Appendix-3

List of Personnel related to the Study in Egypt

Ministry of Public Works and Water Resources

Mr. Abdllatif M. Askar	1st. Under Secretary of State, President, MED
Mr. Mohamed Ali El Dessouky	Head of Central Dept. for Project Sector, MED
Mr. Soliman Ishak Abdel Messieh	General Director of Upper Egypt Projects
Mr. Mohamed Abdel Rahman	Director of Floating Pumping Station Upper Egypt Aswan
Mr. Mohamed Khalil	Director of Planning and Flow up, MED
Mr. Kamel Abo El Seoud	General Director of Technical Bureau, MED
Mr. Mohamed Aboul Fotouh	Director of Studies and Specification Dept., MED
Mr. Victor Fares Ishak	General Director of Specification Dept., MED
Mr. Mohamed Ali Gaafar	Director, Upper Egypt Projects
Mr. Karam Abbas	Mechanical Office
Mr. Hamdy Farrag	Engineer, MED
Mr. Mohamed Abdallah	Deputy Director of Floating Pumping Station Upper Egypt Aswan
Mr. Khalid Mohdy	Irrigation Engineer, Aswan District
Mr. Abdel Hafez Taha	Technical office, Irrigation Dept.
Mr. Rafat Fahmy	Executive director, Irrigation Dept. Aswan
Mr. Hassan Osman	Irrigation Engineer, Irrigation Dept. Eduf
Mr. Alaa Eld in Ibrahim	Irrigation Engineer, Irrigatiom Dept. Eduf
Hirishi Egami	Technical Advisor, MPWWR

Ministry of International Cooperation

Mr. Zahian M. Abu Zeid	General Director, Asian Dept. MOIC
Mr. Mohsen Sadek	Director of Japan Dept.

Appendix-4

MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY ON THE PROJECT
FOR REHABILITATION OF FLOATING IRRIGATION PUMP STATIONS
IN UPPER EGYPT (PHASE 2) IN THE ARAB REPUBLIC OF EGYPT

In response to a request from the Government of the Arab Republic of Egypt, the Government of Japan decided to conduct a Basic Design Study on the Project for Rehabilitation of Floating Irrigation Pump Stations in Upper Egypt (Phase 2) (hereinafter referred to as " the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA).

The JICA sent to Egypt a study team headed by Mr. Kenji IWAGUCHI, Managing Director of Grant Aid Study and Design Department, JICA, and is scheduled to stay from December 4, 1995 to January 8, 1996.

The team held discussions with the officials concerned of the Government of the Arab Republic of Egypt and conducted a field survey at the study area.

In the course of the discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed further works and prepare the Basic Design Study Report.

Cairo, December 17, 1995

Mr. Kenji IWAGUCHI
Leader
Basic Design Study Team
JICA

Eng. A. M. ASKAR
1 St. Under Secretary of State
Head of Mechanical and Electrical
Department
Ministry of Public Works and
Water Resources

Witnessed by

ZAHIA M. ABU ZEID
General Director
Asian Department
Ministry of International Cooperation

ATTACHMENT

1. Objective

The objective of the Project is to secure reliable and firm water sources for farmland irrigation so as to contribute to stable agricultural production and thus to self-sufficiency of food through procurement of equipment and materials for rehabilitating the floating pump stations.

2. Project Sites

The Project sites, of which the location map is shown in Annex-1, are listed below.

1) Gezirat Ballola
2) Gezirat Al-Arab
3) Kubania
4) Sahel Abu Rish
5) Sahel El-Kelh
6) Wadi El Kubania
7) El-Sharunia
8) El-Owenia
9) Baklous
10) Sahel Fares
11) El Karabia

3. Responsible and Executing Agency

The Ministry of Public Works and Water Resources (MPWWR) is responsible for the administration and execution of the Project (see Annex-2)..

4. The Items requested by Mechanical & Electrical Department, the Ministry of Public Works and Water Resources, the Arab Republic of Egypt

After discussions with the Team, the following items were finally requested by the Egyptian side. However, the final items will be decided after further studies.

1) Pumps
2) Motors
3) Priming Pumps and Motors
4) Valves
5) Pipes and Hoses for pumping suction and delivery up to discharge tower
6) Switchboards

7) Power and Control Cables between panel to motors
8) Barges
9) Spare Parts

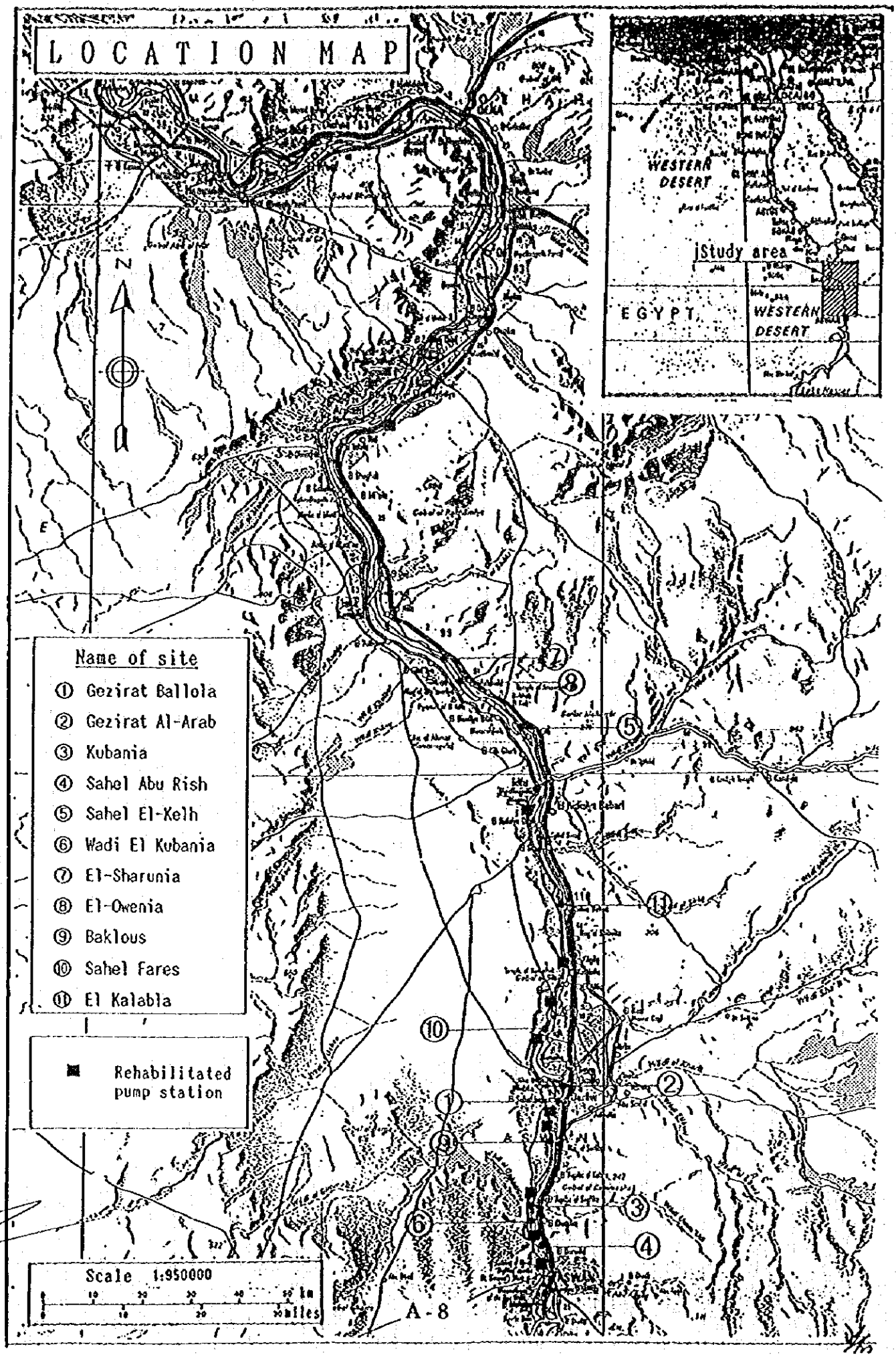
5. Japan's Grant Aid System

1) Mechanical & Electrical Department, the Ministry of Public Works and Water Resources, the Arab Republic of Egypt has understood the system of Japanese Grant Aid explained by the Team (see Annex-3).
2) Mechanical & Electrical Department, the Ministry of Public Works and Water Resources, the Arab Republic of Egypt will take the necessary measures, described in Annex-4 for smooth implementation of the Project, on condition that Japan's Grant Aid is extended to the Project.

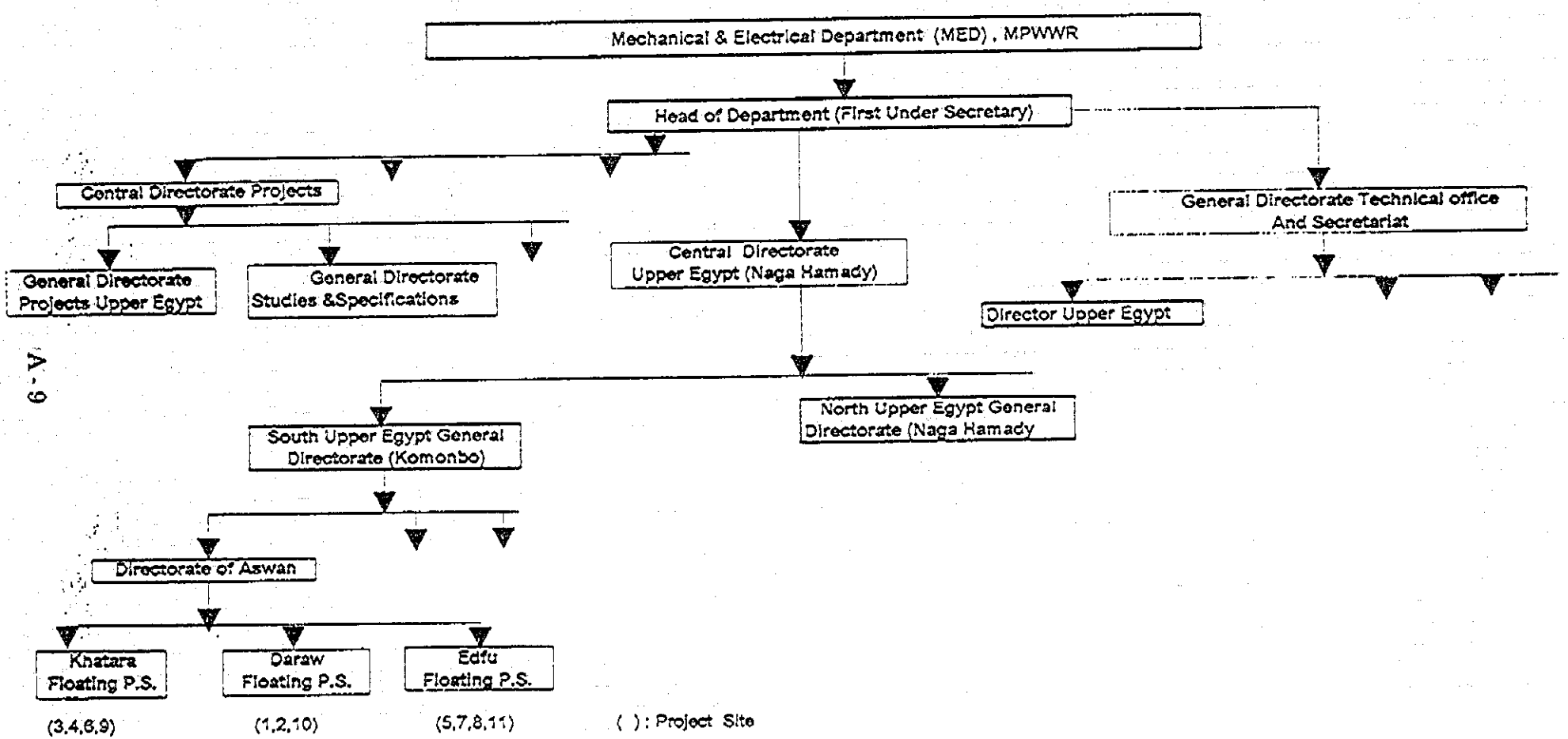
6. Schedule of the Study

1) The Consultants will proceed to further studies in Egypt until January 8, 1996.
2) Based upon the Minutes of Discussions and technical examination of the study results, JICA will complete the final report and send it to the Government of Egypt in April, 1996.

Annex-1


LOCATION MAP
WESTERN DESERT
Study area
EGYPT
WESTERN DESERT
N
Name of site
① Gezirat Ballola
② Gezirat Al-Arab
③ Kubania
④ Sahel Abu Rish
⑤ Sahel El-Kelh
⑥ Wadi El Kubania
⑦ El-Sharunia
⑧ El-Owenia
⑨ Baklous
⑩ Sahel Fares
⑪ El Kalabla
Rehabilitated pump station
Scale 1:950000
miles

Annex-2 ORGANIZATION CHART OF THE PROJECT



Annex-3

Japan's Grant Aid System

1. Grant Aid Procedures

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).
Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows;

a) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
c) Confirmation of items agreed on by both parties concerning the basic concept of the Project.
d) Preparation of a basic design of the Project
e) Estimation of costs of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid Project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design

Study and write(s) a report, based upon terms of reference set by JICA. The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality).

5) Necessity of "Verification"

(1) The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(2) Tender results, names of tenderes, name of awarded tender and its tendered price, will be provided for public reading by Government of Japan after the verification of contract.

6) Undertakings required of the Government of the Recipient Country
In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

(1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.

(2) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.

(3) To secure buildings prior to the procurement in case the installation of the equipment is needed.

(4) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.

(5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.

(6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) "Proper Use"
The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(8) "Re-export"
The products purchased under the Grant Aid should not be re-exported from the recipient country.

(9) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

Annex-4

Recommendation for Undertakings by the Government of the Arab Republic of Egypt in case Japan's Grant Aid is extended

1) To secure the land for the Project and to clear the site as needed before arrival of the equipment and materials for rehabilitating the floating pump stations.

2) To provide facilities for distribution of electricity and other incidental facilities to the Project sites.

3) To ensure prompt unloading, customs clearance of the goods for the Project at the port of disembarkation in the Arab Republic of Egypt and prompt internal transportation therein of the products purchased under the Grant Aid.

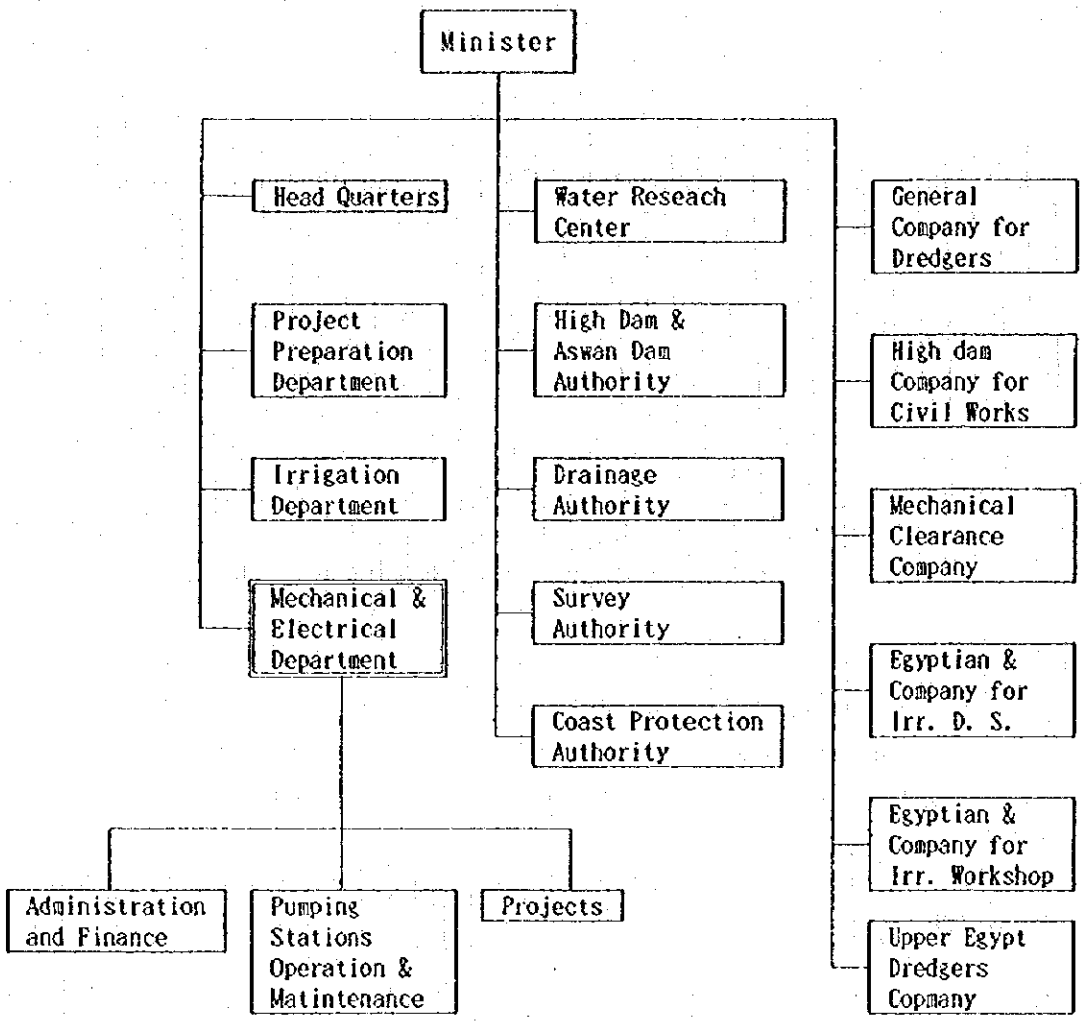
4) To secure, with respect to the supply of the products and services under the verified contracts, that Japanese nationals shall not be subject to any customs duties, internal taxes and other fiscal levies which may be imposed in the Arab Republic of Egypt.

5) To accord Japanese nationals whose services may be required in connection with the supply of products and services under the verified contracts such facilities as may be necessary for their entry into the Arab Republic of Egypt and stay therein for the performance of their work in accordance with the relevant laws and regulations of the Arab Republic of Egypt.

6) To maintain and use properly and effectively the equipment and materials purchased under the Grant Aid.

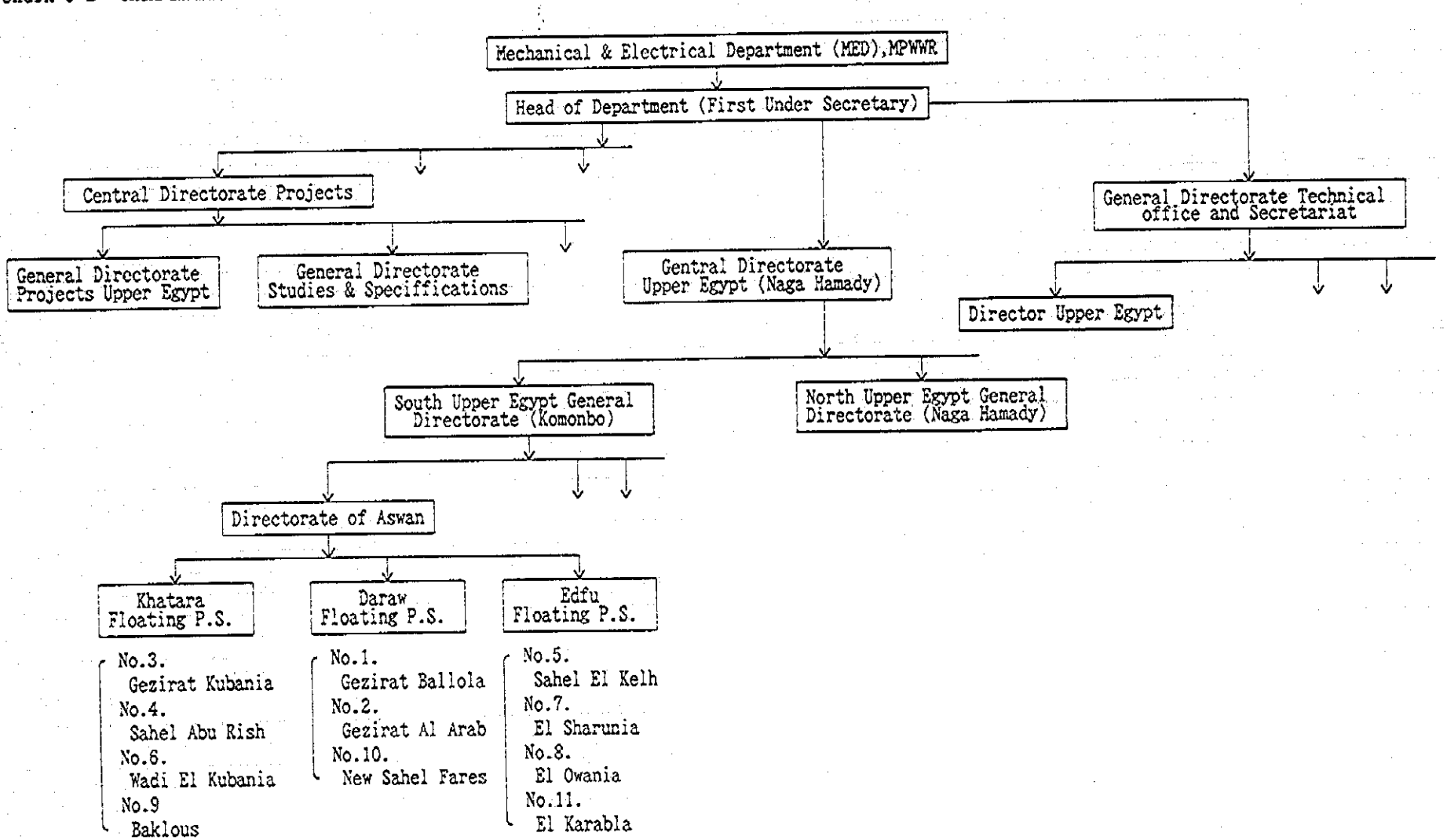
7) To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the execution of the Project.

Appendix 5-1 Organization of MPWWR



: Project Implementing Agency

Appendix 5-2 ORGANIZATION CHART OF THE PROJECT



Appendix 5-3 PUMPING STATIONS REHABILITATION PROJECT
FINANCED BY ISLAMIC BANK
(STATUS JUNE 1993)

Ser.No.	STATION NAME	GOVERNORATE	HYDRAULIC DATA			REQUIREMENTS
			NO.OF UNITS	DIS/UNIT cu m/sec	ST. LEFT m	
1	HANOUT	DAKAMLIEA	3	5	3.3	Construction of additional P.S.with total capacity of 5m³/sec(2×2.5m³/sec).
2	EL-NILE	EDFU	5	1.55	10.4	Construction of an new P.S.with total capacity of 7.5m³/sec(3×2.5m³/sec).
3	RADISIA(1) RADISIA(2)	EDFU EDFU	4 4	1.07 1.04	14 19	Construction of an new P.S.with total capacity of 10m³/sec(4×2.5m³/sec) and manometre head 26m.
4	DER EL-MAYMOUN	BANY SWIEF	2	0.5	7.2	Construction of an new P.S.with total capacity of 1m³/sec(2×0.5m³/sec).
5	EL-HAGARA	BANY SWIEF	2	0.5	7	Construction of an new P.S.with total capacity of 1m³/sec(2×0.5m³/sec).
6	EL-MALARIA 1	ISMILIA	2	0.25	2	Replacement of mech. & elec. equipment with capacity (2×0.5m³/sec) & supply S.P.
7	EL-MALARIA 2	ISMILIA	3	0.35	3	Replacement of mech. & elec. equipment with capacity (3×0.5m³/sec) & supply S.P.
8	EL-MAX	ELEX	6	12.5	4	Replacement of mech. & elec. equipment and repair of the pump house.
9	EL-TABYA	ELEX	5	8	5.5	Construction of an new secrew P.S. with total capacity of 40m³/sec(8×5m³/sec).
10	BAHR EL-HAYAR	EL-FAYOUM	2	0.5	6.5	Replacement of mech. & elec. equipment with capacity (2×1m³/sec) & repair of building.
11	EL-RAKBA	ASWAN	2	0.5	2	Replacement of mech. & elec. equipment with capacity (3×1m³/sec).
12	IBRIM	ASWAN	2	2.5	5.5	Replacement of mech. & elec. equipment & repair of building.

Appendix 5-4 1994(1,July)—1995(30,June)

Site No.	Station Name	No.of operating hours	Discharge (m^3)	Cost of Maintenance (L.E)	Cost of consumption of electric power and fuel	Wages & sallary (L.E)	Cost of oils & grease (L.E)	Inspection & Repairing cost	Total cost (L.E)	Cost of irrigation per feddan (L.E)	Area served
1	Gezirat Ballola	3,116	3,926,160	3,504	7,056	30,068	70	3,940	44,638	178	250
2	Gezirat Al-Arab	844	1,063,440	2,740	3,208	26,728	50	2,700	35,426	322	110
3	Kubania	2,250	2,025,000	4,200	18,720	17,142	70	4,930	45,062	225	200
4	Sahel Abu Rish	7,582	20,471,400	7,320	53,849	37,556	170	9,374	108,269	188	575
5	Sahel El Kelh	1,809	3,256,200	6,302	19,320	19,234	200	6,320	51,376	128	400
6	Wadi El-Kubania	3,594	6,469,200	8,420	18,940	20,396	432	8,340	56,529	94	600
7	El-Sharunia	4,547	8,184,600	12,821	11,928	33,724	316	8,730	67,519	84	800
8	EL-Owenia	4,210	7,578,000	11,745	23,262	35,840	364	9,850	81,061	108	750
9	Baklous	346	918,000	4,500	5,300	4,596	70	4,820	19,280	192	100
11	El Karabla	2,322	4,179,600	5,603	20,320	25,225	120	7,632	58,900	147	400

1993(1,July)－1994(30,June)

Site No.	Station Name	No.of operating hours	Discharge (m^3)	Cost of Maintenance (L.E)	Cost of consumption of electric power and fuel	Wages & sallary (L.E)	Cost of oils & grease (L.E)	Inspection & Repairing cost	Total cost (L.E)	Cost of irrigation per feddan (L.E)	Area served
1	Gezirat Ballola	2,498	3,147,480	3,200	6,452	25,068	118	6,200	46,038	184	250
2	Gezirat Al-Arab	1,036	1,305,360	4,320	4,351	16,728	59	5,300	30,758	279	110
3	Kubania	2,498	2,248,200	4,560	6,122	19,854	45	3,202	33,783	169	200
4	Sahel Abu Rish	7,435	20,074,500	8,720	55,140	55,700	140	10,120	129,820	225	575
5	Sahel El Kelh	1,440	2,592,000	6,302	9,437	17,817	299	3,400	37,555	94	400
6	Wadi El-Kubania	3,816	6,868,800	5,920	22,968	24,327	30	7,820	61,065	102	600
7	El-Sharunia	4,505	8,109,000	9,881	12,936	31,308	320	7,320	61,765	76	800
8	EL-Owenia	4,624	8,323,200	10,618	32,184	32,188	384	8,993	84,337	112	750
9	Baklous	300	810,000	5,300	2,300	2,000	70	4,980	14,650	146	100
11	El Karabla	2,333	4,199,400	4,960	16,381	21,295	185	5,940	48,731	122	400

1992(1,July)—1993(30,June)

Site No.	Station Name	No.of operating hours	Discharge (m^3)	Cost of Maintenance (L.E)	Cost of consumption of electric power and fuel	Wages & sallary (L.E)	Cost of oils & grease (L.E)	Inspection & Repairing cost	Total cost (L.E)	Cost of irrigation per feddan (L.E)	Area served
1	Gezirat Ballola	2,403	3,027,780	3,590	7,748	25,068	90	2,500	38,996	155	250
2	Gezirat Al-Arab	725	913,500	2,370	3,989	16,728	50	3,700	26,837	243	110
3	Kubania	2,123	1,910,700	2,140	9,200	18,879	29	2,120	32,368	161	200
4	Sahel Abu Rish	7,466	20,158,200	7,049	69,432	45,687	65	9,940	132,173	229	575
5	Sahel El Kelh	1,654	2,977,200	3,251	8,931	9,345	280	2,000	23,807	59	400
6	Wadi El-Kubania	3,361	6,049,800	7,450	12,896	22,922	40	4,670	47,976	79	600
7	El-Sharunia	4,550	8,190,000	12,115	18,014	29,048	223	6,820	66,220	82	800
8	EL-Owenia	5,183	9,329,400	10,123	50,591	33,287	353	8,740	103,094	127	750
9	Baklous	320	864,000	1,200	2,051	21,920	50	3,200	11,421	114	100
11	El Karabla	2,536	4,564,800	6,321	16,711	17,638	145	3,220	44,035	110	400

APPENDIX 6-1 LIST OF PUMP STATIONS AND LOCATIONS IN ASWAN GOVERNORATE

Table A6-1-1 List of Pump Stations in Aswan Governorate (1/2)

Pump Station		Purpose of Pump Station			Type	Rehabilitation	
No.	Name of Pump Station	Main/ Booster	Irrgation Area (fed)	Drainage Area (fed)	of Pump Station	Phase-I No.	Phase-II No.
1	Gezirat Aswan	main	50		fixed		
2	Arb Aswan Kebli Sahel	main	325		fixed		
3	Sahel Abu Rish	main	460		floating		4
4	Gharb Aswan Baharia	main	225		floating	8	
5	Gezirat Behrif	main	300		floating	10	
6	Wadi El-kubania	main	330		floating		6
7	Alhatara	main	1,480		floating		
8	Gezirat Alkobania Alkeblia	main	80		floating		
9	Sahel Alakaba Kebli	main	250		floating		
10	Gezirat Kubania	main	150		floating		3
11	Sahel El-Kobania	main	300		floating	4	
12	Sahel Alakab Bahari	main	300		floating		
13	El-Sheikh Fadl	main	310		floating	1	
14	El-Twisa	main	290		floating	7	
15	Daraw Rey	main	3,800		fixed		
16	Al Twisa Rey	main	30,210		fixed		
17	Adendan Rey	booster	3,400		fixed		
18	Blana Rey	booster	26,870		fixed		
19	Kstal Fera	booster	600		fixed		
20	Kostal	booster	23,170		fixed		
21	Keret El Sofla	booster	14,400		fixed		
22	Keret El Alia	booster	900		fixed		
23	Gezirat Ballola	main	300		floating		1
24	Al Rakaba	booster	120		fixed		
25	Bamban	main	4,000		fixed		
26	Gezirat Al-Arab	main	80		floating		2
27	Daraw Sarf	main		non-ope.	fixed		
28	Gezirat Al Mansoria	main	1,200		fixed		
29	Alberba Sarf	main	1,160		fixed		
30	Sahel Maniha	main	600		floating		
31	Albiara Al Gadida	main	11,318		fixed		
32	Albiara Al Kadima	main	27,850		fixed		
33	Gezirat Maniha Almostageda	main	70		floating		
34	Ekliat Rey	main	2,075		fixed		
35	Ekliat Sarf	main		non-ope.	fixed		
36	Gezirat Fares	main	250		floating	9	
37	Sahel Fares	main	1,000		floating	5	
38	Abem	booster	3,200		fixed		
39	Aeniba	booster	2,900		fixed		
40	Al Daka	booster	2,840		fixed		
41	Wadi Al Arab	booster	9,410		fixed		
42	Korta	booster	19,215		fixed		
43	El Salsala	main	22,105		fixed		
44	Selwa Keble	main	1,450		fixed		
45	Selwa Bari	main	2,050		fixed		
46	Sahel El-Hamam	main	200		floating	2	
47	Gezirat Selwa Kebli	main	100		floating		
48	Gezirat Selwa El Mostageda	main	35		fixed		
49	Al Rakikin Sahel	main	75		floating		
50	El-Karabla	main	150		floating		11

Table A6-1-1 List of Pump Stations in Aswan Governorate (2/2)

Pump Station No.	Name of Pump Station	Purpose of Pump Station: Main/ Booster	Irrgation Area (fed)	Drainage Area (fed)	Type of Pump Station	Rehabilitation: Phase-I No.	Phase-II No.
51	Al Ramadi	main	9,680		fixed		
52	Al Radisia	main	3,600		fixed		
53	Gezirat Al Sarage	main	50		floating		
54	Ganoob Al Radisia (1)	booster	250		fixed		
55	Ganoob Al Radisia (2)	booster	0		fixed		
56	Gezirat Al Malkia	main	650		floating		
57	Atia Shenoda	main	60		floating		
58	Al Radisia Shamal (2)	booster	500		fixed		
59	Al Radisia Shamal (1)	booster	250		fixed		
60	Wadi Al Radisia (3)	booster	1,540		fixed		
61	Wadi Al Radisia (2)	booster	5,700		fixed		
62	Wadi Al Radisia (1)	main	5,950		fixed		
63	El Foza Al Kblia	main	75		fixed		
64	El Foza Al Wsta	main	50		fixed		
65	El-Foza El-Baharia	main	75		floating	3	
66	Blowher	main	2,850		fixed		
67	Idfu Al Kala & Al Shih Mamoud	main	11,215		fixed		
68	Sarf Idfu & El Kala	main	1,900		fixed		
69	Gezirat Al Sabaha	main	300		floating		
70	Al Bosilia	main	4,000		fixed		
71	Al Sebaia	main	5,585		fixed		
72	Sarf Al Sebaia	main		non-ope.	fixed		
73	Wadi Abadiy (4)	booster	?		fixed		
74	Wadi Abadiy (3)	booster	1,780		fixed		
75	Wadi Abadiy (2)	booster	3,265		fixed		
76	Wadi Abadiy (1)	main	4,389		fixed		
77	Mokcefat Al Atoany	main	580		floating		
78	Gezirat Abo Arafa	main	50		floating		
79	Gezirat Al Kalh (Al Domaria)	main	500		floating		
80	Sahel El-Kelh	main	220		floating		5
81	Sahel El Hagez Kebly	main	750		floating		
82	Gezirat Al Gehaz	main	100		floating		
83	Al Gehaz	main	1,800		fixed		
84	El-Owenia	main	550		floating		8
85	El-Sharunia	main	550		floating		7
86	Baklous	main	188		floating		9
Total			290,955				

SHEET 12/78 EGYPT — SCALE 1:100,000 ASWÂN اسوان لوحة IV/VI

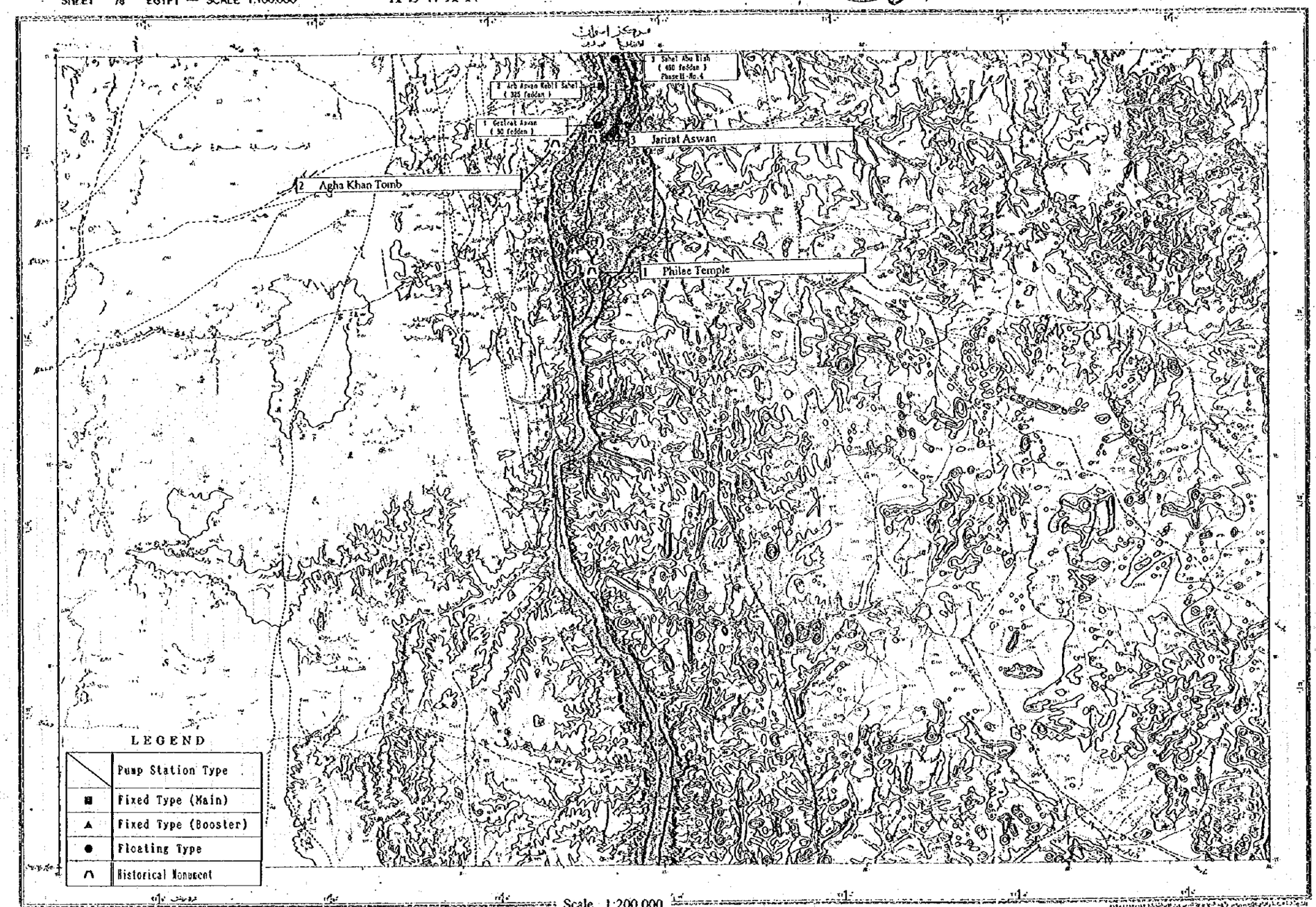
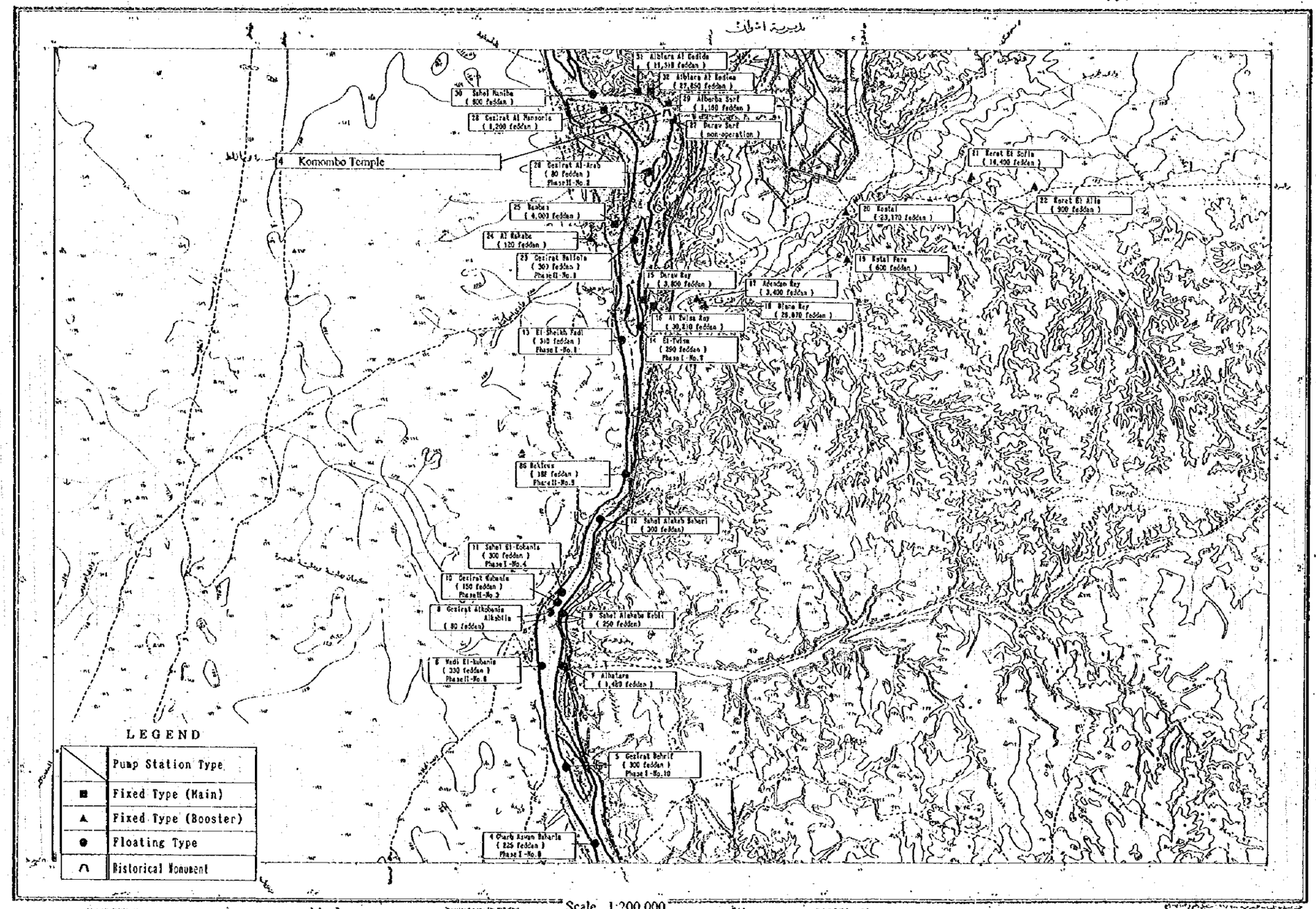


Figure A6-1-1 Location Map of Pump Stations in Aswan Governorate (1/4)

SHEET 16/78 EGYPT — SCALE 1:100,000 KÔM OMBO كوم امبو لوحة ١٦/٧٨ مصر — مقياس الرسم ١:١٠٠٠٠٠



Scale 1:200,000

Figure A6-1-1 Location Map of Pump Stations in Aswan Governorate (2/4)

SHEET 20/78 EGYPT — SCALE 1:100,000 SILWA BAHARI (GEBEL EL SILSILA) سلوة بحرى (جبل السلسلة) لوحة ٧٠/٧٨ مصر — مقياس الرسم ١ : ١٠٠,٠٠٠

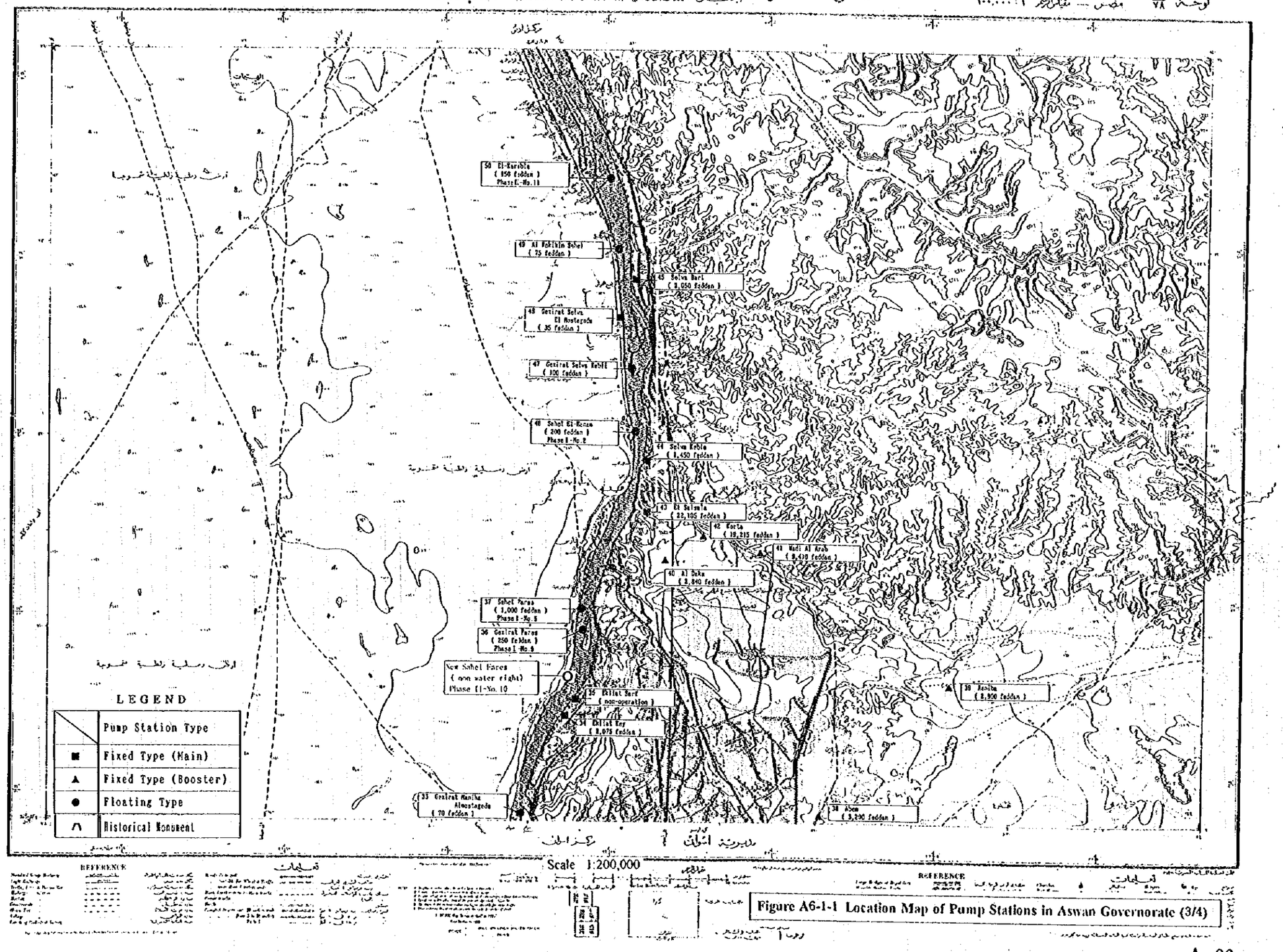


Figure A6-1-1 Location Map of Pump Stations in Aswan Governorate (3/4)

SHEET 24/72 & 24/78 EGYPT — SCALE 1:100,000 ROADS CORRECTED TO OCTOBER 1943

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لوحة ٢٤/٧٢ و ٢٤/٧٨ مصر — مقياس الرسم ١:١٠٠,٠٠٠ صححت الطرق لغاية اكتوبر سنة ١٩٤٣

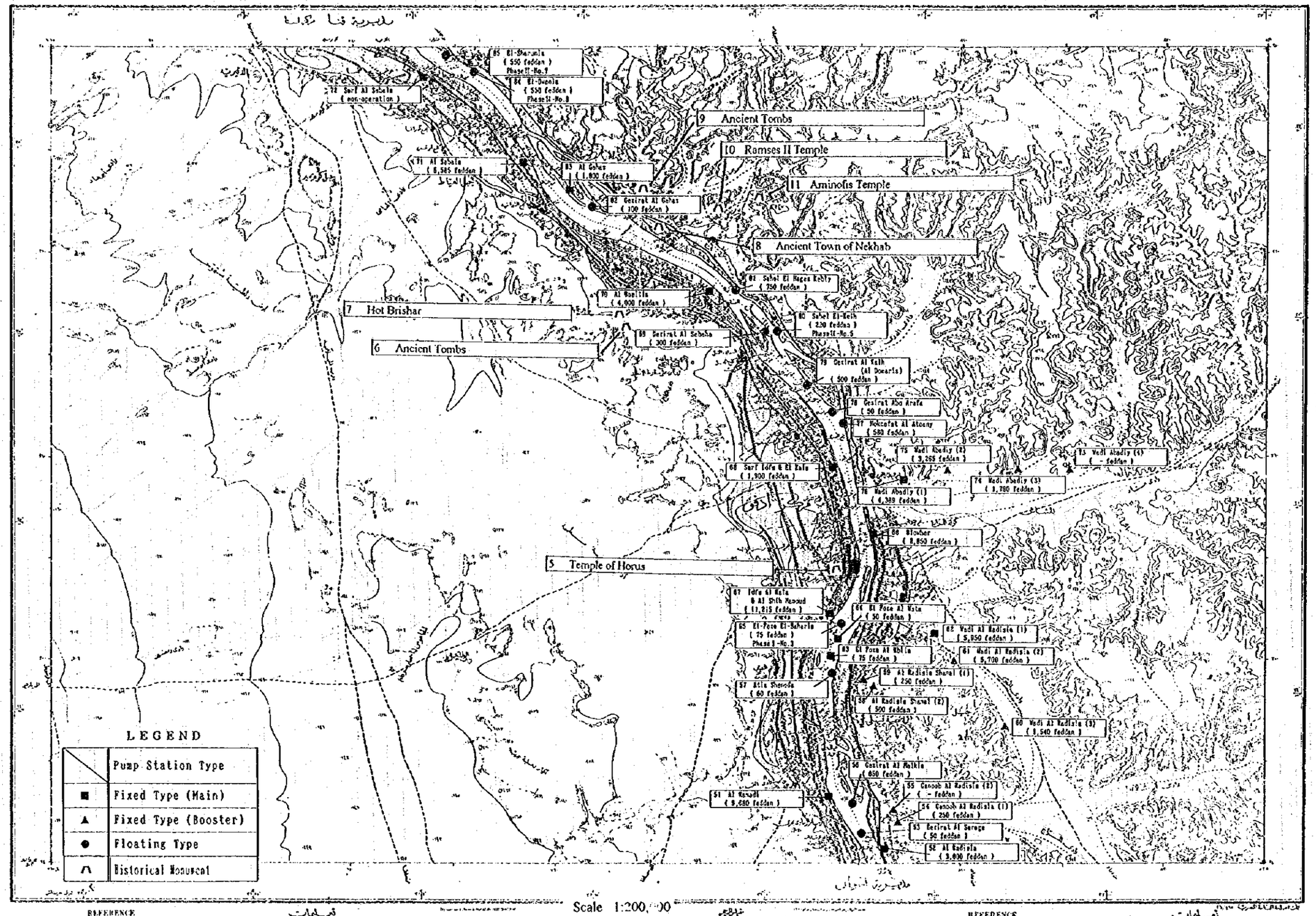


Figure A6-1-1 Location Map of Pump Stations in Aswan Governorate (4/4)

APPENDIX 6-2 MAP OF BENEFITIAL AREAS OF THE PHASE-II REHABILITATION PROJECT

Figure A6-2-1 Benefitial Areas of No.1(Gezirat Ballola) and No.2(Gezirat Al-Arab)

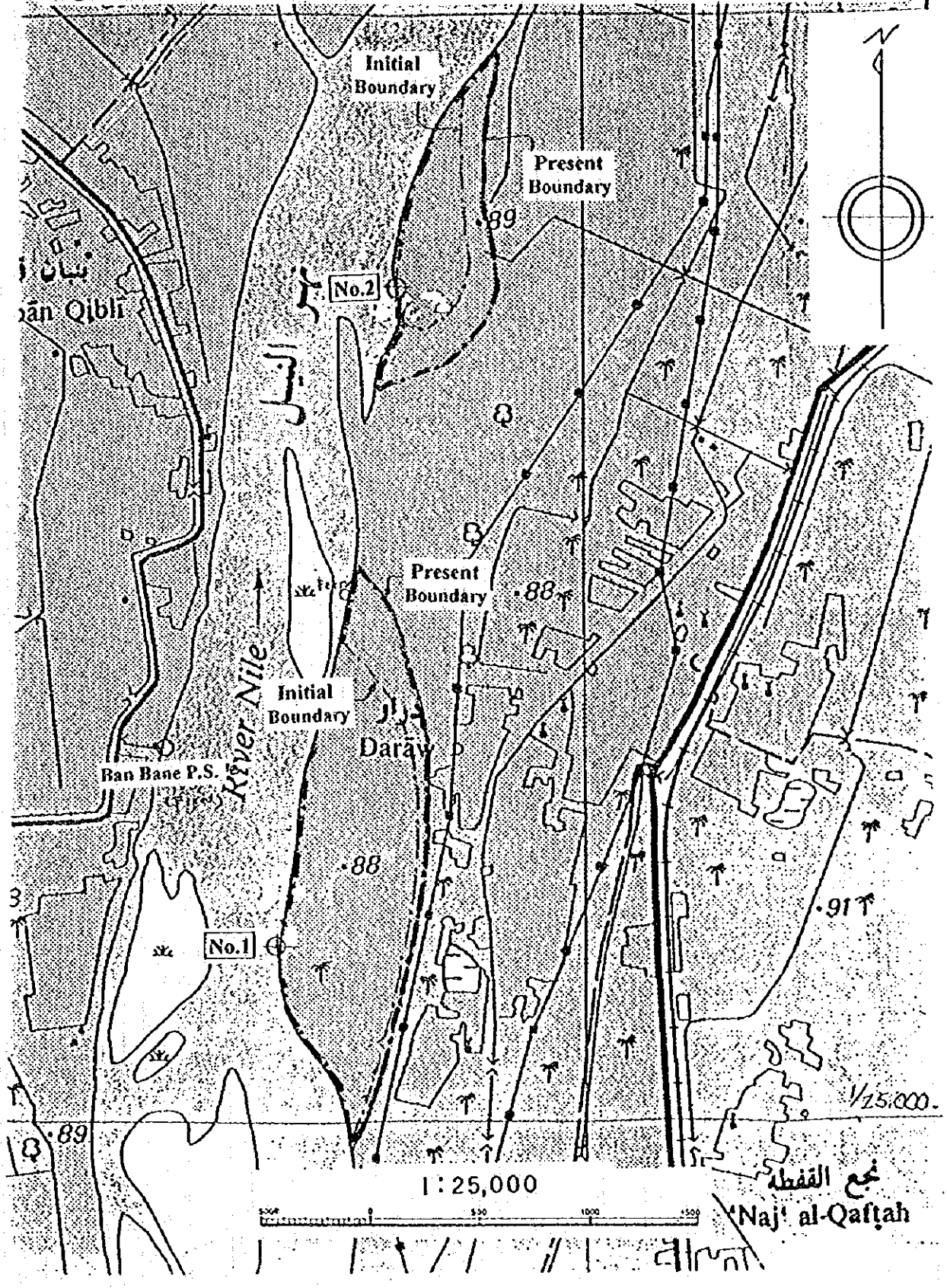


Figure A6-2-2 Benefitial Areas of No.3(Gezirat Kubania) and No.6(Wadi El-Kubania)

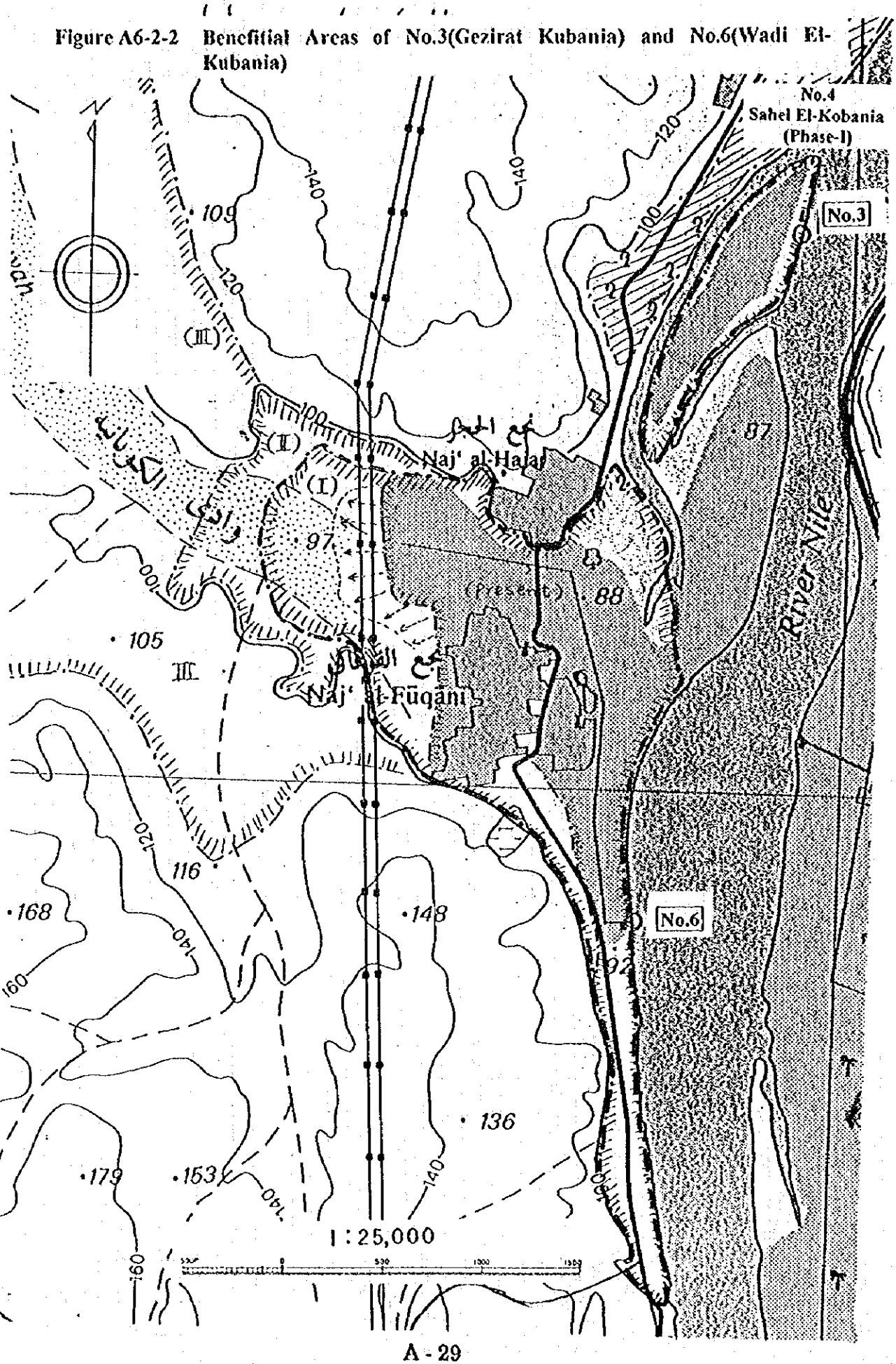


Figure A6-2-3 Benefitial Areas of No.4(Sahel Abu Rish)

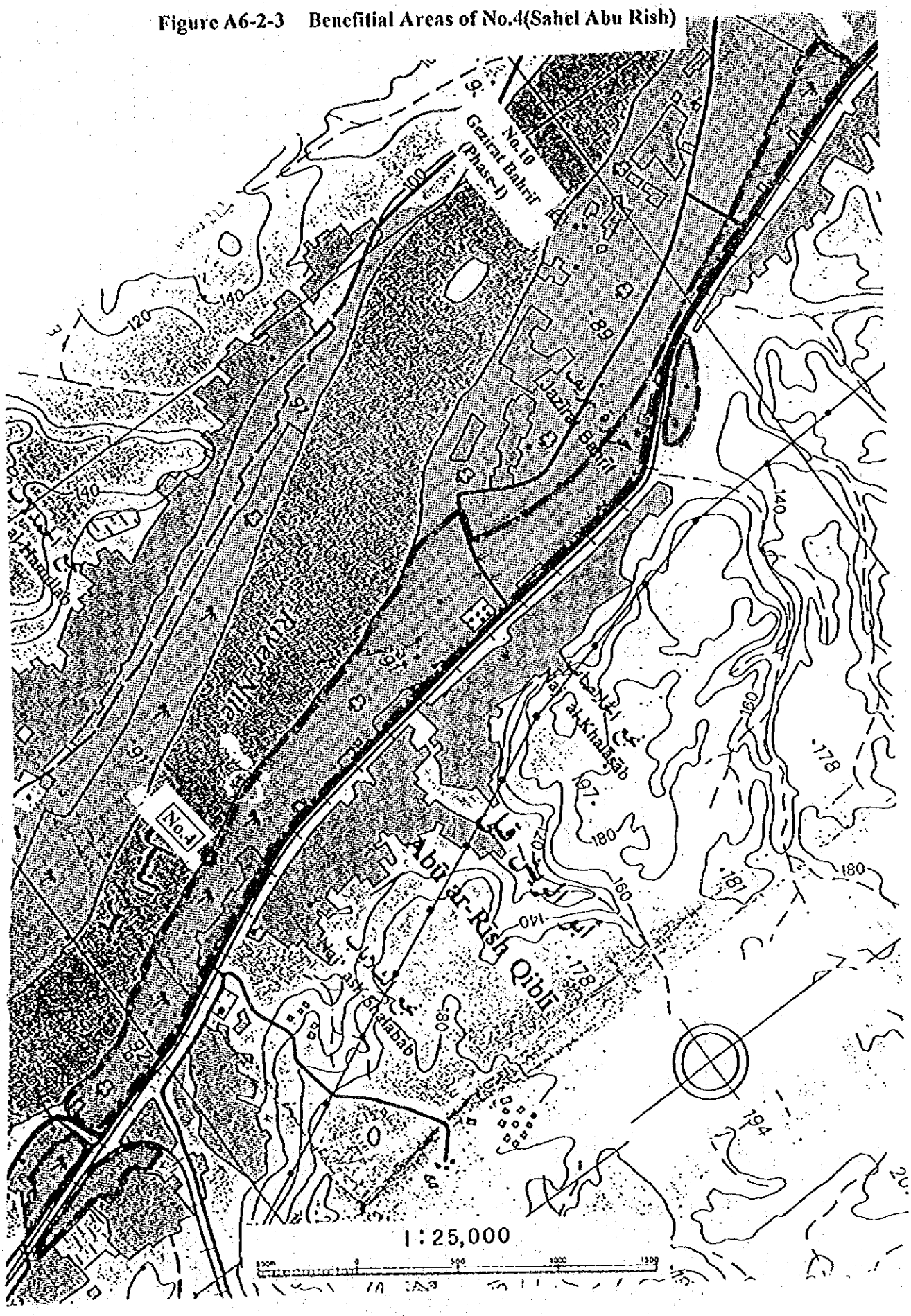


Figure A6-2-4 Benefitial Areas of No.5(Sahel El-Kelh)

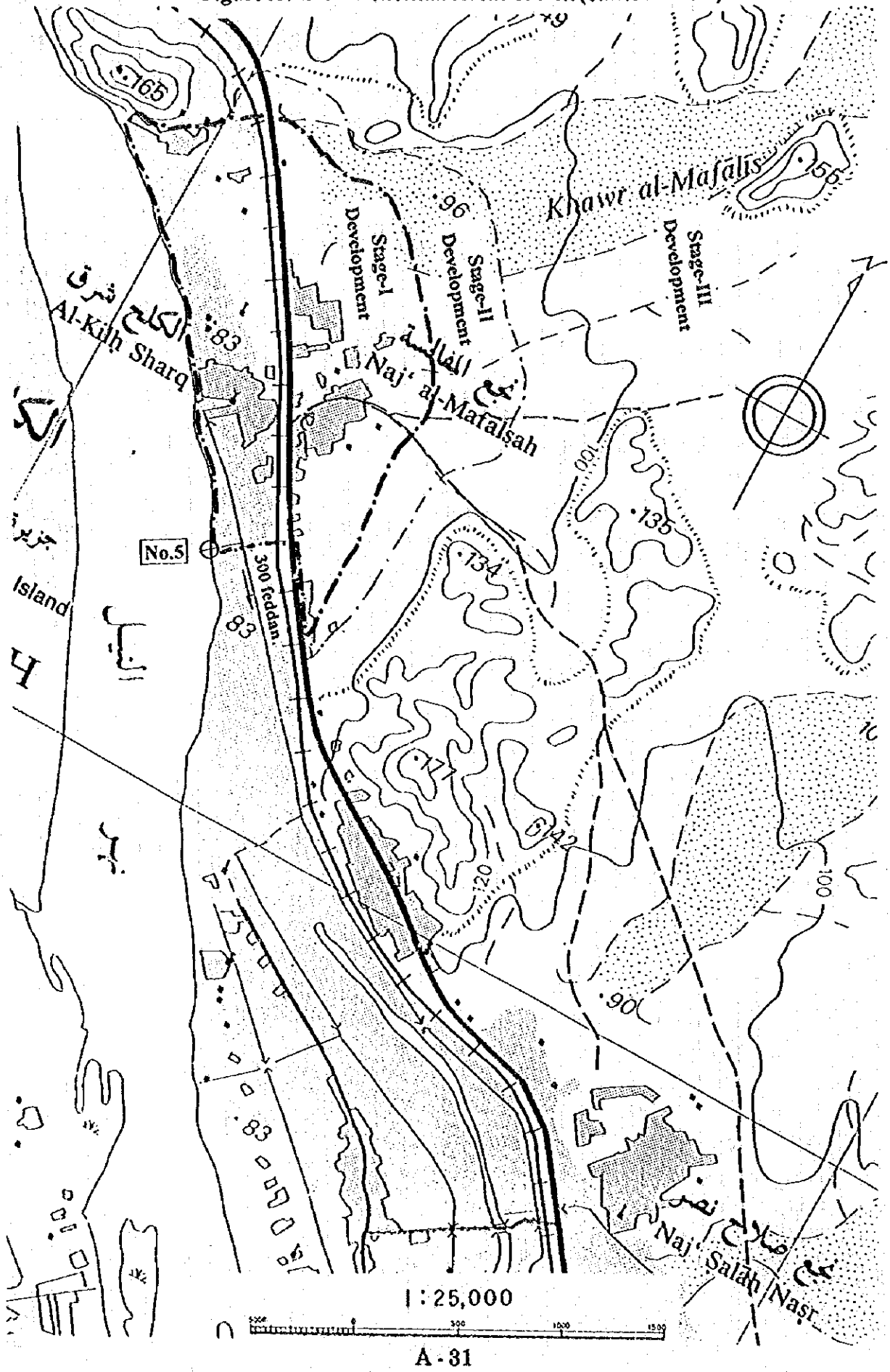


Figure A6-2-5 Benefitial Areas of No.7(El-Sharunia)

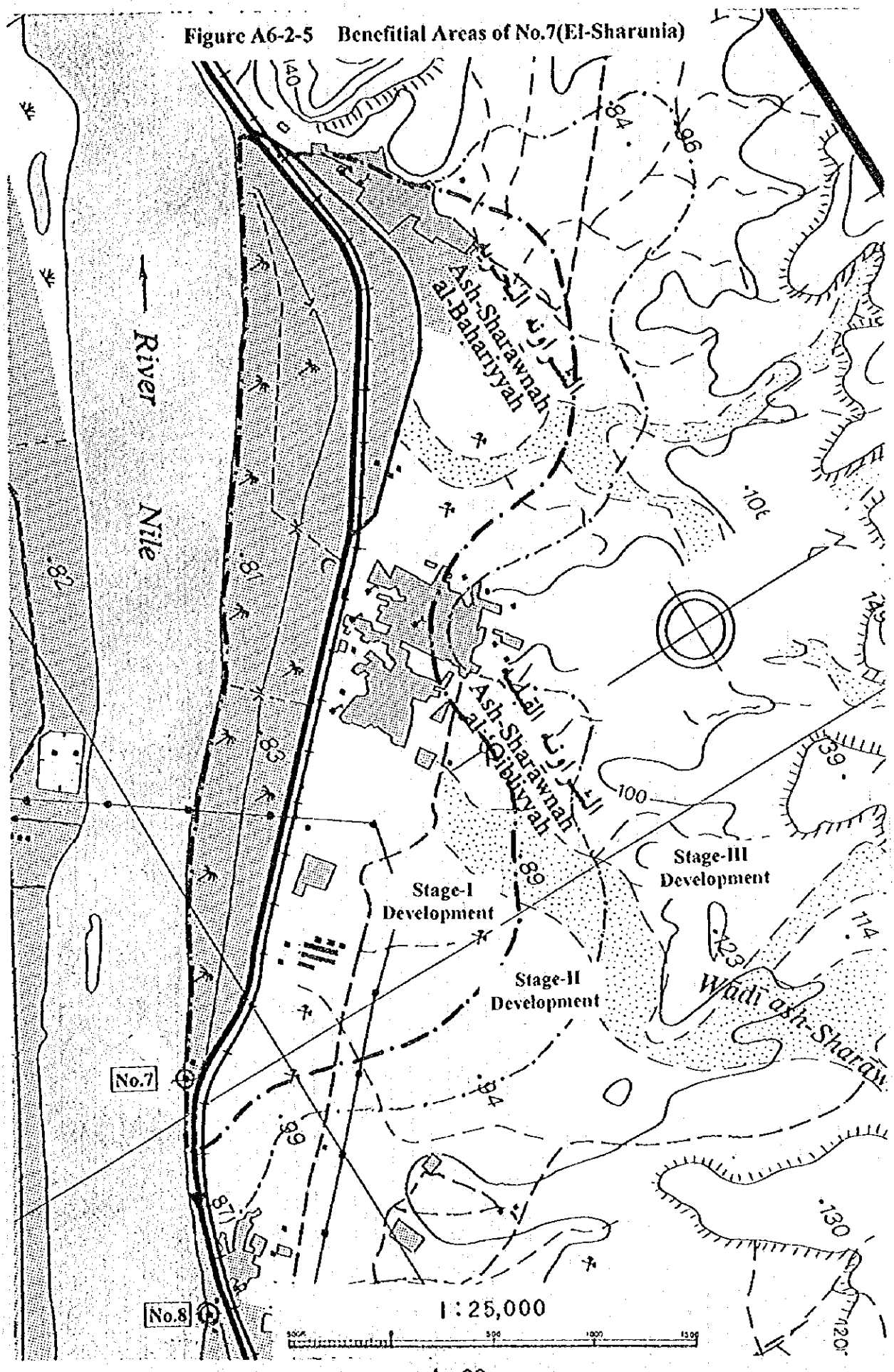


Figure A6-2-6 Benefitial Areas of No.8(El-Owenia)

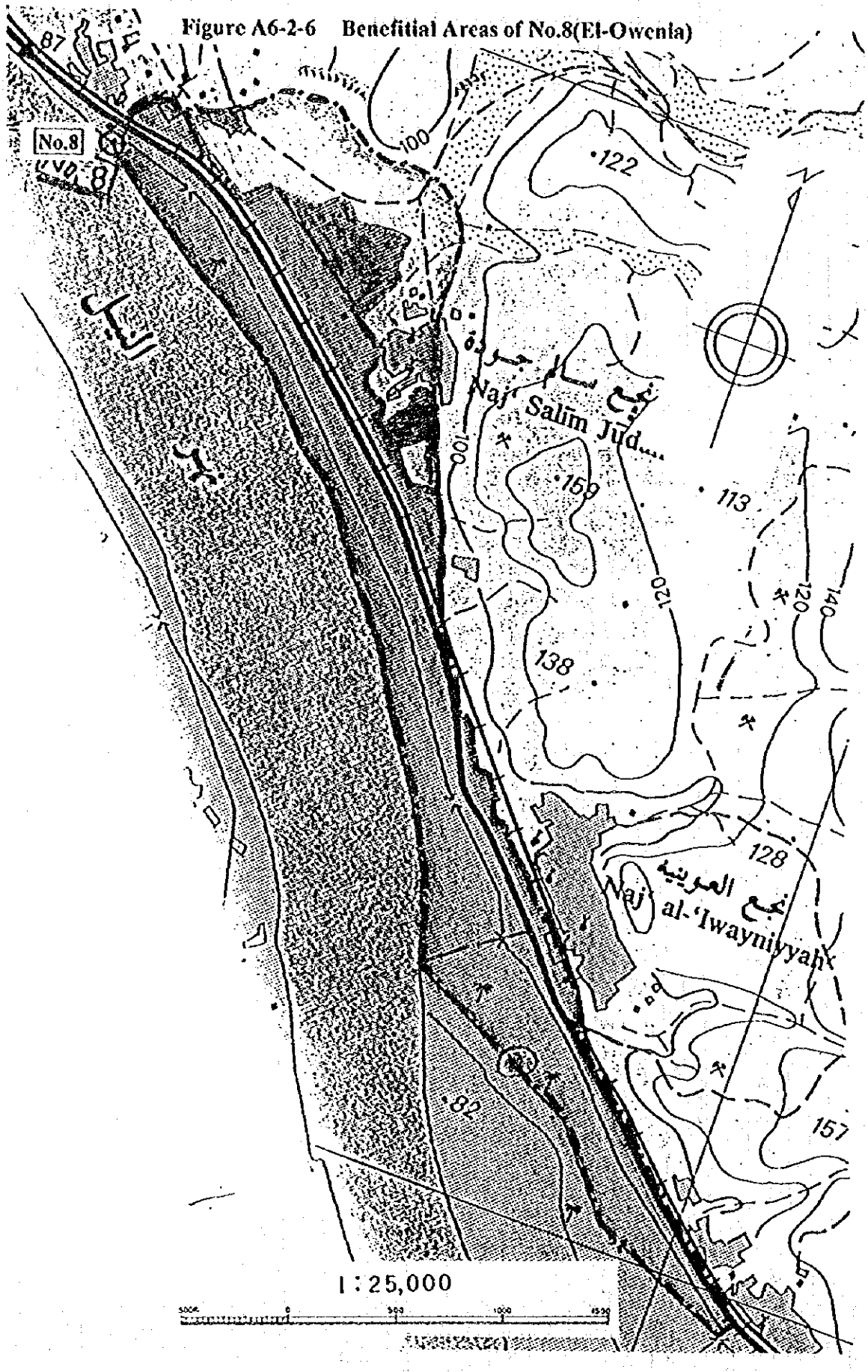


Figure A6-2-7 Benefitial Areas of No.9(Baklous)

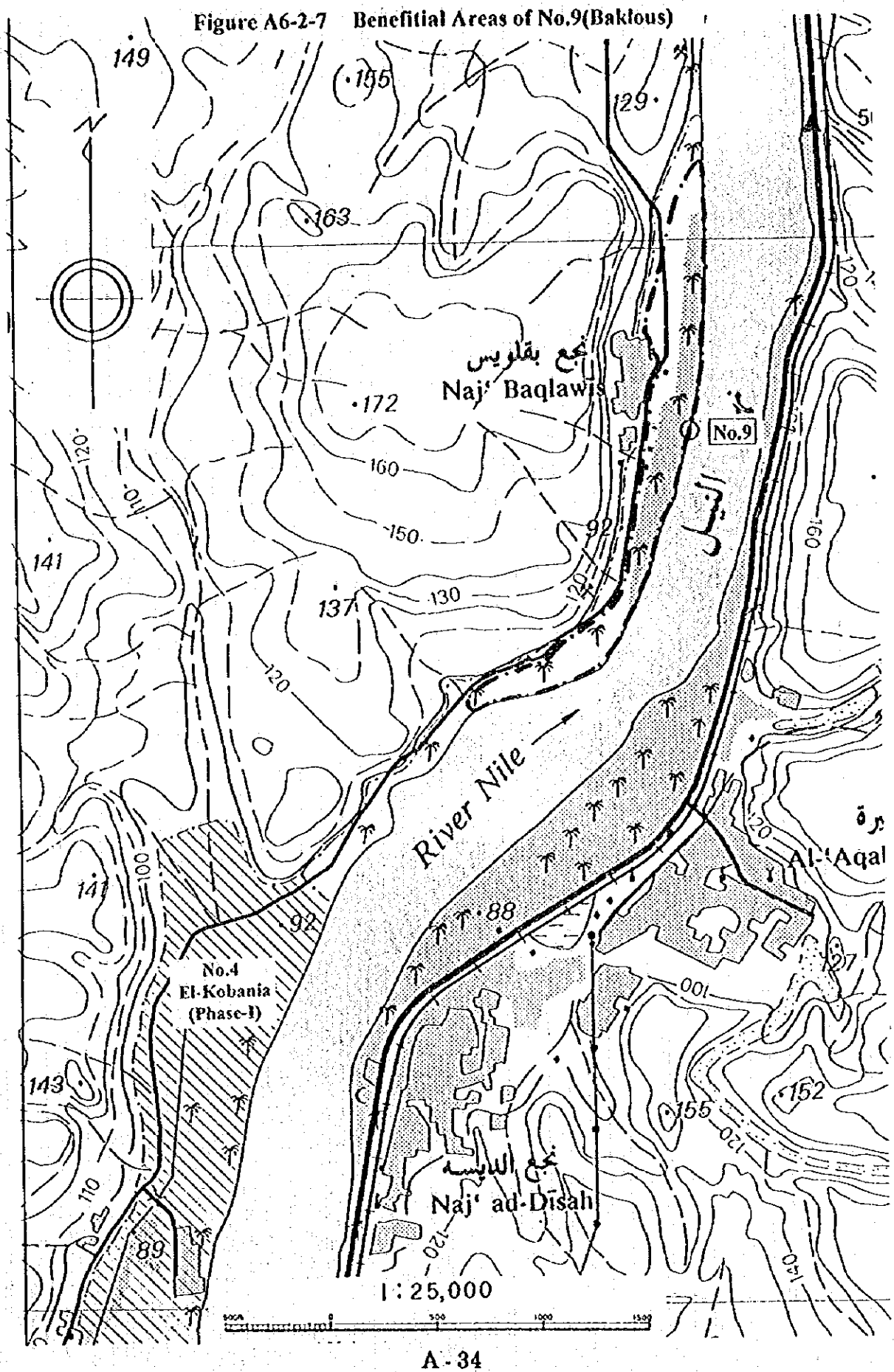


Figure A6-2-8 Benefitial Areas of No.10(New Shahel Fares)

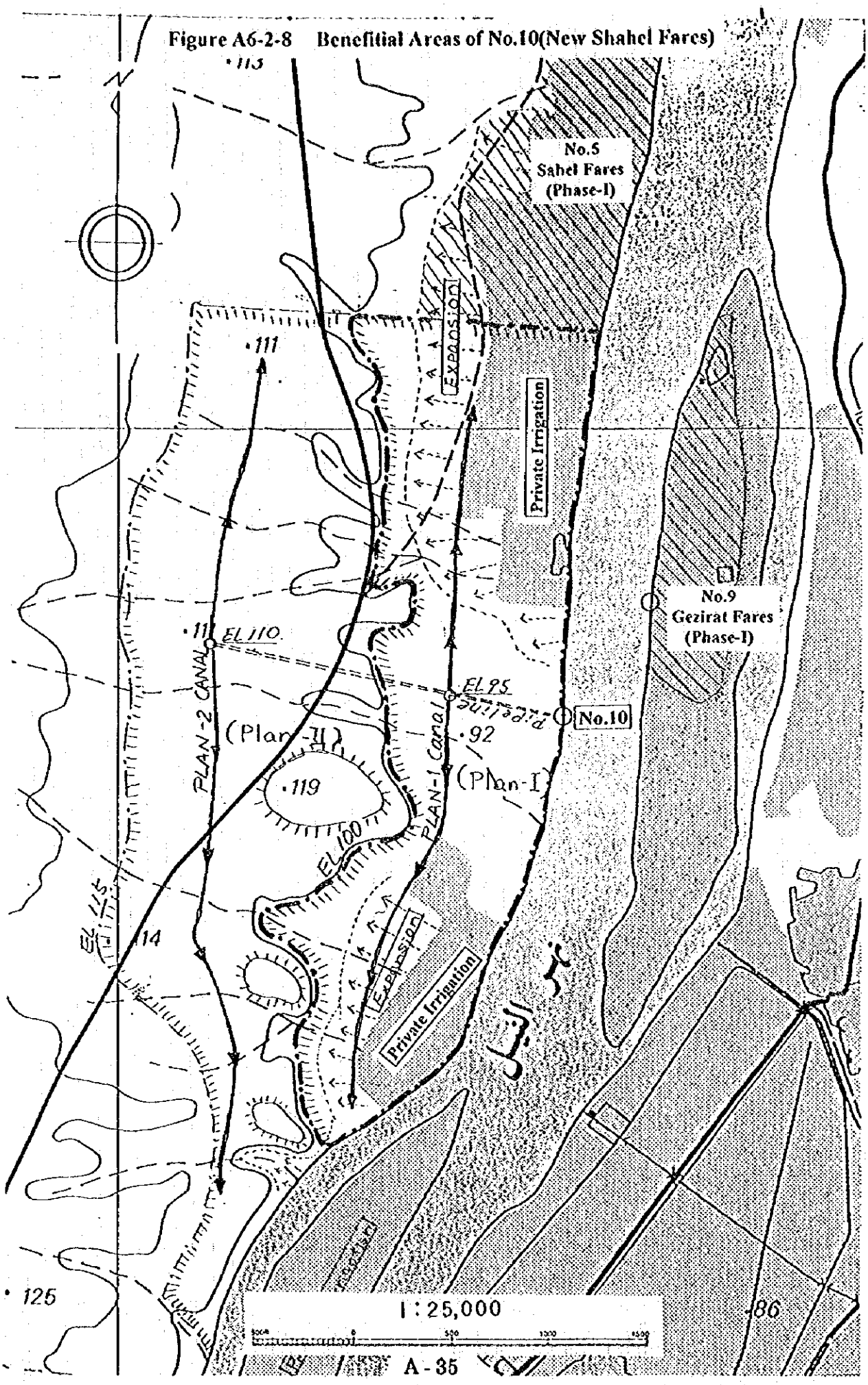
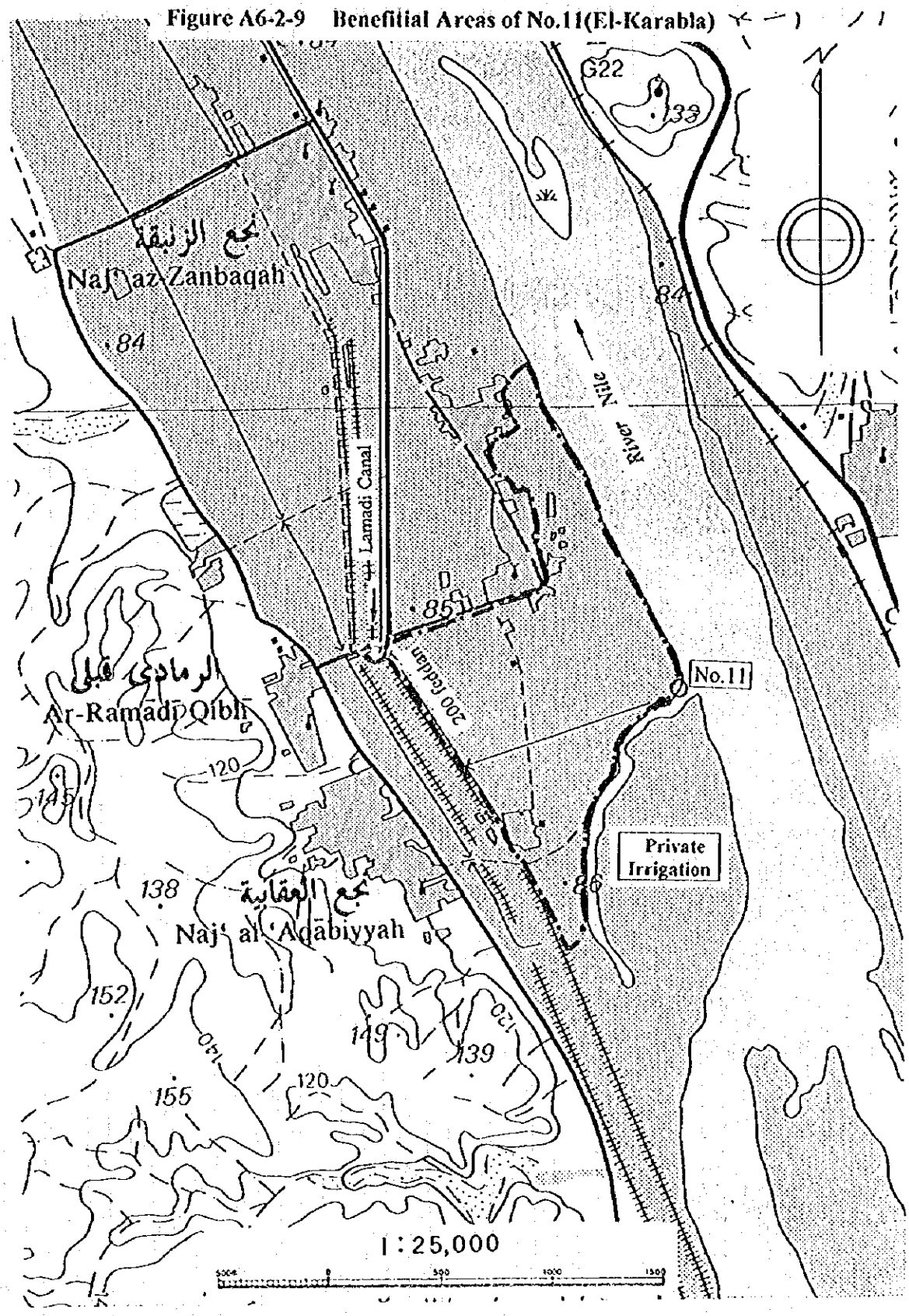


Figure A6-2-9 Benefitial Areas of No.11(El-Karabla)



APPENDIX 6-3 SUPPORTING DATA FOR IRRIGATION PLANNING AND FACTORS

(1) Supporting Data for Irrigation Efficiency

Table A6-3-1 Conveyance, Field Canal, Distribution and Field Application Efficiency

Conveyance Efficiency (Ec)					ICID/ILRI
Continuous supply with no substantial change in flow					0.90 *1
Rotational supply in projects of 3,000 - 7,000 ha and rotation areas of 70 - 300 ha, with effective management					0.80
Rotational supply in large schemes (> 10,000 ha) and small schemes (< 1,000 ha) with respective problematic communication and less effective management:					
based on predetermined schedule					0.70
based on advance request					0.65
Field Canal Efficiency (Eb)					
Blocks larger than 20 ha:					
unlined					0.80
lined or piped					0.90
Blocks up to 20 ha					
unlined					0.70 *2
lined or piped					0.80
Distribution Efficiency (Ed = Ec x Eb)					
Average for rotational supply with management and communication adequate					0.65
Average for rotational supply with management and communication sufficient					0.55
Average for rotational supply with management and communication insufficient					0.40
Average for rotational supply with management and communication poor					0.30
Field Application Efficiency (Ea)	**USDA**		**US(SCS)**		
Surface Irrigation					
by soil property					
light soils	0.55				
medium soils	0.70				
heavy soils	0.60				
graded border			0.60 - 0.75		0.53
basin and level border			0.60 - 0.80 *3		0.58
contour ditch			0.50 - 0.55		
furrow			0.55 - 0.70		0.57
corrugation			0.50 - 0.70		
Subsurface Irrigation			up to 0.80		
Sprinkler Irrigation					
hot dry climate			0.60		
moderate climate			0.70		0.67
humid and cool			0.80		
Rice					0.32

(Data Source) Crop Water Requirement, FAO Irrigation and Drainage Paper 24, 1977

(Note) ICID: International Conference of Irrigation and Drainage ILRI:
USDA: United States Department of Agriculture US(SCS): United States Department of Agriculture, Soil Conservation Service

(2) Water Requirement of Banana and Sugarcane

Table A6-3-2 Water Consumption of Sugarcane and Banana in Upper Egypt

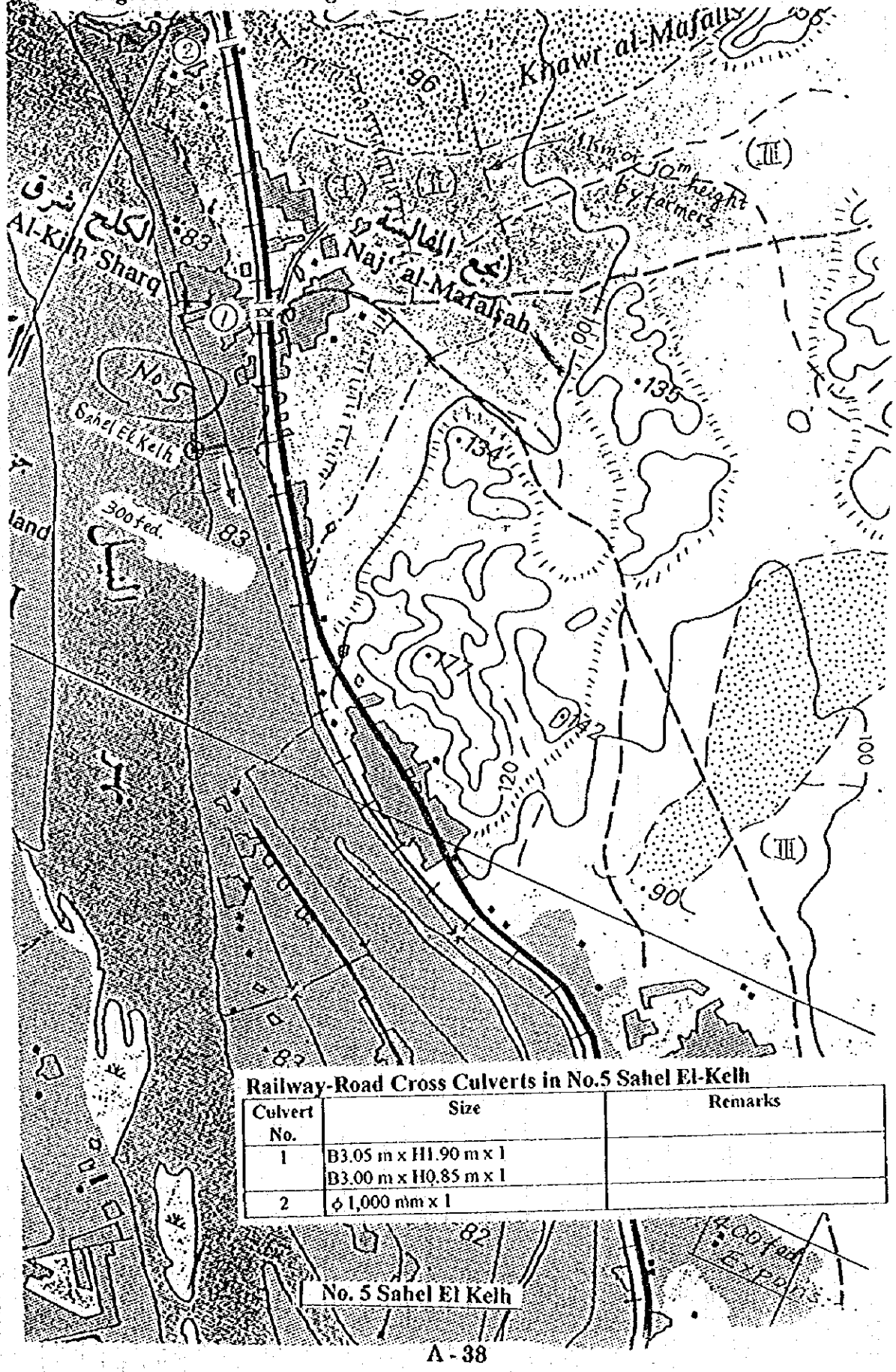
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days/month		31	28	31	30	31	30	31	31	30	31	30	31	365
Reference Evapotranspiration (ETo) (*1)														
(mm/month)		62.0	84.0	99.2	136.5	241.8	262.2	304.1	296.4	249.9	201.2	138.6	93.0	2168.9
(mm/day)		2.0	3.0	3.2	4.6	7.8	8.7	9.8	9.6	8.3	6.5	4.6	3.0	5.9
Water Consumption of Sugarcane														
Crop Coefficient (Kc) (*1)		0.59	0.68	0.61	0.61	0.78	0.81	0.97	1.08	1.09	1.10	1.20	0.95	0.87
Consumptive Use (ETcrop)	(mm/month)	36.6	57.1	60.5	83.3	189	212	295	320	272	221	166	88.4	2,002
	(mm/day)	1.2	2.0	2.0	2.8	6.1	7.1	9.5	10.3	9.1	7.1	5.5	2.9	5.5
	(m^3/month/feddan)	154	240	254	350	792	892	1,239	1,344	1,144	929	698	371	8,407
Water Consumption of Banana (*2)														
Crop Coefficient (Kc)		1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.20	1.20	1.20	1.15	1.15	1.13
Consumptive Use (ETcrop)	(mm/month)	68.2	92.4	109.1	150.2	266.0	288.4	334.5	355.7	299.9	241.4	159.3	107.0	2,472
	(mm/day)	2.2	3.3	3.5	5.0	8.6	9.6	10.8	11.5	10.0	7.8	5.3	3.5	6.8
	(m^3/month/feddan)	286	388	458	631	1,117	1,211	1,405	1,494	1,260	1,014	669	449	10,382

(Data Source) (*1): Water Resources Research Institution except (*1)

(Note) (*2): referring to "Crop Water Requirements", FAO Irrigation and Drainage Paper 24, 1977
Kc values are modified from January to July, under without removal. (under dry climate/ light to moderate wind)

(3) Existing Culverts and Locations in the Expasion Areas

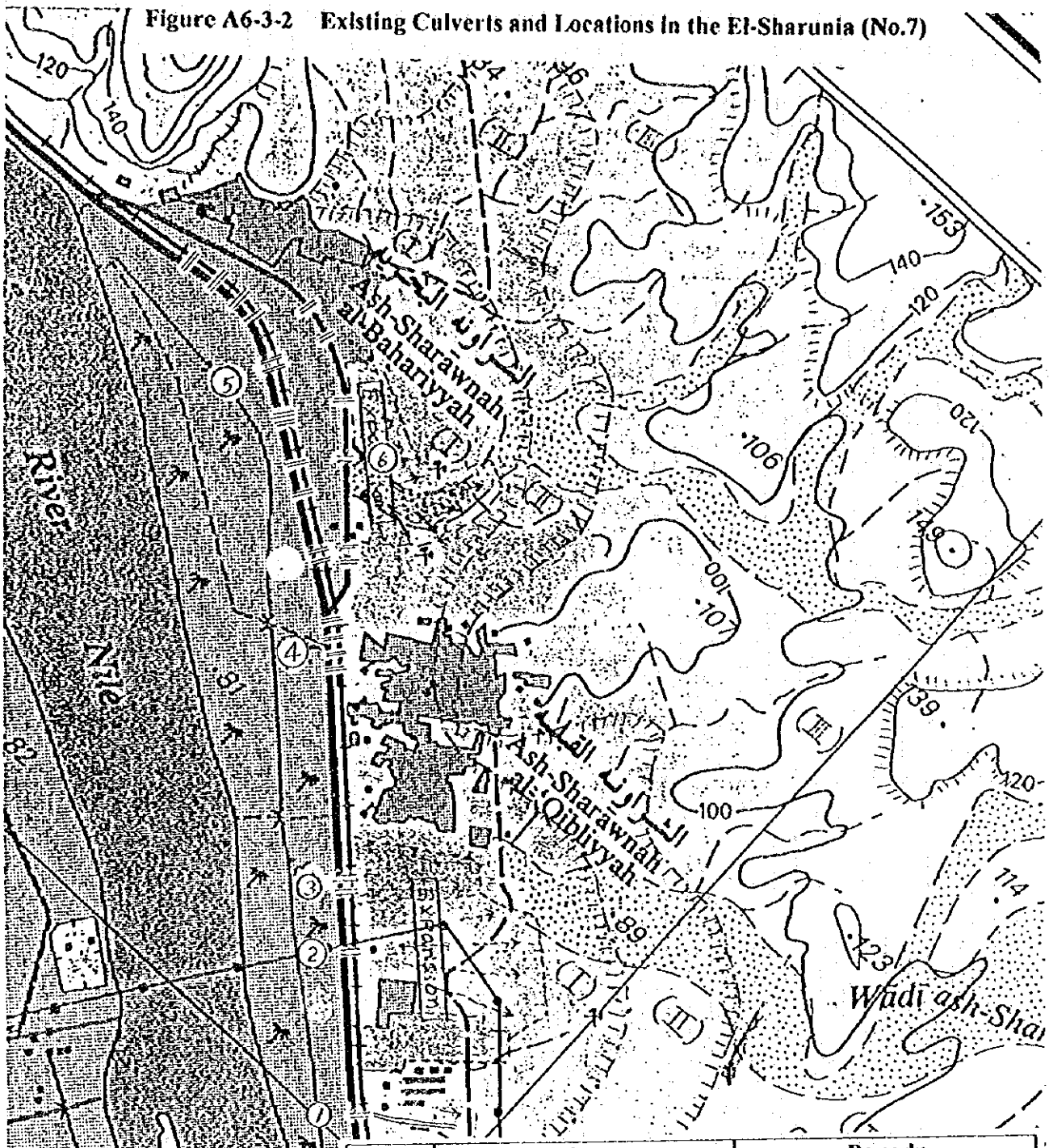
Figure A6-3-1 Existing Culverts and Locations in the Sahel El-Kelh (No.5)



Railway-Road Cross Culverts in No.5 Sahel El-Kelh

Culvert No.	Size	Remarks
1	B3.05 m x H1.90 m x 1 B3.00 m x H0.85 m x 1	
2	ϕ 1,000 mm x 1	

Figure A6-3-2 Existing Culverts and Locations in the El-Sharunia (No.7)



Culvert No.	Size	Remarks
1	ϕ 600 mm x 1	ϕ 180 mm x 1 concrete pipe passing inner of pipe for irigation of brick factory farm.
2	B1.80 m x H1.80 m x 1	
3	B4.15 m x H2.00 m x 1 B0.40 m x H0.45 m x1	used for irrigation for expansion area.
4	ϕ 300 mm x 4	used for irrigation for expanded area.
5	B0.40 m x H0.40 m x 1 ϕ 300 mm x 10	used for irrigation for expanded area.
6	B2.50 m x H1.40 mx1 (*1) ϕ 300 mm x 5 (*2)	(*1) provided for old road for flood-pass, but not for railway and new road. (*2) provided both for road and railway for expansion area.

APPENDIX 6-4 WATER LEVEL AND DISCHARGE OF THE NILE RIVER IN ASWAN

Table A6-4-1 Discharge and Water Level of the Nile River

Month		Discharge (MCM/day)	Water Level (MSL, m)
Jan	I	60	81.70
	II	60	81.70
	III	75	82.15
	IV	85	82.30
	V	95	82.55
	VI	110	82.75
Feb	I	115	82.95
	II	120	83.15
	III	123	83.20
	IV	125	83.25
	V	123	83.22
	VI	123	83.20
Mar	I	120	83.15
	II	130	83.30
	III	140	83.55
	IV	145	83.65
	V	155	83.85
	VI	158	83.88
Apr	I	160	83.90
	II	158	83.87
	III	157	83.83
	IV	155	83.80
	V	153	83.77
	VI	152	83.73
May	I	150	83.70
	II	153	83.78
	III	155	83.85
	IV	175	84.15
	V	185	84.45
	VI	200	84.70
Jun	I	240	85.25
	II	243	85.30
	III	245	85.35
	IV	248	85.40
	V	250	85.45
	VI	248	85.40
Jul	I	245	85.35
	II	243	85.33
	III	240	85.30
	IV	238	85.25
	V	235	85.20
	VI	230	85.10
Aug	I	225	85.00
	II	223	84.98
	III	220	84.95
	IV	218	84.93
	V	215	84.90
	VI	208	84.78
Sep	I	200	84.65
	II	175	84.10
	III	170	84.00
	IV	155	83.85
	V	140	83.50
	VI	125	83.25
Oct	I	115	83.00
	II	110	82.90
	III	115	83.00
	IV	110	82.90
	V	105	82.80
	VI	115	83.00
Nov	I	120	83.10
	II	125	83.20
	III	120	83.10
	IV	110	82.90
	V	100	82.60
	VI	95	82.55
Dec	I	90	82.45
	II	85	82.35
	III	80	82.25
	IV	75	81.95
	V	65	81.85
	VI	60	81.70
	I	60	81.70
Annual Averaage		153	83.68
Maximum		250	85.45
Minimum		60	81.7

(Data Source) Irrigation Department Aswan

(Note) Water level at 6.5 km downstream from Old Dam.