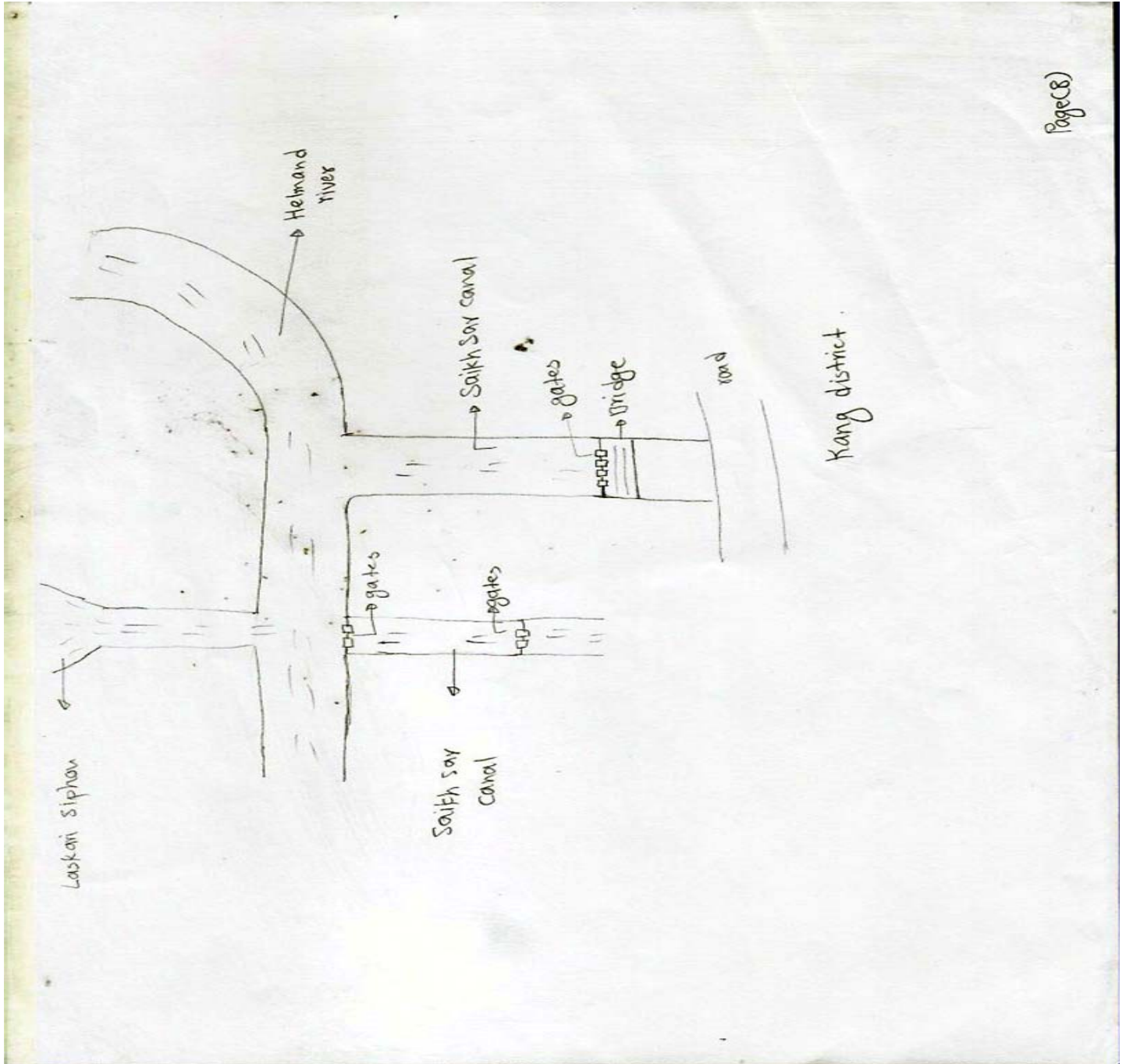


Figure 52; Termination of Lashkari Canal in Kang district where it joins Helmand River

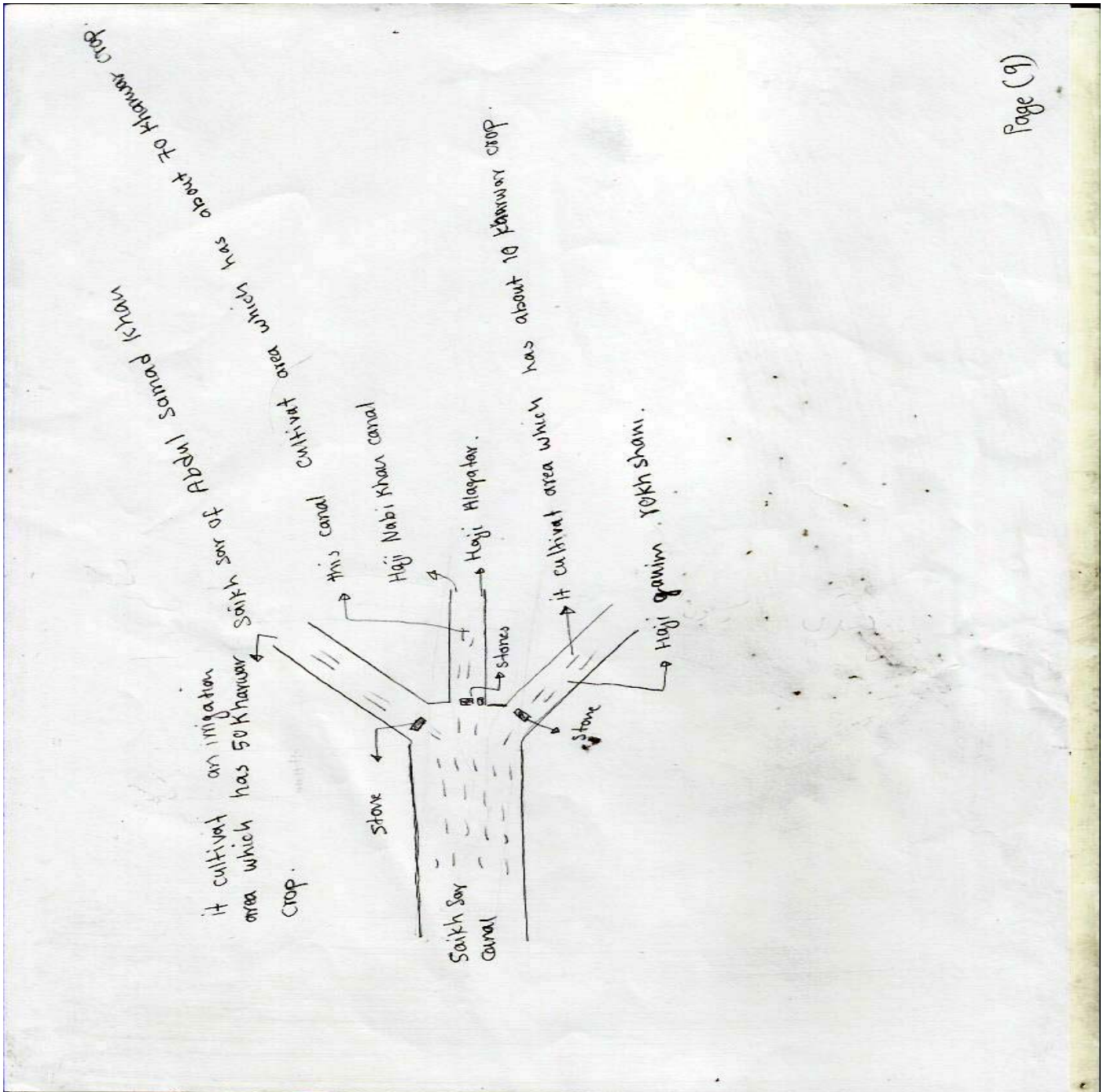


Figure 53; Sample of water sharing from canal to juis in Kanad district

## **Outcomes and Author's Suggestions**

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Despite abundant water from Helmand River, people of Nimruz do not have access to sufficient water during the year. Majority amount of water in Helmand River has seasonal and flooding nature, which provides water during that season which destroys farming lands, and people face scarcity of water during dry season. Therefore, they have to buy water with high prices from other sources even from Iran that stores water from Helmand River for this purpose. This problem seems more severe due to lack of fresh water in ground. Ground water in this province is salty and cannot be used for drinking purposes.

As the local people insist, the mechanism for storing water and for providing of filtered water in this area seems necessary. Currently, people look forward for immediate implementation of projects which paves the way for them to take maximum advantage of Helmand River. People in this province mainly rely on agricultural occupation, and other professions and occupation seems trivial. Hence, they insist that they just want water for improvement, wellbeing, and peace keeping.

In order to deal with such issues, one step is to increase the number of canals for transportation of water in agricultural areas. Nowadays, there is not sufficient number of canal for this purpose. Additionally, already built canals half-filled with sediments, which cannot convey the full capacity water for people.

Although the current conflicts over water sharing and distribution must not be neglected, the source of conflicts is due of lack of water. Additionally, water is not distributed squarely, and farmers complain in this case. The traditional system of water distribution which is called Nitra is famous and acceptable for people is not implemented in this area. For application of this system, government needs to take action and make a special plan for being successful.

## Contact Information

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