

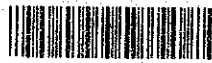
**ISMAILIA GOVERNORATE
THE ARAB REPUBLIC OF EGYPT**

**FEASIBILITY REPORT
ON
THE TENTH OF RAMADAN
AGRICULTURAL DEVELOPMENT PROJECT
APPENDIX**

SEPTEMBER 1982

JAPAN INTERNATIONAL COOPERATION AGENCY

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A. NATIONAL ECONOMY

Table II.A.1 Expected GNP in 1978 Plan compared with 1977

Economic Sectors	At current prices (Unit LE million)				
	1977	1978	Growth rate	Relative Importance	
				1977	1978
First: Commodity Sectors					
- Industry and mining	1024	1188	16	17	16.9
- Petroleum	413	603	46	6.8	8.6
- Electricity	86	91	5.8	1.4	1.3
- Construction	239	319	33.5	4	4.5
- Agriculture & irrigation	1720	1823	6	28.6	25.9
Total	3482	4024	15.6	57.8	57.2
Second: Distribution Sectors					
- Transport and Communication	270	279	3.3	4.5	3.9
- Suez Canal	147	185	25.9	2.4	2.6
- Commerce & finance	638	828	29.8	10.6	11.8
Total	1055	1292	22.5	17.5	18.3
Third: Utility Sector					
- Housing	141	150	6.4	2.3	2.1
- Public utilities	23	25	8.7	0.7	0.4
- Services	1321	1546	17	21.7	22
Total	1485	1721	15.9	24.7	24.5
Grand Total	6022	7037	16.9	100	100

Source: Min. of Planning

Table II.A.2 Balance of Payment on Current Account

(Unit: LE million)

Item	1975	1976	1977	1978	1979
<u>Trade</u>					
Exports					
Oil	1,566	1,609	1,992	1,984	2,730
Raw cotton	(164)	(268)	(600)	(734)	(1,350)
Cotton yarn and textile	(371)	(312)	(457)	(275)	(370)
Imports					
Wheat and flour	(642)	(547)	(513)	(731)	(850)
Other agricultural commodities	(444)	(748)	(450)	(570)	(750)
Intermediate goods	(1,954)	(1,526)	(1,550)	(1,950)	(2,000)
Consumers' goods	(493)	(515)	(600)	(745)	(970)
Trade Balance	-2,832	-2,778	-2,521	-2,692	-3,570
<u>Non-Factor Services (net)</u>					
Receipts	628	1,150	1,545	1,541	1,700
(Tourism)	(332)	(464)	(730)	(702)	(650)
(Suez canal)	(85)	(311)	(428)	(514)	(600)
Pavements	533	523	973	812	1,020
Factor Services (net)	84	458	529	1,254	1,200
(Workers' remittance)	(366)	(755)	(894)	(1,761)	(1,950)
Current Account	-2,615	-1,838	-1,590	-1,763	-1,490

Source: Egypt Investment Directory

Table II.A.23 Gross Domestic Product at Current and Constant Market Prices, 1950 - 1978

(Unit: LE million)

Year	Current Price	Growth Rate (%)	Constant Prices (1965)	Annual Growth Rate
1950	929.9	-	1,228.7	-
1955	1,056.0	2.6	1,344.1	1.8
1960	1,443.2	4.3 ^{1/}	1,695.0	3.3
1965	2,340.1	8.3 ^{2/}	2,340.1	5.7 ^{2/}
1966	2,473.8	5.7	2,353.5	0.6
1970	3,058.4	7.9	2,682.8	6.3
1973	3,644.6	7.5	2,925.0	2.8
1975	4,861.0	15.8	3,447.0	8.9
1976	5,828.0	19.9	3,770.0	9.4
1977	7,551.0	29.6	4,147.0	10.0
1978	8,602.0	13.9	4,624.0	11.5

^{1/} Average annual growth rate for 1950 - 1960

^{2/} Average annual growth rate for 1955 - 1965

Source: World Bank

Table II.A.4 General Framework of Egyptian Economy

(Unit: LE million)					
Item	1975	1976	1977	1982	1982/1977
<u>Production</u>					
Agriculture and Irrigation	2,053	2,126	2,196	2,605	
Industry and Metallurgy	3,346	3,516	3,750	6,120	
Petroleum	386	508	609	2,214	
Electricity	89	98	119	217	
Construction	520	520	630	1,259	
Transportation and Communication	386	519	580	1,154	
Commerce and Finance	801	877	927	1,263	
Housing	137	144	150	236	
Public Utilities	30	32	35	59	
Services	1,603	1,706	1,800	2,805	
Total	9,351	10,046	10,796	17,932	1.66
<u>Gross National Product</u> (Gross national expenditure)					
Private Consumption	3,284	3,485	3,764	5,530	
Government Consumption	1,213	1,361	1,487	2,436	
National Investment	1,328	1,115	1,474	3,037	2.06
(Government and Public sector)	1,049	1,004	1,175	2,350	
(Private and mixed sector)	88	89	112	500	
(Inventory)	191	22	187	187	
Exports	859	1,199	1,516	3,268	2.16
Imports	-1,894	-1,816	-2,220	-3,827	
Net Returns form Income Abroad	93	204	224	350	
Total	4,853	5,548	6,245	10,794	1.73

Source: "The Report on Economic Development Policy of Egypt"
Prepared by Mr. M. Yanagisawa, JICA, in 1982

Table II.A.5 DEVELOPMENT OF NATIONAL DISPOSAL INCOME IN EGYPT

(Unit: LE million)

Year	Gross National Disposal Income		Dispersement			
	G.N.P.	Net current transfer from the rest of the world	Savings	Consumption		
				Individual	Collective	Total
1972	3403.0	131.0	392.0	2237.0	905.0	3142.0
1973	3634.0	258.0	533.0	2339.0	1020.0	3359.0
1974	4085.1	489.5	602.7	2870.9	1101.0	3971.9
1975	4712.5	573.7	708.7	3292.5	1213.0	4505.5
1976	6117.7	303.6	987.0	3863.4	1570.9	5434.3
1977*	7139.1	501.9	1560.0	4505.0	1576.0	6081.0

Source: Statistical Year Book, 1979

Table II.A.6 GROSS DOMESTIC PRODUCTS

(Unit: LE mil.)

	1977		1978		1979	
	Amount (LE million.)	Percentage to GDP (%)	Amount (LE million)	Percentage to GDP (%)	Amount (LE million)	Percentage to GDP (%)
Commodity Sectors	4,090	55.2	4,865	54.0	6,859	57.4
Agriculture	2,138	27.5	2,286	25.4	2,688	22.5
Industry & Mining	1,120	15.1	1,319	14.6	1,478	12.4
Petroleum	468	6.3	626	6.9	1,908	16.0
Electricity	106	1.4	125	1.4	134	1.1
Construction	358	4.9	509	5.7	651	5.4
Distribution Sectors	1,672	22.6	2,224	24.7	2,839	23.8
Transport & Communica- tion	322	4.3	395	4.4	572	4.0
Suez Canal	169	2.3	294	3.3	423	3.5
Commerce & Finance	1,181	16.0	1,535	17.0	1,944	16.3
Utility Sectors	1,641	22.2	1,919	21.3	2,240	18.8
Housing	244	3.3	262	2.9	287	2.4
Other Services	1,397	18.9	1,657	18.4	1,953	16.4
GDP (Factor)	7,403	100.0	9,008	100.0	11,938	100.0
Indirect tax	880	11.9	663	7.4	471	4.0
GDP (Current price)	8,283	119.9	9,671	107.4	12,409	104.0

Source: Research Institute of Asian Economy, "Annual Report", 1981.

Table II.A.7 Investment of the First Five-year Plan (1960/61 - 1964/65)
(current price)

Sector	Investment	
	(LE Million)	Share (%)
Agriculture	118.4	7.9
Irrigation and Drainage	138.0	9.1
Aswan High Dam	98.6	6.5
Industry	403.9	26.7
Electricity	112.6	7.4
Construction	13.2	0.9
Transport & Communication	270.8	17.9
Suez Canal	23.4	1.5
Commerce & Finance	19.5	1.3
Housing	161.5	10.7
Public Utilities	50.5	3.3
Service	102.6	6.8
Total	1,513.0	100.0

Source: Middle East Economic Study Institute

Table II.A.8 Investment Plan of Five Year Plan: Governmental and Public Sectors

(Unit: LE milli.)

	1978	1979	1980	1981	1982	Total	%
Agriculture	65.4	74.9	79.2	85.1	91.1	395.7	3.9
Irrigation	86.7	93.8	98.3	102.0	102.4	483.2	4.7
Industry	344.1	274.1	457.9	573.2	663.3	2,412.6	23.7
Petroleum	75.0	91.8	117.3	129.3	149.0	562.4	5.5
Electricity	122.6	172.2	223.8	211.7	193.7	924.0	9.1
Construction	32.0	42.5	44.6	46.3	48.4	213.8	2.1
Transport & Communication	370.5	431.4	479.5	497.4	528.5	2,307.3	22.6
Suez Canal	119.0	128.0	148.8	47.0	32.0	474.8	4.7
Commerce & Finance	30.7	40.9	48.1	45.6	50.5	215.8	2.2
Housing	85.0	111.5	120.4	133.5	134.6	585.0	5.8
Public Utilities	94.6	124.4	133.5	135.5	135.0	622.8	6.1
Govt. Service	158.5	179.5	201.6	216.6	221.8	978.0	9.6
Total	1,584.1	1,865.0	2,153.0	2,223.0	2,350.3	10,175.4	100.0

Source: Min. of Planning, The Five Year Plan 1978 - 1982.

Table II.A.9 Growth Target of GDP (1980 - 1984)

	1979	1980	1984	Annual Growth Rate (%)		Relative Importance
				1979 - 84	1979	
Agriculture	2,580	2,640	3,023	3.2	25.4	18.3
Industry	1,472	1,590	2,395	10.2	14.5	14.5
Petroleum	1,680	1,874	3,030	12.5	16.5	18.4
Electricity	100	110	163	10.3	0.9	1.0
Construction	420	540	840	14.9	4.1	5.1
Transport & Communication	437	475	740	11.1	4.3	4.3
Suez Canal	399	502	931	18.5	3.9	5.7
Commerce & Finance	1,074	1,170	1,773	10.5	10.6	10.8
Housing	188	206	330	11.9	1.6	2.0
Other Services	1,810	2,120	3,250	12.4	17.8	19.7
GDP (factor)	10,160	11,257	16,475	10.2	100.0	100.0

Source: Min. of Planning, Egypt's Development Strategy 1980 - 84, 1979.

B. AGRICULTURAL SECTOR

Table II.B.1 Land Reclamation in Egypt

Date	Land Reclaimed				From 71/72 to 1978	Land Reclaimed During 1952 to 1978	
	Land Reclaimed During 1952 to 65/66	66/67	67/68	68/69			
Land Reclamation	291.7	46.1	34.0	45.1	21.0	24.5	462.4
Nubian Immigration Lands	38.8	-	-	-	-	-	38.8
Tahrir Province	148.8	-	-	-	-	-	148.8
Kuta, Kom Oshim and Abis	36.1	-	-	-	-	-	36.1
Wasteland	73.5	3.2	-	-	-	-	76.7
Deserts	142.7	6.5	-	-	-	2.5	151.7
Total Area Reclaimed	731.6	55.8	34.0	45.1	21.0	24.5	914.5

(000 Fed)

Source: Statistical Year Book, 1979

Table II.B.2 Wage and Productivity Average in 1978
Plan Compared with 1977 Plan

(Unit: LE)

Economic sector	Wage averages		Rate of increase	Productivity average		Rate of increase
	1977	1978	%	1977	1978	%
First: Commodity sectors						
- Agriculture	107.6	108	0.4	400.8	417.9	4.3
- Industry and mining	320	328.3	2.6	835.6	918.2	9.9
- Petroleum and its by products	1027.3	1515.5	47.5	18772.7	23372.1	24.5
- Electricity	379.8	381.3	0.4	1666.6	1636.7	1.8
- Construction	358.3	354.7	8	484.6	593.2	22.6
Total	173.9	182.8	5.1	572.4	641.3	12
Second: Distribution sectors						
- Transport, Communications and storing	385	393.7	2.3	882.5	930.6	5.5
- Commerce and finance	267.5	270.2	1	611.1	756.6	23.8
Total	304.1	308.9	1.6	695.6	811.1	16.6
Third: Utility sectors						
- Housing	103.3	105.8	2.4	971.1	1023.9	5.4
- Utilities	304.3	306.3	0.7	416.7	416.7	-
- Services of social development	356.6	370.2	3.8	524.0	599.7	14.5
Total	340	353.1	3.9	548.7	620.3	13
Grand Total	233.4	243.1	4.2	585.4	862.3	13.1

Source: Ministry of Planning

Table II.B.3 Exports and Imports in 1978

	(LE 000)		
	Exports	Imports	Difference
1. Living animals and by-products	5,621	95,175	-89,554
2. Vegetable products	81,900	366,570	-284,670
3. Fats, oils and by-products	130	69,250	-69,110
4. Prepared foodstuffs, etc.	26,177	155,405	-129,228
5. Mineral products	190,515	96,735	+93,780
6. Products of chemical industries	21,228	210,966	-189,738
7. Plastic materials, etc.	505	87,455	-86,950
8. Hides and skins	5,179	4,045	1,134
9. Wood and its products	198	114,694	+114,496
10. Paper and its materials	4,536	63,923	-59,387
11. Textiles	286,571	62,483	+224,088
12. Footwear, etc.	5,529	1,487	+4,042
13. Articles of stone, glass, etc.	568	39,610	-39,042
14. Pearls and precious stones	186	7,520	-7,334
15. Base metals	40,215	235,334	-195,119
16. Machinery	1,844	575,437	-573,593
17. Vehicles and aircraft	4,353	389,832	-385,479
18. Optical instruments	576	41,113	-40,537
19. Arms, ammunition and parts	15	1,182	-1,167
20. Miscellaneous articles	1,902	13,970	-12,068
21. Works of art	6	5	+1
Total	679,754	2,632,180	-1,952,426

Source: Statistical Year Book, 1979.

C. AGRICULTURAL DEVELOPMENT AND

DESERT DEVELOPMENT

Table II.C.1 Land use in the Nile Delta and Valley
According to the 1961 Agricultural Census

Land Use	(in 1,000 units)	
	Area	
	Feddan	ha
Arable land	5,830	2,449
Permanent Crops (orchards & timber)	144	60
Sub-total: cultivated land	5,974	2,509
Built-on land	161	68
Private barren and waste land	227	95
State barren and waste land	1,214	510
Public utilities	786	330
Sub-total: non-cultivated land	2,388	1,003
Total: cultivated and non-cultivated land	8,362	3,512

Source: H.A. El-Tabgy "Contemporary Egyptian Agriculture", 1976.

Table II.C.2 Total areas of Plan Distributed on
Implementing Directions

Implementing Direction	Plan of 1980/84	Distribution of Areas on 5-Year Plan (Feddan)				
		1980	1981	1982	1983	1984
1 - The Projects & Construction Authority	152,250	7,500	15,250	33,500	48,000	48,000
2 - Green Revolution System in Sinai	12,000	2,600	2,100	3,100	2,100	2,100
3 - Green Revolution System West Nobarria	150,500	14,000	27,000	44,500	32,500	32,500
4 - Green Revolution System New Valley	60,300	12,000	11,300	12,500	14,500	10,000
Total Governmental Systems	375,050	36,100	55,650	93,600	97,100	92,600
5 - Cooperatives & Persons	379,900	58,200	78,000	81,700	84,500	77,500
6 - <u>Companies</u>						
Pepsi-Cola Co. & Arab Contractors	9,000	2,000	2,000	2,000	2,000	1,000
Ramsis Agricultural Co.	8,200	1,000	3,000	1,000	3,200	-
Sharkia Governorate	4,500	2,000	2,500	-	-	-
Grand Total	776,650	99,300	141,150	178,300	186,800	171,100

Source: Ministry of Land Reclamation, 1981

III PROJECT AREA

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B. CLIMATE

Table III.B.1 Climatic Data in Ismailia¹⁾

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Max. Temperature, °C	20.1	21.6	23.6	28.0	32.0	34.5	36.1	36.1	33.5	30.5	26.4	21.6	28.7
Min. - do - °C	7.8	8.8	10.1	12.5	15.9	18.7	21.8	22.0	20.2	17.4	13.5	9.7	14.9
Mean - do -	14.0	15.2	16.8	20.2	24.0	26.6	29.0	29.1	26.8	24.0	20.0	15.6	21.8
Relative Humidity (at 0600), %	68	76	56	45	47	53	63	67	67	67	70	70	62
- do - (at 1200), %	43	41	30	22	24	27	31	33	32	36	40	44	34
- do - (at 1800), %	66	69	51	46	44	45	55	59	58	64	67	67	58
Evaporation, mm/day	4.3	5.2	7.2	10.2	10.1	11.8	10.5	9.4	7.7	6.0	4.6	4.5	2,647
Rainfall in month, mm	6.6	1.6	7.4	1.3	3.5	0.0	0.0	0.0	0.0	2.3	7.7	2.9	33.3
Mean Wind Velocity, Km/day	262	227	320	307	289	289	302	244	244	196	187	227	258

1) Quoted from "CLIMATOLOGICAL NORMALS for THE ARAB REPUBLIC OF EGYPT upto 1975" by Meteorological Authority, Cairo. Above figures are mean of 1964 to 1968.

C. GEOLGY AND SOIL

C-1. GEOLGY AND SOIL

Table III.C.1 Result of Well Survey

* Value in () are according to unofficial sources

No.	Discharge facilities	Usage	Dia. of well (m)	Depth of well (m)	Well level in Altitude (m)	Depth till water level (m)	Ground water level (m)	Water temperature (°C)	pH	EC (µS/m)	NaCl (ppm)
SWP-1								15.1	8.2	440	220
-2								15.0	8.2	410	205
-3								17.2	8.7	360	170
SWI-1								17.3	8.3	350	170
-2								18.3	8.3	350	170
-3								17.4	8.1	390	190
SWD-1								21.4	8.5	20,000<	10,000<
-2								23.5	8.9	1,650	990
S-1	Hand pump	Not in use	0.05	13.5	12.7	7.2	5.5				
-2	by bucket	"	0.05	12.4	10.8	5.3	5.5	24.0	10.7	4,300	2,500
-3	Hand pump	Agricultural & Home use	0.05	10.3	10.0	7.7	2.9				
-4	by bucket	Not in use	0.05	12.1	11.6	6.2	5.4	24.8	11.0	4,200	2,400
-5	Hand pump Small motor	Agricultural Use	0.05					22.7	8.1	4,300	2,450
-6	Hand pump	"	0.05	14.4	9.0	4.4	4.6	24.0	7.9	5,000	2,800
-7	"	Home use	0.05	13.8	9.0	3.9	5.1	23.4	7.9	5,500	3,000
-8	"	Agricultural Use	0.05					22.2	8.3	4,700	2,700
-9	Small motor	Home use	0.05					23.4	8.0	4,800	2,750
-10	Hand pump	Not in use	0.05	10.3	12.3	8.0	4.3	17.5	8.2	3,500	1,900
-11	"	Unknown	0.05					24.6	8.0	2,900	1,600

D-1	Volute	Agricultural use	0.20					24.3	7.7	5,000	2,800
-2	Volute Motor 30HP	"	0.20					24.8	7.9	4,700	2,700
-3	"	"	0.20	(35.0)	13.0	(10.0)	(3.0)	24.3	7.8	4,300	2,500
-4	by bucket	Undecided	0.20	(40.0)	12.5	6.9	5.3				
-5	Volute	Agricultural use	0.20	(40.0)				23.8	8.2	3,050	1,750
-6	Volute Diesel	"	0.20	(65.0)	9.5	(9.0)	(0.5)	24.8	7.9	4,000	2,250
-7	"	"	0.40	(65.0)	11.2	(9.0)	(2.2)	25.2	7.8	3,300	1,800
-8	"	"	0.30	(60.0)	8.8	(7.0)	(1.8)	23.4	7.7	3,000	1,650
-9	by bucket	Unknown	0.20		8.9	6.7	2.2	25.2	8.9	2,700	1,450
-10	Volute Diesel	"	0.20		10.9	7.2	3.7	25.0	9.0	2,900	1,600
-11	by bucket	Not in use	0.20		10.8	8.5	2.3	25.2	8.1	2,700	1,450
-12	Within boring	Unknown	0.20	(40.0)	16.1	10.4	5.7				
-13	Volute	Agricultural use	0.20	(30.0)	17.2	(13.3)	(3.9)	24.6	7.8	5,000	2,850
-14	Axial flow	"	0.15	(45.6)	16.9	(11.0)	(5.9)	24.5	7.6	6,000	3,450
-15	"	"	0.15					24.7	7.7	5,000	2,850

Table III.C.2 Quality of Well Water

No.	Discharge facilities	Usage	Dia. of well (m)	Depth of well (m)	Ground water level (m)	Ground water level in Altitude (m)	Ground Temperature (°C)	pH	EC (µS/cm)
S-3 (W-6)	Hand pump	House holds	0.05	10.3	7.7	2.9		7.6	5,300
S-7 (W-11)	"	"	0.05	13.8	3.9	5.1	23.4	7.9 7.0	5,500 6,130
S-9 (W-13)	"	"	0.05				23.4	8.0 7.7	4,800 5,360
S-11 (W-15)	"	No used	0.05				24.6	8.0	2,900 3,210
S-17 (W-31)	"	House holds	0.05	6.5	3.4	7.9	22.9	8.5 3.1	3,750 4,470
S-25 (W-45)	"	"	0.05	4.0	1.7	4.6	20.4	7.8 7.5	1,250 1,180
S-26 (W-46)	"	"	0.05	10.5	4.4	5.4	23.7	9.2 8.6	750 830
S-27 (W-47)	"	"	0.05				21.5	8.9 8.2	880 954
D-1 (W-1)	Centrifugal pump	Agricultural	0.20				24.3	7.7 7.4	5,000 6,280
D-8 (W-20)	:	"	0.30	60.0	(7.0)	(1.8)	23.4	7.7 7.5	3,000 4,060
D-14 (W-33)	Vertical turbine pump	"	0.15	45.6	(11.0)	(5.9)	24.5	7.6 7.4	6,000 7,480

Table II.C.3 Results of Water Quality Analysis

No.	Discharge facilities	Dia. of well	Depth of water level in well	Ground water level in Altitude	Water Temperature	pH	EC (µS/cm)	T-Salinity (ppm)	Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	Upper: weight unit: mg/l				SiO ₂ (mg/l)
													HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻	SO ₄ ²⁻	
													Lower: equivalent unit: meq/l				
S-3 (W-6)	Hand pump	0.05	10.3	7.7	2.9	7.6	5,300		1,050	14.8	77.0	28.3	271	1,310	690	27.0	
	House holds								45.7	0.38	3.84	2.33	4.44	36.9	14.4		
S-7 (W-11)	Hand pump	0.05	13.8	3.9	5.1	7.9	5,500	3,000	1,210	10.7	67.0	26.8	206	1,640	590	26.0	
	House holds					7.0	6,120		52.6	0.27	3.34	2.20	3.38	46.2	12.3		
S-9 (W-13)	Hand pump	0.05			23.4	8.0	4,800	2,750	1,400	9.7	69.0	27.8	244	1,790	410	28.2	
	House holds					7.7	5,360		60.9	0.25	3.44	2.29	4.00	50.5	8.53		
S-11 (W-15)	Hand pump	0.05			24.6	8.0	2,900	1,600	820	8.5	17.8	11.3	289	964	205	26.8	
	Mo used					8.3	3,210		35.7	0.22	0.89	0.93	4.74	27.2	4.26		
S-17 (W-31)	Hand pump	0.05	6.5	3.4	7.9	8.5	3,750	2,000	940	4.1	26.0	8.5	240	1,110	520	30.4	
	House holds					8.1	4,470		40.9	0.10	1.30	0.70	3.94	31.3	10.8		
S-25 (W-45)	Hand pump	0.05	4.0	1.7	20.4	7.8	1,250	650	790	9.0	16.2	17.7	248	67.2	308	25.0	
	House holds					7.5	1,180		34.4	0.23	8.08	1.45	4.07	1.90	6.41		
S-26 (W-46)	Hand pump	0.05	10.5	4.4	5.4	9.2	750	380	190	2.0	2.6	1.0	321	56.6	53.0	22.6	
	House holds					8.6	830		8.27	0.05	0.13	0.08	5.26	1.60	1.10		
S-27 (W-47)	Hand pump	0.05			21.5	8.9	880	440	230	6.1	10.4	3.2	311	120	81.0	21.2	
	House holds					8.2	954		10.0	0.16	0.52	0.26	5.10	3.38	1.68		
D-1 (W-1)	Centrifugal pump	0.20			24.3	7.7	5,000	2,800	1,660	17.4	122	486	216	2,250	486	21.9	
	Agri-cultural					7.4	6,280		72.2	0.45	6.09	399	3.54	63.5	10.1		
D-8 (W-20)	"	0.30	60.0	(7.0)	(1.8)	7.7	3,000	1,650	900	10.4	93.0	29.0	284	1,270	267	31.5	
	"					7.5	4,060		39.2	0.27	4.64	2.38	4.66	35.8	5.55		
D-14 (W-33)	Vertical turbine pump	0.15	45.6	(11.0)	(5.9)	7.6	6,000	3,450	1,280	24.5	235	79.0	262	2,020	875	34.8	
	"					7.4	7,480		55.7	0.63	11.73	6.49	4.30	57.0	18.2		

Fig. III.C.1 Spots of Well Survey

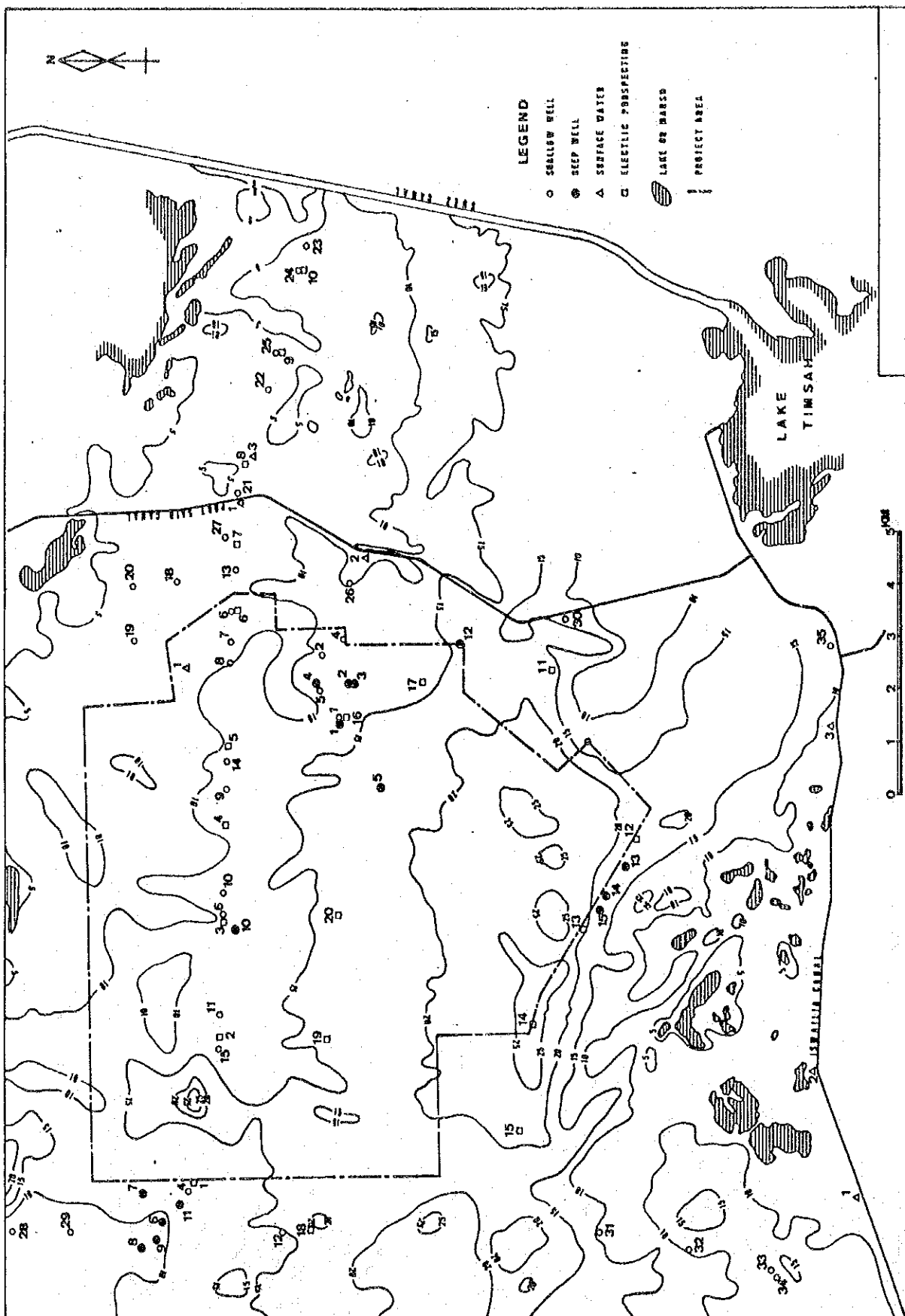


Fig. III.C.2 Distribution of Ground Water Temperature

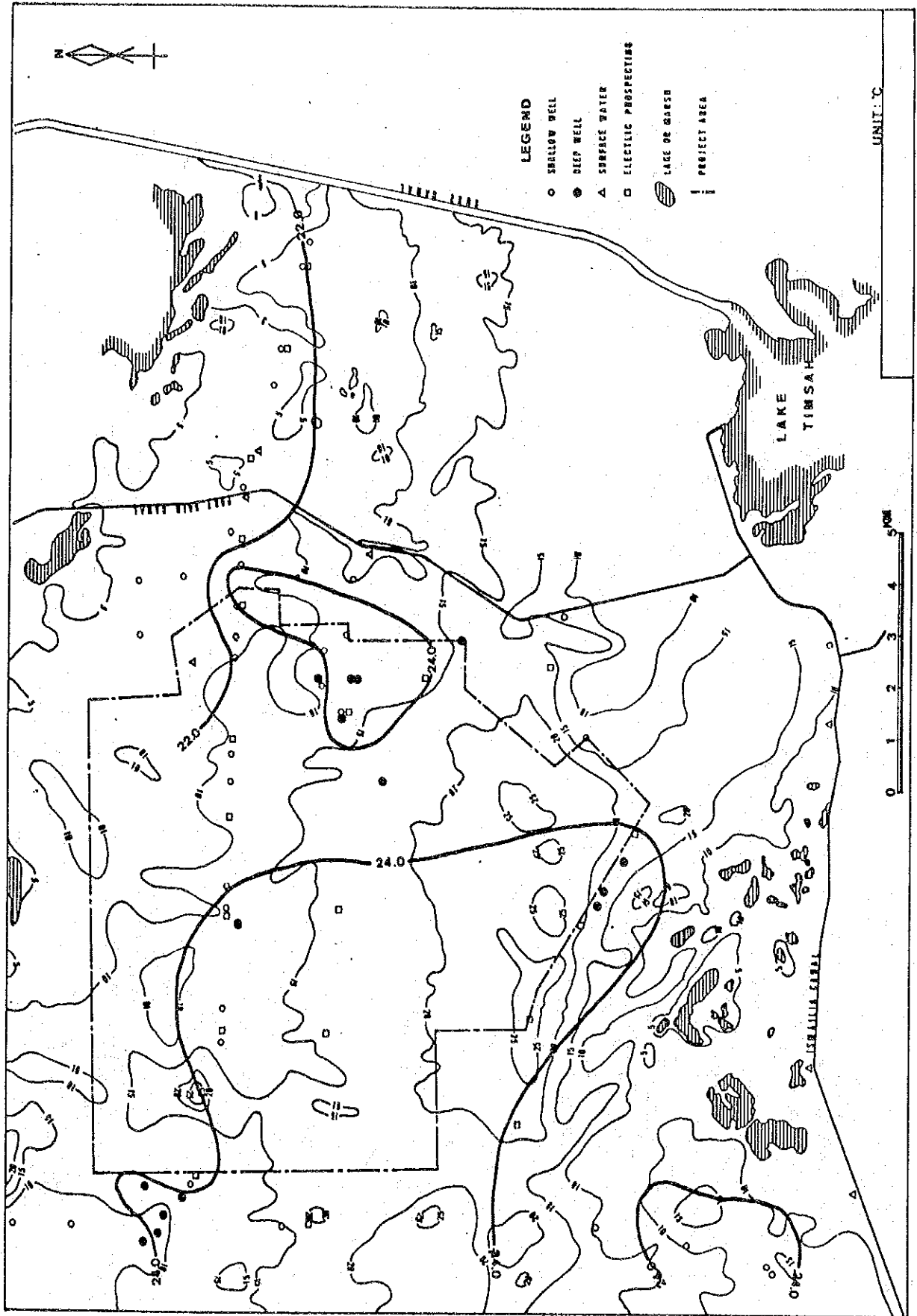


Fig. III.C.3 pH Distribution of Well Water

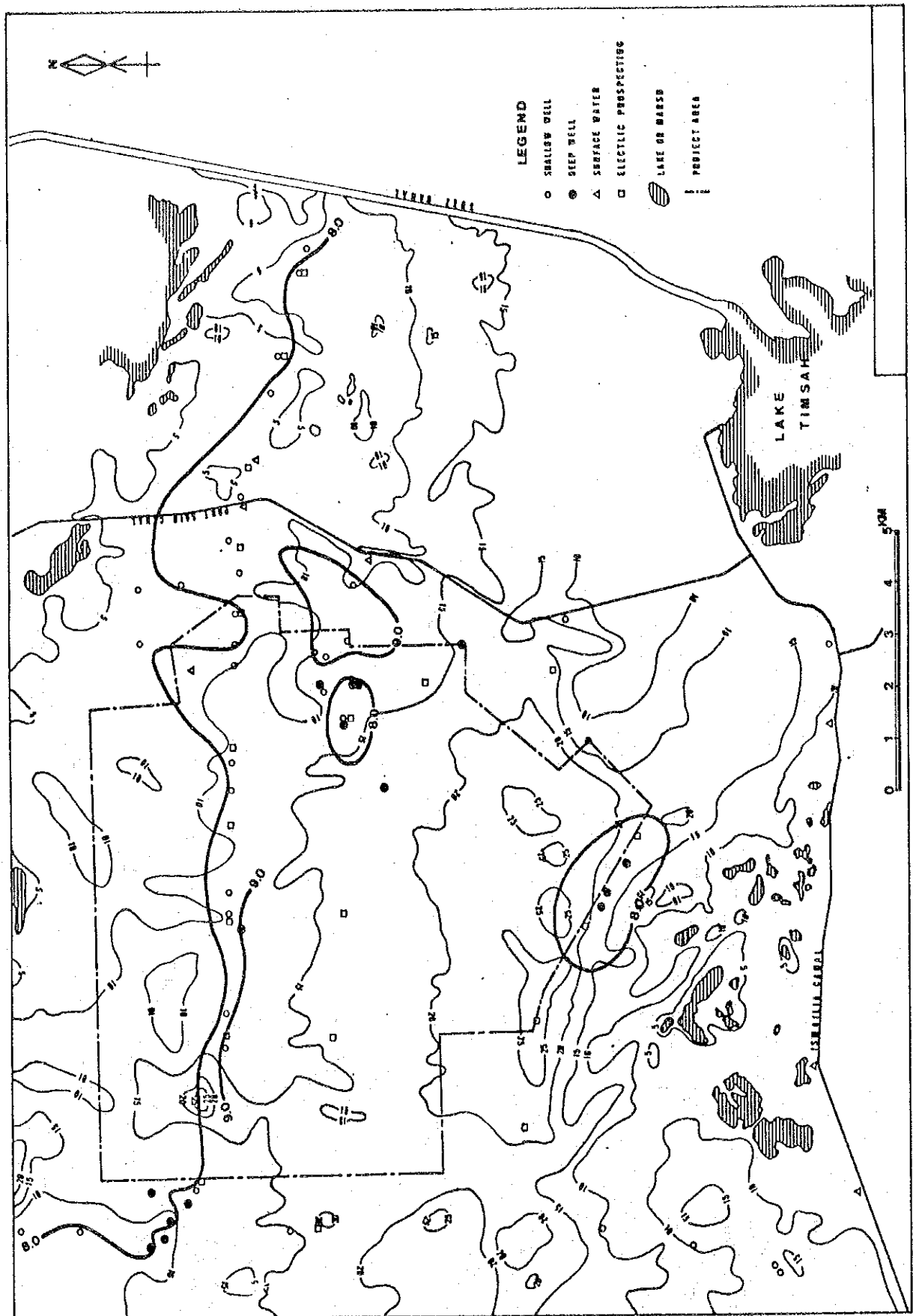


Fig. III.C.4 NaCl Distribution of Well water

