

ZAMSURECO

**INITIAL ENVIRONMENTAL EXAMINATION
for proposed SALUG-DAKU Mini-hydro Power
Plant Project**

July 31, 2008

ENG'R ALAN B. DE GALA
Regional Director
EMB, DENR - IX
GMV Drive, Gov. Camins Avenue
Zamboanga City

Dear Sir:

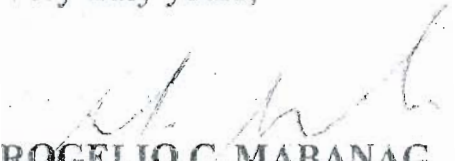
In connection with our APPLICATION for an **ENVIRONMENTAL COMPLIANCE CERTIFICATE (ECC)** for the **PROPOSED SALUG-DAKU MINI-HYDRO POWER PLANT PROJECT** located at Salug Daku River, Josefina, Zamboanga del Sur, of **ZAMSURECO-1, J.S. Alano St., Pagadian City** represented by **MR. ROGELIO C. MABANAG**, President, Board of Directors, we wish to submit the **INITIAL ENVIRONMENTAL EXAMINATION (IEE)** study conducted on the Proposed Project together with all the requirements as stipulated.

We hope that this document will merit your kind approval.

Thank you and more power,

Advance Merry Christmas and Happy New Year!!!

Very truly yours,



ROGELIO C. MABANAG

Project Proponent
TIN No. 113-716-108
Representative / President
Board of Directors
ZAMSURECO-I

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INITIAL ENVIRONMENTAL EXAMINATION (IEE) CHECKLIST

For

SALUG-DAKU MINI-HYDRO POWER PLANTS SALUG-DAKU RIVER, JOSEFINA, ZAMBOANGA DEL SUR

SECTION 1

1.0 GENERAL INFORMATION

1.1 Project Name/Title: SALUG-DAKU, MINI-HYDRO POWER PLANT
 1.2 Proposer/Company: MR. ROGELIO C. MABANAG - Representative
President, ZAMSURECO - I, Board of Directors
 Address: J. S. ALANO ST., PAGADIAN CITY
(Street/sitio, Barangay, City/Municipality, Province)
 Tel/Fax: 2152737 / 2151708
 E-mail: 2141880

1.3 Project Location: SALUG - DAKU RIVER, JOSEFINA, ZAMBOANGA DEL SUR
(Street/sitio, barangay, city/municipality, province)
(Pls. see attached location Map with Landmarks, Political Boundaries)

1.4 Scheme of Hydro Development:

☒ Run-of-water Scheme ☐ Storage Scheme

1.5 Project Objective/s: To provide sustainable and cheap power supply to further supplement the energy demand of ZAMSURECO - I

1.6 Project Ownership:

Type of Owner(s): ☐ Single Proprietorship ☐ Corporation
☐ Partnership/Joint Venture ☒ Cooperative
☐ Others, pls. Specify: Zamboanga Del Sur Electric Cooperative-I (ZAMSURECO-I)

(Pls. see attached Certificate of Registration (NEA) as ANNEX A

(Pls. see attached Articles of Incorporation as ANNEX B

(Pls. see attached Certificate of Franchise as ANNEX C

1.7 List of Owners (in case of partnership/corporation):

Note: OWNERS ARE THE MEMBER CONSUMERS

1.8 Project Cost

Total Project Cost (Range): P 1,081,232,200
(Pls. see attached Estimated Project Cost as Annex D)

2.0 PROJECT AREA DESCRIPTION

2.1 Project Area Coverage:

Watershed area (km²):

Above weir/ intake: 170 Sq. - Kilometer
 Total watershed area of river: 375 Sq. - Kilometer

Area of project sites (m² or ha):

Total area: 48,000 Sq. m
 Structures: 40,000 Sq. m Buildings: 4,000 Sq. m
 Impoundment: N/A Switchyard: 4,800 Sq. m
 Others, pls. specify: Roads : 16,200 Sq. (22 Km)

(Pls. see attached location Maps showing all project sites and Flow-Chart Diagram)

2.2 General Water Appropriation:

- ☐ Domestic ☐ Municipal ☐ Irrigation ☒ Power Generation
☐ Fisheries ☐ Livestock Raising ☐ Industrial ☐ Recreational
☐ Others, pls. specify: _____

2.3 General Land Classification of project areas:

- ☒ Public Land (ha): 110 ha
☐ A (applicable), (ha): _____ ☐ D (disposable), (ha): _____

2.4 Present Land Use Classification (based on the approved land use/zoning ordinance of the city/municipality).

- ☒ Agriculture ☐ Residential ☐ Tourism
☐ Industrial ☐ Forest Land ☐ Institutional
☐ Commercial ☐ Open Spaces
☐ Others, pls. Specify : Mountainous, River Bank / Cliffs in Terrain

3.0 PROJECT COMPONENTS

3.1 Relevant Dimensions

Dimension		Proposed Project
Plant Capacity	MW	18.5
Max. Plant Discharge	m ³ /s	6.8
Min. Plant Discharge	m ³ /s	1.04
Max. Headwater Level	m.a.s.l	750.40
Min. Operating Headwater Level	m.a.s.l	746
Tailrace Water Level	m.a.s.l	235
Estimated Net Head	m.a.s.l	515 m
Total Storage Volume	M3	Water diversion Only

3.2 Structures and Buildings

3.2.1 Description

FACILITY	SPECIFICATION / DESCRIPTION	CHARACTERISTICS		
		AREA (m ²)	LENGTH (m)	HEIGHT (m)
WEIR 1	6 X .50 X 45 (m)	135	45	6
WEIR 2	6 X .50 X 50 (m)	150	50	6
WEIR 3	6 X .50 X 40 (m)	120	40	6
WEIR 4	6 X .50 X 60 (m)	180	60	6
INTAKE STRUCTURE 1	2.6 X 2.6 (m)	600	2.6	6
INTAKE STRUCTURE 2	2.6 X 2.6 (m)	660	2.6	6
INTAKE STRUCTURE 3	2.6 X 2.6 (m)	720	2.6	6
INTAKE STRUCTURE 4	2.6 X 2.6 (m)	900	6.6	6
HEAD RACE 1	2.10 X 650 (m)	1,365	650	N/A
HEAD RACE 2	2.10 X 1,500 (m)	3,150	1,500	N/A
HEAD RACE 3	2.40 X 3,400 (m)	8,160	3,400	N/A
HEAD RACE 4	2.55 X 5,570 (m)	14,203.50	5,750	N/A
SURGE TANK 1	3.00 X 12.70 X .30 (m)	38.10	3	12.70
SURGE TANK 2	3.00 X 18.07 X .30 (m)	54.21	3	18.07
SURGE TANK 3	7.00 X 27.91 X .30 (m)	195.37	7	27.91
SURGE TANK 4	7.00 X 33.23 X .30 (m)	232.61	7	33.23
FOREBAY 1	N/A			
FOREBAY 2	N/A			
FOREBAY 3	N/A			
FOREBAY 4	N/A			
PENSTOCK 1	1.20 X 260 (m) X 8mm	312	260	N/A
PENSTOCK 2	1.20 X 150 (m) X 8mm	180	150	N/A
PENSTOCK 3	1.50 X 180 (m) X 8mm	270	180	N/A
PENSTOCK 4	1.50 X 250 (m) X 8mm	375	250	N/A

FACILITY	SPECIFICATION / DESCRIPTION	CHARACTERISTICS		
		AREA (m ²)	LENGTH (m)	HEIGHT (m)
POWERHOUSE 1	12 X 66.67 (m)	800	12	6
POWERHOUSE 2	12 X 66.67 (m)	800	12	6
POWERHOUSE 3	12 X 100 (m)	1,200	12	6
POWERHOUSE 4	12 X 100 (m)	1,200	12	6
TAILRACE 1	3 X 3 X 3 (m)	27	3	3
TAILRACE 2	3 X 3 X 3 (m)	27	3	3
TAILRACE 3	3 X 3 X 3 (m)	27	3	3
TAILRACE 4	3 X 3 X 3 (m)	27	3	3
SWITCHYARD 1	6 X 6 (m)	36	6	N/A
SWITCHYARD 2	6 X 6 (m)	36	6	N/A
SWITCHYARD 3	6 X 6 (m)	36	6	N/A
SWITCHYARD 4	6 X 6 (m)	36	6	N/A

3.2.2 Access

FACILITY	ACCESS		NEW OR UPGRADING ACCESS TO PROJECT SITE		
	Access from (Preferable main road)	Distance (Km)	Max. Allowable weight on road (T)	Length (m)	Height (m)
WEIR 1	BRGY. ROAD	1.5	20 T	6m	N/A
WEIR 2	BRGY. ROAD	1.5	20 T	6m	N/A
WEIR 3	BRGY. ROAD	2	20 T	6m	N/A
WEIR 4	BRGY. ROAD	2.5	20 T	6m	N/A
HEADRACE 1	BRGY. ROAD	1	20 T	6m	N/A
HEADRACE 2	BRGY. ROAD	2	20 T	6m	N/A
HEADRACE 3	BRGY. ROAD	2.5	20 T	6m	N/A
HEADRACE 4	BRGY. ROAD	3	20 T	6m	N/A
SURGE TANK 1	BRGY. ROAD	1.5	20 T	6m	N/A
SURGE TANK 2	BRGY. ROAD	2.5	20 T	6m	N/A
SURGE TANK 3	BRGY. ROAD	3	20 T	6m	N/A
SURGE TANK 4	BRGY. ROAD	3.5	20 T	6m	N/A
PENSTOCK 1	BRGY. ROAD	2	20 T	6m	N/A
PENSTOCK 2	BRGY. ROAD	3	20 T	6m	N/A
PENSTOCK 3	BRGY. ROAD	3.5	20 T	6m	N/A
PENSTOCK 4	BRGY. ROAD	4	20 T	6m	N/A
POWERHOUSE 1	BRGY. ROAD	2.5	20 T	6m	N/A
POWERHOUSE 2	BRGY. ROAD	3.5	20 T	6m	N/A
POWERHOUSE 3	BRGY. ROAD	4	20 T	6m	N/A
POWERHOUSE 4	BRGY. ROAD	4.5	20 T	6m	N/A

3.3 Transmission Line

Transmission from Switchyard to		New Transmission Line	
Location of next Substation/Tapping Point	Voltage [V]	Length [km]	Right-of-way [m]
Brgy. Sanda Mahayag, ZDS.	13.2 KV	25 Km	3m

(Pls. see attached location map showing all project sites)

4 Resource Requirements

Water Demand:

Design Discharge (m³/s or l/s): SALUG-DAKO - 1 & 2 = 2.83 m³ / S
SALUG-DAKO - 3 & 4 = 6.8 m³ / S

Others, pls. Specify _____

Other Resource Requirements, pls. specify: _____

3.5 Water Treatment and Sewage Disposal N/A

Is water used for other purpose than energy generation?

☒ No ☐ Yes, pls. specify: _____

If yes, is there provision for water treatment?

☐ No ☐ Yes, pls. describe: _____
☒ N/A

If sewage disposal is required, what system is used? (Domestic Waste Only)

☒ Individual Septic Tank ☐ communal Septic Tank
☐ N/A

3.6 Handling and Disposal of Dangerous Substances

What kind of dangerous substances (e.g. oil, lubricants, chemicals; pls. Specify) are used during:

• Pre/Construction Phase: No Mechanical Equipment used
Man Power Only

• Operation/Maintenance Phase: No oil or lubricants used

Is an oil water separator installed?

☒ No ☐ Yes, Location: _____

What oil/Lubricants Collection and Disposal System is used? N/A

Collection System: _____ Volume of storage containers(l): _____
Storage Location: _____

Disposal System: N/A

☐ Recycled ☐ Sold to Re-cyclers
☐ Others, pls. Specify: _____

3.7 Solid Waste Disposal System (Domestic Waste Only)

Collection System:

☐ Association/project-maintained garbage collection system
☒ Integrated into municipal garbage collection system
☐ Others, pls. Specify: _____

Disposal System :

☐ Burning at open dumpsite ☒ Open dumpsite in project site
☐ Sludge cleaning ☐ Municipality/City landfill site
☐ Others, pls. Specify: _____

Location of waste disposal site: (Domestic Waste Only at project site)

3.8 Manpower and Employment

How many people will be employed by the proposed Mini Hydro Power Plant during:

(Pre)Construction Phase:	1- ARCHITECT
1- PROJECT MANAGER	1- LEGAL COUNCIL
1- ASST. PROJECT MANAGER	2- PROJECT COORDINATOR
2- CIVIL ENGINEER	2- ACAD OPERATORS
1- GEODETIC ENGINEER	2- TESTING LABORATORY TECHNICIANS
1- HYDRO POWER ENGINEER	2- DRAFTSMEN
1- STRUCTURAL ENGINEER	1- ACCOUNTING CLERK
1- GEOLOGIST	1- RECORD OFFICER
1- MATERIALS ENGINEER	2- ENCODERS
1- PROFESSIONAL MECHANICAL ENGINEER	3- DRIVERS
1- PROFESSIONAL ELECTRICAL ENGINEER	2- UTILITY MEN
	1- SECRETARY
	32 - TOTAL WORKERS

Construction Phase:

3- CONST. FOREMAN
10- CARPENTERS
10- MASON
5- STEEL MEN
3- ELECTRICIAN
4- WELDER
5- PIPE FILLER

6- DRIVER
4- RIGGER
2- SPOTTER
4- PAINTER
4- CONCRETE MIXER
15- UNSKILLED
5- PLUMBER

81 - TOTAL WORKERS

PRE-CONSTRUCTION AND CONSTRUCTION PHASE: Overall Total Workers -----113 workers

Operation and Maintenance Phase: 18 Workers

OPERATION AND MAINTENANCE PHASE

4- ADMINISTRATIVE / FINANCE
1- PLANT MANAGER
2- MECHANICAL SHIFT OPERATORS (ENGR.)
2- ELECTRICAL SHIFT OPERATORS (ENGR.)
3- TENDERS
1- DRIVER
1- UTILITY MAN
4- SECURITY PERSONNEL

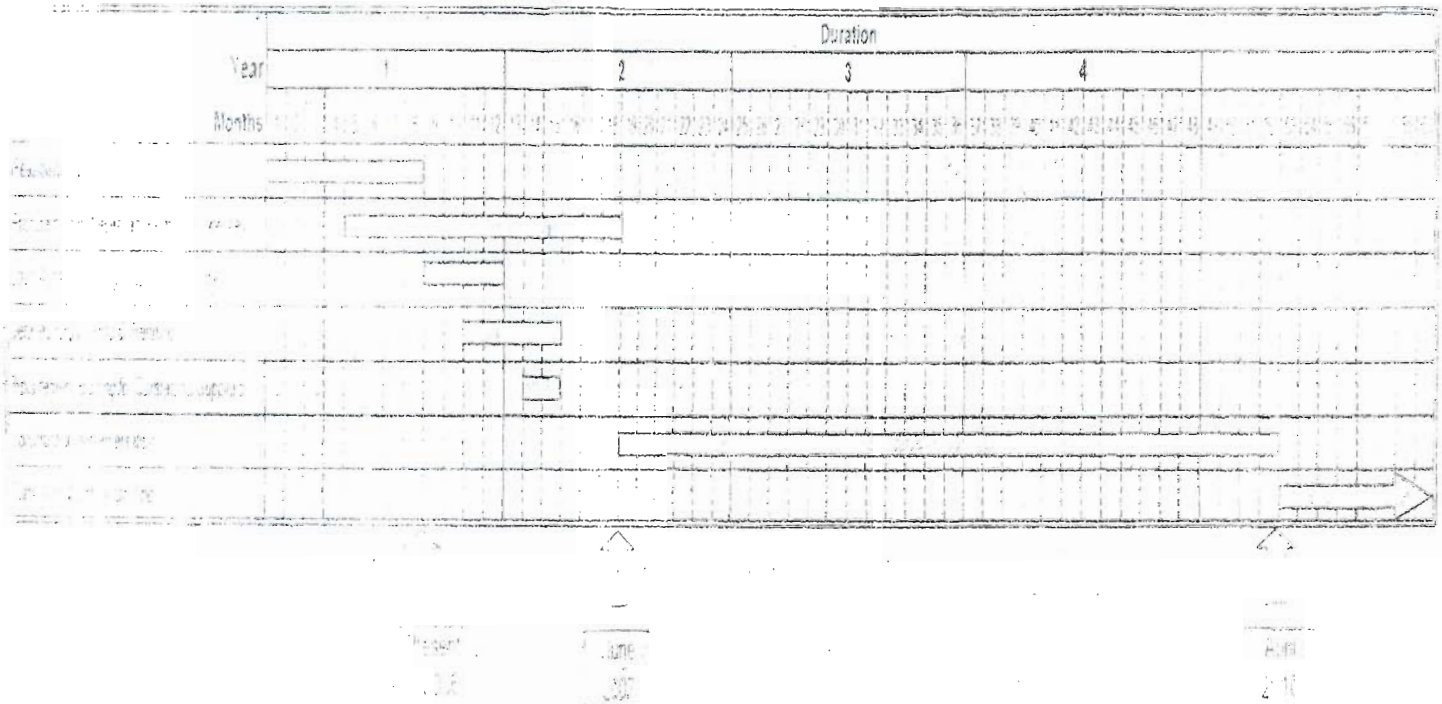
18 - TOTAL WORKERS

OPERATION AND MAINTENANCE PHASE: Overall Total Workers -----18 workers

Project Schedule

SALUG-DAKU, MINI-HYDRO POWER PLANT
Salug-Daku River, Josefina, Zamboanga del Sur

SCHEDULE OF DEVELOPMENT ACTIVITIES FROM PRE-CONSTRUCTION, CONSTRUCTION AND OPERATION PHASE



3.10 Pictures of Project sites

(Attach schedule of project sites and its immediate vicinity looking up-and downstream/north and south)



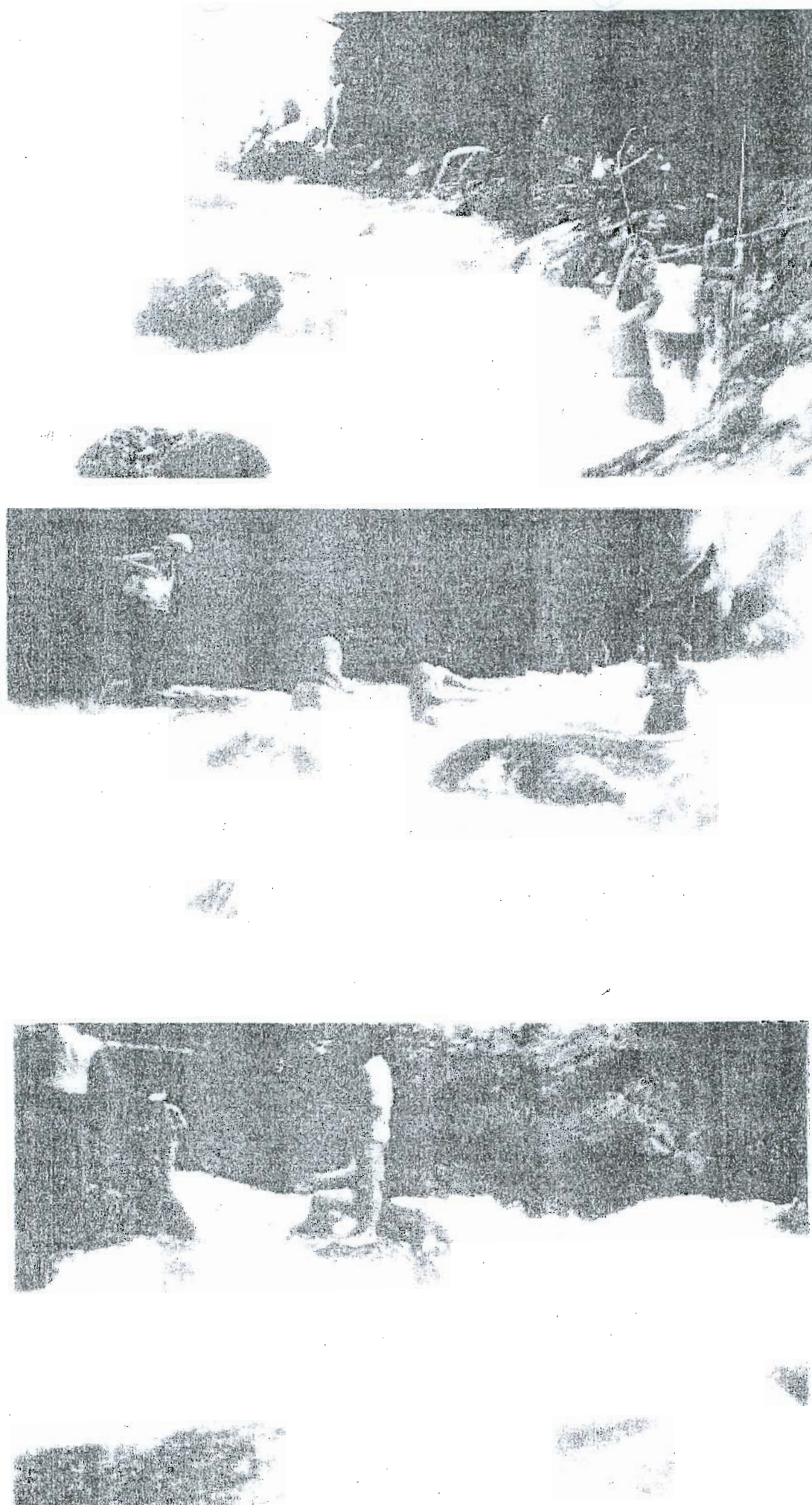
PANORAMIC VIEW SHOWING THE UPSTREAM PORTION
OF THE SALUG-DAKU RIVER (SOUTH DIRECTION)



PANORAMIC VIEW SHOWING THE DOWNSTREAM PORTION OF
THE SALUG-DAKU RIVER (NORTH DIRECTION)

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PANORAMIC VIEW SHOWING
THE RAPIDS AND FLOWS OF THE SALUG-DAKU RIVER

affini

Ph. A. B.

SECTION 2

4.0 BASELINE ENVIRONMENTAL CONDITIONS

4.1 Natural and Physical Environment

River characteristics (length of river between intake and tailrace, slope, waterfall, typical flow depths), pls. describe and attach maps/photographs:

FACILITY	Length of River between intake and tailrace	SLOPE	Water Fall	Typical Flow Depths
WIER - 1	650 m.	.002	N/A	1.5 m.
WIER - 2	1,500 m.	.003	N/A	1.5 m.
WIER - 3	3,400 m.	.004	N/A	1.5 m.
WIER - 4	5,570 m.	.003	N/A	1.5 m.

Flood characteristics of the river:

Return Period [Years]	Statistical flood discharge (as far as known) [m ³ /s]
2	N/A
5	N/A
50	N/A
100	2,500 m ³ / S
500	N/A

Are there areas in the site where indication of soil erosion occur?

☒ No

☐ Yes, pls. specify and/or attach pictures: _____

If yes, what causes the erosion? Pls. specify: _____

Have any landslides occurred or still are occurring in the project area?

☒ No

☐ Yes, pls. specify and/or attach picture: _____

What are the present used of water bodies (ground water surface water) in the watershed of the proposed project area?

☒ Washing ☐ Recreation (swimming, boating, Etc.)

☐ Source of drinking water (body/ location / demand [l/s]):

N/A

Sanitation (body/location / demand [l/s]):

N/A

☐ Irrigation (body/location / demand [l/s]):

☐ Fishing (body/location / demand [l/s]):

☐ Others, pls. Specify: N/A

What is the present land use of the project wherein the structures and buildings of the proposed mini hydro power plant will be located?

Facility	Area [m ²] or [ha]	Present Land Use Categories see below
Weir/intake	2,400 sq.m	Cliffs / River Bank
Headrace	81,600 sq. m	Cliffs / River Bank
Surge Tank	520.29 sq.m	Cliffs / River Bank
Forebay	N/A	Cliffs / River Bank
Powerhouse	4,000 sq. m	Cliffs / River Bank
Tailrace	108 sq. m	Cliffs / River Bank
Switchyard	144 sq. m	Grass Land
Others pls specify		

Categories:

- (1) Prime agricultural land (productive/irrigated); (2) Prime agricultural land (abandoned); (3) Grassland; (4) Build-up; (5) Orchard; (6) Marsh/Mangrove; (7) Fishpond; (8) Others (pls. Specify)

Was the present water quality in the river assessed?

☒ No

☐ Yes, pls. Insert results in table:

Parameter		Sample			
pH					
Total Suspended Solids	ppm				
Total Coliform	No.	N/A	N/A	N/A	N/A
Oil and Grease	Mg/l	N/A	N/A	N/A	N/A
Chlorides	Mg/l	N/A	N/A	N/A	N/A
Copper	Ppm	N/A	N/A	N/A	N/A
Lead	Ppm	N/A	N/A	N/A	N/A
Iron	Ppm	N/A	N/A	N/A	N/A
Manganese	Ppm	N/A	N/A	N/A	N/A
Total Hardness	Mg/l	N/A	N/A	N/A	N/A
Alkalinity	Mg/l as CaCO ₃	N/A	N/A	N/A	N/A
Pesticides, pls. Specify:					

Pls. Describe methods and locations of sampling and attach chemical attests:

N/A

4.2 Biological Environment

Are there flora and/or fauna of ecological or commercial significance to be found in the water bodies near within the project area that might be affected by the proposed project?

☒ No, pls. discuss probable reasons:

(The methods of the proposed project is water diversion only)

☐ Yes, pls. specify (water body/location/species/significance of the population):

N/A

What methods and data sources were used to assess the flora and fauna in the water bodies? Pls. describe and/or attach documents:

N/A

Is there flora and/or fauna of ecological or commercial significance to be found outside the water bodies near within the project area that might be affected by the proposed project?

☒ No

☐ Yes, pls. specify (location/location/significance):

N/A

4.3 Socio-Cultural, Economic and Political Environment

Are there existing settlements in the watershed area of the proposed project?

☒ No

☐ Yes, pls. specify (location/number of households, families and population):

The area is mountainous, cliffs and river banks

What methods and data sources were used to gain information on the existing settlements? Pls. describe and/or attach documents:

Actual visits in the area

What social infrastructures are located in or near the project area? Pls. describe.

Facility	Location	Capacity	
		ber of persons	Sufficient (yes/no)
School(s)	N/A		
Health Center(s)/Clinic(s)	N/A		
Hospital(s)	N/A		
Others, pls. specify	N/A		

(The project site is very far from the municipal proper of Josefina ZDS. The area is mountainous, cliffs and river banks)

Is the political situation (peace and order) stable in the near the project area?

☒ Yes

☐ No, pls. describe:

Peace and order is implemented in the area

What are the major employment and income sources in and around the project area?

Livelihood	Percentage of Population living on
Farming	N/A
Fishing	N/A
Backyard poultry and piggery	N/A
Vending/Bug and Sell	N/A
Sari-sari store	N/A
Others, pls. specify:	

(No settlements in the area)

Are there existing local non-governmental organizations in or around the project area?

☒ No

☐ Yes, pls. identify:

The project site is Mountainous / Cliffs / River Banks

Social acceptability of the project assessed (community, government, non-governmental organizations)?

☒ No

☐ Yes, pls. describe and/ or attach documents:

The project site is Mountainous / Cliffs / River Banks

SECTION 3

5.0 IMPACT ASSESSMENT / MITIGATION MEASURES

5.1 Project Location and Design

Impact	Evaluation		Mitigation Measures	Responsibility
	Relevant Subjects and Parameters	Magnitude of Impact		
Loss of species due to obstructions to movement of aquatic life	Height of the weir(m): <u>6.00 m</u>	☒ none ☐ low ☐ moderate ☐ high	☒ No mitigation measure ☐ Fishway or by-pass planned. Pls. Describe design and arrangement of the proposed mitigation facility and attach plans: ☐ Further measures, pls. specify.	Proponent
Fish injuries due to passing through turbine or across sharp edged weir	Width of openings of screen or rack at intake (mm) : <u>2 inches</u> Design of weir spillway	☒ none ☐ low ☐ moderate ☐ high	☐ No mitigation measure ☐ Planned measures, pls. Specify:	Proponent

Drying out of the riverbed between the intake and the outlet	Minimum residual flow with proposed project: -In m3/s or l/s: <u>N/A</u> In % of mean annual flow without proposed project: <u>N/A</u> (Diversion of water only)	☒ none ☐ low ☐ moderate ☐ high	How is the residual flow provided? ☐ With a residual flow section in the weir ☐ By-pass pipeline ☐ Other pls. Specify ☐ Other measures, pls. specify: <u>N/A</u>	N/A
Downstream Erosion due to reduction or inhibition of bed load transport	Design and arrangement of the weir and the intake: <u>N/A</u> (Diversion of water only)	☒ none ☐ low ☐ moderate ☐ high	Design and arrangement of the weir and the intake? Pls. Attach drawing or plan: <u>N/A</u>	N/A
Sludge alluvial deposits, increased growth of algae, Reduction of capacity for self-cleaning of the water due to the transformation of a stream into an impoundment	Tot. storage volume (m3): <u>N/A</u> Tot. surface area of the impoundment (m2): <u>N/A</u> (Diversion of water only)	☒ none ☐ low ☐ moderate ☐ high	☒ No mitigation measure ☐ Planned measures, pls. Specify:	N/A
Impairment on aesthetics or cultural heritage due to protruding structures	Architecture, size and construction materials of buildings and structures: <u>N/A</u>	☐ none ☒ low ☐ moderate ☐ high	Architecture, size and construction materials of major buildings? Pls. describe and attach plans: <u>N/A</u>	N/A
Erosion due to building of roads and/or structures on steep slopes	Maximum slope at construction site (%; <u>N/A</u> if tunnel): -Weir and intake structure: <u>N/A</u> -Headrace: <u>.004</u> -Surge tank/Forebay <u>N/A</u> Penstock: <u>.5</u> -Powerhouse <u>N/A</u> -Tailrace: <u>N/A</u> -Others, pls. Specify: <u>N/A</u>	☐ none ☒ low ☐ moderate ☐ high	☐ No mitigation measure ☒ Slope stabilization with methods of bio-engineering, pls. Specify: ☐ Other slope stabilization measures, pls. Specify: ☐ Other measures, pls. Specify:	Proponent & Engineer's
Construction Phase				
Construction work in sensitive environment	Estimated duration of noisy and dust provoking activities during construction at all major project sites (days or months)? (Man Power Only) Estimated duration and volume of major transport traffic to construction sites (days and trucks per day)? <u>N/A</u>	☐ none ☒ low ☐ moderate ☐ high	☐ No mitigation measure ☒ General guidelines for construction work (safety, health, and environment). Pls. Attach guidelines and implementing procedures. ☐ Restricting of hours during which the offending activities are carried out. Pls. Specify: ☐ Use of blast mats ☐ Maintenance of equipment exhaust system	Proponent & Worker's

	Kind and number of machinery used at major construction sites? (Man Power Only)		☐ Removing and disposal of trees and any vegetation pushed or felled into watercourses ☐ Inhibition of illegal settlement and housing of wild animals as well as logging around the construction work ☐ Introduction of speed limits on access roads ☐ Other measures, pls. Specify:	
Contamination of soil and water due to spilling of dangerous substances (fuel, oil, lubricants, chemicals)	Storage, handling and disposal of dangerous substances (No mechanical used man power only)	☐ none ☐ low ☐ moderate ☐ high	☐ following of the regulation of RA 6969 ☐ Other measures, pls. Specify: N/A	Proponent & Worker's
Loss of habitat due to excavation work in watercourses	Volume of excavation in or at watercourses (m3): N/A (Diversion of Water Only)	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure ☐ Erosion control measures with methods of bio-engineering, pls. Specify: ☐ Other erosion control measures, pls. Specify: ☐ Protection measures for fish populations, pls. Specify: ☐ Other measures, pls. Specify:	N/A
Erosion and sedimentation due to disposal of spoil from excavation work	Estimated volumes of spoil from excavation work at construction sites (m3): (Man Power Only)	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure ☐ Disposal of spoil from excavation works at dedicated spoil and stockpile location, pls. Specify location(s): ☐ Related measures (drainage, re-vegetation) at stockpile location, pls. Specify: ☐ Other measures, pls. Specify:	N/A
Operation and Maintenance				
Obstruction to movement of aquatic life due to insufficient functionality of the migration facility	Functionality of mitigation facilities N/A	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure ☐ Frequent maintenance of fishway or by-pass, pls. Describe measures: ☐ Other measures, pls. Specify:	N/A

Loss of aquatic life due to surges as a consequence of intermittent operation of the hydro scheme	Estimated maximum variation of downstream discharge (m ³ /s) during normal plant operation within a period of 5 Minutes: 2.27 10 Minutes: 4.54 60 Minutes: 6.8	☐ none ☒ low ☐ moderate ☐ high	☒ No mitigation measure ☐ operation guidelines to limit surges, pls. describe: ☐ Other measures, pls. specify:	Proponent & Engineer's
Loss of aquatic life due to flushing of the impoundment	Volume of life storage, that will be maintained during plant operation phase (m ³ /s): (Diversion of Water Only)	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure ☐ Flushing during natural floods ☐ Provision and Implementation of flushing guidelines, pls. specify or attach flushing guidelines: If flushing during natural floods is not successful, what other strategies are planned to maintain the live storage? ☐ Dredging ☐ Flushing outside natural floods ☐ Others, pls. specify:	N/A
Accumulation of floating debris at the intake	Design of intake 2.6 X 2.6 m. Concrete	☐ none ☒ low ☐ moderate ☐ high	☒ No mitigation measure ☐ Measures to reduce or avoid accumulations of floating debris at the intake, pls. describe: If there will be accumulations of floating debris at the intake, how will it be disposed? Pls. describe: (Assigned dam tenders to maintain and regularly. Removed and collect for floating debris)	Dam tenders
Loss of habitats due to de-watering of basins and channels during revision and maintenance work	N/A	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure ☐ Relocation of fish population prior to de-watering of basins and channels ☐ Other measures, pls. specify: N/A	N/A

[Signature]

[Signature]

Abandonment and Rehabilitation Phase				
Contamination of soil and water due to abandoned equipment	Abandonment of plant facilities including all equipment (machinery electro-mechanical equipment) N/A	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure ☐ Abandonment plan including cost estimate, pls. describe and attach plan: N/A ☐ Other measures, pls. specify:	N/A
Flooding due to blocking of abandoned dam or weir	N/A	N/A	N/A	N/A

5.2 Risk Assessment

Risk	Evaluation		Mitigation Measures	Responsibility
	Relevant Subject and Parameters	Magnitude of Impact		
Downstream flooding due to failure of the dam or weir	Dam or weir stability N/A	☐ none ☒ low ☐ moderate ☐ high N/A	☐ No mitigation measure necessary ☐ Monitoring of dam or weir stability; pls. include monitoring plan (refer to paragraph 6.3.) ☐ Other measures, pls. specify:	N/A
Upstream flooding due to high head water level	Maximum flood water level in impoundment if sluice gate is blocked (m.a.s.l.): N/A	☐ none ☐ low ☐ moderate ☐ high N/A	☐ No mitigation measure necessary ☐ Restricting activities near impoundment, pls. specify: ☐ Other measures, pls. specify:	N/A

SECTION 4

6. ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

6.1. Environmental Management and Protection Plan: N/A

Subject	Activity
Watershed Management and Protection	Pls. describe or attach plan. (diversion of Water Only)
Protection of significant flora and fauna in or near the project area	Pls. describe or attach plan. (Diversion of Water only)

6.2 Disaster Preparedness Plan

Subject	Activity
Flood Alarm System N/A	Alarm System provided? ☒ Not necessary ☐ Yes, please describe or attach plan:
Evacuation Plan N/A	Evacuation Plan provided? ☒ Not necessary ☐ Yes, please describe or attach plan:
Others, pls. specify:	

6.3 Monitoring Plan

Subject	Parameter, Location, Frequency of Monitoring	Responsibility	Cost Estimated
Water Quality	Plant Site	Proponent	25,000
Fish Mitigation	N/A	N/A	N/a
Soil Erosion	N/A	N/A	N/A
Dam or weir stability	Dam Site	Proponent	12,000,000
Waste disposal	N/A	N/A	N/A
Others, pls. specify:			

7.0 ATTACHMENT AND ANNEXES

7.1 Government Permit and clearances

(Attach Photocopies of documents)

- ✓ Barangay and Municipal/ City Endorsement TCT/OCT/ID
- ✓ Location Clearance from HLURB
- ✓ National Water Resources Board (NWRB) Permit
- ✓ Other Permits or Clearances, if they are required for the proposed project, pls. specify:

7.2 Required Checklist Attachments

- ✓ Location maps, scale 1:25'000 and 1:10'000, with important landmarks, political boundaries, access points
- ✓ Location map(s), scale 1:10'000, showing all project sites
- ✓ Listing of detailed manpower requirements
- ✓ Schedule of development activities from pre-construction, construction and operation phase
- ✓ Pictures project sites and its immediate vicinity looking up- and downstream/ north and south

7.3 Further Attachments and Annexes

Pls. see attached Annex

PROPONENT'S COMMITMENTS

I am / We are committing to

- Comply with existing environmental rules and regulations, guidelines and criteria;
- Comply with all mitigation measures that have been identified in the report;
- Support multi-partite monitoring efforts to be organized;
- Maintain the cleanliness of the general surroundings;
- Participate or contribute towards a communal cleaning effort;
- Strictly implement a risk management plan and safety programme;
- Organize and conduct information, education and communication (IEC) activities on environmental, health and other civic issues;
- Others, pls. specify:

Submitted by

ROGELIO C. MABANAG
Representative / President
Board of Directors-Zamsureco-1
TIN. NO. 113-716-108

Prepared by

WILTER L. NOQUIAO
IEE Preparer
Pollution Control Officer

ACKNOWLEDGMENT

BEFORE ME this 11th day of December 2006 at Pagadian City, personality appeared Rogelio C. Mabanag, with Community Tax Certificate No. 06916047 issued on Jan. 27, 2006 at Mahayag, Zamboanga del Sur, in his capacity as representative/President, ZAMSURECO-1, Board of Directors at Pagadian City and acknowledged to me that this IEE is his voluntary act and deed, and voluntary act and deed of the entity he represents. This document which consists of 15 pages, including the page of which this acknowledgment is an Initial Environmental Examination Report Checklist.

Witness: my hand and seal on the place and date above written.

Doc. No. 827
Page No. 1447
Book No. 11
Series of 2006

TRK
OP No.

CONT. IEE CHECKLIST OF SALUG-DAKU RIVER MINI-HYDRO POWER PLANT

Page 15

ACCOUNTABILITY STATEMENT OF THE PROJECT PROPONENT

This is to certify that the **PROPOSED SALUG-DAKU, MINI-HYDRO POWER PLANT PROJECT** located at Salug-Daku River, Josefina, Zamboanga del Sur, with all information in the enclosed Initial Environmental Examination (IEE) Report is true, accurate and complete. Should we learn of any information, which would make the enclosed IEE inaccurate, we shall bring said information to the attention of the appropriate Environment Management Bureau (EMB) of the DENR Regional Office.

We hereby bind ourselves jointly and solidarity with the preparers for any penalties that may be imposed arising from any misrepresentations or failure to state material information in the enclosed IEE report.

In witness whereof, we, hereby set our hands this 11th day of December 2006 at Pagadian City.


ROGELIO C. MABANAG

Project Proponent

Representative/President

Board of Directors-ZAMSURECO-I

Title/Designation

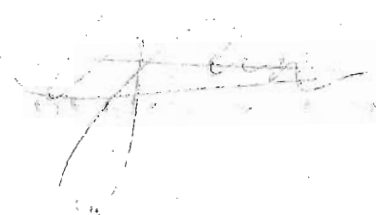
SUBSCRIBED AND SWORN to before me this 11th day of December 2006, affiant exhibiting to me his/her Tax Identification Number (TIN) 113-716-118 and Community Tax Certificate No. 06916047 issued at Mahayag, Zamboanga del Sur on January 27, 2006.

Doc. No. 8193

Page No. 1137

Book No. VI

Series of 2006


Notary Public

ACCOUNTABILITY STATEMENT OF THE PREPARER

This is to certify that the data/information contained in the Initial Environmental Examination (IEE) Report of PROPOSED SALUG-DAKU, MINI-HYDRO POWER PLANT PROJECT located at Salug-Daku River, Josefinaa, Zamboanga del Sur, are true, accurate and complete and that an objective and thorough assessment of the project was done.

In case of any information imputable to the undersigned shall have been found to be false, copied, or otherwise done as acts of infringement from other sources without proper citations and as a consequence of which will tend to misrepresent the findings of the study, the undersigned consultant shall bring said information to the attention of the appropriate Environment Management Bureau (EMB) of the DENR Regional Office.


WALTER Z. NOQUIAO

IEE Preparer/Pollution Control Officer

IEE PREPARER

Title/Designation

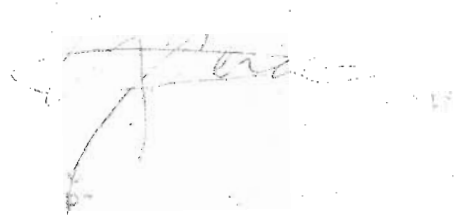
SUBSCRIBED AND SWORN to before me this 11th day of December 2006, affiant exhibiting to me his Tax Identification Number (TIN) 919-053-016 and Community Tax Certificate No 06940367 issued on February 02, 2006 issued at Sto. Niño Dist. Pagadian City.

Doc. No. 8197

Page No. 135

Book No. VI

Series of 2006



Republic of the Philippines
PROVINCE OF ZAMBOANGA DEL SUR
Municipality Of Josefinas
-00000-
OFFICE OF THE SANGGUNIANG BAYAN

EXCERPT FROM THE MINUTES DURING THE WEEKLY REGULAR SESSION OF THE
SANGGUNIANG BAYAN OF JOSEFINA, ZAMBOANGA DEL SUR HELD AT THE LEGISLATIVE
BUILDING ON SEPTEMBER 26, 2005

PRESENT

Hon. Carlito V. Cagod, Sr.	Municipal Vice Mayor Presiding Officer
Hon. Jaime N. Libre	SB Member
Hon. Helena M. Dalion	SB member
Hon. Perty Rey T. Flores	SB Member
Hon. Rolando Flonda	SB Member
Hon. Conchita C. Celiz	SB Member
Hon. Benjamin Jaiclen	SB Member
Hon. Manuel Bersaga	SB Member
Hon. Albertson Mag-usara	SB Member
Hon. Aylene Ursonal	SB Member
Hon. Yolando Mahinay	SB Member

ABSENT

N E

RESOLUTION NO. 09-227-2005

"AN EN BANC RESOLUTION APPEALING ALL MUNICIPAL GOVERNMENTS
WITH ZAMSURECO-1 AREA COVERAGE TO SUPPORT AND ENDORSE THE
ZAMSURECO-1 MINI HYDRO POWER PROJECT IN JOSEFINA, ZAMBOANGA
DEL SUR ALONG SALUG DAKU RIVER SO THAT TOGETHER OUR VOICES
WILL BE HEARD BY OUR OFFICIALS AT THE LOCAL AND NATIONAL LEVEL
AND HELP FACILITATE THE EARLY CONSTRUCTION OF OUR HYDRO
POWER PROJECT"

WHEREAS that we thank God for giving us the Salug Daku River a potential
source of Hydro Power;

WHEREAS from studies made, five (5) power plants can be constructed and/or
installed along Salug Daku River capable of generating a total of 20
megawatts more than sufficient to serve the power needs of
Josefinas;

WHEREAS a feasibility study has already been made that assures of the
feasibility and viability of the project;

WHEREAS Hydro Power is very much cheaper than power generated by oil
or geothermal steam;

WHEREAS we will save so much on dollars if we use Hydro Power, as Hydro
Plants are run by water not by oil;

WHEREAS the study of Salug Daku Hydro started way back 1993 & 1994 but
until now there is no concrete plan to construct the project;

WHEREAS even as we thirst for cheap and dependable power, Salug Daku
Hydro Power, has remain a dream;

NOW THEREFORE, in view of the foregoing, it was unanimously resolved that this August Body pass a resolution addressed to the City Government and Municipal Governments of municipalities within the coverage area of ZAMBU-ECO-1 appealing for their support and endorsement to the 3-Aug Mini Hydro Project so that together we can have a louder voice and a stronger influence to get our National and Local Offices such as the NEA, DOE, NCRP, DENR and others, to cause the early construction of the Mini Hydro Project.

That this resolution is also addressed to our Beloved Provincial Governor, Hon. Aurora E. Cerilles, to give our Mini Hydro Project her support and assistance to make the project a reality.

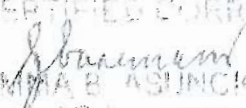
That through her leadership, and with ZAMBU-ECO-1, DENR, NCRP, DOE & the local officials of this province we are sure a proposal and an action plan can be developed which our Governor can readily submit and present to our National Leaders and if necessary to the President of the Philippine Republic, to hasten the realization of our Hydro Power Project.

UNANIMOUSLY APPROVED

We hereby certify to the correctness of the aforesaid resolution.

ATTESTED


CARLITO V. CAGOD SR.
Municipal Vice Mayor
Presiding Officer

CERTIFIED CORRECT

EMMA B. ASUNCION
SB Secretary

APPROVED


JULENITO L. MAG-USARA
Municipal Mayor

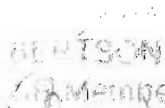

PERLY RESIT FLORES
SB Member


FELENA M. DALION
LL Member


YOLANDO B. MAHINAY
SB Member


CONCHITA C. CELIZ
SB Member

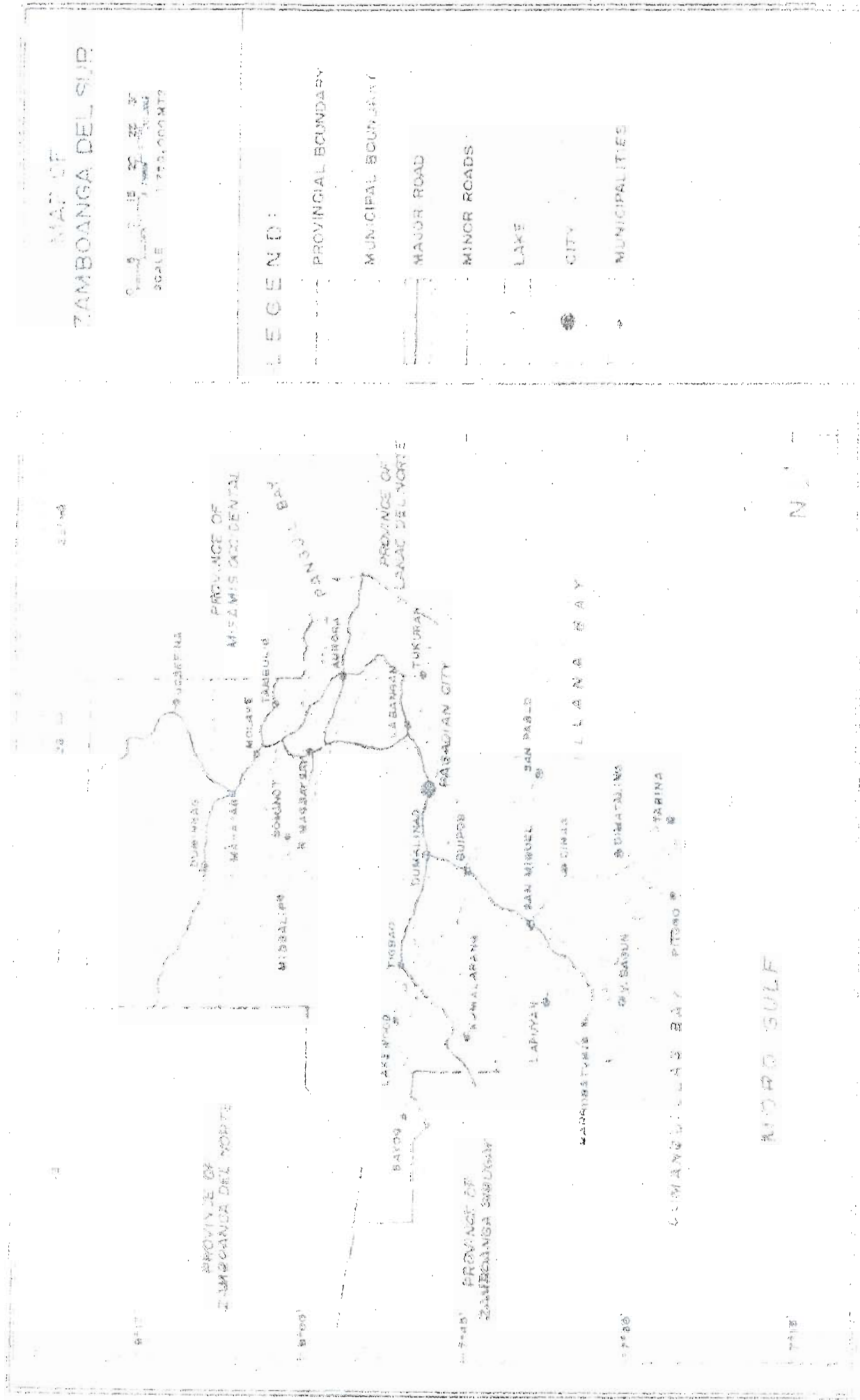

MANUEL D. BERSAGA
SB Member


ROBERTSON C. MAG-USARA
SB Member/AEC Pres


AILENE A. URSOLA
SB Member/CA Fed. J. 25


YOLANDO E. FLORIO
SB Member


BENIGNO B. B. B.
SB Member



MAP OF ZAMBOANGA DEL SUR WITH LANDMARKS AND POLITICAL BOUNDARIES

REGION 12
MUNICIPALITY
OF
JOSEFINA
PROVINCE OF
ZAMBOANGA DEL
SUR
SCALE
100 M. 1:100

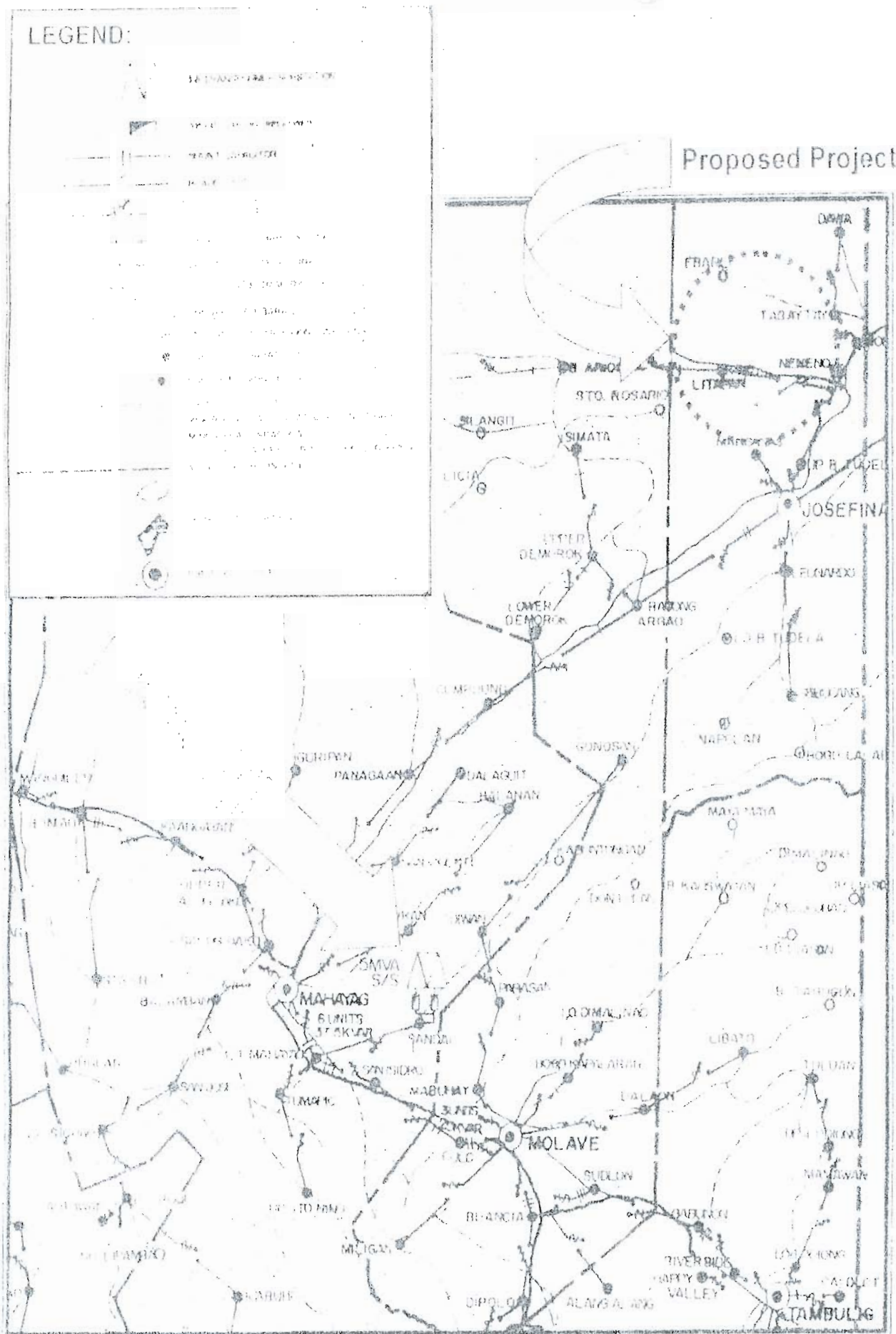
CONFIDENTIAL

Page 10 of 10

REG-2019-0001

- [illegible]

MAP OF JOSEFINA, ZAMBONGA DEL SUR

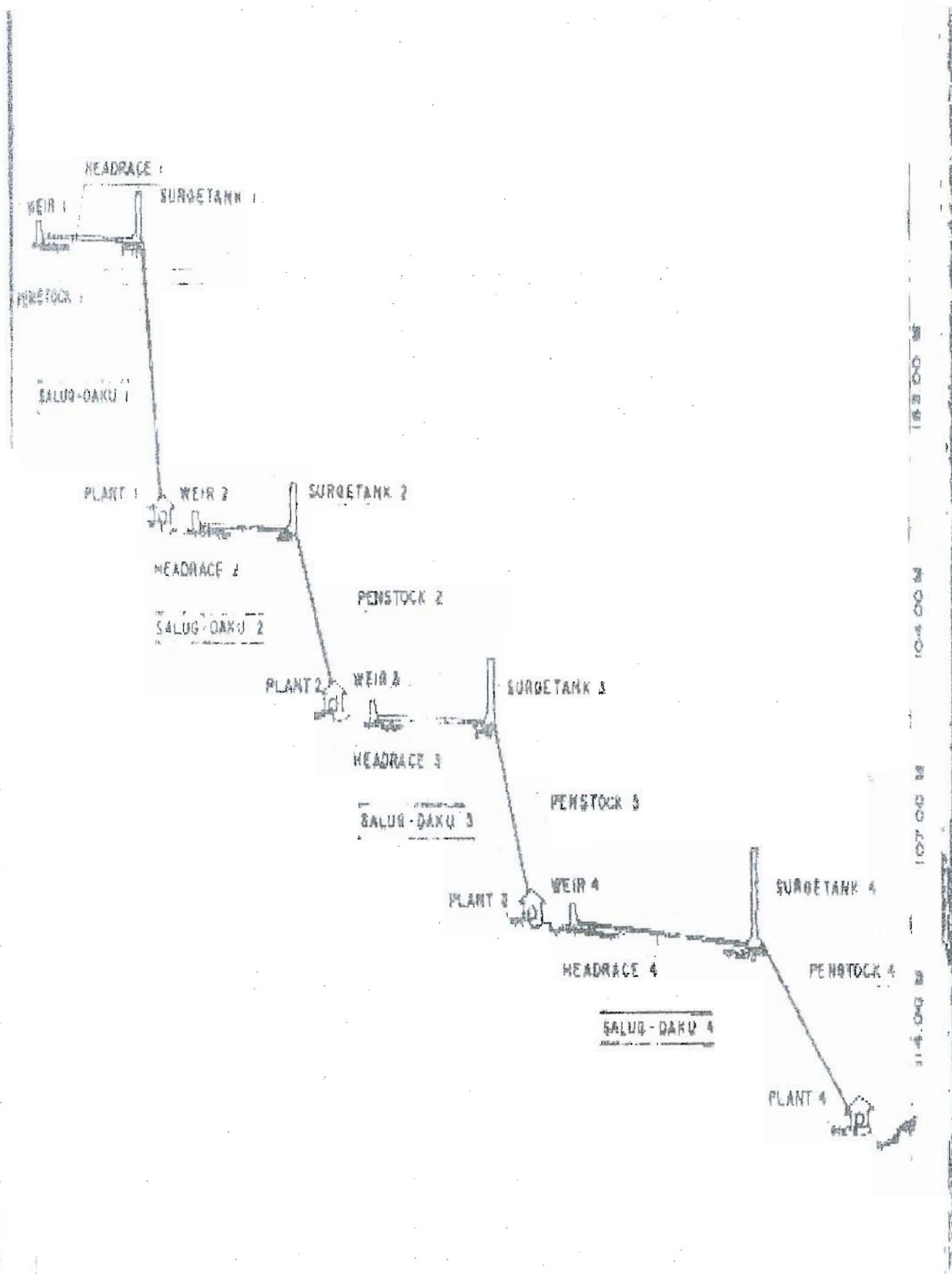


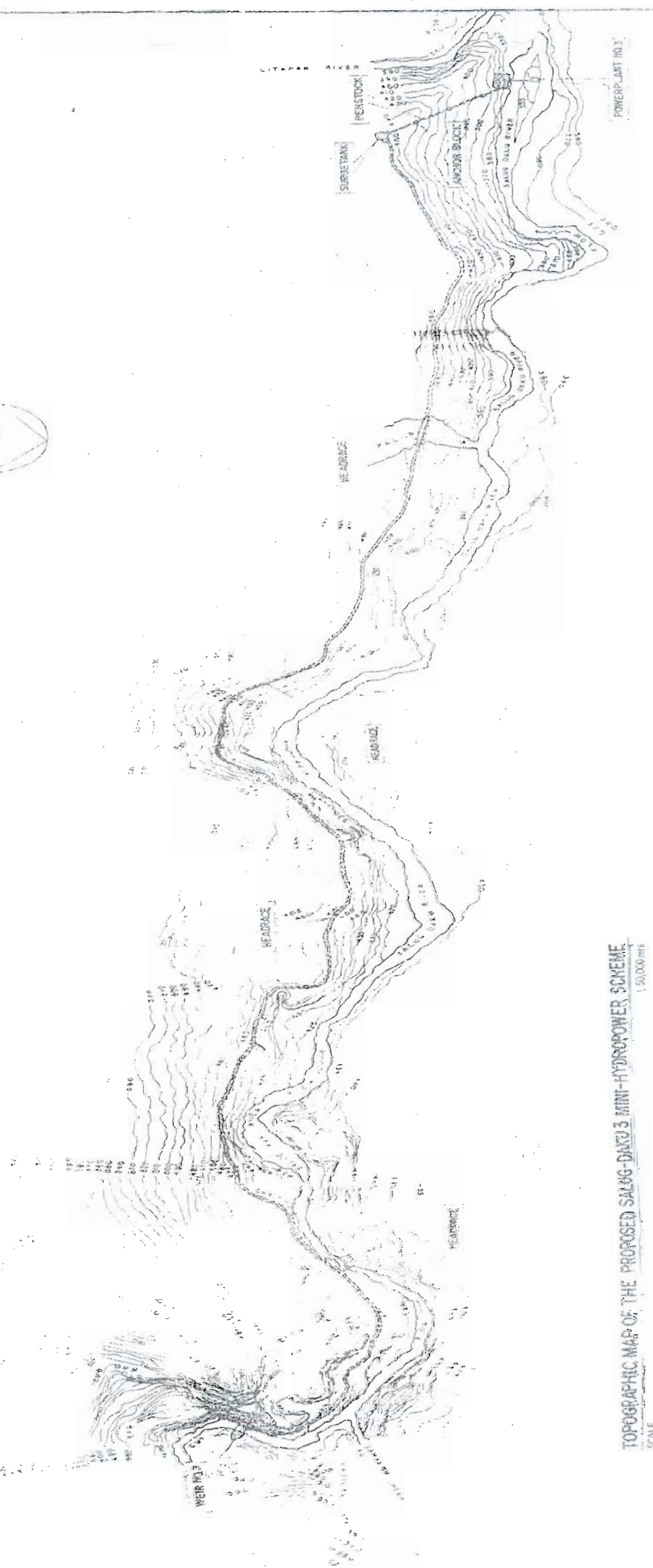
Location Map showing all projects sites
and
existing Power Transmission Network



**PROPOSED SALUG-DAKU MINI-HYDRO POWER PLANT
18.5 MW (18500 KW) INSTALLED CAPACITY**

FLOW-CHART DIAGRAM of Potential head of Salug-Daku River

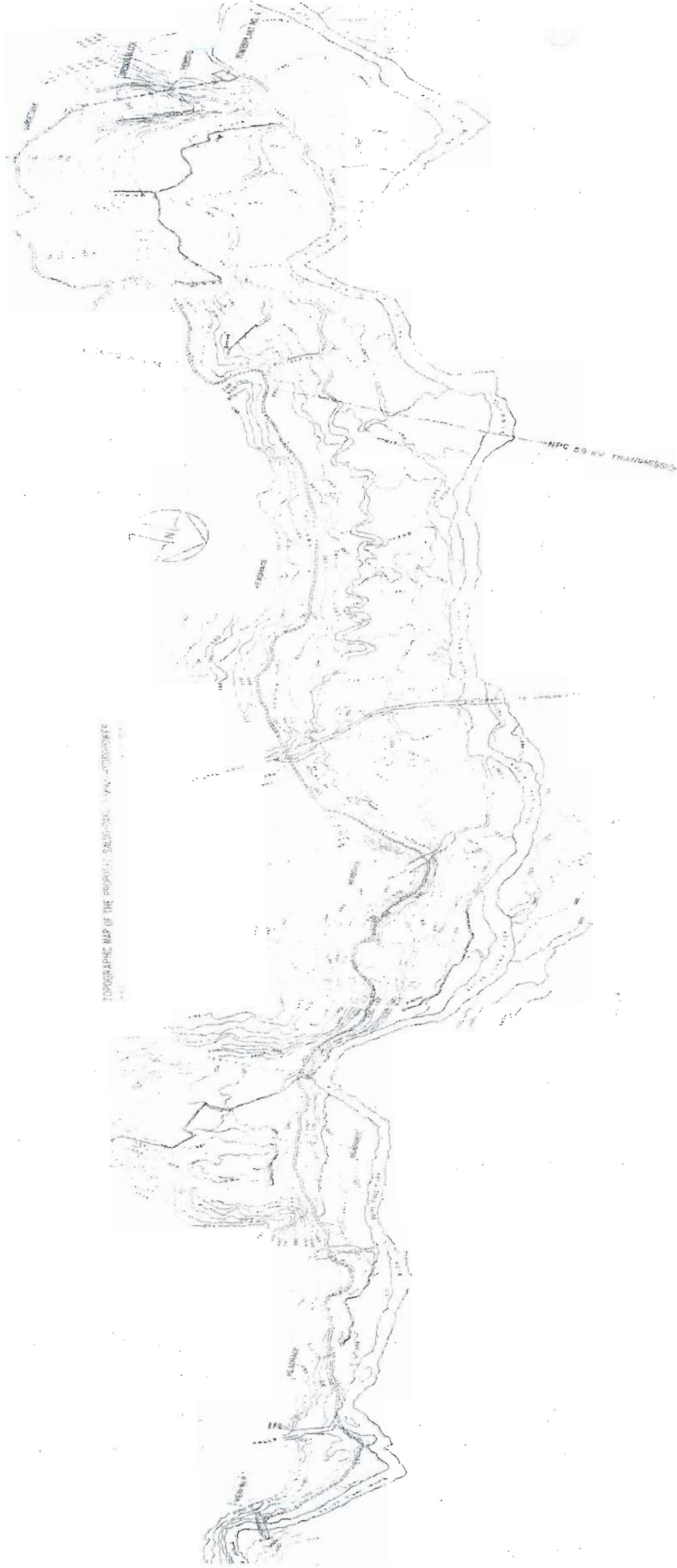




TOPOGRAPHIC MAP OF THE PROPOSED SALUG-DAKU 3 MINI-HYDRO POWER SCHEME
SCALE 1:50,000

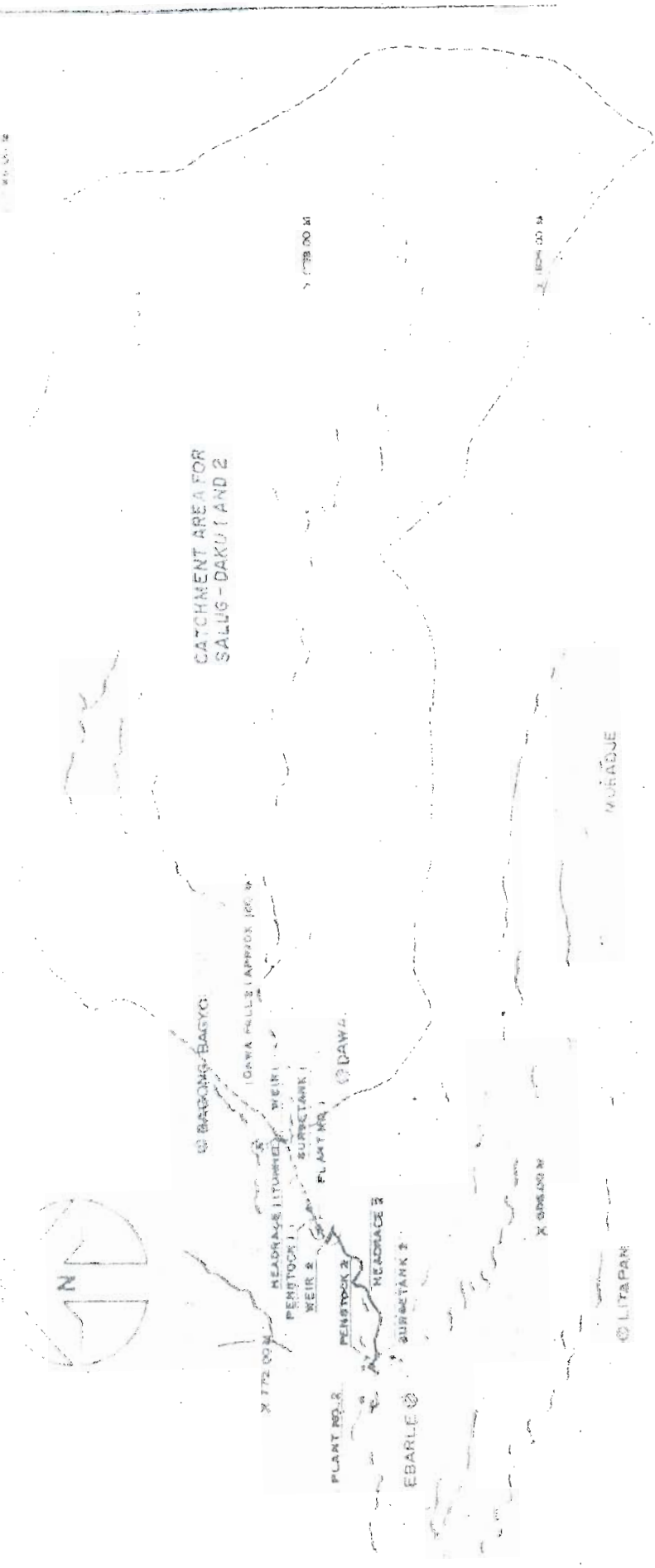
TOPOGRAPHIC MAP OF THE SALUG-DAKU 3 MINI-HYDRO POWER SCHEME

Scale 1:50,000 mts.



TOPOGRAPHIC MAP OF THE SALUG-DAKU 4 MINI-HYDRO POWER
Scale 1: 50,000 mts.

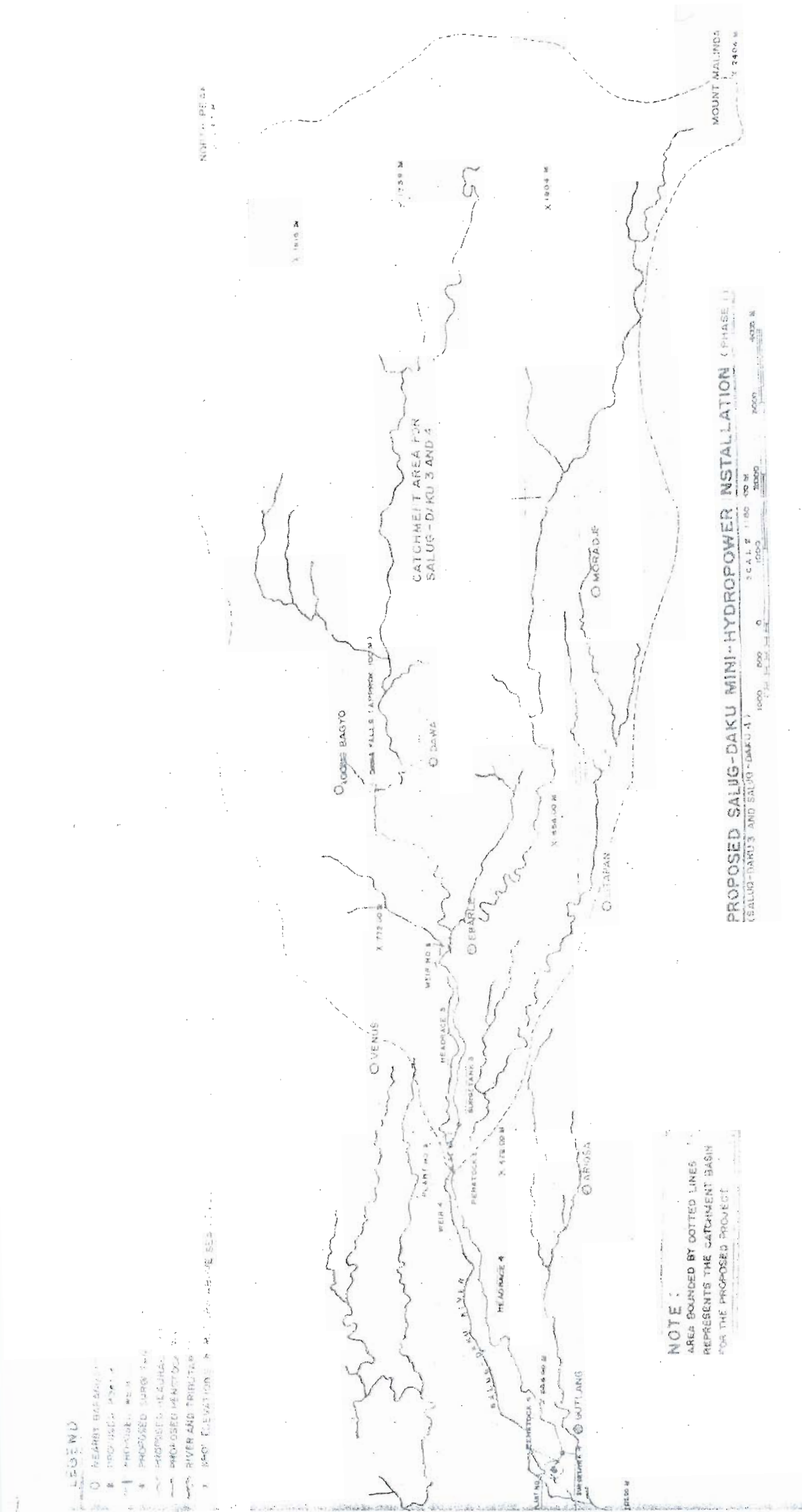
30



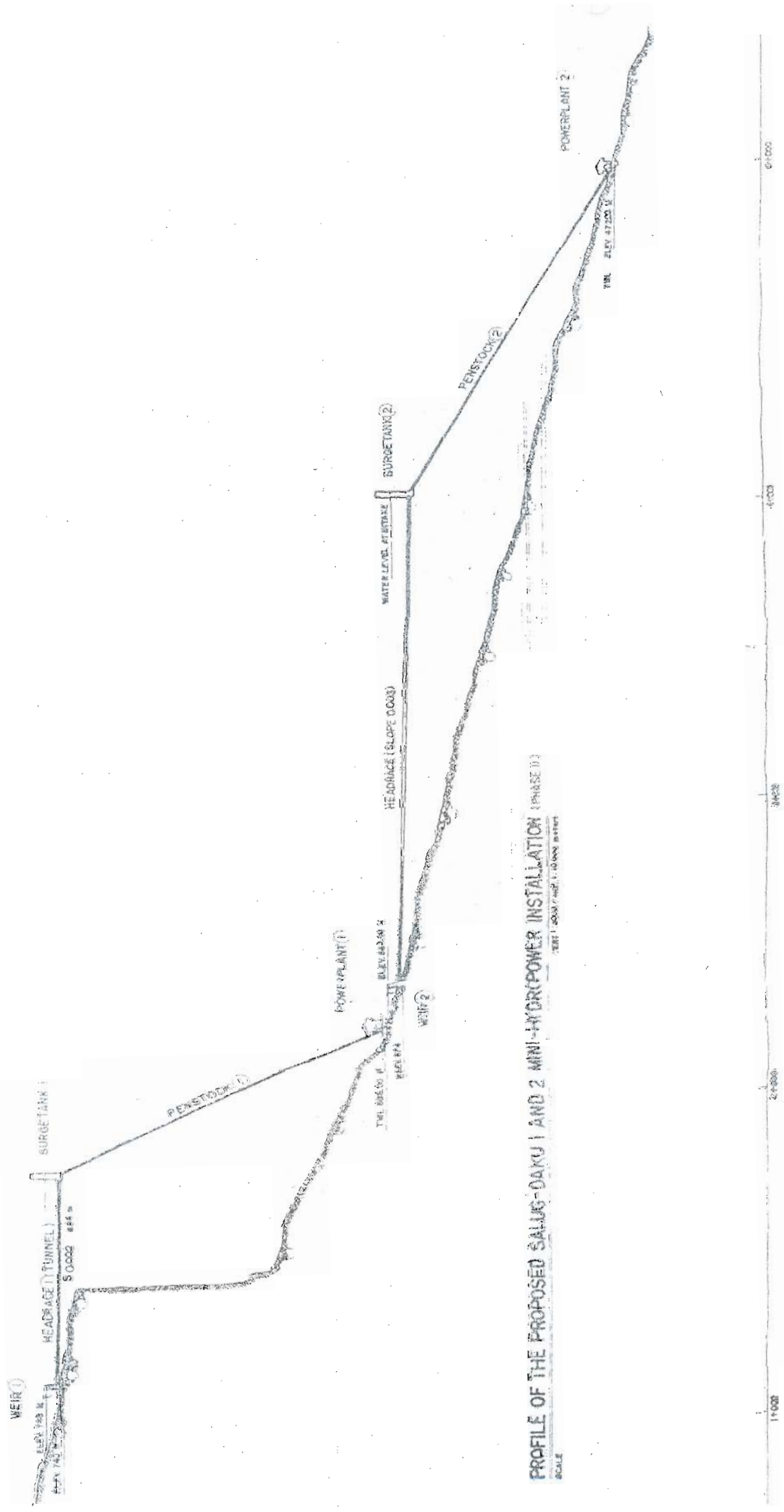
PROPOSED SALUG-DAKU MINI-HYDROPOWER INSTALLATION PHASE II
(SALUG-DAKU 1 AND SALUG-DAKU 2)

MT MALINDANG
X 2404 00 N

CATCHMENT AREA OF PROPOSED SALUG-DAKU MINI-HYDRO POWER INSTALLATION SALUG-DAKU 1 AND 2



CATEMENT AREA OF PROPOSED SALUG-BAKU MIN-EXYDROPOWER INSTALATION
SALUG-BAKU: 3 AND 4



PROFILE OF THE PROPOSED SALUG-DAKU I AND 2 MINI-HYDROPOWER INSTALLATION
(PHASE II)

PROPOSED WEIR SITE
ELEV 4640.00 M
JUNCTION SALUG-DABU - DAMAGING CREEK



PROFILE OF THE PROPOSED SALUG-DAKU 3 MINI-HYDROPOWER INSTALLATION (PHASE I)
SCALE
VERT 1:2000 / HOR 1:500



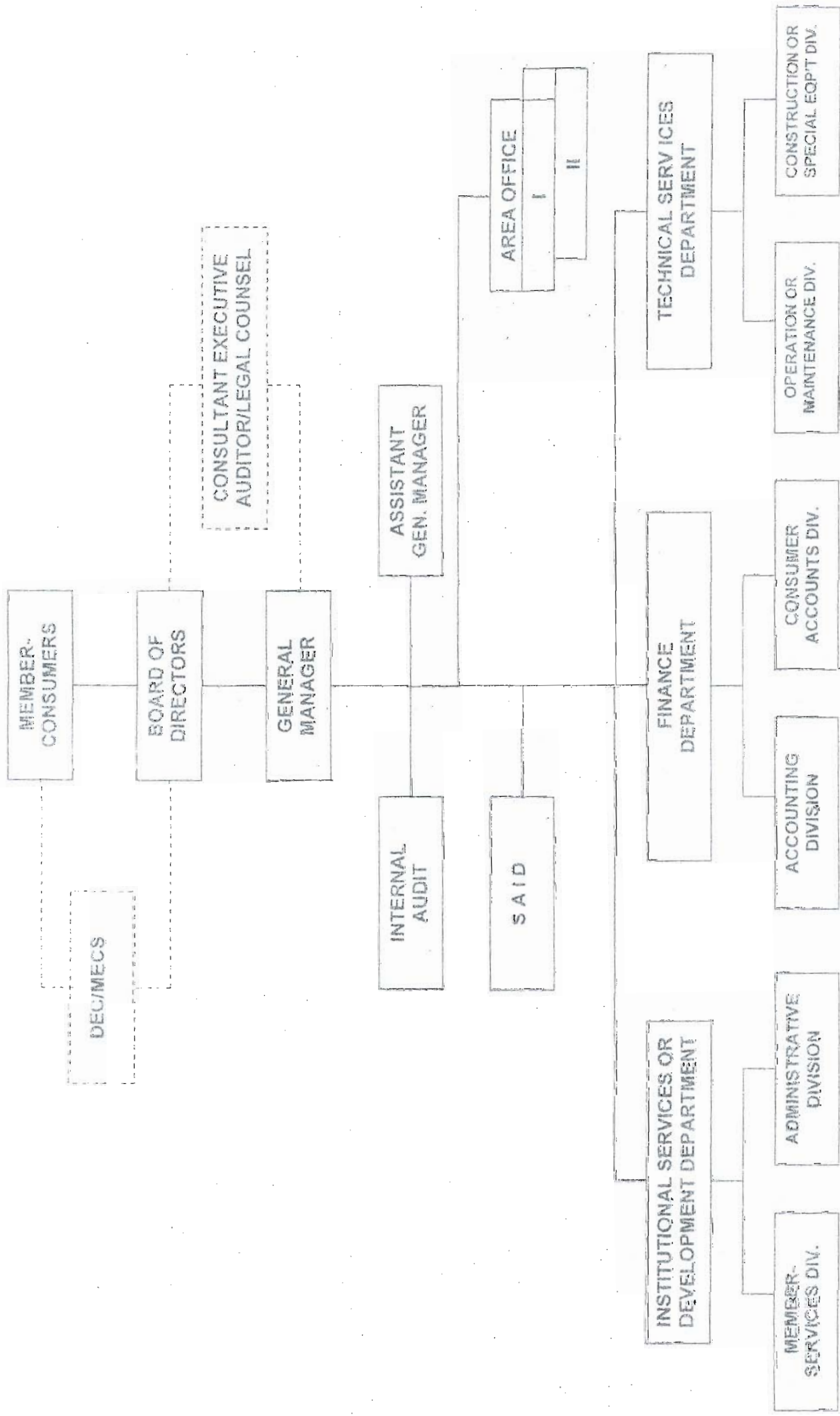
PROFILE OF THE PROPOSED SALUG-DAKU 3 MINI-HYDROPOWER INSTALLATION (PHASE II)

19

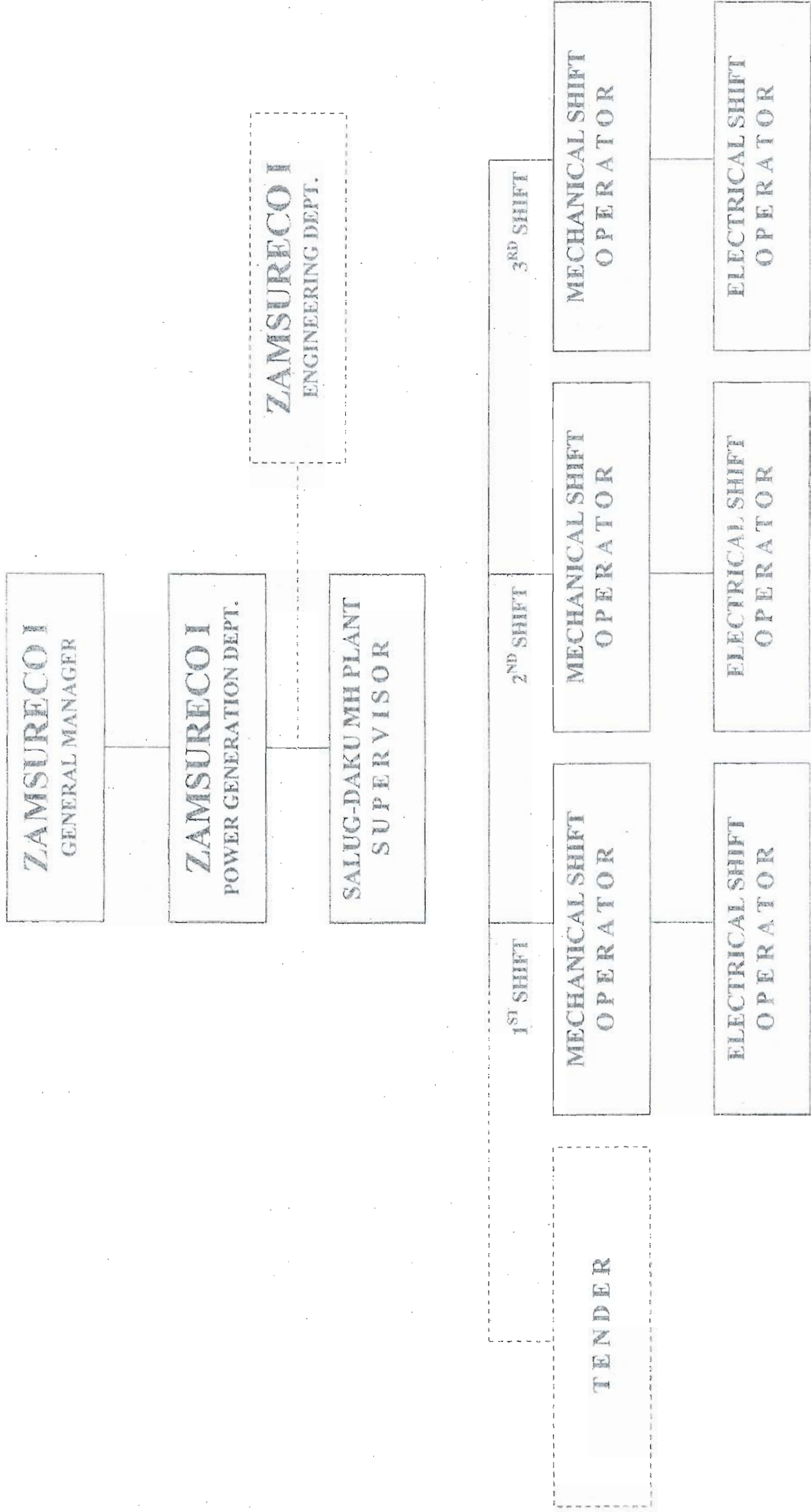


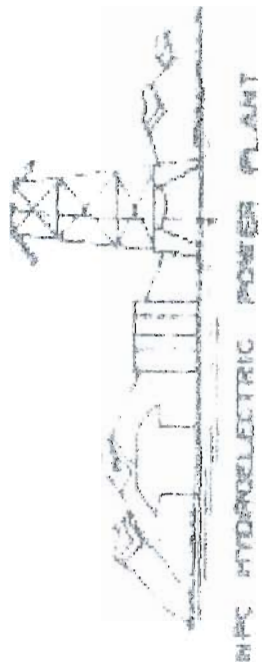
PROPOSED 4 MINUTE PROPOSED INSTALLATION
IN EAST

ORGANIZATIONAL CHART OF ZAMSURECO - I, INC.



ORGANIZATIONAL CHART FOR OPERATION





330 kV



69 kV



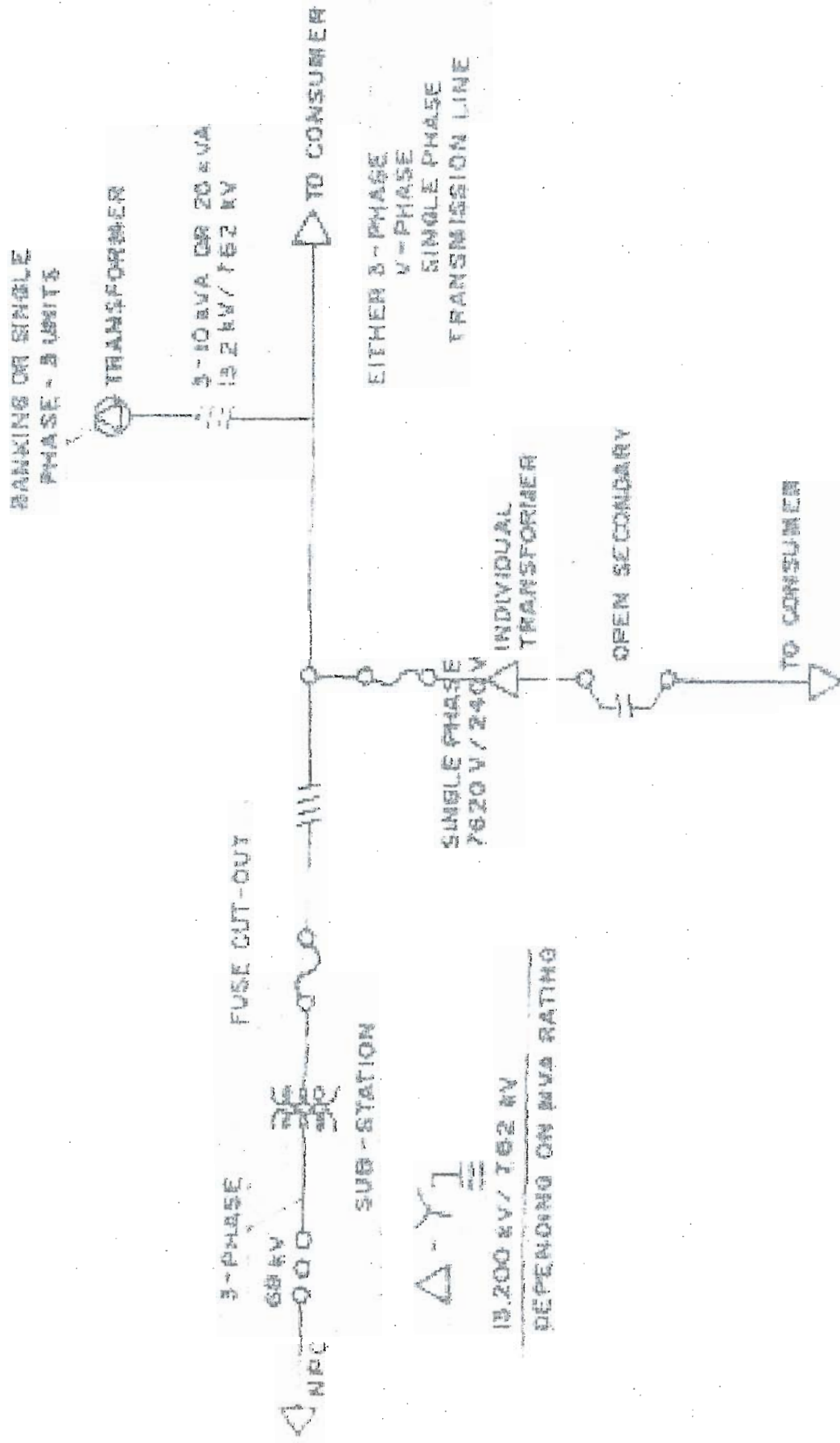
BACKBONE
13.2 kV



DISTRIBUTION
TRANSFORMER
230 V



DIAGRAM OF ENERGY GENERATION AND DISTRIBUTION



POWER DISTRIBUTION SCHEME

ATTENDANCE SHEET PUBLIC CONSULTATION

Project : SALUG-DAKU RIVER, MINI-HYDRO POWER PLANT
 Proponent : ZAMSURECO -I
 Location : JOSEFINA, ZAMBOANGA DEL SUR
 Date : NOVEMBER 17, 2006
 Time : 9:00 A.M.

NAMES	ADDRESSES	SIGNATURES
1. Mrs. A. LAMARAN	Rm. Josefinia	A. LAMARAN
2. Adeline E. Manjale	Rm. Josefinia	Adeline E. Manjale
3. ELMA G. CENCIANED	Nurse III - Josefinia	Elma G. Cencianed
4. LEOGILLO L. HADILLA	Sgt. Josefinia	Leo Gillo L. Hadilla
5. Mrs. M. RARA JR.	Leonardo, Josefinia, 205	M. RARA JR.
6. Violata B. Usoral	UBT, Josefinia, 205	Violata B. Usoral
7. Andres J. Daga	Josefinia, 205	Andres J. Daga
8. E. Rara, Jr.	Josefinia, 205	E. Rara, Jr.
9. Lucina v. Leonardi	UBT, Josefinia, 205	Lucina v. Leonardi
10. J. Rara, Sr.	Josefinia	J. Rara, Sr.
11. Alicia P. Dura	Josefinia, 205	Alicia P. Dura
12. Evangelina Cayul	Josefinia, 205	Evangelina Cayul
13. Profeta A. Nolasco	Josefinia, 205	Profeta A. Nolasco
14. EMMA C. HADILLA	Josefinia, 205	EMMA C. HADILLA
15. RARA, Jr.	Josefinia, 205	RARA, Jr.
16. Lucina P. Leonardi	Josefinia, 205	Lucina P. Leonardi
17. AIDA A. ACAS	Josefinia, 205	AIDA A. ACAS
18. P. Rara, Jr.	Josefinia, 205	P. Rara, Jr.
19. RARA, Jr.	Josefinia, 205	RARA, Jr.
20. RARA, Jr.	Josefinia, 205	RARA, Jr.
21. RARA, Jr.	Josefinia, 205	RARA, Jr.
22. RARA, Jr.	Josefinia, 205	RARA, Jr.
23. RARA, Jr.	Josefinia, 205	RARA, Jr.
24. RARA, Jr.	Josefinia, 205	RARA, Jr.
25. RARA, Jr.	Josefinia, 205	RARA, Jr.
26. RARA, Jr.	Josefinia, 205	RARA, Jr.
27. RARA, Jr.	Josefinia, 205	RARA, Jr.
28. RARA, Jr.	Josefinia, 205	RARA, Jr.
29. RARA, Jr.	Josefinia, 205	RARA, Jr.
30. ADELFA ARDOR BALANDACA	LGU-JOSEFINA, 205	ADELFA ARDOR BALANDACA
31.		
32.		
33.		
34.		
35.		

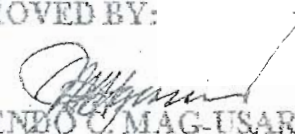
ATTESTED BY:

CARLITO V. CAGOB, SR.
 Municipal Vice Mayor

PREPARED BY:

EMMA B. ASUNCION
 SB Secretary

APPROVED BY:


 JULENDO C. MAG-USARA
 Municipal Mayor

ATTENDANCE SHEET PUBLIC CONSULTATION

Project : SALUG-DAKU RIVER, MINI-HYDRO POWER PLANT
Proponent : ZAMSURECO -I
Location : JOSEFINA, ZAMBOANGA DEL SUR
Date : NOVEMBER 17, 2006
Time : 9:00 A.M.

NAMES	ADDRESSES	SIGNATURES
1. ✓ JULIE ROSA M. PALEY	JOSEFINA 2/S	
2. JENETH O. INSABATA	- do -	
3. JHERN. J. ANGAB	- do -	
4. JORD CEFERIN	- do -	
5. CRISTINA	- do -	
6. ROLDAN MAG-USARA	- do -	
7. MINILYN I. ANGGOT	- do -	
8. DOMINGO S. SALDANIA	- do -	
9. JOVELYN D. ANGGOT	- do -	
10. HERMINIA M. MAGPANG	- do -	
11. ROBERTO M. MAGPANG	- do -	
12. MELBA B. MAGPANG	- do -	
13. RONCHITA ALIJA	- do -	
14. EMMA ASUNCION	- do -	
15. JESSICA P. JIMENEZ	- do -	
16. JESSICA P. JIMENEZ	- do -	
17. JESSICA P. JIMENEZ	- do -	
18. JESSICA P. JIMENEZ	- do -	
20. EMMANUEL GABRIEL	- do -	
21. PABLO EDWIN SOUS	- do -	
22. TEOFILO A. CELESTIN	- do -	
23. CESAR S. VILLAGONZALO	- do -	
24. JESSICA P. JIMENEZ	- do -	
25. JESSICA P. JIMENEZ	- do -	
26. JESSICA P. JIMENEZ	- do -	
27. JESSICA P. JIMENEZ	- do -	
28. JESSICA P. JIMENEZ	- do -	
29. JESSICA P. JIMENEZ	- do -	
30. JESSICA P. JIMENEZ	- do -	
31. JESSICA P. JIMENEZ	- do -	
32. JULIENNO C. MAG-USARA	LBH - Josefin	
33. ADELA ANGOT-BALANDACA	AGU - JOSEFINA 301	
34.		
35.		

WITNESSED BY:

CARLITO V. CAGOD, SR.
Municipal Vice Mayor

PREPARED BY:

EMMA R. ASUNCION
SB Secretary

APPROVED BY:

JULIENNO C. MAG-USARA
Municipal Mayor

Held November 17, 2006

Minutes of the Joint Meeting/of the Sanguniang Bayan of
Josefina and the Board of Directors of ZAMSURECO-1.

Attending:

- Municipal Mayor of Josefina, Jullendo Magusara
- Sanguniang Members of Josefina
- Municipal Officials and Employees of Josefina
- Board President of ZAMSURECO-1, Rogelio C. Mabanag
- Members of the Board of Directors of ZAMSURECO-1
- General Manager of ZAMSURECO-1, Jose Raul A. Sanial
- Consultant Engineer, Michael Canete
- Staff Engineers of Michael Canete
- RGM Bonifacio B. Lagura
- ZAMSURECO Officials and Employees

The Meeting was formally opened with the singing of the National Anthem. Then everybody was requested to introduce himself to the Body.

RGM Lagura was requested to explain the purpose of the meeting. It was explained that the Municipality of Josefina has adopted a Resolution asking the Municipalities within Area Coverages of ZAMSURECO-1 to give their support and endorsement to the Mini Hydro Project in Josefina. It was the feeling of the ZAMSURECO-1 Board that the municipality of Josefina should not be left alone to do this responsibility. So ZAMSURECO-1 communicated with Josefina if it is possible that the Josefina Municipal Officials and the ZAMSURECO-1 Board can meet to discuss ways and means to get ^{Local} Leaders but also National Leaders/s^{upport} the development of Salug Daku River in Josefina into a Mini Hydro Source of Electricity.

The proposal of ZAMSURECO-1 was readily accepted by the Sanguniang Bayan of Josefina and then and there it was declared that the affair was a joint meeting of Josefina Municipal Officials and the ZAMSURECO-1 Directors.

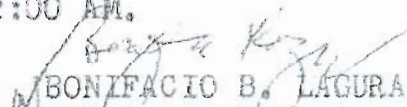
GM Sanial, the new GM of ZAMSURECO-1, talked of the problems of ZAMSURECO-1, such as the high system loss, low collection efficiency and the high cost of electricity, brought about by price of oil that is increasing without end. He asked the group to be firm of their plan to develop the mini hydro as this will stabilize operations of ZAMSURECO-1.

Engr Michael Canete, General Manager of Meadowland, the Consultant Firm of ZAMSURECO-1, told the audience that the Feasibility Study of the Mini Hydro is already completed and everybody should be happy because the Feasibility Study has shown the Mini Hydro Project is feasible and viable.

Engr Canete further said the first Plant to be constructed will be Plant 3 which Dam is located at where the waters of Moradje Creek, Masapak Falls and Damasing Creek met the Salug Daku River. It is capable of generating 6 Megawatts. The height of the Dam or Weir is 6 meters and the headrace about 3 kilometers long. This plant will cost ₱590,000,000.00. We will borrow this money from the DBP at 9 to 10% interest and we will return this money in 15 years with 3 years grace period to pay the loan.

It was asked if we could pay this loan and the answer was Yes, very much.

The meeting was adjourned at 12:00 AM.
Certified True and Correct.


BONIFACIO B. LAGURA
RGM, Actg. Recorder



PUBLIC CONSULTATION - PROPOSED SALUG-DAKU RIVER, MINI-HYDRO POWER PLANT
Salug-Daku River, Josefina, Zamboanga del Sur

CERTIFICATION:

This is to certify that the undersigned took the pictures as appearing above during the Public Consultation conducted on
 March 11, 2006 at Josefina, Zamboanga del Sur.

ROGELIO C. MABANAG

PART THREE

VITAL DOCUMENTS OF
ZAMSURECO-I

REPUBLIKA NG PILIPINAS
TANGGAPAN NG PANGULO
PAMBANSANG PANGASIWAAN NG ELEKTRIPIKASYON
(NATIONAL ELECTRIFICATION ADMINISTRATION)
LUNGSOD NG QUEZON

Certificate of Registration

To All Whom These Presents May Come, Greetings:

This is to certify that the Articles of Incorporation of

*Zamboanga del Sur Electric
Cooperative, Inc.*

were presented on August 25, 1972 for registration with this Office

This is to certify further that the said Articles of Incorporation are
in conformity with the provisions of Republic Act No. 6038.

By virtue of the powers and duties vested in me by the said
Republic Act No. 6038, I hereby certify the Articles of Incorporation of
the above-mentioned electric cooperative as duly registered with this
Office and in effect as of this date.

In testimony thereof, I hereby set my hand and cause the Seal of
this Office to be affixed at Aurora, Zamboanga del Sur this 25th day of
August in the year of Our Lord 1972.


PEDRO G. DUMOL
Administrator.

and Barrios of Aurora, Dumingag, Mahayag, Molave, Ramon Magsaysay and Tambulig, Province of Zamboanga del Sur and of any additional area which may hereafter be serviced by the Cooperative;

SEVENTH - That the number of Directors of said Cooperative shall be Six (6) and the names and residence of the Directors of the Cooperative who are to service until successors are elected and qualified as provided for in the By-Laws are:

	NAME	ADDRESS
1.	Perpetuo C. Apale	Mahayag, Zamboanga del Sur
2.	Lino U. Araya	Tambulig, Zamboanga del Sur
3.	Walder L. Lubguban	Ramon Magsaysay, Zamboanga del Sur
4.	Samuel M. Rivera	Dumingag, Zamboanga del Sur
5.	Marcial A. Romano, Jr.	Molave, Zamboanga del Sur
6.	Pacifico L. Tecson	Aurora, Zamboanga del Sur

IN WITNESS WHEREOF, we have heretunto set our hands on this 25th day of August, 1972 at Aurora, Zamboanga del Sur, Philippines.

PERPETUO C. APALE

LINO U. ARAYA

WALDER L. LUBGUBAN

SAMUEL RIVERA

MARCIAL A. ROMANO, JR.

PACIFICO L. TECSON

Signed in the presence of:

JOSE L. TEDSON
Governor

VICENTE M. CERILLES
Congressman

PEPITO P. BALPLONA
Chairman
Prov'l Electric Cooperative Team

JOSE S. LASTIMOSA
Notary Public
Until December, 31, 1972

ARTICLES OF INCORPORATION OF THE ZAMBOANGA DEL SUR ELECTRIC COOPERATIVE, INC.

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned, all of whom are of legal age, Filipino citizens and residents of the Philippines, have this day voluntarily associated ourselves together for the purpose of forming a non-stock, non-profit membership electric cooperative under the laws of the Republic of the Philippines, more particularly under Republic Act No. 6038.

AND WE HEREBY CERTIFY:

FIRST - That the name of the Cooperative shall be ZAMBOANGA DEL SUR ELECTRIC COOPERATIVE, INC.;

SECOND - That this Cooperative is formed primarily for the purpose of supplying, promoting and encouraging the fullest use of electric service to its members on an area coverage basis, pursuant to the provisions of Republic Act No. 6038;

THIRD - That the Cooperative shall have its principal office at the municipality of Molave, Province of Zamboanga del Sur;

FOURTH - That the term for which said Cooperative is to exist is fifty (50) years, from and after the date of incorporation;

FIFTH - That the names and residence of the incorporators of said Cooperative are as follows:

	NAME	NATIONALITY	ADDRESS
1.	Perpetuo C. Apale	Filipino	Mahayag, Zamboanga del Sur
2.	Lino U. Araya	Filipino	Tambulig, Zamboanga del Sur
3.	Walder L. Lubguban	Filipino	Ramon Magsaysay, Zambo del Sur
4.	Samuel M. Rivera	Filipino	Dumingag, Zamboanga del Sur
5.	Marcial A. Romano, Jr.	Filipino	Molave, Zamboanga del Sur
6.	Pacifico L. Tecson	Filipino	Aurora, Zamboanga del Sur

SIXTH - That membership in this Cooperative shall be open to any person, firm, association, corporation, or body politic or subdivision thereof, qualified under the By-Laws and rules prescribed by the Cooperative in the Municipalities

Republic of the Philippines
NATIONAL ELECTRIFICATION COMMISSION
Metro Manila

Certificate No. 091

KNOW ALL MEN BY THESE PRESENTS

By virtue of the authority vested in the National Electrification Commission by Presidential Decree No. 269, dated August 6, 1973, this

CERTIFICATE OF FRANCHISE

is hereby issued to the

ZAMBOANGA DEL SUR I ELECTRIC COOPERATIVE, INC.

Authority is hereby granted to operate an electric light and power service for a period of fifty (50) years from July 13, 1983 in the areas presently comprised by the following municipalities:

DON MARIANO MARCOS **PITOCO** **JOSEFINA** **VINCENZO SAGUN**

This franchise is hereby granted subject to existing laws, the rules and regulations of the Commission and the conditions prescribed in the decision of the Commission.

Given at Metro Manila, Philippines, this 13th day of July, 1983.

(SGD.) IMELDA ROMUALDEZ MARCOS

Commissioner

(SGD.) JESUS S. HIPOLITO

Commissioner

(SGD.) JAIME C. LAYA

Commissioner

(SGD.) CEFERINO S. CARREON

Commissioner

(SGD.) CONRADO D. DEL ROSARIO

Commissioner

(SGD.) PEDRO G. DUMOL

Commissioner

Attested:

(SGD.) ANITA M. ILUSTRE

Secretary of the Commission

Josefina, Zamboanga del Sur
ZAMSURECO - I

ESTIMATED PROJECT COST

	SALUG-DAKU 1	SALUG-DAKU 2	SALUG-DAKU 3	SALUG-DAKU 4	TOTAL
CIVIL WORKS					
1. SITE FACILITIES	900,000	900,000	900,000	900,000	3,600,000
2. ACCESS ROADS	7,425,000	7,425,000	10,395,000	7,425,000	32,670,000
3. WEIR	22,275,000	23,490,000	20,148,750	29,463,750	95,377,500
4. HEADRACE	23,400,000	25,650,000	68,850,000	29,463,750	147,363,750
5. SURGETANK	19,800,000	21,600,000	4,500,000	5,400,000	51,300,000
6. POWERPLANT	14,400,000	14,400,000	26,600,000	26,600,000	82,000,000
SUB - TOTAL	88,200,000	93,465,000	131,393,750	99,252,500	412,311,250
STEEL WORKS					
1. PENSTOCK	8,865,000	5,130,000	5,130,000	9,000,000	28,125,000
2. TRANSMISSION LINES	9,000,000	7,200,000	2,700,000	1,350,000	20,250,000
SUB - TOTAL	17,865,000	12,330,000	7,830,000	10,350,000	48,375,000
ELECTRO - MECHANICAL					
1. GATES, LIFTING EQUIPMENTS TRASHRACTS, & OTHERS	2,002,500	2,002,500	2,002,500	2,002,500	8,010,000
2. TURBINE - GENERATOR, VALVES GOVERNOR, SWICHBOARDS	106,740,000	80,212,500	160,110,000	160,110,000	507,172,500
SUB - TOTAL	108,742,500	82,215,000	162,112,500	162,112,500	515,182,500
TOTAL					
ENGINEERING & OVERHEAD	214,807,500	188,010,000	301,336,250	271,715,000	975,868,750
	21,480,750	17,451,000	29,768,625	36,663,075	
TOTAL	236,288,250	205,461,000	331,104,875	308,378,075	1,081,232,200



Nº 6906364 D

Date: June 2, 2015

Agency NAA/KCB

Fundă

Payor 2 AMURECO - J

Nature of
Collection

Account
Code

Amount

Living Be with 4/2/58
URF

P 440.00
12.00

TOTAL.

P- 50.40

Amount in Words five hundred pesos

☒ Cash

Drawee
Bank

Number

Date _____

☐ Check☐ Money Order

Received the amount stated above.

Collecting Officer

NOTE: Write the number and date of this receipt on the back of check or money order received.

CONTROL NO. 05-423

The Executive Director
National Water Resources Board
8th Floor NIA Bldg.
EDSA, Quezon City

This is to certify that WATER PERMIT APPLICATION NO. 43258

ISSUED FOR : ZAMSURECO-1 Proposed Mini-Hydro Power Project
LOCATED AT : Salug Daku River in Josefin, Zamboanga del Sur
OWNED BY : Zamboanga del Sur Electric Cooperative, Inc. (ZAMSURECO-1)
MAILING ADDRESS : J. S. Alano St., Tapanan City

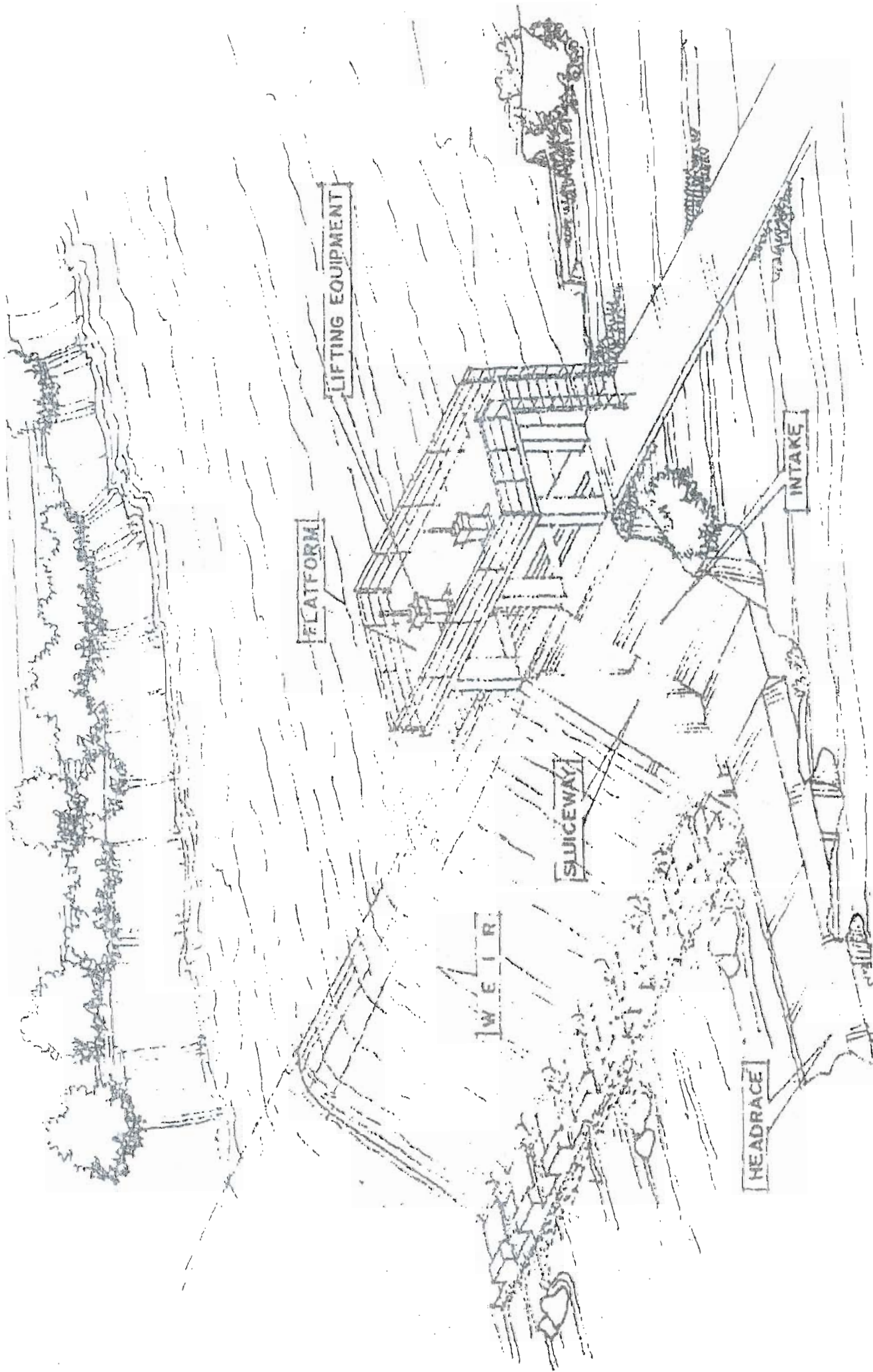
was filed in this office on: June 3, 2005

NAME & SIGNATURE : Donatiano A. Alano - POB ZAMSURECO-1
POSITION : Former General Manager of ZAMSURECO-1
AGENCY/OFFICE : ZAMSURECO-1
ADDRESS : J. S. Alano St., Tapanan City
DATE : June 3, 2005

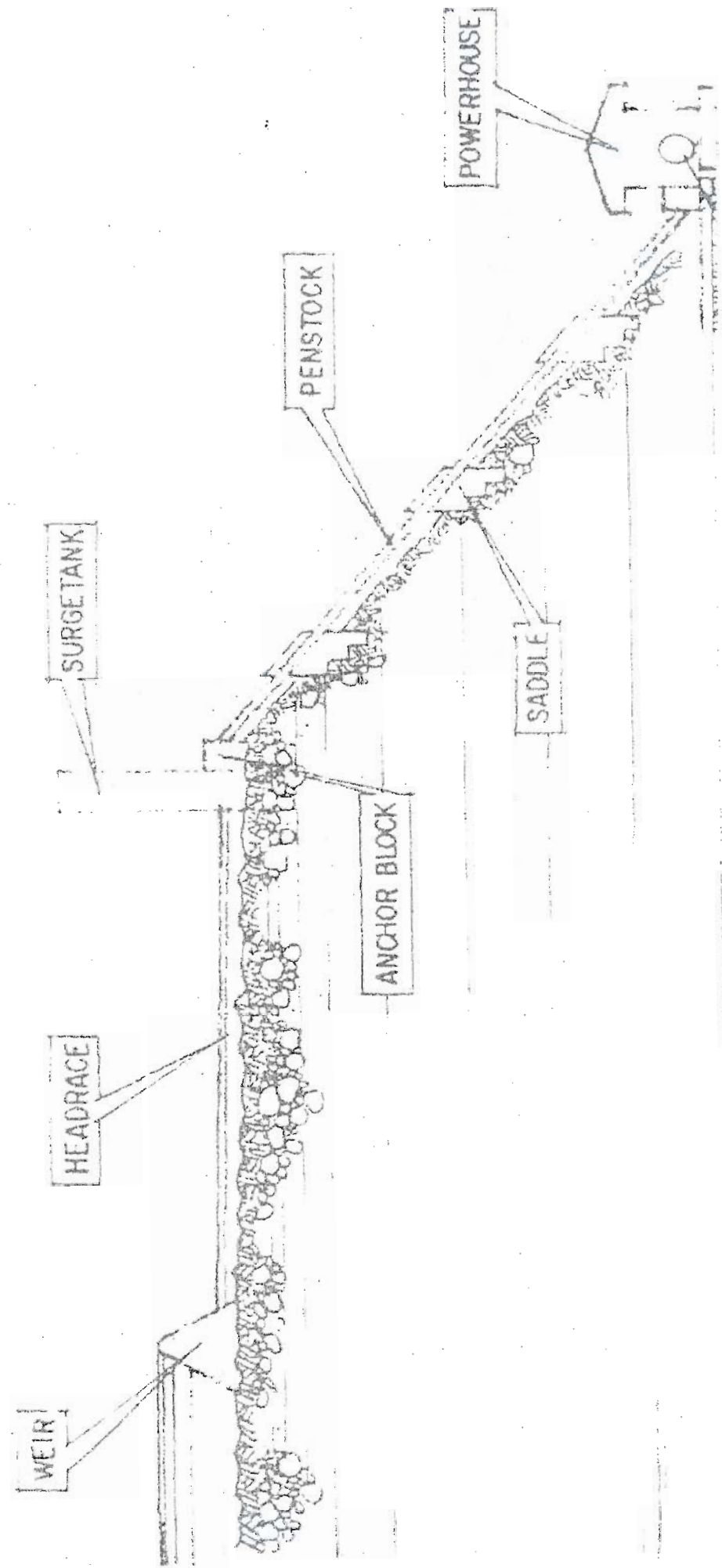
(TO BE FILLED BY THE DEPUTIZED AGENT OR BY THE RECEIVING AUTHORITY WHERE
THE WATER PERMIT APPLICATION WAS FILED AND TO BE SUBMITTED/MAILED BACK TO NWRB
WITHIN 10 DAYS FROM DATE OF FILING.)

MED 410 B

F49



TYPICAL INTAKE AND SLUICeway STRUCTURE



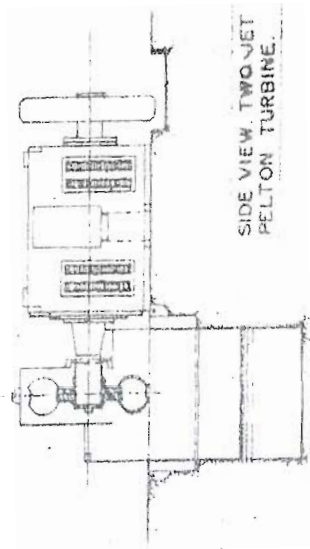
TYPICAL WEIR-HEADRACE-POWER PLANT SCHEME

ANNEX - I

TWO JET PELTON TURBINE
ARRANGEMENT



TWO JET PELTON TURBINE
ARRANGEMENT

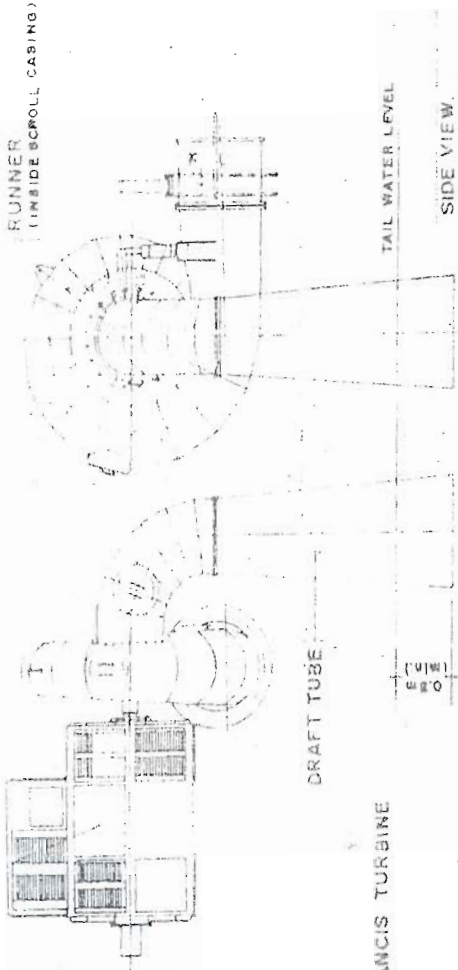


SIDE VIEW, TWO JET
PELTON TURBINE

SIDE VIEW TWO JET
PELTON TURBINE

GENERATOR

SCROLL CASING



FRANCIS TURBINE

DRAFT TUBE

TAIL WATER LEVEL

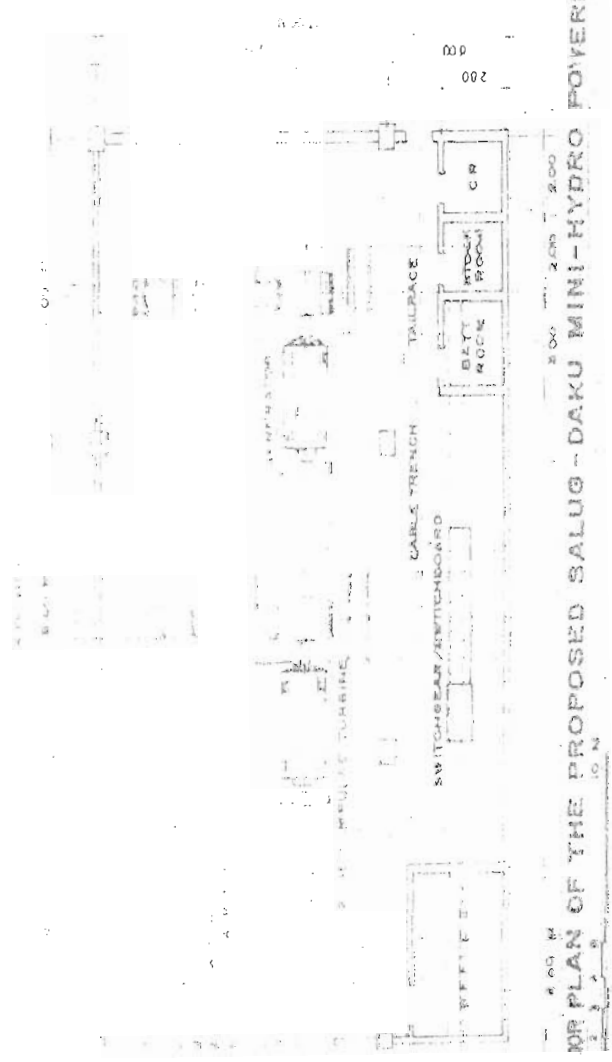
SIDE VIEW,
FRANCIS TURBINE

FRANCIS TURBINE

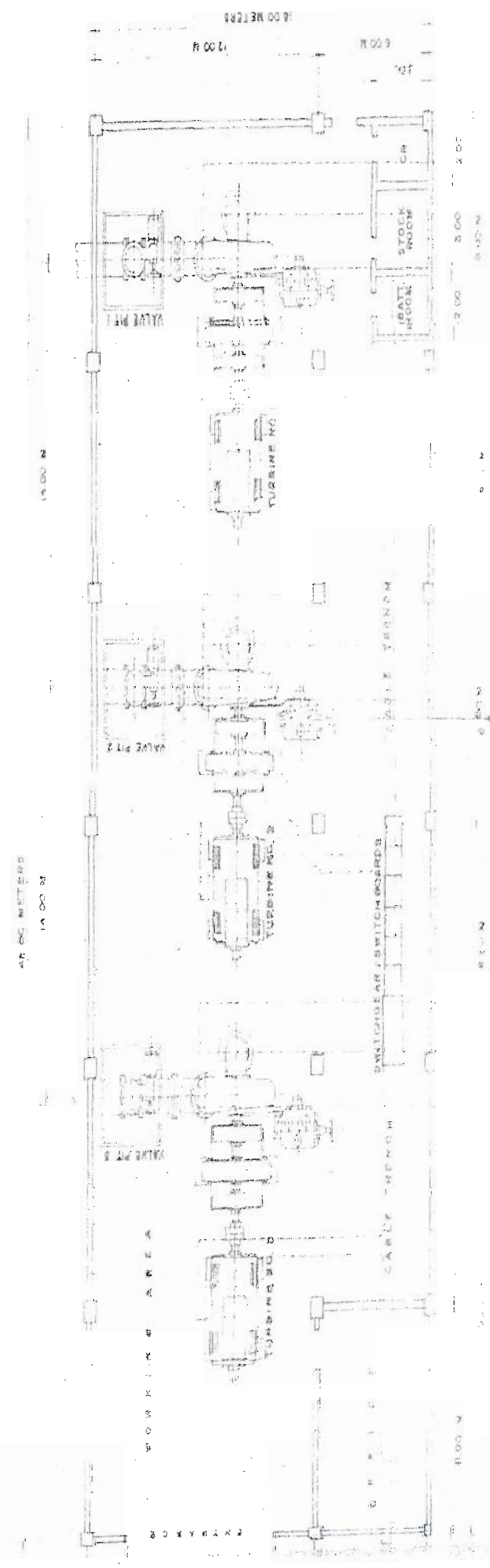
SIDE VIEW
FRANCIS TURBINE

SOURCE : KVAERNER HYDRO - SØRUMSAND VERKSTED A/S

TURBINE EQUIPMENT FOR THE PROPOSED SALUG-IPAKU MINI-HYDRO POWER PLANT



FLOOR PLAN OF THE PROPOSED SALUG - DAKU MINI-HYDRO POWERPLANT 1 AND 2
PHASE 1



FLOOR PLAN OF THE PROPOSED SALUG - DAKU MINI-HYDRO POWERPLANT 3 AND 4

FLOOR PLAN OF THE SALUG-DAKU MINI-HYDRO POWER PLANT 1, 2, 3 AND 4

SPECIAL POWER OF ATTORNEY

KNOW TO ALL MEN BY THESE PRESENTS:

That I, **ROGELIO C. MABANAG**, of legal age, Filipino citizen, married, and a residence of Brgy. San Isidro, Mahayag, Zamboanga del Sur. I have name, constitute and appoint **WILTER Z. NOQUIAO**, likewise of legal age, Filipino citizen, married and a resident of Purok Mangga, Sto. Niño District, Pagadian City, to be my true and lawful attorney-in-fact in my name, place and stead to do the following acts.

1. To transact and/or appear for and in my behalf, in the office of the **Environmental Management Bureau (EMB)** of the **Department of Environment and Natural Resources (DENR)**, Regional office and to any other government agencies concerned relative to the approval of the **ECC application of the PROPOSED SALUG-DAKU, MINI-HYDRO POWER PLANT PROJECT**, and to withdraw/hand carry the duly approved **Environment Compliance Certificate (ECC)** of the said proposed project located at Salug-Daku River, Josefina, Zamboanga del Sur.
2. To make, sign and execute documents and other writings of whatever nature, kind and description relating to the aforesaid undertaking:

GIVING AND GRANTING unto my said Attorney full power and authority to do and perform all and every act and thing whatsoever requisite or necessary to be done in and about the premises as fully to all intents and purposes as I might or could do if personally present; and

HEREBY RATIFYING AND CONFIRMING all that my said Attorney shall lawfully do or cause to be done by virtue of these presents.

IN WITNESS WHEREOF, I have hereunto set our hands this 11th day of December 2006 at Pagadian City, Philippines.

ROGELIO C. MABANAG

Principal

Res. Cert. No.06916047

Issued on: January 27, 2006

Issued at: Mahayag, ZDS.

With my acceptance:

WILTER Z. NOQUIAO

Signed in the presence of:

1.

2.

Republic of the Philippines.....)

City of Pagadian) s.s

...../

BEFORE ME, this 11th day of December 2006 at Pagadian City, Philippines, personally appeared Rogelio C. Mabanag, with his Community Tax Certificate above-indicated, known to me to be the same person who executed the foregoing instrument and he acknowledge that the same is his free and voluntary act and deed.

WITNESS MY HAND AND SEAL.

Doc. No. 8791

Page. No. 1581

Book No. VI

Series of 2006