

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-06-19-0-1

SCHEME : NANENG

RIVER SYSTEM : CAGAYAN
STREAM : TANUDAN

WATER RESOURCES REGION : 11
PROVINCE : KAL-APAYAO

COORDINATES : N17-23-15 E121-16-41
STUDY LEVEL : UNSCALED
(PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 365.0 (MAIN : 365., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-063-NP-
AVER. BASIN RAINFALL (MM/YR) : 3106. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 874.
AVERAGE DISCHARGE (M3/S) : 20.0 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 54.8

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 474.0 GROSS STORAGE VOL. (MIL M3) : 636.1
AVERAGE OPERATING LEVEL (EL.M) : 455.5 ACTIVE STORAGE VOL. (MIL M3) : 441.4
MINIMUM OPERATING LEVEL (EL.M) : 418.6 DEAD STORAGE VOL. (MIL M3) : 194.7
DRAWDOWN DEPTH (M) : 59.4 SEDIMENT VOL. (MIL M3) : 25.5

MAIN DAM CREST ELEVATION (EL.M) : 480.0 CREST LENGTH (M) : 328.0
(WEIR) DAM HEIGHT (M) : 178.0 EMBANKMENT VOL. (MIL M3) : 10.20

WATERWAY HEADRAGE : LENGTH (M) : 890.0 DIAMETER (WIDTH) (M) : 5.3 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 320.0 DIAMETER (M) : 4.1 NOS. : 1
DIVERSION : LENGTH (M) : 1230.0 DIAMETER (M) : 6.7 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 111.5

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 67.0 AVERAGE NET HEAD (M) : 149.1
/HEAD FIRM DISCHARGE (M2/S) : 15.7 TAILWATER LEVEL (EL.M) : 302.0

POWER UNSATLLED CAPACITY (MW) : 82.2 ANNUAL TOTAL ENERGY (GWH) : 209.6
/ENERGY FIRM POWER (MW) : 20.6 FIRM ENERGY (GWH) : 180.1
MIN. GUARANTEED POWER (MW) : 58.9 SECONDARY ENERGY (GWH) : 29.4

TRANSMISSION LINE LENGTH (KM) : 35.0 TO : BATONG BUHAY 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 3.5 FROM : NANENG

CONSTRUCTION COST

TOTAL COST (MIL USD) : 238.2 POWER COST (MIL USD) : 231.0
TOTAL COST/KW (USD/KW) : 2896.5 TRANSMISSION COST (MIL USD) : 6.3
TOTAL COST/KWH (USD/KWH) : 1.261 ACCESS ROAD COST (MIL USD) : 1.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3272-11
TECHNICAL COMMENT :

INVENTORY OF HYDROPOWER SITES

SCHEME ID : 2-008-06-20-0-1

SCHEME : MT. BOLONTOC

RIVER SYSTEM : CAGAYAN
STREAM : PASIL

WATER RESOURCES REGION : II
PROVINCE : KAL-APAYAO

COORDINATES : N17-23-15 E121-09-30
STUDY LEVEL : IDENTIFIED
(IN THE PREVIOUS STUDY)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 275.0 (MAIN : 275.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-063-NP-
AVER. BASIN RAINFALL (MM/YR) : 2500. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 874.
AVERAGE DISCHARGE (M3/S) : 9.8 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 54.8

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.23

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 586.5 GROSS STORAGE VOL. (MIL M3) : 93.5
AVERAGE OPERATING LEVEL (EL.M) : 566.9 ACTIVE STORAGE VOL. (MIL M3) : 70.9
MINIMUM OPERATING LEVEL (EL.M) : 527.8 DEAD STORAGE VOL. (MIL M3) : 22.6
DRAWDOWN DEPTH (M) : 58.7 SEDIMENT VOL. (MIL M3) : 19.2

MAIN DAM CREST ELEVATION (EL.M) : 592.5 (M) : 649.6
(WEIR) DAM HEIGHT (M) : 149.5 EMBANKMENT VOL. (MIL M3) : 17.46

WATERWAY HEADRAGE : LENGTH (M) : 980.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
PENSTOCK : HORIZONTAL L (M) : 420.0 DIAMETER (M) : 2.1 NOS. : 1
DIVERSION : LENGTH (M) : 1730.0 DIAMETER (M) : 8.9 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 114.5

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 11.6 (M) : 117.9
/HEAD FIRM DISCHARGE (M3/S) : 5.8 TAILWATER LEVEL (EL.M) : 443.0

POWER UNSATLLED CAPACITY (MW) : 11.3 ANNUAL TOTAL ENERGY (GWH) : 69.1
/ENERGY FIRM POWER (MW) : 5.7 FIRM ENERGY (GWH) : 49.5
MIN. GUARANTEED POWER (MW) : 7.2 SECONDARY ENERGY (GWH) : 19.8

TRANSMISSION LINE LENGTH (KM) : 26.0 TO : BATONG BURAY 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 4.5 FROM : ABLEG

CONSTRUCTION COST

TOTAL COST (MIL USD) : 270.0 POWER COST (MIL USD) : 267.6
TOTAL COST/KW (USD/KW) : 23885.7 TRANSMISSION COST (MIL USD) : 1.1
TOTAL COST/KWH (USD/KWH) : 4.874 ACCESS ROAD COST (MIL USD) : 1.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3272-111
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-06-21-0-1

SCHEME : LOWER PASIL

RIVER SYSTEM : CAGAYAN
STREAM : PASIL

WATER RESOURCES REGION : II
PROVINCE : KALINGA APAYAO

COORDINATES : N17-23-59 E121-12-38
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 371.0 (MAIN : 371.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-063-NP-
AVER. BASIN RAINFALL (MM/YR) : 2500. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 874.
AVERAGE DISCHARGE (M3/S) : 13.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 54.8

SELECTED PLAN

TYPE OF DEVELOPMENT

RESERVOIR DEVELOPMENT RATIO : 0.33

RESERVOIR :
FULL SUPPLY LEVEL (EL.M) : 466.4
AVERAGE OPERATING LEVEL (EL.M) : 453.1
MINIMUM OPERATING LEVEL (EL.M) : 426.5
DRAWDOWN DEPTH (M) : 39.8
CREST ELEVATION (EL.M) : 472.4
DAM HEIGHT (M) : 146.4
HEADRAGE : LENGTH (M) : 670.0
PENSTOCK : HORIZONT. L (M) : 110.0
DIVERSTION : LENGTH (M) : 850.0
EXCAVATION VOL TOTAL (1000 M3) : 74.4

GROSS STORAGE VOL. (MIL M3) : 267.6
ACTIVE STORAGE VOL. (MIL M3) : 137.3
DEAD STORAGE VOL. (MIL M3) : 130.2
SEDIMENT VOL. (MIL M3) : 26.0

MAIN DAM (WEIR) :
CREST LENGTH (M) : 376.0
EMBANKMENT VOL. (MIL M3) : 7.18

WATERWAY :
DIAMETER (WIDTH) (M) : 4.8
DIAMETER (M) : 3.8
DIAMETER (M) : 6.7
NOS. : 1
NOS. : 1
NOS. : 2

DISCHARGE /HEAD :
PLANT MAX. DISCHARGE (M3/S) : 54.8
FIRM DISCHARGE (M3/S) : 9.1
POWER /ENERGY :
INSTALLED CAPACITY (MW) : 56.0
FIRM POWER (MW) : 9.3
MIN. GUARANTEED POWER (MW) : 41.9

AVERAGE NET HEAD (EL.M) : 124.2
TAILWATER LEVEL (EL.M) : 326.0
ANNUAL TOTAL ENERGY (GWH) : 115.3
FIRM ENERGY (GWH) : 81.7
SECONDARY ENERGY (GWH) : 33.6

TRANSMISSION

LINE LENGTH (KM) : 30.0 TO : BATONG BUHAY 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2

ACCESS ROAD LENGTH (KM) : 0. FROM :

CONSTRUCTION COST

TOTAL COST (MIL USD) : 173.4
TOTAL COST/KW (USD/KW) : 3098.1
TOTAL COST/KWH (USD/KWH) : 1.889

POWER COST (MIL USD) : 170.0
TRANSMISSION COST (MIL USD) : 3.4
ACCESS ROAD COST (MIL USD) : 0.

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3272-111
TECHNICAL COMMENT :

INVENTORY OF HYDROPOWER SITES

SCHEME ID : 2-008-06-22-0-2

SCHEME : PASIL

RIVER SYSTEM : CAGAYAN
STREAM : PASIL

WATER RESOURCES REGION : II
PROVINCE : MT. PROVINCE

COORDINATES : N17-20-28 E121-03-25
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 208.1 (MAIN : 208.1, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-063-NP-
AVER. BASIN RAINFALL (MM/YR) : 2500. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 874.
AVERAGE DISCHARGE (M3/S) : 7.4 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 54.8

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.55

PONDAGE FULL SUPPLY LEVEL (EL.M) : 849.6 PONDAGE STORAGE VOL. (1000M3) : 69.7
AVERAGE OPERATING LEVEL (EL.M) : 848.8 ACTIVE STORAGE VOL. (1000M3) : 25.9
MINIMUM OPERATING LEVEL (EL.M) : 847.9
DRAWDOWN DEPTH (M) : 1.7

MAIN DAM CREST ELEVATION (EL.M) : 849.6 CREST LENGTH (M) : 31.1
(WEIR) WEIR HEIGHT (M) : 7.6 WEIR CONCRETE VOL. (1000 M3) : 4.9

WATERWAY HEADRAGE : LENGTH (M) : 9330.0 DIAMETER (WIDTH) (M) : 2.2 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 700.0 DIAMETER (M) : 1.6 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 38.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 7.4 AVERAGE NET HEAD (M) : 329.1
/HEAD FIRM DISCHARGE (M3/S) : 0.9 TAILWATER LEVEL (EL.M) : 495.0

POWER UNSATLLED CAPACITY (MW) : 20.0 ANNUAL TOTAL ENERGY (GWH) : 105.0
/ENERGY FIRM POWER (MW) : 2.4 FIRM ENERGY (GWH) : 21.3
MIN. GUARANTEED POWER (MW) : 2.2 SECONDARY ENERGY (GWH) : 83.6

TRANSMISSION LINE LENGTH (KM) : 9.6 TO : BATONG BUHAY 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1

ACCESS ROAD LENGTH (KM) : 2.0 FROM : NEAREST PROVINCIAL ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 25.4 POWER COST (MIL USD) : 24.2
TOTAL COST/KW (USD/KW) : 1270.9 TRANSMISSION COST (MIL USD) : 0.6
TOTAL COST/KWH (USD/KWH) : 0.548 ACCESS ROAD COST (MIL USD) : 0.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - SCARCE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3272-111 1960
TECHNICAL COMMENT : - FOUR STREAM INTAKES PROVIDED ALONG THE WATERWAY

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-06-23-0-2

SCHEME : TANUDAN

RIVER SYSTEM : CAGAYAN
 STREAM : TANUDAN
 WATER RESOURCES REGION : 11
 PROVINCE : MT. PROVINCE
 COORDINATES : N17-10-15 E121-12-38
 STUDY LEVEL : NEWLY IDENTIFIED
 THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 175.6 (MAIN : 176., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-063-NP-
 AVER. BASIN RAINFALL (MM/YR) : 3523 DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 874.
 AVERAGE DISCHARGE (M3/S) : 11.9 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 54.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.65
 PONDAGE FULL SUPPLY LEVEL (EL.M) : 790.2 PONDAGE STORAGE VOL. (1000M3) : 93.4
 AVERAGE OPERATING LEVEL (EL.M) : 788.8 ACTIVE STORAGE VOL. (1000M3) : 41.8
 MINIMUM OPERATING LEVEL (EL.M) : 787.4
 DRAWDOWN DEPTH (M) : 2.8
 MAIN DAM CREST ELEVATION (EL.M) : 790.2 CREST LENGTH (M) : 65.6
 (WEIR) WEIR HEIGHT (M) : 9.2 WEIR CONCRETE VOL. (1000 M3) : 11.9
 WATERWAY HEADRACE : LENGTH (M) : 8100.0 DIAMETER (WIDTH) (M) : 2.7 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 610.0 DIAMETER (M) : 2.0 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 50.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 11.9 AVERAGE NET HEAD (M) : 249.9
 /HEAD FIRM DISCHARGE (M3/S) : 1.5 TAILWATER LEVEL (EL.M) : 520.0
 POWER INSATLLED CAPACITY (MW) : 24.5 ANNUAL TOTAL ENERGY (GWH) : 128.9
 /ENERGY FIRM POWER (MW) : 3.0 FIRM ENERGY (GWH) : 26.1
 MIN. GUARANTEED POWER (MW) : 2.7 SECONDARY ENERGY (GWH) : 102.8

TRANSMISSION LINE LENGTH (KM) : 25.8 TO : BATONG BUHAY 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 13.0 FROM : NEAREST NATIONAL ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 34.2 POWER COST (MIL USD) : 29.3
 TOTAL COST/KW (USD/KW) : 1392.6 TRANSMISSION COST (MIL USD) : 1.1
 TOTAL COST/KWH (USD/KWH) : 0.600 ACCESS ROAD COST (MIL USD) : 3.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3271-IV 1979
 TECHNICAL COMMENT : - NONE

INVENTORY OF HYDROPOWER SITES

SCHEME ID : 2-008-07-24-0-1

SCHEME : BANTAY

RIVER SYSTEM : CAGAYAN
STREAM : PARET

WATER RESOURCES REGION : II
PROVINCE : CAGAYAN

COORDINATES : N17-54-52 E121-49-39
STUDY LEVEL : UNSCALED
(PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 742.0 (MAIN) : 742.0 INTER TRANSFER TOTAL : 0.0 STREAM GAGE ID : 4-2-020-NW-225
AVER. BASIN RAINFALL (MM/YR) : 2878. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
AVERAGE DISCHARGE (M3/S) : 50.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.80

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 62.0 GROSS STORAGE VOL. (MIL M3) : 1646.2
AVERAGE OPERATING LEVEL (EL.M) : 56.2 ACTIVE STORAGE VOL. (MIL M3) : 1278.8
MINIMUM OPERATING LEVEL (EL.M) : 44.5 DEAD STORAGE VOL. (MIL M3) : 367.4
DRAWDOWN DEPTH (M) : 17.5 SEDIMENT VOL. (MIL M3) : 51.9
MAIN DAM CREST ELEVATION (EL.M) : 68.0 CREST LENGTH (M) : 428.0
(WEIR) DAM HEIGHT (M) : 48.0 EMBANKMENT VOL. (MIL M3) : 1.39
WATERWAY HEADRACE : LENGTH (M) : 380.0 DIAMETER (WIDTH) (M) : 5.4 NOS. : 2
PENSTOCK : HORIZONTAL L (M) : 110.0 DIAMETER (M) : 4.4 NOS. : 2
DIVERSION : LENGTH (M) : 470.0 DIAMETER (M) : 7.8 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 66.0

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 138.5 AVERAGE NET HEAD (M) : 34.9
FIRM DISCHARGE (M3/S) : 34.6 TAILWATER LEVEL (EL.M) : 20.0
POWER INSATLLED CAPACITY (MW) : 39.6 ANNUAL TOTAL ENERGY (GWH) : 122.7
FIRM POWER (MW) : 10.0 FIRM ENERGY (GWH) : 87.2
MIN. GUARANTEED POWER (MW) : 25.3 SECONDARY ENERGY (GWH) : 35.4

TRANSMISSION LINE LENGTH (KM) : 50.4 TO : CAMALANIUGAN 65 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2

ACCESS ROAD LENGTH (KM) : 0. FROM : NATIONAL ROAD BESIDE DAMSITE

CONSTRUCTION COST

TOTAL COST (MIL USD) : 94.3 POWER COST (MIL USD) : 90.6
TOTAL COST/KW (USD/KW) : 2368.5 TRANSMISSION COST (MIL USD) : 3.7
TOTAL COST/KWH (USD/KWH) : 0.964 ACCESS ROAD COST (MIL USD) : 0.

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - DENSE POPULATION
SUBMERGED ROAD : PROVINCIAL ROAD 7.0 KMS.
MAP USED (1:50,000 SCALE) : 3373-1 1979
TECHNICAL COMMENT : - TOPOGRAPHIC LIMIT +/- EL 80.0 M.
- SITE COVERED WITH THICK RESIDUAL AND RIVER DEPOSITS SUSCEPTIBLE TO HIGH PERMEABILITY

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-08-25-0-1
 SCHEME : DABBA
 RIVER SYSTEM : CAGAYAN
 STREAM : PIN.TUGUEGARAO
 WATER RESOURCES REGION : II
 PROVINCE : CAGAYAN
 COORDINATES : N17-42-05 E121-50-05
 STUDY LEVEL : UNSCALED
 (PRE-F/S-RECONNAISSANCE)

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 439.7 (MAIN) : 440. INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-020-NW-225
 AVER. BASIN RAINFALL (MM/YR) : 3652. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
 AVERAGE DISCHARGE (M3/S) : 40.8 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.62

RESERVOIR
 FULL SUPPLY LEVEL (EL.M) : 117.0 GROSS STORAGE VOL. (MIL M3) : 1290.3
 AVERAGE OPERATING LEVEL (EL.M) : 105.5 ACTIVE STORAGE VOL. (MIL M3) : 798.3
 MINIMUM OPERATING LEVEL (EL.M) : 82.5 DEAD STORAGE VOL. (MIL M3) : 492.0
 DRAWDOWN DEPTH (M) : 34.5 SEDIMENT VOL. (MIL M3) : 30.8

MAIN DAM
 (WEIR) CREST ELEVATION (EL.M) : 123.0 CREST LENGTH (M) : 561.0
 DAM HEIGHT (M) : 85.0 EMBANKMENT VOL. (MIL M3) : 4.41

WATERWAY
 HEADRAGE : LENGTH (M) : 450.0 DIAMETER (WIDTH) (M) : 4.9
 PENSTOCK : HORIZONT. L (M) : 80.0 DIAMETER (M) : 4.0
 DIVERSION : LENGTH (M) : 680.0 DIAMETER (M) : 7.0
 EXCAVATION VOL TOTAL (1000 M3) : 71.0 NOS. : 2

DISCHARGE
 /HEAD PLANT MAX. DISCHARGE (M3/S) : 111.3 AVERAGE NET HEAD (M) : 65.8
 FIRM DISCHARGE (M3/S) : 27.8 TAILWATER LEVEL (EL.M) : 38.0

POWER
 /ENERGY INSTALLED CAPACITY (MW) : 60.3 ANNUAL TOTAL ENERGY (GWH) : 186.5
 FIRM POWER (MW) : 15.1 FIRM ENERGY (GWH) : 132.1
 MIN. GUARANTEED POWER (MW) : 37.4 SECONDARY ENERGY (GWH) : 54.4

TRANSMISSION
 LINE LENGTH (KM) : 23.0 TO : TUGUEGARAO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 14.5 FROM : PENABLANCA

CONSTRUCTION COST
 TOTAL COST (MIL USD) : 147.4 POWER COST (MIL USD) : 140.4
 TOTAL COST/KW (USD/KW) : 2444.2 TRANSMISSION COST (MIL USD) : 2.8
 TOTAL COST/KWH (USD/KWH) : 0.993 ACCESS ROAD COST (MIL USD) : 4.1

OTHER INFORMATION
 LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3373-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-08-26-0-1

SCHEME : DALAYA

RIVER SYSTEM : CAGAYAN WATER RESOURCES REGION : 11 COORDINATES : N17-41-20 E121-55-40
 STREAM : PIN.TUGUEGARAO PROVINCE : CAGAYAN STUDY LEVEL : IDENTIFIED
 IN THE PREVIOUS STUDY

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 216.7 (MAIN : 217. INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-020-NW-225
 AVER. BASIN RAINFALL (MM/YR) : 4284. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
 AVERAGE DISCHARGE (M3/S) : 24.5 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.52

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 222.0 GROSS STORAGE VOL. (MIL M3) : 544.3
 AVERAGE OPERATING LEVEL (EL.M) : 200.8 ACTIVE STORAGE VOL. (MIL M3) : 401.2
 MINIMUM OPERATING LEVEL (EL.M) : 158.6 DEAD STORAGE VOL. (MIL M3) : 143.2
 DRAWDOWN DEPTH (M) : 63.4 SEDIMENT VOL. (MIL M3) : 15.2

MAIN DAM CREST ELEVATION (EL.M) : 228.0 CREST LENGTH (M) : 536.6
 (WEIR) DAM HEIGHT (M) : 158.0 EMBANKMENT VOL. (MIL M3) : 11.27

WATERWAY HEADRACE : LENGTH (M) : 530.0 DIAMETER (WIDTH) (M) : 6.4 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 180.0 DIAMETER (M) : 4.8 NOS. : 1
 DIVERSION : LENGTH (M) : 810.0 DIAMETER (M) : 8.5 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 66.4

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 95.7 AVERAGE NET HEAD (M) : 128.1
 /HEAD FIRM DISCHARGE (M3/S) : 15.9 TAILWATER LEVEL (EL.M) : 70.0

POWER INSATLLED CAPACITY (MW) : 100.9 ANNUAL TOTAL ENERGY (GWH) : 223.7
 /ENERGY FIRM POWER (MW) : 16.8 FIRM ENERGY (GWH) : 147.3
 MIN. GUARANTEED POWER (MW) : 64.4 SECONDARY ENERGY (GWH) : 76.4

TRANSMISSION LINE LENGTH (KM) : 24.0 TO : TUGUEGARAO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 30.0 FROM : PENABLANCA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 245.3 POWER COST (MIL USD) : 232.1
 TOTAL COST/KW (USD/KW) : 2431.4 TRANSMISSION COST (MIL USD) : 4.7
 TOTAL COST/KWH (USD/KWH) : 1.441 ACCESS ROAD COST (MIL USD) : 8.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3373-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-08-27-0-2

SCHEME : TUGUEGARAO

COORDINATES : N17-36-59 E122-03-23
STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

WATER RESOURCES REGION : II
PROVINCE : CAGAYAN

RIVER SYSTEM : CAGAYAN
STREAM : PIN.TUGUEGARAO

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 95.3 (MAIN : 95.3, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-020-NW-225
 AVER. BASIN RAINFALL (MM/YR) : 4500 DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
 AVERAGE DISCHARGE (M3/S) : 11.4 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.62

PONDAGE FULL SUPPLY LEVEL (EL.M) : 306.5 PONDAGE STORAGE VOL. (1000M3) : 95.9
 AVERAGE OPERATING LEVEL (EL.M) : 305.4 ACTIVE STORAGE VOL. (1000M3) : 36.6
 MINIMUM OPERATING LEVEL (EL.M) : 304.4
 DRAWDOWN DEPTH (M) : 2.1

MAIN DAM CREST ELEVATION (EL.M) : 306.5 CREST LENGTH (M) : 53.7
 (WEIR) WEIR HEIGHT (M) : 8.5 WEIR CONCRETE VOL. (1000 M3) : 8.8

WATERWAY HEADRACE : LENGTH (M) : 3430.0 DIAMETER (WIDTH) (M) : 2.7 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 250.0 DIAMETER (M) : 2.1 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 20.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 11.4 AVERAGE NET HEAD (M) : 98.3
 /HEAD FIRM DISCHARGE (M3/S) : 1.3 TAILWATER LEVEL (EL.M) : 200.0

POWER UNSATLLED CAPACITY (MW) : 9.2 ANNUAL TOTAL ENERGY (GWH) : 46.6
 /ENERGY FIRM POWER (MW) : 1.0 FIRM ENERGY (GWH) : 9.0
 MIN. GUARANTEED POWER (MW) : 0.9 SECONDARY ENERGY (GWH) : 37.6

TRANSMISSION LINE LENGTH (KM) : 16.0 TO : TUGUEGARAO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 37.0 FROM : AGUGADAM

CONSTRUCTION COST

TOTAL COST (MIL USD) : 25.5 POWER COST (MIL USD) : 14.1
 TOTAL COST/KW (USD/KW) : 2755.8 TRANSMISSION COST (MIL USD) : 0.8
 TOTAL COST/KWH (USD/KWH) : 1.255 ACCESS ROAD COST (MIL USD) : 10.5

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3472-1V
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : SAN PABLO
 RIVER SYSTEM : CAGAYAN
 STREAM : PINACANAUAN
 WATER RESOURCES REGION : II
 PROVINCE : ISABELA
 COORDINATES : N17-28-30 E121-55-00
 STUDY LEVEL : UNSCALED
 (PRE-F/F/S, RECONNAISSANCE)

SCHEME ID : 2-008-09-28-0-1

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 120.0 (MAIN) : 120.0 INTER TRANSFER TOTAL : 0.0 STREAM GAGE ID : 4-2-020-NW-225
 AVER. BASIN RAINFALL (MM/YR) : 3915. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 555.
 AVERAGE DISCHARGE (M3/S) : 12.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.57

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 255.3 GROSS STORAGE VOL. (MIL M3) : 274.4
 AVERAGE OPERATING LEVEL (EL.M) : 233.9 ACTIVE STORAGE VOL. (MIL M3) : 218.3
 MINIMUM OPERATING LEVEL (EL.M) : 191.1 DEAD STORAGE VOL. (MIL M3) : 56.1
 DRAWDOWN DEPTH (M) : 64.2 SEDIMENT VOL. (MIL M3) : 8.4
 MAIN DAM CREST ELEVATION (EL.M) : 261.3 CREST LENGTH (M) : 932.9 NOS. : 1
 (WEIR) DAM HEIGHT (M) : 163.3 EMBANKMENT VOL. (MIL M3) : 30.61 NOS. : 1
 WATERWAY HEADRAGE : LENGTH (M) : 770.0 DIAMETER (WIDTH) (M) : 2.6 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 240.0 DIAMETER (M) : 2.3 NOS. : 1
 DIVERSION : LENGTH (M) : 1540.0 DIAMETER (M) : 7.5 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 72.9

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 16.4 AVERAGE NET HEAD (M) : 130.5
 /HEAD FIRM DISCHARGE (M3/S) : 8.2 TAILWATER LEVEL (EL.M) : 98.0
 POWER INSTALLED CAPACITY (MW) : 17.6 ANNUAL TOTAL ENERGY (GWH) : 98.8
 /ENERGY FIRM POWER (MW) : 8.8 FIRM ENERGY (GWH) : 77.2
 MIN. GUARANTEED POWER (MW) : 11.3 SECONDARY ENERGY (GWH) : 21.6

TRANSMISSION LINE LENGTH (KM) : 15.0 TO : TUGUEGARAO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 20.0 FROM : OLD SAN-PABLO

CONSTRUCTION COST

TOTAL COST (MIL USD) : 391.8 POWER COST (MIL USD) : 385.3
 TOTAL COST/KW (USD/KW) : 22216.9 TRANSMISSION COST (MIL USD) : 0.8
 TOTAL COST/KWH (USD/KWH) : 4.680 ACCESS ROAD COST (MIL USD) : 5.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3372-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : TUMAUNI-1
 RIVER SYSTEM : CAGAYAN
 STREAM : PINACANAUAN DE TUMAUNI PROVINCE
 WATER RESOURCES REGION : II
 COORDINATES : N17-18-25 E121-57-38
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

SCHEME ID : 2-008-11-29-0-1

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 165.6 (MAIN : 166., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-020-NW-225
 AVER. BASIN RAINFALL (MM/YR) : 3438. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
 AVERAGE DISCHARGE (M3/S) : 14.3 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.47

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 267.8 GROSS STORAGE VOL. (MIL M3) : 301.4
 AVERAGE OPERATING LEVEL (EL.M) : 250.5 ACTIVE STORAGE VOL. (MIL M3) : 211.3
 MINIMUM OPERATING LEVEL (EL.M) : 216.0 DEAD STORAGE VOL. (MIL M3) : 90.2
 DRAWDOWN DEPTH (M) : 51.8 SEDIMENT VOL. (MIL M3) : 11.6
 MAIN DAM CREST ELEVATION (EL.M) : 273.8 CREST LENGTH (M) : 545.4
 (WEIR) DAM HEIGHT (M) : 145.8 EMBANKMENT VOL. (MIL M3) : 9.77
 WATERWAY HEADRAGE : LENGTH (M) : 820.0 DIAMETER (WIDTH) (M) : 4.8 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 140.0 DIAMETER (M) : 3.8 NOS. : 1
 DIVERSION : LENGTH (M) : 1380.0 DIAMETER (M) : 8.0 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 86.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 53.6 AVERAGE NET HEAD (M) : 119.4
 /HEAD FIRM DISCHARGE (M3/S) : 8.9 TAILWATER LEVEL (EL.M) : 128.0
 POWER INSATLLED CAPACITY (MW) : 52.7 ANNUAL TOTAL ENERGY (GWH) : 120.6
 /ENERGY FIRM POWER (MW) : 8.8 FIRM ENERGY (GWH) : 77.0
 MIN.GUARANTEED POWER (MW) : 35.7 SECONDARY ENERGY (GWH) : 43.6

TRANSMISSION LINE LENGTH (KM) : 27.0 TO : TUGUEGARAO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 24.5 FROM : TUMAUNI

CONSTRUCTION COST

TOTAL COST (MIL USD) : 205.9 POWER COST (MIL USD) : 195.8
 TOTAL COST/KW (USD/KW) : 3906.4 TRANSMISSION COST (MIL USD) : 3.2
 TOTAL COST/KWH (USD/KWH) : 2.287 ACCESS ROAD COST (MIL USD) : 7.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3371-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-12-30-0-1
 COORDINATES : N17-08-00 E121-30-10
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

SCHEME : NATONIN

RIVER SYSTEM : CAGAYAN
 STREAM : SIFFU

WATER RESOURCES REGION : 11
 PROVINCE : MT. PROVINCE

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 466.0 (MAIN : 466., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-NW-
 AVER. BASIN RAINFALL (MM/YR) : 2000. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
 AVERAGE DISCHARGE (M3/S) : 10.6 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.85

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 134.0 GROSS STORAGE VOL. (MIL M3) : 346.2
 AVERAGE OPERATING LEVEL (EL.M) : 126.3 ACTIVE STORAGE VOL. (MIL M3) : 283.3
 MINIMUM OPERATING LEVEL (EL.M) : 110.8 DEAD STORAGE VOL. (MIL M3) : 62.9
 DRAWDOWN DEPTH (M) : 23.2 SEDIMENT VOL. (MIL M3) : 32.6
 MAIN DAM CREST ELEVATION (EL.M) : 140.0 CREST LENGTH (M) : 330.0
 (WEIR) DAM HEIGHT (M) : 60.0 EMBANKMENT VOL. (MIL M3) : 2.19
 WATERWAY HEADRAGE : LENGTH (M) : 350.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 120.0 DIAMETER (M) : 2.3 NOS. : 1
 DIVERSION : LENGTH (M) : 560.0 DIAMETER (M) : 7.1 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 46.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 13.9 AVERAGE NET HEAD (M) : 44.2
 /HEAD FIRM DISCHARGE (M3/S) : 6.9 TAILWATER LEVEL (EL.M) : 30.0
 POWER UNSATLLED CAPACITY (MW) : 5.0 ANNUAL TOTAL ENERGY (GWH) : 28.9
 /ENERGY FIRM POWER (MW) : 2.5 FIRM ENERGY (GWH) : 22.1
 MIN. GUARANTEED POWER (MW) : 3.1 SECONDARY ENERGY (GWH) : 6.8

TRANSMISSION LINE LENGTH (KM) : 8.0 TO : TABUK 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 17.0 FROM : MUNOZ

CONSTRUCTION COST

TOTAL COST (MIL USD) : 63.8 POWER COST (MIL USD) : 63.8
 TOTAL COST/KW (USD/KW) : 13720.0 TRANSMISSION COST (MIL USD) : 0.6
 TOTAL COST/KWH (USD/KWH) : 2.868 ACCESS ROAD COST (MIL USD) : 4.8

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3371-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-12-31-0-1

 SCHEME : PASTOR

 RIVER SYSTEM : CAGAYAN
 STREAM : SIFFU
 WATER RESOURCES REGION : II
 PROVINCE : MT. PROVINCE
 COORDINATES : N17-05-53 E121-20-18
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 274.0 (MAIN : 274.0, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-NW-
 AVER. BASIN RAINFALL (MM/YR) : 2201. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
 AVERAGE DISCHARGE (M3/S) : 8.0 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR
 RESERVOIR DEVELOPMENT RATIO : 0.65

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 303.0 GROSS STORAGE VOL. (MIL M3) : 254.8
 AVERAGE OPERATING LEVEL (EL.M) : 291.0 ACTIVE STORAGE VOL. (MIL M3) : 163.2
 MINIMUM OPERATING LEVEL (EL.M) : 267.1 DEAD STORAGE VOL. (MIL M3) : 91.6
 DRAWDOWN DEPTH (M) : 35.9 SEDIMENT VOL. (MIL M3) : 19.2
 MAIN DAM CREST ELEVATION (EL.M) : 309.0 CREST LENGTH (M) : 318.0
 (WEIR) DAM HEIGHT (M) : 105.0 EMBANKMENT VOL. (MIL M3) : 3.66
 WATERWAY HEADRACE : LENGTH (M) : 790.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 160.0 DIAMETER (M) : 2.0 NOS. : 1
 DIVERSION : LENGTH (M) : 1020.0 DIAMETER (M) : 8.9 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 68.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 9.7 AVERAGE NET HEAD (M) : 84.0
 /HEAD FIRM DISCHARGE (M3/S) : 4.9 TAILWATER LEVEL (EL.M) : 204.0
 POWER INSATLLED CAPACITY (MW) : 6.7 ANNUAL TOTAL ENERGY (GWH) : 40.2
 /ENERGY FIRM POWER (MW) : 3.4 FIRM ENERGY (GWH) : 29.5
 MIN. GUARANTEED POWER (MW) : 4.6 SECONDARY ENERGY (GWH) : 10.7

TRANSMISSION LINE LENGTH (KM) : 41.0 TO : BATONG BUHAY 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 13.0 FROM : NATONIN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 97.4 POWER COST (MIL USD) : 92.1
 TOTAL COST/KW (USD/KW) : 14449.1 TRANSMISSION COST (MIL USD) : 1.6
 TOTAL COST/KWH (USD/KWH) : 2.976 ACCESS ROAD COST (MIL USD) : 3.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3271-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : TABUK SCHEME ID : 2-008-13-32-0-1
 RIVER SYSTEM : CAGAYAN COORDINATES : N17-16-53 E121-31-06
 STREAM : MALIG STUDY LEVEL : UNSCALED
(PRE-F/S, RECONNAISSANCE)

WATER RESOURCES REGION : 11 STREAM GAGE ID : 4-2-053-NW-
 PROVINCE : MT. PROVINCE GAGE CATCHMENT (KM2) : 1784.
 INTER TRANSFER TOTAL : 0.1 GAGE AVER. DISCHARGE (M3/S) : 69.0
 DENUDATION RATE (MM/YR) : 1.4
 EVAPORATION RATE (MM/DAY) : 3.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.80

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 146.0 GROSS STORAGE VOL. (MIL M3) : 580.9
 AVERAGE OPERATING LEVEL (EL.M) : 136.5 ACTIVE STORAGE VOL. (MIL M3) : 464.3
 MINIMUM OPERATING LEVEL (EL.M) : 117.4 DEAD STORAGE VOL. (MIL M3) : 116.5
 DRAWDOWN DEPTH (M) : 28.6 SEDIMENT VOL. (MIL M3) : 30.7

MAIN DAM CREST ELEVATION (EL.M) : 152.0 CREST LENGTH (M) : 215.3
 (WEIR) DAM HEIGHT (M) : 79.0 EMBANKMENT VOL. (MIL M3) : 1.83

WATERWAY HEADRACE : LENGTH (M) : 440.0 DIAMETER (WIDTH) (M) : 5.5
 PENSTOCK : HORIZONT. L (M) : 80.0 DIAMETER (M) : 4.4
 DIVERSION : LENGTH (M) : 640.0 DIAMETER (M) : 7.0
 EXCAVATION VOL TOTAL (1000 M3) : 60.8 NOS. : 1
NOS. : 1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 71.8 AVERAGE NET HEAD (M) : 62.0
 /HEAD FIRM DISCHARGE (M3/S) : 12.0 TAILWATER LEVEL (EL.M) : 73.0

POWER INSATLLED CAPACITY (MW) : 36.6 ANNUAL TOTAL ENERGY (GWH) : 81.1
 /ENERGY FIRM POWER (MW) : 6.1 FIRM ENERGY (GWH) : 53.5
 MIN. GUARANTEED POWER (MW) : 24.2 SECONDARY ENERGY (GWH) : 27.6

TRANSMISSION LINE LENGTH (KM) : 12.0 TO : TABUK 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 12.5 FROM : BARUCBUC

CONSTRUCTION COST

TOTAL COST (MIL USD) : 91.2 POWER COST (MIL USD) : 86.2
 TOTAL COST/KW (USD/KW) : 2489.2 TRANSMISSION COST (MIL USD) : 1.4
 TOTAL COST/KWH (USD/KWH) : 1.476 ACCESS ROAD COST (MIL USD) : 3.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3371-1V
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-13-33-0-1

SCHEME : BANATAO

COORDINATES : N17-18-06 E121-28-55
STUDY LEVEL : IDENTIFIED
IN THE PREVIOUS STUDY

WATER RESOURCES REGION : II
PROVINCE : KAL-APAYAO

RIVER SYSTEM : CAGAYAN
STREAM : MALIG

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 379.0 (MAIN : 379.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-NW-
AVER. BASIN RAINFALL (MM/YR) : 2623. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
AVERAGE DISCHARGE (M3/S) : 16.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.55

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 155.0 GROSS STORAGE VOL. (MIL M3) : 516.9
AVERAGE OPERATING LEVEL (EL.M) : 150.8 ACTIVE STORAGE VOL. (MIL M3) : 278.9
MINIMUM OPERATING LEVEL (EL.M) : 142.4 DEAD STORAGE VOL. (MIL M3) : 237.9
DRAWDOWN DEPTH (M) : 12.6 SEDIMENT VOL. (MIL M3) : 26.5

MAIN DAM CREST ELEVATION (EL.M) : 161.0 CREST LENGTH (M) : 145.2
(WEIR) DAM HEIGHT (M) : 45.0 EMBANKMENT VOL. (MIL M3) : 0.38

WATERWAY HEADRACE : LENGTH (M) : 260.0 DIAMETER (WIDTH) (M) : 4.7 NOS. : 1
PENSTOCK : HORIZONTAL L (M) : 70.0 DIAMETER (M) : 3.9 NOS. : 1
DIVERSION : LENGTH (M) : 430.0 DIAMETER (M) : 6.8 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 36.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 52.7 AVERAGE NET HEAD (M) : 33.8
/HEAD FIRM DISCHARGE (M3/S) : 8.8 TAILWATER LEVEL (EL.M) : 116.0

POWER INSATLLED CAPACITY (MW) : 14.7 ANNUAL TOTAL ENERGY (GWH) : 38.1
/ENERGY FIRM POWER (MW) : 2.4 FIRM ENERGY (GWH) : 21.4
MIN. GUARANTEED POWER (MW) : 10.5 SECONDARY ENERGY (GWH) : 16.7

TRANSMISSION LINE LENGTH (KM) : 18.0 TO : TABUK 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 17.0 FROM : MALLIG

CONSTRUCTION COST

TOTAL COST (MIL USD) : 47.0 POWER COST (MIL USD) : 41.2
TOTAL COST/KW (USD/KW) : 3204.5 TRANSMISSION COST (MIL USD) : 0.9
TOTAL COST/KWH (USD/KWH) : 1.779 ACCESS ROAD COST (MIL USD) : 4.8

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3271-1
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : MALIANO
 RIVER SYSTEM : CAGAYAN
 STREAM : PIN DE ILAGAN
 WATER RESOURCES REGION : II
 PROVINCE : ISABELA
 COORDINATES : N16-44-36 E122-04-00
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

SCHEME ID : 2-008-14-34-0-1

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 880.2 (MAIN : 880., INTER TRANSFER TOTAL : 0.)
 AVER. BASIN RAINFALL (MM/YR) : 2839. DENUDATION RATE (MM/YR) : 1.4
 AVERAGE DISCHARGE (M3/S) : 63.1 EVAPORATION RATE (MM/DAY) : 3.5
 STREAM GAGE ID : 4-2-044-NW-244
 GAGE CATCHMENT (KM2) : 4244.
 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR
 RESERVOIR DEVELOPMENT RATIO : 0.70
 RESERVOIR FULL SUPPLY LEVEL (EL.M) : 292.0
 GROSS STORAGE VOL. (MIL M3) : 2003.4
 AVERAGE OPERATING LEVEL (EL.M) : 272.2
 ACTIVE STORAGE VOL. (MIL M3) : 1393.0
 MINIMUM OPERATING LEVEL (EL.M) : 232.7
 DEAD STORAGE VOL. (MIL M3) : 610.4
 DRAWDOWN DEPTH (M) : 59.3
 SEDIMENT VOL. (MIL M3) : 61.6
 CREST ELEVATION (EL.M) : 298.0
 CREST LENGTH (M) : 655.5
 DAM HEIGHT (M) : 153.0
 EMBANKMENT VOL. (MIL M3) : 16.17
 WATERWAY HEADRAGE : LENGTH (M) : 550.0
 DIAMETER (WIDTH) (M) : 6.0
 PENSTOCK : HORIZONT. L (M) : 300.0
 DIAMETER (M) : 4.6
 DIVERSION : LENGTH (M) : 1100.0
 DIAMETER (M) : 8.1
 EXCAVATION VOL TOTAL (1000 M3) : 155.6
 DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 171.9
 AVERAGE NET HEAD (M) : 123.9
 FIRM DISCHARGE (M3/S) : 43.0
 TAILWATER LEVEL (EL.M) : 145.0
 POWER INSATLLED CAPACITY (MW) : 175.3
 ANNUAL TOTAL ENERGY (GWH) : 540.4
 FIRM POWER (MW) : 43.8
 FIRM ENERGY (GWH) : 333.9
 MIN. GUARANTEED POWER (MW) : 113.7
 SECONDARY ENERGY (GWH) : 156.5

TRANSMISSION LINE LENGTH (KM) : 70.0 TO : SANTIAGO
 ACCESS ROAD LENGTH (KM) : 34.0 FROM : SAN MARIANO
 NOS. OF CIRCUIT : 1
 230 K V DOUBLE CIRCUIT

CONSTRUCTION COST

TOTAL COST (MIL USD) : 371.9
 TOTAL COST/KW (USD/KW) : 2241.2
 TOTAL COST/KWH (USD/KWH) : 0.912
 POWER COST (MIL USD) : 371.9
 TRANSMISSION COST (MIL USD) : 11.3
 ACCESS ROAD COST (MIL USD) : 9.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3470-IV 1960
 TECHNICAL COMMENT : - NO PARTICULAR PROBLEM ON GEOLOGIC ASPECT.
 - ADAPTABILITY OF PLAN DEPENDS ON THE ACCESSIBILITY TO THE SITE THRU DEEP FOREST.

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-14-35-0-1

SCHEME : ILAGAN-1

RIVER SYSTEM : CAGAYAN WATER RESOURCES REGION : 11 COORDINATES : N16-35-03 E122-01-19
 STREAM : PINACAUAN DE ILAGAN PROVINCE : ISABELA STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 413.7 (MAIN : 414. INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2845. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 29.8 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT

RESERVOIR DEVELOPMENT RATIO : 0.90

RESERVIOR FULL SUPPLY LEVEL (EL.M) : 474.0
 AVERAGE OPERATING LEVEL (EL.M) : 441.3
 MINIMUM OPERATING LEVEL (EL.M) : 375.9
 DRAWDOWN DEPTH (M) : 98.1
 CREST ELEVATION (EL.M) : 480.0
 DAM HEIGHT (M) : 186.0
 WATERWAY HEADRACE : LENGTH (M) : 710.0
 PENSTOCK : HORIZONTAL L (M) : 300.0
 DIVERSION : LENGTH (M) : 1250.0
 EXCAVATION VOL TOTAL (1000 M3) : 134.0

GROSS STORAGE VOL. (MIL M3) : 936.2
 ACTIVE STORAGE VOL. (MIL M3) : 346.3
 DEAD STORAGE VOL. (MIL M3) : 90.0
 SEDIMENT VOL. (MIL M3) : 29.0
 CREST LENGTH (M) : 500.0
 EMBANKMENT VOL. (MIL M3) : 17.61
 DIAMETER (WIDTH) (M) : 5.3
 DIAMETER (M) : 4.0
 DIAMETER (M) : 6.9

NOS. : 2
 NOS. : 2
 NOS. : 2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 135.0
 /HEAD FIRM DISCHARGE (M3/S) : 22.5
 POWER INSTALLED CAPACITY (MW) : 208.4
 /ENERGY FIRM POWER (MW) : 34.7
 MIN. GUARANTEED POWER (MW) : 129.3

AVERAGE NET HEAD (M) : 167.6
 TAILWATER LEVEL (EL.M) : 249.0
 ANNUAL TOTAL ENERGY (GWH) : 401.2
 FIRM ENERGY (GWH) : 304.3
 SECONDARY ENERGY (GWH) : 96.9

TRANSMISSION

LINE LENGTH (KM) : 66.0 TO : SANTIAGO
 ACCESS ROAD LENGTH (KM) : 76.0 FROM : SAN.MARIANO
 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1

CONSTRUCTION COST

TOTAL COST (MIL USD) : 396.6
 TOTAL COST/KW (USD/KW) : 1902.8
 TOTAL COST/KWH (USD/KWH) : 1.190

POWER COST (MIL USD) : 364.2
 TRANSMISSION COST (MIL USD) : 10.7
 ACCESS ROAD COST (MIL USD) : 21.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3469-IV
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-14-36-0-1

SCHEME : ILAGAN-2

RIVER SYSTEM : CAGAYAN WATER RESOURCES REGION : 11 COORDINATES : N16-30-13 E122-00-01
 STREAM : PINACUAN DE ILAGAN PROVINCE : ISABELA STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPTS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 323.9 (MAIN : 324.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2871.0 DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 23.6 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 544.0 GROSS STORAGE VOL. (MIL M3) : 740.6
 AVERAGE OPERATING LEVEL (EL.M) : 526.7 ACTIVE STORAGE VOL. (MIL M3) : 521.2
 MINIMUM OPERATING LEVEL (EL.M) : 492.0 DEAD STORAGE VOL. (MIL M3) : 219.4
 DRAWDOWN DEPTH (M) : 52.0 SEDIMENT VOL. (MIL M3) : 22.7

MAIN DAM CREST ELEVATION (EL.M) : 550.0 CREST LENGTH (M) : 425.0
 (WEIR) DAM HEIGHT (M) : 147.0 EMBANKMENT VOL. (MIL M3) : 10.02

WATERWAY HEADRAGE : LENGTH (M) : 500.0 DIAMETER (WIDTH) (M) : 6.4 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 320.0 DIAMETER (M) : 4.8 NOS. : 1
 DIVERSION : LENGTH (M) : 1000.0 DIAMETER (M) : 6.5 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 89.5

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 96.1 AVERAGE NET HEAD (M) : 120.4
 /HEAD FIRM DISCHARGE (M3/S) : 16.0 TAILWATER LEVEL (EL.M) : 403.0

POWER UNSATLLED CAPACITY (MW) : 95.3 ANNUAL TOTAL ENERGY (GWH) : 201.9
 /ENERGY FIRM POWER (MW) : 15.9 FIRM ENERGY (GWH) : 139.1
 MIN. GUARANTEED POWER (MW) : 64.6 SECONDARY ENERGY (GWH) : 62.8

TRANSMISSION

LINE LENGTH (KM) : 88.0 TO : SANTIAGO

NOS. OF CIRCUIT : 1

ACCESS ROAD LENGTH (KM) : 90.0 FROM : SAN MARIANO

CONSTRUCTION COST

TOTAL COST (MIL USD) : 263.7 POWER COST (MIL USD) : 227.0
 TOTAL COST/KW (USD/KW) : 2767.3 TRANSMISSION COST (MIL USD) : 11.0
 TOTAL COST/KWH (USD/KWH) : 1.669 ACCESS ROAD COST (MIL USD) : 25.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3369-1, 3469-IV
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-14-37-0-1

SCHEME : DINAPIQUI

RIVER SYSTEM : CAGAYAN
 STREAM : DINAPIQUI

WATER RESOURCES REGION : II
 PROVINCE : ISABELA

COORDINATES : N16-32-34 E122-08-24
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 95.0 (MAIN : 95.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2467. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 5.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.94

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 546.0 GROSS STORAGE VOL. (MIL M3) : 179.0
 AVERAGE OPERATING LEVEL (EL.M) : 525.9 ACTIVE STORAGE VOL. (MIL M3) : 168.8
 MINIMUM OPERATING LEVEL (EL.M) : 435.8 DEAD STORAGE VOL. (MIL M3) : 10.2
 DRAWDOWN DEPTH (M) : 60.2 SEDIMENT VOL. (MIL M3) : 6.6

MAIN DAM CREST ELEVATION (EL.M) : 552.0 CREST LENGTH (M) : 370.7
 (WEIR) DAM HEIGHT (M) : 102.0 EMBANKMENT VOL. (MIL M3) : 4.35

WATERWAY HEADRACE : LENGTH (M) : 9000.0 DIAMETER (WIDTH) (M) : 2.7 NOS. : 1
 PENSTOCK : HORIZONTAL (M) : 680.0 DIAMETER (M) : 2.3 NOS. : 1
 DIVERSION : LENGTH (M) : 550.0 DIAMETER (M) : 7.1 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 77.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 17.4 AVERAGE NET HEAD (M) : 408.1
 FIRM DISCHARGE (M3/S) : 4.3 TAILWATER LEVEL (EL.M) : 80.0

POWER INSATLLED CAPACITY (MW) : 58.3 ANNUAL TOTAL ENERGY (GWH) : 159.4
 FIRM POWER (MW) : 14.6 FIRM ENERGY (GWH) : 127.8
 MIN. GUARANTEED POWER (MW) : 50.1 SECONDARY ENERGY (GWH) : 31.6

TRANSMISSION LINE LENGTH (KM) : 67.0 TO : CAWAYAN 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 40.0 FROM : FROM NEAREST PUBLIC ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) :	146.4	POWER COST (MIL USD) :	128.3
TOTAL COST/KW (USD/KW) :	2509.8	TRANSMISSION COST (MIL USD) :	6.7
TOTAL COST/KWH (USD/KWH) :	1.067	ACCESS ROAD COST (MIL USD) :	11.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3460-IV
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : BALLASANG
 RIVER SYSTEM : CAGAYAN
 STREAM : ABUAN
 WATER RESOURCES REGION : 11
 PROVINCE : ISABELA
 COORDINATES : N17-05-05 E122-03-03
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

SCHEME ID : 2-008-15-38-0-1

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 462.0 (MAIN : 462., INTER TRANSFER TOTAL : 0.)
 AVER. BASIN RAINFALL (MM/YR) : 3401. DENUDATION RATE (MM/YR) : 1.4
 AVERAGE DISCHARGE (M3/S) : 42.3 EVAPORATION RATE (MM/DAY) : 3.5
 STREAM GAGE ID : 4-2-044-NW-244
 GAGE CATCHMENT (KM2) : 4244.
 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR : RESERVOIR DEVELOPMENT RATIO : 0.49

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 194.0 GROSS STORAGE VOL. (MIL M3) : 902.4
 AVERAGE OPERATING LEVEL (EL.M) : 175.6 ACTIVE STORAGE VOL. (MIL M3) : 694.0
 MINIMUM OPERATING LEVEL (EL.M) : 138.8 DEAD STORAGE VOL. (MIL M3) : 248.4
 DRAWDOWN DEPTH (M) : 55.2 SEDIMENT VOL. (MIL M3) : 32.3

MAIN DAM CREST ELEVATION (EL.M) : 200.0 CREST LENGTH (M) : 700.0
 (WEIR) DAM HEIGHT (M) : 141.0 EMBANKMENT VOL. (MIL M3) : 16.04

WATERWAY HEADRACE : LENGTH (M) : 720.0 DIAMETER (WIDTH) (M) : 5.6 NOS. : 2
 PENSTOCK : HORIZONTAL. L (M) : 240.0 DIAMETER (M) : 4.3 NOS. : 2
 DIVERSION : LENGTH (M) : 1140.0 DIAMETER (M) : 7.1 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 132.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 149.1 AVERAGE NET HEAD (M) : 113.4
 /HEAD FIRM DISCHARGE (M3/S) : 24.9 TAILWATER LEVEL (EL.M) : 59.0

POWER UNSATLLED CAPACITY (MW) : 139.2 ANNUAL TOTAL ENERGY (GWH) : 341.6
 /ENERGY FIRM POWER (MW) : 23.2 FIRM ENERGY (GWH) : 203.3
 MIN. GUARANTEED POWER (MW) : 89.5 SECONDARY ENERGY (GWH) : 138.4

TRANSMISSION LINE LENGTH (KM) : 68.0 TO : TUGUEGARAO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 12.0 FROM : SAN ANTONIO

CONSTRUCTION COST

TOTAL COST (MIL USD) : 339.3 POWER COST (MIL USD) : 326.3
 TOTAL COST/KW (USD/KW) : 2437.2 TRANSMISSION COST (MIL USD) : 9.6
 TOTAL COST/KWH (USD/KWH) : 1.386 ACCESS ROAD COST (MIL USD) : 3.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3471-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-15-39-0-1

SCHEME : ABUAN-1

RIVER SYSTEM : CAGAYAN
 STREAM : ABUAN
 WATER RESOURCES REGION : 11
 PROVINCE : ISABELA
 COORDINATES : N17-05-22 E122-07-58
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 355.3 (MAIN ; 355., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 3598. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 34.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR : RESERVOIR DEVELOPMENT RATIO : 0.80

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 284.0 GROSS STORAGE VOL. (MIL M3) : 1095.1
 AVERAGE OPERATING LEVEL (EL.M) : 261.6 ACTIVE STORAGE VOL. (MIL M3) : 860.1
 MINIMUM OPERATING LEVEL (EL.M) : 216.7 DEAD STORAGE VOL. (MIL M3) : 235.0
 DRAWDOWN DEPTH (M) : 67.3 SEDIMENT VOL. (MIL M3) : 24.9
 MAIN DAM CREST ELEVATION (EL.M) : 290.0 CREST LENGTH (M) : 590.0
 (WEIR) DAM HEIGHT (M) : 173.0 EMBANKMENT VOL. (MIL M3) : 18.45
 WATERWAY HEADRAGE : LENGTH (M) : 1400.0 DIAMETER (WIDTH) (M) : 5.6 NOS. : 2
 PENSTOCK : HORIZONT. L (M) : 280.0 DIAMETER (M) : 4.2 NOS. : 2
 DIVERSTION : LENGTH (M) : 1020.0 DIAMETER (M) : 6.7 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 148.7

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 146.6 AVERAGE NET HEAD (M) : 153.8
 /HEAD FIRM DISCHARGE (M3/S) : 24.4 TAILWATER LEVEL (EL.M) : 103.0
 POWER UNSATLLED CAPACITY (MW) : 185.6 ANNUAL TOTAL ENERGY (GWH) : 373.3
 /ENERGY FIRM POWER (MW) : 30.9 FIRM ENERGY (GWH) : 271.0
 MIN. GUARANTEED POWER (MW) : 125.2 SECONDARY ENERGY (GWH) : 102.2

TRANSMISSION LINE LENGTH (KM) : 27.0 TO : ILAGAN 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 22.5 FROM : SAN ANTONIO

CONSTRUCTION COST

TOTAL COST (MIL USD) : 382.4 POWER COST (MIL USD) : 370.8
 TOTAL COST/KW (USD/KW) : 2059.8 TRANSMISSION COST (MIL USD) : 5.1
 TOTAL COST/KWH (USD/KWH) : 1.267 ACCESS ROAD COST (MIL USD) : 6.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3471-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-16-40-0-1

SCHEME : CATALANGAN

RIVER SYSTEM : CAGAYAN WATER RESOURCES REGION : 11 COORDINATES : N16-59-24 E122-04-05
 STREAM : CATALANGAN PROVINCE : ISABELA STUDY LEVEL : UNSCALED
 (PRE-F/S-RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 292.0 (MAIN : 292., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2959. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 22.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.44

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 154.0 GROSS STORAGE VOL. (MIL M3) : 403.7
 AVERAGE OPERATING LEVEL (EL.M) : 141.7 ACTIVE STORAGE VOL. (MIL M3) : 306.7
 MINIMUM OPERATING LEVEL (EL.M) : 117.0 DEAD STORAGE VOL. (MIL M3) : 97.1
 DRAWDOWN DEPTH (M) : 37.0 SEDIMENT VOL. (MIL M3) : 20.4

MAIN DAM CREST ELEVATION (EL.M) : 160.0 CREST LENGTH (M) : 500.0
 (WEIR) DAM HEIGHT (M) : 101.0 ENDANKMENT VOL. (MIL M3) : 5.87

WATERWAY HEADRACE : LENGTH (M) : 490.0 DIAMETER (WIDTH) (M) : 5.5 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 170.0 DIAMETER (M) : 4.4 NOS. : 1
 DIVERSION : LENGTH (M) : 910.0 DIAMETER (M) : 6.4 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 73.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 72.6 AVERAGE NET HEAD (M) : 80.5
 /HEAD FIRM DISCHARGE (M3/S) : 12.1 TAILWATER LEVEL (EL.M) : 59.0

POWER INSATLLED CAPACITY (MW) : 48.1 ANNUAL TOTAL ENERGY (GWH) : 126.0
 /ENERGY FIRM POWER (MW) : 8.0 FIRM ENERGY (GWH) : 70.2
 MIN. GUARANTEED POWER (MW) : 31.8 SECONDARY ENERGY (GWH) : 55.8

TRANSMISSION LINE LENGTH (KM) : 27.0 TO : ILAGAN 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 1.5 FROM : ABBATUAN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 151.4 POWER COST (MIL USD) : 147.8
 TOTAL COST/KW (USD/KW) : 3149.9 TRANSMISSION COST (MIL USD) : 3.2
 TOTAL COST/KWH (USD/KWH) : 1.742 ACCESS ROAD COST (MIL USD) : 0.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3470-1V
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-16-41-0-1

SCHEME : DISUSUAN

RIVER SYSTEM : CAGAYAN
STREAM : DISABUNGAN

WATER RESOURCES REGION : 11
PROVINCE : ISABELA

COORDINATES : N16-57-28 E122-06-07
STUDY LEVEL : IDENTIFIED
IN THE PREVIOUS STUDY

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 127.8 (MAIN : 128., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
AVER. BASIN RAINFALL (MM/YR) : 2767. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
AVERAGE DISCHARGE (M3/S) : 8.9 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT

RESERVOIR DEVELOPMENT RATIO : 0.50

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 154.0
AVERAGE OPERATING LEVEL (EL.M) : 143.6
MINIMUM OPERATING LEVEL (EL.M) : 122.8
DRAWDOWN DEPTH (M) : 31.2
CREST ELEVATION (EL.M) : 160.0
DAM HEIGHT (M) : 84.0
WATERWAY HEADRACE : LENGTH (M) : 380.0
PENSTOCK : HORIZONTAL L (M) : 110.0
DIVERSION : LENGTH (M) : 780.0
EXCAVATION VOL TOTAL (1000 M3) : 37.4

GROSS STORAGE VOL. (MIL M3) : 194.4
ACTIVE STORAGE VOL. (MIL M3) : 140.3
DEAD STORAGE VOL. (MIL M3) : 54.1
SEDIMENT VOL. (MIL M3) : 8.9
CREST LENGTH (M) : 280.0
EMBANKMENT VOL. (MIL M3) : 2.47

DIAMETER (WIDTH) (M) : 2.5
DIAMETER (M) : 2.0
DIAMETER (M) : 7.6
AVERAGE NET HEAD (M) : 65.6
TAILWATER LEVEL (EL.M) : 76.0
ANNUAL TOTAL ENERGY (GWH) : 34.7
FIRM ENERGY (GWH) : 24.5
SECONDARY ENERGY (GWH) : 10.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 10.4
/HEAD FIRM DISCHARGE (M3/S) : 5.2
POWER INSTALLED CAPACITY (MW) : 5.6
/ENERGY FIRM POWER (MW) : 2.8
MIN. GUARANTEED POWER (MW) : 3.6

TRANSMISSION

LINE LENGTH (KM) : 41.0 TO : CAWAYAN NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 7.5 FROM : ABBATUAN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 67.8
TOTAL COST/KW (USD/KW) : 12106.3
TOTAL COST/KWH (USD/KWH) : 2.458

POWER COST (MIL USD) : 64.1
TRANSMISSION COST (MIL USD) : 1.6
ACCESS ROAD COST (MIL USD) : 2.1

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3470-1V
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : MARIANO
 RIVER SYSTEM : CAGAYAN
 STREAM : DISABUNGAN
 WATER RESOURCES REGION : 11
 PROVINCE : ISABELA
 COORDINATES : N16-51-56 E122-08-35
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

SCHEME ID : 2-008-16-42-0-1

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 134.0 (MAIN : 134.0, INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 3000. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 10.3 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT

RESERVOIR DEVELOPMENT RATIO : 0.72

RESERVOIR : RESERVOIR
 FULL SUPPLY LEVEL (EL.M) : 245.0
 AVERAGE OPERATING LEVEL (EL.M) : 230.0
 MINIMUM OPERATING LEVEL (EL.M) : 200.1
 DRAWDOWN DEPTH (M) : 44.9

GROSS STORAGE VOL. (MIL M3) : 326.6
 ACTIVE STORAGE VOL. (MIL M3) : 234.2
 DEAD STORAGE VOL. (MIL M3) : 92.4
 SEDIMENT VOL. (MIL M3) : 5.4

MAIN DAM (WEIR) : CREST ELEVATION (EL.M) : 251.0
 DAM HEIGHT (M) : 115.0

CREST LENGTH (M) : 376.0
 EMBANKMENT VOL. (MIL M3) : 5.27

WATERWAY : HEADRACE : LENGTH (M) : 640.0
 PENSTOCK : HORIZONTAL L (M) : 140.0
 DIVERSION : LENGTH (M) : 1030.0
 EXCAVATION VOL TOTAL (1000 M3) : 51.2

DIAMETER (WIDTH) (M) : 2.5
 DIAMETER (M) : 2.3
 DIAMETER (M) : 7.7
 NOS. : 1
 NOS. : 1
 NOS. : 1

DISCHARGE /HEAD : PLANT MAX. DISCHARGE (M3/S) : 14.1
 FIRM DISCHARGE (M3/S) : 7.0

AVERAGE NET HEAD (M) : 90.3
 TAILWATER LEVEL (EL.M) : 136.0

POWER /ENERGY : INSTALLED CAPACITY (MW) : 10.5
 FIRM POWER (MW) : 5.2
 MIN.GUARANTEED POWER (MW) : 5.7

ANNUAL TOTAL ENERGY (GWH) : 58.3
 FIRM ENERGY (GWH) : 45.9
 SECONDARY ENERGY (GWH) : 12.4

TRANSMISSION LINE : LENGTH (KM) : 45.0 TO : CAGAYAN
 ACCESS ROAD LENGTH (KM) : 34.0 FROM : ABBATUAN

NOS. OF CIRCUIT : 1

69 K V SINGLE CIRCUIT

CONSTRUCTION COST

TOTAL COST (MIL USD) : 121.3
 TOTAL COST/KW (USD/KW) : 11574.8
 TOTAL COST/KWH (USD/KWH) : 2.445

POWER COST (MIL USD) : 109.9
 TRANSMISSION COST (MIL USD) : 1.7
 ACCESS ROAD COST (MIL USD) : 9.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3470-1V
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-19-43-0-1

SCHEME : ALIMIT-1

RIVER SYSTEM : CAGAYAN
STREAM : ALIMIT

WATER RESOURCES REGION : 11
PROVINCE : IFUGAO

COORDINATES : N16-46-38 E121-15-56
STUDY LEVEL : UNSCALED
(PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 594.9 (MAIN : 595.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-055-NW-
AVER. BASIN RAINFALL (MM/YR) : 2463. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
AVERAGE DISCHARGE (M3/S) : 22.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.65

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 299.0 GROSS STORAGE VOL. (MIL M3) : 703.8
AVERAGE OPERATING LEVEL (EL.M) : 286.9 ACTIVE STORAGE VOL. (MIL M3) : 455.6
MINIMUM OPERATING LEVEL (EL.M) : 262.8 DEAD STORAGE VOL. (MIL M3) : 248.2
DRAWDOWN DEPTH (M) : 36.2 SEDIMENT VOL. (MIL M3) : 41.6

MAIN DAM CREST ELEVATION (EL.M) : 305.0 CREST LENGTH (M) : 495.0
(WEIR) (M) : 113.4 EMBANKMENT VOL. (MIL M3) : 6.47

WATERWAY HEADRACE : LENGTH (M) : 640.0 DIAMETER (WIDTH) (M) : 5.9 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 220.0 DIAMETER (M) : 4.6 NOS. : 1
DIVERSION : LENGTH (M) : 800.0 DIAMETER (M) : 7.4 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 91.0

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 81.6 AVERAGE NET HEAD (M) : 92.7
/HEAD FIRM DISCHARGE (M3/S) : 13.6 TAILWATER LEVEL (EL.M) : 191.6

POWER UNSATLLED CAPACITY (MW) : 62.3 ANNUAL TOTAL ENERGY (GWH) : 145.2
/ENERGY FIRM POWER (MW) : 10.4 FIRM ENERGY (GWH) : 90.9
MIN. GUARANTEED POWER (MW) : 43.8 SECONDARY ENERGY (GWH) : 54.3

TRANSMISSION LINE LENGTH (KM) : 36.0 TO : SANTIAGO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
ACCESS ROAD LENGTH (KM) : 17.0 FROM : HALOG

CONSTRUCTION COST

TOTAL COST (MIL USD) : 179.0 POWER COST (MIL USD) : 170.2
TOTAL COST/KW (USD/KW) : 2874.5 TRANSMISSION COST (MIL USD) : 4.0
TOTAL COST/KWH (USD/KWH) : 1.670 ACCESS ROAD COST (MIL USD) : 4.8

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3270-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-19-44-0-1

SCHEME : ALIMIT-2

RIVER SYSTEM : CAGAYAN
 STREAM : ALIMIT
 WATER RESOURCES REGION : 11
 PROVINCE : IFUGAO
 COORDINATES : N16-54-11 E121-16-22
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 446.6 (MAIN : 447., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-NW-
 AVER. BASIN RAINFALL (MM/YR) : 2620. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
 AVERAGE DISCHARGE (M3/S) : 18.9 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.60

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 404.3 GROSS STORAGE VOL. (MIL M3) : 480.0
 AVERAGE OPERATING LEVEL (EL.M) : 386.5 ACTIVE STORAGE VOL. (MIL M3) : 357.8
 MINIMUM OPERATING LEVEL (EL.M) : 351.1 DEAD STORAGE VOL. (MIL M3) : 122.3
 DRAWDOWN DEPTH (M) : 53.2 SEDIMENT VOL. (MIL M3) : 31.3
 MAIN DAM CREST ELEVATION (EL.M) : 410.3 CREST LENGTH (M) : 470.8
 (WEIR) DAM HEIGHT (M) : 138.9 EMBANKMENT VOL. (MIL M3) : 9.60
 WATERWAY HEADRACE : LENGTH (M) : 800.0 DIAMETER (WIDTH) (M) : 5.4 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 150.0 DIAMETER (M) : 4.2 NOS. : 1
 DIVERSION : LENGTH (M) : 1020.0 DIAMETER (M) : 7.0 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 99.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 68.5 AVERAGE NET HEAD (M) : 112.2
 /HEAD FIRM DISCHARGE (M3/S) : 11.4 TAILWATER LEVEL (EL.M) : 271.4
 POWER INSATLLED CAPACITY (MW) : 63.3 ANNUAL TOTAL ENERGY (GWH) : 150.9
 /ENERGY FIRM POWER (MW) : 10.6 FIRM ENERGY (GWH) : 92.4
 MIN. GUARANTEED POWER (MW) : 41.2 SECONDARY ENERGY (GWH) : 58.5

TRANSMISSION LINE LENGTH (KM) : 41.0 TO : SANTIAGO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 15.5 FROM : DUCLICAN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 217.8 POWER COST (MIL USD) : 208.9
 TOTAL COST/KW (USD/KW) : 3439.6 TRANSMISSION COST (MIL USD) : 4.4
 TOTAL COST/KWH (USD/KWH) : 1.980 ACCESS ROAD COST (MIL USD) : 4.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3270-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-20-45-0-1
 COORDINATES : N16-44-36 E121-10-00
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

SCHEME : HUOAB

RIVER SYSTEM : CAGAYAN
 STREAM : IBULAO

WATER RESOURCES REGION : 11
 PROVINCE : IFUGAO

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 551.6 (MAIN : 552.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-HW-
 AVER. BASIN RAINFALL (MM/YR) : 2739. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
 AVERAGE DISCHARGE (M3/S) : 25.4 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR DEVELOPMENT RATIO : 0.65

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 460.0 GROSS STORAGE VOL. (MIL M3) : 747.3
 AVERAGE OPERATING LEVEL (EL.M) : 443.6 ACTIVE STORAGE VOL. (MIL M3) : 521.4
 MINIMUM OPERATING LEVEL (EL.M) : 410.9 DEAD STORAGE VOL. (MIL M3) : 225.9
 DRAWDOWN DEPTH (M) : 49.1 SEDIMENT VOL. (MIL M3) : 38.6
 MAIN DAM CREST ELEVATION (EL.M) : 466.0 CREST LENGTH (M) : 686.5
 (WEIR) DAM HEIGHT (M) : 150.3 EMBANKMENT VOL. (MIL M3) : 16.90
 WATERWAY HEADRACE : LENGTH (M) : 530.0 DIAMETER (WIDTH) (M) : 6.3 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 230.0 DIAMETER (M) : 4.8 NOS. : 1
 DIVERSION : LENGTH (M) : 1160.0 DIAMETER (M) : 7.3 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 119.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 94.4 AVERAGE NET HEAD (M) : 125.0
 /HEAD FIRM DISCHARGE (M3/S) : 15.7 TAILWATER LEVEL (EL.M) : 315.7
 POWER INSTALLED CAPACITY (MW) : 97.1 ANNUAL TOTAL ENERGY (GWH) : 224.2
 /ENERGY FIRM POWER (MW) : 16.2 FIRM ENERGY (GWH) : 141.7
 MIN. GUARANTEED POWER (MW) : 68.2 SECONDARY ENERGY (GWH) : 82.5

TRANSMISSION

LINE LENGTH (KM) : 41.0 TO : SOLANO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 1.5 FROM : HALOG

CONSTRUCTION COST

TOTAL COST (MIL USD) : 315.1 POWER COST (MIL USD) : 307.5
 TOTAL COST/KW (USD/KW) : 3246.3 TRANSMISSION COST (MIL USD) : 7.1
 TOTAL COST/KWH (USD/KWH) : 1.893 ACCESS ROAD COST (MIL USD) : 0.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3270-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-20-46-0-2

SCHEME : IBULAO

RIVER SYSTEM : CAGAYAN
STREAM : IBULAO

WATER RESOURCES REGION : 11
PROVINCE : IFUGAO

COORDINATES : N16-46-19 E120-59-29
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 159.1 (MAIN : 159.1, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-NW-
AVER. BASIN RAINFALL (MM/YR) : 2827. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
AVERAGE DISCHARGE (M3/S) : 7.8 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 59.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.64

PONDAGE FULL SUPPLY LEVEL (EL.M) : 813.7 PONDAGE STORAGE VOL. (1000M3) : 110.6
AVERAGE OPERATING LEVEL (EL.M) : 813.3 ACTIVE STORAGE VOL. (1000M3) : 21.3
MINIMUM OPERATING LEVEL (EL.M) : 813.0
DRAWDOWN DEPTH (M) : 0.7

MAIN DAM CREST ELEVATION (EL.M) : 813.7 CREST LENGTH (M) : 59.2
(WEIR) WEIR HEIGHT (M) : 5.7 WEIR CONCRETE VOL. (1000 M3) : 6.7

WATERWAY HEADRACE : LENGTH (M) : 8050.0 DIAMETER (WIDTH) (M) : 2.3 NOS. : 1
PENSTOCK : HORIZONTAL L (M) : 440.0 DIAMETER (M) : 1.7 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 34.4

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 7.8 AVERAGE NET HEAD (M) : 254.1
/HEAD FIRM DISCHARGE (M3/S) : 0.7 TAILWATER LEVEL (EL.M) : 540.0

POWER INSATLLED CAPACITY (MW) : 16.3 ANNUAL TOTAL ENERGY (GWH) : 83.9
/ENERGY FIRM POWER (MW) : 1.5 FIRM ENERGY (GWH) : 13.6
MIN. GUARANTEED POWER (MW) : 1.4 SECONDARY ENERGY (GWH) : 70.3

TRANSMISSION LINE LENGTH (KM) : 42.0 TO : SOLANO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 14.2 FROM : NEAREST NATIONAL ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 26.3 POWER COST (MIL USD) : 20.6
TOTAL COST/KW (USD/KWH) : 1611.6 TRANSMISSION COST (MIL USD) : 1.6
TOTAL COST/KWH (USD/KWH) : 0.759 ACCESS ROAD COST (MIL USD) : 4.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - SCARCE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3170-1/ 1975
TECHNICAL COMMENT : - ONE TRIBUTARY INTAKE

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-22-47-0-2

SCHEME : MATUNO-1R

RIVER SYSTEM : CAGAYAN
STREAM : CADACLAN

WATER RESOURCES REGION : II
PROVINCE : IFUGAO

COORDINATES : N16-39-46 E121-01-51
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 177.3 (MAIN : 177., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-055-NW-
AVER. BASIN RAINFALL (MM/YR) : 2714. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
AVERAGE DISCHARGE (M3/S) : 8.0. EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.64

PONDAGE FULL SUPPLY LEVEL (EL.M) : 756.4 PONDAGE STORAGE VOL. (1000M3) : 97.2
AVERAGE OPERATING LEVEL (EL.M) : 755.9 ACTIVE STORAGE VOL. (1000M3) : 22.0
MINIMUM OPERATING LEVEL (EL.M) : 755.5
DRAWDOWN DEPTH (M) : 0.9

MAIN DAM CREST ELEVATION (EL.M) : 756.4 CREST LENGTH (M) : 95.5
(WEIR) WEIR HEIGHT (M) : 6.9 WEIR CONCRETE VOL. (1000 M3) : 10.7

WATERWAY HEADRACE : LENGTH (M) : 9050.0 DIAMETER (WIDTH) (M) : 2.3 NOS. : 1
PENSTOCK : HORIZONTAL, L (M) : 335.0 DIAMETER (M) : 1.3 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 39.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 8.1 AVERAGE NET HEAD (M) : 138.4
/HEAD FIRM DISCHARGE (M3/S) : 0.8 TAILWATER LEVEL (EL.M) : 600.0

POWER INSATLLED CAPACITY (MW) : 9.2 ANNUAL TOTAL ENERGY (GWH) : 47.2
/ENERGY FIRM POWER (MW) : 0.9 FIRM ENERGY (GWH) : 7.6
MIN. GUARANTEED POWER (MW) : 0.8 SECONDARY ENERGY (GWH) : 39.6

TRANSMISSION LINE LENGTH (KM) : 29.0 TO : SOLANO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 38.0 FROM : BALUNGAO

CONSTRUCTION COST

TOTAL COST (MIL USD) : 31.8 POWER COST (MIL USD) : 19.8
TOTAL COST/KW (USD/KW) : 3467.4 TRANSMISSION COST (MIL USD) : 1.2
TOTAL COST/KWH (USD/KWH) : 1.630 ACCESS ROAD COST (MIL USD) : 10.8

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3269-1V
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-22-48-0-2

SCHEME : MATUNO-2R

COORDINATES : N16-32-34 E120-58-48
STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

WATER RESOURCES REGION : II
PROVINCE : IFUGAO

RIVER SYSTEM : CAGAYAN
STREAM : MATUNO

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 85.2 (MAIN : 85.2 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-055-NW-
AVER. BASIN RAINFALL (MM/YR) : 2750. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 1784.
AVERAGE DISCHARGE (M3/S) : 4.0 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 69.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.64

PONDAGE FULL SUPPLY LEVEL (EL.M) : 803.3 PONDAGE STORAGE VOL. (1000M3) : 41.0
AVERAGE OPERATING LEVEL (EL.M) : 802.8 ACTIVE STORAGE VOL. (1000M3) : 10.8
MINIMUM OPERATING LEVEL (EL.M) : 802.4
DRAWDOWN DEPTH (M) : 0.9

MAIN DAM CREST ELEVATION (EL.M) : 803.3 CREST LENGTH (M) : 46.6
(WEIR) WEIR HEIGHT (M) : 6.9 WEIR CONCRETE VOL. (1000 M3) : 5.0

WATERWAY HEADRACE : LENGTH (M) : 6500.0 DIAMETER (WIDTH) (M) : 1.8 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 560.0 DIAMETER (M) : 1.3 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 17.4

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 4.0 AVERAGE NET HEAD (M) : 265.6
/HEAD FIRM DISCHARGE (M3/S) : 0.4 TAILWATER LEVEL (EL.M) : 520.0

POWER INSTALLED CAPACITY (MW) : 8.7 ANNUAL TOTAL ENERGY (GWH) : 44.6
/ENERGY FIRM POWER (MW) : 0.8 FIRM ENERGY (GWH) : 7.2
MIN. GUARANTEED POWER (MW) : 0.7 SECONDARY ENERGY (GWH) : 37.4

TRANSMISSION LINE LENGTH (KM) : 17.0 TO : SOLANO 69 K V SINGLE CIRCUIT. NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 30.0 FROM : BALUNGAO

CONSTRUCTION COST

TOTAL COST (MIL USD) : 22.4 POWER COST (MIL USD) : 13.0
TOTAL COST/KW (USD/KW) : 2579.0 TRANSMISSION COST (MIL USD) : 0.9
TOTAL COST/KWH (USD/KWH) : 1.214 ACCESS ROAD COST (MIL USD) : 8.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3169-1
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-22-49-0-1

 RIVER SYSTEM : CAGAYAN
 STREAM : STA. CRUZ
 WATER RESOURCES REGION : II
 PROVINCE : N. VIZCAYA
 COORDINATES : N16-22-00 E121-02-00
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

 CATCHMENT AREA (KM2) : 281.6 (MAIN : 282. INTER TRANSFER TOTAL : 0.)
 AVER. BASIN RAINFALL (MM/YR) : 2309. DENUDATION RATE (MM/YR) : 1.4
 AVERAGE DISCHARGE (M3/S) : 9.1 EVAPORATION RATE (MM/DAY) : 3.5
 STREAM GAGE ID : 4-2-055-NW-
 GAGE CATCHMENT (KM2) : 1784.
 GAGE AVER. DISCHARGE (M3/S) : 59.0

SELECTED PLAN

 TYPE OF DEVELOPMENT : RESERVOIR
 RESERVOIR DEVELOPMENT RATIO : 0.30

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 434.0
 AVERAGE OPERATING LEVEL (EL.M) : 426.0
 MINIMUM OPERATING LEVEL (EL.M) : 415.9
 DRAWDOWN DEPTH (M) : 18.1
 GROSS STORAGE VOL. (MIL M3) : 126.9
 ACTIVE STORAGE VOL. (MIL M3) : 86.7
 DEAD STORAGE VOL. (MIL M3) : 40.2
 SEDIMENT VOL. (MIL M3) : 19.7

MAIN DAM (WEIR) CREST ELEVATION (EL.M) : 440.0
 DAM HEIGHT (M) : 52.9
 WATERWAY HEADRACE : LENGTH (M) : 560.0
 PENSTOCK : HORIZONT. L (M) : 100.0
 DIVERSION : LENGTH (M) : 760.0
 EXCAVATION VOL TOTAL (1000 M3) : 51.0
 DIAMETER (WIDTH) (M) : 2.5
 DIAMETER (M) : 1.8
 DIAMETER (M) : 9.0
 NOS. : 1
 NOS. : 1
 NOS. : 1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 7.5
 FIRM DISCHARGE (M3/S) : 3.8
 POWER INSATLLED CAPACITY (MW) : 2.4
 FIRM POWER (MW) : 1.2
 MIN. GUARANTEED POWER (MW) : 1.6
 AVERAGE NET HEAD (M) : 39.4
 TAILWATER LEVEL (EL.M) : 387.1
 ANNUAL TOTAL ENERGY (GWH) : 19.5
 FIRM ENERGY (GWH) : 10.7
 SECONDARY ENERGY (GWH) : 8.8

TRANSMISSION LINE LENGTH (KM) : 15.0 TO : SOLANO
 ACCESS ROAD LENGTH (KM) : 0. FROM :
 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1

CONSTRUCTION COST

 TOTAL COST (MIL USD) : 73.6
 TOTAL COST/KW (USD/KW) : 30173.4
 TOTAL COST/KWH (USD/KWH) : 5.522
 POWER COST (MIL USD) : 72.9
 TRANSMISSION COST (MIL USD) : 0.8
 ACCESS ROAD COST (MIL USD) : 0.

OTHER INFORMATION

 LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3269-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-26-50-0-1

SCHEME : PINARIPAD

RIVER SYSTEM : CAGAYAN
 STREAM : ADDALAM

WATER RESOURCES REGION : II
 PROVINCE : GUIRINO

COORDINATES : N16-27-56 E121-34-50
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 851.1 (MAIN : 851., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 45.3 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.41

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 194.0 GROSS STORAGE VOL. (MIL M3) : 832.2
 AVERAGE OPERATING LEVEL (EL.M) : 182.9 ACTIVE STORAGE VOL. (MIL M3) : 585.5
 MINIMUM OPERATING LEVEL (EL.M) : 160.6 DEAD STORAGE VOL. (MIL M3) : 246.7
 DRAWDOWN DEPTH (M) : 33.4 SEDIMENT VOL. (MIL M3) : 59.6

MAIN DAM CREST ELEVATION (EL.M) : 200.0 CREST LENGTH (M) : 740.0
 (WEIR) DAM HEIGHT (M) : 86.7 EMBANKMENT VOL. (MIL M3) : 6.55

WATERWAY HEADRACE : LENGTH (M) : 480.0 DIAMETER (WIDTH) (M) : 5.5 NOS. : 2
 PENSTOCK : HORIZONTAL L (M) : 310.0 DIAMETER (M) : 4.4 NOS. : 2
 DIVERSION : LENGTH (M) : 920.0 DIAMETER (M) : 8.0 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 125.9

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 142.6 AVERAGE NET HEAD (M) : 67.0
 /HEAD FIRM DISCHARGE (M3/S) : 23.8 TAILWATER LEVEL (EL.M) : 113.3

POWER INSATLLED CAPACITY (MW) : 78.7 ANNUAL TOTAL ENERGY (GWH) : 216.0
 /ENERGY FIRM POWER (MW) : 13.1 FIRM ENERGY (GWH) : 114.9
 MIN. GUARANTEED POWER (MW) : 50.0 SECONDARY ENERGY (GWH) : 101.1

TRANSMISSION LINE LENGTH (KM) : 38.0 TO : SANTIAGO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 5.0 FROM : PINARIPAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 208.1 POWER COST (MIL USD) : 200.0
 TOTAL COST/KW (USD/KW) : 2645.9 TRANSMISSION COST (MIL USD) : 6.7
 TOTAL COST/KWH (USD/KWH) : 1.434 ACCESS ROAD COST (MIL USD) : 1.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3369-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME : DIBULUAN
 RIVER SYSTEM : CAGAYAN
 STREAM : DIBULUAN
 WATER RESOURCES REGION : II
 PROVINCE : QUIRINO
 COORDINATES : N16-25-56 E121-50-40
 STUDY LEVEL : UNSCALED
 (PRE-F/S-RECONNAISSANCE)

SCHEME ID : 2-008-27-51-0-1

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 194.7 (MAIN : 195. INTER TRANSFER TOTAL : 0.1) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2789. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 13.6 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN
 TYPE OF DEVELOPMENT : RESERVOIR
 RESERVOIR DEVELOPMENT RATIO : 0.68

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 321.0 GROSS STORAGE VOL. (MIL M3) : 431.1
 AVERAGE OPERATING LEVEL (EL.M) : 302.6 ACTIVE STORAGE VOL. (MIL M3) : 292.7
 MINIMUM OPERATING LEVEL (EL.M) : 265.9 DEAD STORAGE VOL. (MIL M3) : 138.4
 DRAWDOWN DEPTH (M) : 55.1 SEDIMENT VOL. (MIL M3) : 13.6
 MAIN DAM CREST ELEVATION (EL.M) : 327.0 CREST LENGTH (M) : 491.0
 (WEIR) DAM HEIGHT (M) : 138.7 EMBANKMENT VOL. (MIL M3) : 7.06
 WATERWAY HEADRACE : LENGTH (M) : 560.0 DIAMETER (WIDTH) (M) : 4.8 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 260.0 DIAMETER (M) : 3.8 NOS. : 1
 DIVERSION : LENGTH (M) : 1200.0 DIAMETER (M) : 8.3 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 78.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 54.9 AVERAGE NET HEAD (M) : 111.1
 /HEAD FIRM DISCHARGE (M3/S) : 9.2 TAILWATER LEVEL (EL.M) : 188.3
 POWER UNSATLLED CAPACITY (MW) : 50.2 ANNUAL TOTAL ENERGY (GWH) : 108.3
 /ENERGY FIRM POWER (MW) : 8.4 FIRM ENERGY (GWH) : 73.3
 MIN. GUARANTEED POWER (MW) : 32.0 SECONDARY ENERGY (GWH) : 34.5

TRANSMISSION LINE LENGTH (KM) : 57.0 TO : SANTIAGO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 18.0 FROM : MINURI

CONSTRUCTION COST
 TOTAL COST (MIL USD) : 174.0 POWER COST (MIL USD) : 163.0
 TOTAL COST/KW (USD/KW) : 3462.6 TRANSMISSION COST (MIL USD) : 5.3
 TOTAL COST/KWH (USD/KWH) : 2.075 ACCESS ROAD COST (MIL USD) : 5.1

OTHER INFORMATION
 LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3369-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-28-52-0-1

SCHEME : CABINGATAN

RIVER SYSTEM : CAGAYAN
STREAM : CONWAP

WATER RESOURCES REGION : 11
PROVINCE : QUIRINO

COORDINATES : N16-13-32 E121-37-31
STUDY LEVEL : UNSCALED
(PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 1660.3 (MAIN : 1660., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-RW-244
AVER. BASIN RAINFALL (MM/YR) : 2465. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
AVERAGE DISCHARGE (M3/S) : 99.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 303.0 GROSS STORAGE VOL. (MIL M3) : 3153.6
AVERAGE OPERATING LEVEL (EL.M) : 284.6 ACTIVE STORAGE VOL. (MIL M3) : 2199.9
MINIMUM OPERATING LEVEL (EL.M) : 247.7 DEAD STORAGE VOL. (MIL M3) : 953.7
DRAWDOWN DEPTH (M) : 55.3 SEDIMENT VOL. (MIL M3) : 116.2

MAIN DAM CREST ELEVATION (EL.M) : 309.0 CREST LENGTH (M) : 355.2
(WEIR) DAM HEIGHT (M) : 145.8 EMBANKMENT VOL. (MIL M3) : 9.07

WATERWAY HEADRACE : LENGTH (M) : 400.0 DIAMETER (WIDTH) (M) : 6.2 NOS. : 3
PENSTOCK : HORIZONT. L (M) : 140.0 DIAMETER (M) : 4.7 NOS. : 3
DIVERSION : LENGTH (M) : 880.0 DIAMETER (M) : 7.5 NOS. : 3
EXCAVATION VOL TOTAL (1000 M3) : 163.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 271.0 AVERAGE NET HEAD (M) : 119.0
/HEAD FIRM DISCHARGE (M3/S) : 67.7 TAILWATER LEVEL (EL.M) : 163.2

POWER INSATLLED CAPACITY (MW) : 265.5 ANNUAL TOTAL ENERGY (GWH) : 818.6
/ENERGY FIRM POWER (MW) : 66.4 FIRM ENERGY (GWH) : 531.4
MIN. GUARANTEED POWER (MW) : 174.6 SECONDARY ENERGY (GWH) : 237.2

TRANSMISSION LINE LENGTH (KM) : 72.0 TO : SANTIAGO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 38.5 FROM : PALASIAN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 359.2 POWER COST (MIL USD) : 326.5
TOTAL COST/KW (USD/KW) : 1353.3 TRANSMISSION COST (MIL USD) : 21.7
TOTAL COST/KWH (USD/KWH) : 0.551 ACCESS ROAD COST (MIL USD) : 11.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - DENSE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3368-IV 1977
TECHNICAL COMMENT : - TOPOGRAPHIC LIMIT +/- EL 310.0 M
- SITE GEOLOGY OF WELL BEDDED LIMESTONE SUSCEPTIBLE TO HIGH PERMEABILITY THRU BEDDING PLANE.

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-28-53-0-2

SCHEME : GANIP

RIVER SYSTEM : CAGAYAN
STREAM : CONWAP

WATER RESOURCES REGION : II
PROVINCE : GUJRINO

COORDINATES : N16-04-41 E121-20-23
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 114.7 (MAIN : 115. INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
AVERAGE DISCHARGE (M3/S) : 6.1 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.66

PONDAGE FULL SUPPLY LEVEL (EL.M) : 706.4 PONDAGE STORAGE VOL. (1000M3) : 85.8
AVERAGE OPERATING LEVEL (EL.M) : 706.1 AVERAGE STORAGE VOL. (1000M3) : 17.2
MINIMUM OPERATING LEVEL (EL.M) : 705.7
DRAWDOWN DEPTH (M) : 0.7

MAIN DAM CREST ELEVATION (EL.M) : 706.4 CREST LENGTH (M) : 43.4
(WEIR) WEIR HEIGHT (M) : 6.4 WEIR CONCRETE VOL. (1000 M3) : 4.9

WATERWAY HEADRACE : LENGTH (M) : 3000.0 DIAMETER (WIDTH) (M) : 2.1 NOS. : 1
PENSTOCK : HORIZONTAL (M) : 350.0 DIAMETER (M) : 1.6 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 11.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 6.1 AVERAGE NET HEAD (M) : 157.0
/HEAD FIRM DISCHARGE (M3/S) : 0.6 TAILWATER LEVEL (EL.M) : 540.0

POWER INSATLLED CAPACITY (MW) : 7.9 ANNUAL TOTAL ENERGY (GWH) : 41.5
FIRM POWER (MW) : 0.8 FIRM ENERGY (GWH) : 6.8
MIN. GUARANTEED POWER (MW) : 0.7 SECONDARY ENERGY (GWH) : 34.8

TRANSMISSION LINE LENGTH (KM) : 59.0 TO : SOLANO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 49.0 FROM : FROM NEAREST PUBLIC ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 26.1 POWER COST (MIL USD) : 10.0
TOTAL COST/KW (USD/KW) : 3307.8 TRANSMISSION COST (MIL USD) : 2.1
TOTAL COST/KWH (USD/KWH) : 1.515 ACCESS ROAD COST (MIL USD) : 14.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3268-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-54-0-1

SCHEME : DAKGAN

RIVER SYSTEM : CAGAYAN WATER RESOURCES REGION : II
 STREAM : CASECNAV PROVINCE : QUIRINO
 COORDINATES : N16-03-04 E121-27-31
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 731.4 (MAIN : 731.4 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2334. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 40.9 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 433.0 GROSS STORAGE VOL. (MIL M3) : 1278.7
 AVERAGE OPERATING LEVEL (EL.M) : 413.2 ACTIVE STORAGE VOL. (MIL M3) : 966.5
 MINIMUM OPERATING LEVEL (EL.M) : 373.5 DEAD STORAGE VOL. (MIL M3) : 312.2
 DRAWDOWN DEPTH (M) : 59.5 SEDIMENT VOL. (MIL M3) : 51.2

MAIN DAM CREST ELEVATION (EL.M) : 439.0 CREST LENGTH (M) : 599.1
 (WEIR) DAM HEIGHT (M) : 148.1 EMBANKMENT VOL. (MIL M3) : 14.81

WATERWAY HEADRACE : LENGTH (M) : 300.0 DIAMETER (WIDTH) (M) : 6.0 NOS. : 2
 PENSTOCK : HORIZONTAL L (M) : 150.0 DIAMETER (M) : 4.6 NOS. : 2
 DIVERSION : LENGTH (M) : 630.0 DIAMETER (M) : 7.8 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 83.0

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 171.1 AVERAGE NET HEAD (M) : 119.9
 /HEAD FIRM DISCHARGE (M3/S) : 28.5 TAILWATER LEVEL (EL.M) : 290.9

POWER UNSATLLED CAPACITY (MW) : 169.0 ANNUAL TOTAL ENERGY (GWH) : 350.3
 FIRM POWER (MW) : 28.2 FIRM ENERGY (GWH) : 246.7
 MIN. GUARANTEED POWER (MW) : 107.7 SECONDARY ENERGY (GWH) : 103.6

TRANSMISSION LINE LENGTH (KM) : 55.0 TO : MUNOS(VIA PANTABANGAN) 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 23.5 FROM : MAYA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 330.4 POWER COST (MIL USD) : 314.6
 TOTAL COST/KW (USD/KW) : 1955.6 TRANSMISSION COST (MIL USD) : 9.1
 TOTAL COST/KWH (USD/KWH) : 1.190 ACCESS ROAD COST (MIL USD) : 6.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3268-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-55-0-1

SCHEME : MADDELA

RIVER SYSTEM : CAGAYAN
STREAM : TABOYONG

WATER RESOURCES REGION : II
PROVINCE : QUIRINO

COORDINATES : N16-01-04 E121-27-33
STUDY LEVEL : UNSCALED
(PRE-F/S-RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 126.2 (MAIN : 126.2, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
AVER. BASIN RAINFALL (MM/YR) : 2500. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
AVERAGE DISCHARGE (M3/S) : 7.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.64

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 474.7 GROSS STORAGE VOL. (MIL M3) : 193.9
AVERAGE OPERATING LEVEL (EL.M) : 455.6 ACTIVE STORAGE VOL. (MIL M3) : 155.7
MINIMUM OPERATING LEVEL (EL.M) : 417.2 DEAD STORAGE VOL. (MIL M3) : 38.2
DRAWDOWN DEPTH (M) : 57.6 SEDIMENT VOL. (MIL M3) : 9.8

MAIN DAM CREST ELEVATION (EL.M) : 480.7 CREST LENGTH (M) : 683.3
(WEIR) DAM HEIGHT (M) : 140.7 EMBANKMENT VOL. (MIL M3) : 10.05

WATERWAY HEADRACE : LENGTH (M) : 750.0 DIAMETER (WIDTH) (M) : 2.5
PENSTOCK : HORIZONTAL, L (M) : 230.0 DIAMETER (M) : 1.9
DIVERSION : LENGTH (M) : 1280.0 DIAMETER (M) : 7.6
EXCAVATION VOL TOTAL (1000 M3) : 61.8 NOS. : 1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 10.1 AVERAGE NET HEAD (M) : 111.7
/HEAD FIRM DISCHARGE (M3/S) : 5.0 TAILWATER LEVEL (EL.M) : 340.0

POWER UNSATLLED CAPACITY (MW) : 9.3 ANNUAL TOTAL ENERGY (GWH) : 53.2
/ENERGY FIRM POWER (MW) : 4.6 FIRM ENERGY (GWH) : 40.6
MIN. GUARANTEED POWER (MW) : 5.8 SECONDARY ENERGY (GWH) : 12.6

TRANSMISSION LINE LENGTH (KM) : 54.0 TO : MUNOS(VIA PANTABANSAN) 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 25.5 FROM : NAYA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 179.6 POWER COST (MIL USD) : 170.4
TOTAL COST/KW (USD/KW) : 19359.9 TRANSMISSION COST (MIL USD) : 2.0
TOTAL COST/KWH (USD/KWH) : 4.044 ACCESS ROAD COST (MIL USD) : 7.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3268-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-56-0-1

SCHEME : KAGIPSIPAN

RIVER SYSTEM : CAGAYAN
STREAM : CASECNAN

WATER RESOURCES REGION : II
PROVINCE : N.VIZCAYA

COORDINATES : N16-01-29 E121-22-43
STUDY LEVEL : UNSCALED
(PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 508.7 (MAIN : 609.0, INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-044-NW-244
AVER. BASIN RAINFALL (MM/YR) : 2270. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
AVERAGE DISCHARGE (M3/S) : 32.8 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 525.0 GROSS STORAGE VOL. (MIL M3) : 1042.2
AVERAGE OPERATING LEVEL (EL.M) : 503.6 ACTIVE STORAGE VOL. (MIL M3) : 775.1
MINIMUM OPERATING LEVEL (EL.M) : 460.7 DEAD STORAGE VOL. (MIL M3) : 267.1
DRAWDOWN DEPTH (M) : 64.3 SEDIMENT VOL. (MIL M3) : 42.6

MAIN DAM CREST ELEVATION (EL.M) : 531.0 CREST LENGTH (M) : 474.3
(WEIR) DAM HEIGHT (M) : 171.0 EMBANKMENT VOL. (MIL M3) : 14.69

WATERWAY HEADRACE : LENGTH (M) : 770.0 DIAMETER (WIDTH) (M) : 5.4 NOS. : 2
PENSTOCK : HORIZONTAL (M) : 240.0 DIAMETER (M) : 4.2 NOS. : 2
DIVERSION : LENGTH (M) : 1580.0 DIAMETER (M) : 7.5 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 181.7

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 137.5 AVERAGE NET HEAD (M) : 139.9
/HEAD FIRM DISCHARGE (M3/S) : 22.9 TAILWATER LEVEL (EL.M) : 360.0

POWER INSATLLED CAPACITY (MW) : 158.4 ANNUAL TOTAL ENERGY (GWH) : 326.7
/ENERGY FIRM POWER (MW) : 26.4 FIRM ENERGY (GWH) : 231.2
MIN. GUARANTEED POWER (MW) : 104.6 SECONDARY ENERGY (GWH) : 95.5

TRANSMISSION LINE LENGTH (KM) : 70.0 TO : SOLANO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 7.5 FROM : NAYA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 345.6 POWER COST (MIL USD) : 332.1
TOTAL COST/KW (USD/KW) : 2182.0 TRANSMISSION COST (MIL USD) : 11.3
TOTAL COST/KWH (USD/KWH) : 1.330 ACCESS ROAD COST (MIL USD) : 2.1

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3268-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-28-57-0-1

SCHEME : GADENG

RIVER SYSTEM : CAGAYAN
STREAM : CASECNAW

WATER RESOURCES REGION : II
PROVINCE : N.VIZCAYA

COORDINATES : N16-01-30 E121-20-54
STUDY LEVEL : UNSCALED
(PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 576.0 (MAIN : 576.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-044-NW-244
AVER. BASIN RAINFALL (MM/YR) : 2269. DEKUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
AVERAGE DISCHARGE (M3/S) : 31.0 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 555.0 GROSS STORAGE VOL. (MIL M3) : 969.3
AVERAGE OPERATING LEVEL (EL.M) : 535.8 ACTIVE STORAGE VOL. (MIL M3) : 684.2
MINIMUM OPERATING LEVEL (EL.M) : 497.5 DEAD STORAGE VOL. (MIL M3) : 285.1
DRAWDOWN DEPTH (M) : 57.5 SEDIMENT VOL. (MIL M3) : 40.3

MAIN DAM CREST ELEVATION (EL.M) : 561.0 CREST LENGTH (M) : 720.6
(WEIR) DAM HEIGHT (M) : 161.4 EMBANKMENT VOL. (MIL M3) : 19.84

WATERWAY HEADRAGE : LENGTH (M) : 290.0 DIAMETER (WIDTH) (M) : 5.2
PENSTOCK : HORIZONT. L (M) : 270.0 DIAMETER (M) : 4.0
DIVERSION : LENGTH (M) : 1010.0 DIAMETER (M) : 7.4
EXCAVATION VOL TOTAL (1000 M3) : 106.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 126.5 AVERAGE NET HEAD (M) : 133.0
/HEAD FIRM DISCHARGE (M3/S) : 21.1 TAILWATER LEVEL (EL.M) : 399.6

POWER INSATLLED CAPACITY (MW) : 138.5 ANNUAL TOTAL ENERGY (GWH) : 292.9
/ENERGY FIRM POWER (MW) : 23.1 FIRM ENERGY (GWH) : 202.3
MIN. GUARANTEED POWER (MW) : 94.0 SECONDARY ENERGY (GWH) : 90.6

TRANSMISSION LINE LENGTH (KM) : 69.0 TO : SOLANO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 2.5 FROM : NAYA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 369.0 POWER COST (MIL USD) : 357.2
TOTAL COST/KW (USD/KW) : 2663.6 TRANSMISSION COST (MIL USD) : 11.2
TOTAL COST/KWH (USD/KWH) : 1.608 ACCESS ROAD COST (MIL USD) : 0.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3268-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-58-0-2

SCHEME : CASECNAN

RIVER SYSTEM : CAGAYAN
 STREAM : CASIGNAN
 WATER RESOURCES REGION : 11
 PROVINCE : QUIRINO
 COORDINATES : N16-03-21 E121-16-45
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LRPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 286.4 (MAIN ; 286.4, INTER TRANSFER TOTAL ; 0.)
 AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4
 AVERAGE DISCHARGE (M3/S) : 15.2 EVAPORATION RATE (MM/DAY) : 3.5
 STREAM GAGE ID : 4-2-044-NW-244
 GAGE CATCHMENT (KM2) : 4244.
 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.66

PONDAGE FULL SUPPLY LEVEL (EL.M) : 548.2 PONDAGE STORAGE VOL. (1000M3) : 155.7
 AVERAGE OPERATING LEVEL (EL.M) : 547.5 ACTIVE STORAGE VOL. (1000M3) : 42.9
 MINIMUM OPERATING LEVEL (EL.M) : 546.8
 DRAWDOWN DEPTH (M) : 1.4

MAIN DAM CREST ELEVATION (EL.M) : 548.2 CREST LENGTH (M) : 60.4
 (WEIR) WEIR HEIGHT (M) : 8.2 WEIR CONCRETE VOL. (1000 M3) : 9.2

WATERWAY HEADRACE : LENGTH (M) : 5650.0 DIAMETER (WIDTH) (M) : 3.0 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 205.0 DIAMETER (M) : 2.3 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 41.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 15.2 AVERAGE NET HEAD (M) : 89.8
 /HEAD FIRM DISCHARGE (M3/S) : 1.5 TAILWATER LEVEL (EL.M) : 448.0

POWER INSTALLED CAPACITY (MW) : 11.2 ANNUAL TOTAL ENERGY (GWH) : 59.6
 FIRM POWER (MW) : 1.1 FIRM ENERGY (GWH) : 9.7
 MIN. GUARANTEED POWER (MW) : 1.0 SECONDARY ENERGY (GWH) : 50.0

TRANSMISSION LINE LENGTH (KM) : 66.0 TO : SOLANO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 10.0 FROM : INQUEBERGA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 26.0 POWER COST (MIL USD) : 20.8
 TOTAL COST/KW (USD/KW) : 2309.8 TRANSMISSION COST (MIL USD) : 2.3
 TOTAL COST/KWH (USD/KWH) : 1.054 ACCESS ROAD COST (MIL USD) : 2.9

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3268-11 1982
 TECHNICAL COMMENT : MUTUALLY EXCLUSIVE WITH UPPER CASECNAN-3 PLAN

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-59-0-2

SCHEME : UPPER CASEGNAN

RIVER SYSTEM : CAGAYAN
 STREAM : CASIGNAN

WATER RESOURCES REGION : II
 PROVINCE : QUIRINO

COORDINATES : N15-06-39 E121-15-39
 STUDY LEVEL : NEWLY IDENTIFIED
 THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 247.0 (MAIN : 247.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 13.1 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.66

PONDAGE FULL SUPPLY LEVEL (EL.M) : 675.0 PONDAGE STORAGE VOL. (1000M3) : 126.1
 AVERAGE OPERATING LEVEL (EL.M) : 674.3 ACTIVE STORAGE VOL. (1000M3) : 37.0
 MINIMUM OPERATING LEVEL (EL.M) : 673.6
 DRAWDOWN DEPTH (M) : 1.5

MAIN DAM CREST ELEVATION (EL.M) : 675.0 CREST LENGTH (M) : 50.1
 (WEIR) WEIR HEIGHT (M) : 8.0 WEIR CONCRETE VOL. (1000 M3) : 7.7

WATERWAY HEADRACE : LENGTH (M) : 6800.0 DIAMETER (WIDTH) (M) : 2.8 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 200.0 DIAMETER (M) : 2.2 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 44.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 13.1 AVERAGE NET HEAD (M) : 112.7
 /HEAD FIRM DISCHARGE (M3/S) : 1.3 TAILWATER LEVEL (EL.M) : 550.0

POWER INSTALLED CAPACITY (MW) : 12.2 ANNUAL TOTAL ENERGY (GWH) : 64.5
 /ENERGY FIRM POWER (MW) : 1.2 FIRM ENERGY (GWH) : 10.4
 MIN. GUARANTEED POWER (MW) : 1.1 SECONDARY ENERGY (GWH) : 54.0

TRANSMISSION LINE LENGTH (KM) : 57.6 TO : SOLANO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 FROM : INQUEBERGA

ACCESS ROAD LENGTH (KM) : 17.0

CONSTRUCTION COST

TOTAL COST (MIL USD) : 28.4 POWER COST (MIL USD) : 21.5
 TOTAL COST/KW (USD/KW) : 2335.3 TRANSMISSION COST (MIL USD) : 2.1
 TOTAL COST/KWH (USD/KWH) : 1.067 ACCESS ROAD COST (MIL USD) : 4.8

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3268-11 1982
 TECHNICAL COMMENT : - MUTUALLY EXCLUSIVE WITH UPPER CASEGNAN-3 PLAN

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-60-0-1

SCHEME : UPPER CASECANAN-2

RIVER SYSTEM : CAGAYAN
 STREAM : CASONAN
 WATER RESOURCES REGION : 11
 PROVINCE : QUIRINO
 COORDINATES : N16-06-45 E121-15-28
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 243.0 (MAIN : 243.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 12.9 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.95

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 795.0 GROSS STORAGE VOL. (MIL M3) : 411.9
 AVERAGE OPERATING LEVEL (EL.M) : 774.0 ACTIVE STORAGE VOL. (MIL M3) : 386.7
 MINIMUM OPERATING LEVEL (EL.M) : 731.9 DEAD STORAGE VOL. (MIL M3) : 25.2
 DRAWDOWN DEPTH (M) : 63.1 SEDIMENT VOL. (MIL M3) : 17.0

MAIN DAM CREST ELEVATION (EL.M) : 801.0 CREST LENGTH (M) : 423.0
 (WEIR) DAM HEIGHT (M) : 121.0 EMBANKMENT VOL. (MIL M3) : 5.75

WATERWAY HEADRACE : LENGTH (M) : 8100.0 DIAMETER (WIDTH) (M) : 4.1 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 375.0 DIAMETER (M) : 3.2 NOS. : 1
 DIVERSION : LENGTH (M) : 720.0 DIAMETER (M) : 5.7 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 153.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 39.8 AVERAGE NET HEAD (M) : 195.2
 /HEAD FIRM DISCHARGE (M3/S) : 9.9 TAILWATER LEVEL (EL.M) : 560.0

POWER INSATLLED CAPACITY (MW) : 64.0 ANNUAL TOTAL ENERGY (GWH) : 174.9
 /ENERGY FIRM POWER (MW) : 16.0 FIRM ENERGY (GWH) : 140.1
 MIN. GUARANTEED POWER (MW) : 47.8 SECONDARY ENERGY (GWH) : 34.9

TRANSMISSION LINE LENGTH (KM) : 51.0 TO : SOLANO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 12.0 FROM : MALASIN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 194.8 POWER COST (MIL USD) : 186.1
 TOTAL COST/KW (USD/KW) : 3045.8 TRANSMISSION COST (MIL USD) : 5.3
 TOTAL COST/KWH (USD/KWH) : 1.294 ACCESS ROAD COST (MIL USD) : 3.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3268-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-008-29-61-0-1

SCHEME : UPPER CASECANAN-3

RIVER SYSTEM : CAGAYAN
 STREAM : CASIGNAN
 WATER RESOURCES REGION : II
 PROVINCE : QUIRINO
 COORDINATES : N16-D8-09 E121-14-34
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 172.1 (MAIN) : 172.1 INTER TRANSFER TOTAL : 0.2 STREAM GAGE ID : 4-2-044-NW-244
 AVER. BASIN RAINFALL (MM/YR) : 2250. DEGRADATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 4244.
 AVERAGE DISCHARGE (M3/S) : 9.2 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 250.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.91

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 796.0 GROSS STORAGE VOL. (MIL M3) : 287.3
 AVERAGE OPERATING LEVEL (EL.M) : 762.9 ACTIVE STORAGE VOL. (MIL M3) : 263.3
 MINIMUM OPERATING LEVEL (EL.M) : 756.6 DEAD STORAGE VOL. (MIL M3) : 24.0
 DRAWDOWN DEPTH (M) : 39.4 SEDIMENT VOL. (MIL M3) : 12.0

MAIN DAM CREST ELEVATION (EL.M) : 802.0 CREST LENGTH (M) : 406.7
 (WEIR) DAM HEIGHT (M) : 85.0 EMBANKMENT VOL. (MIL M3) : 4.09

WATERWAY HEADRAGE : LENGTH (M) : 12850.0 DIAMETER (WIDTH) (M) : 3.4 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 1350.0 DIAMETER (M) : 2.7 NOS. : 1
 DIVERSION : LENGTH (M) : 700.0 DIAMETER (M) : 8.1 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 161.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 27.4 AVERAGE NET HEAD (M) : 310.2
 /HEAD FIRM DISCHARGE (M3/S) : 6.8 TAILWATER LEVEL (EL.M) : 430.0

POWER INSATLLED CAPACITY (MW) : 70.0 ANNUAL TOTAL ENERGY (GWH) : 193.6
 /ENERGY FIRM POWER (MW) : 17.5 FIRM ENERGY (GWH) : 153.2
 MIN. GUARANTEED POWER (MW) : 61.0 SECONDARY ENERGY (GWH) : 40.4

TRANSMISSION LINE LENGTH (KM) : 48.0 TO : SOLANO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 FROM : CAMAY, MALASIN

ACCESS ROAD LENGTH (KM) : 37.0

CONSTRUCTION COST

TOTAL COST (MIL USD) : 179.9 POWER COST (MIL USD) : 164.3
 TOTAL COST/KW (USD/KW) : 2571.7 TRANSMISSION COST (MIL USD) : 5.0
 TOTAL COST/KWH (USD/KWH) : 1.088 ACCESS ROAD COST (MIL USD) : 10.5

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3253-111 1075
 TECHNICAL COMMENT : - SITE GEOLOGY ASSUMED TO BE AFFECTED BY FAULTS
 - ADAPTABILITY OF THE PLAN DEPENDS ON WATER BALANCE OF PROPOSED CASECANAN TRANS BASINS PLAN.
 - NO PROCEEDING PLAN TO 2ND SCREENING WITHOUT ANY EFFECT UPON WATER BALANCE OF CTBP

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-032-00-01-0-1

SCHEME : TABOAN

RIVER SYSTEM : TABOAN
STREAM : TABOAN

WATER RESOURCES REGION : II
PROVINCE : CAGAYAN

COORDINATES : N17-55-58 E122-07-50
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 332.1 (MAIN : 332., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-020-NW-225
AVER. BASIN RAINFALL (MM/YR) : 3337. DEHUMIDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
AVERAGE DISCHARGE (M3/S) : 27.5 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.67

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 103.0 GROSS STORAGE VOL. (MIL M3) : 866.1
AVERAGE OPERATING LEVEL (EL.M) : 91.2 ACTIVE STORAGE VOL. (MIL M3) : 581.5
MINIMUM OPERATING LEVEL (EL.M) : 67.7 DEAD STORAGE VOL. (MIL M3) : 284.6
DRAWDOWN DEPTH (M) : 35.3 SEDIMENT VOL. (MIL M3) : 23.2
MAIN DAM CREST ELEVATION (EL.M) : 109.0 CREST LENGTH (M) : 422.5
(WEIR) DAM HEIGHT (M) : 99.9 EMBANKMENT VOL. (MIL M3) : 5.43
WATERWAY HEADRAGE : LENGTH (M) : 460.0 DIAMETER (WIDTH) (M) : 5.7 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 90.0 DIAMETER (M) : 4.5 NOS. : 1
DIVERSION : LENGTH (M) : 550.0 DIAMETER (M) : 6.6 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 50.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 76.0 AVERAGE NET HEAD (M) : 80.4
/HEAD FIRM DISCHARGE (M3/S) : 19.0 TAILWATER LEVEL (EL.M) : 9.1
POWER UNSATLLED CAPACITY (MW) : 50.3 ANNUAL TOTAL ENERGY (GWH) : 152.5
/ENERGY FIRM POWER (MW) : 12.6 FIRM ENERGY (GWH) : 110.1
MIN. GUARANTEED POWER (MW) : 33.9 SECONDARY ENERGY (GWH) : 42.4

TRANSMISSION LINE LENGTH (KM) : 68.0 TO : CAMALANIUGAN 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2

ACCESS ROAD LENGTH (KM) : 6.0 FROM : FROM NEAREST PUBLIC ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 146.1 POWER COST (MIL USD) : 137.6
TOTAL COST/KW (USD/KW) : 2905.3 TRANSMISSION COST (MIL USD) : 6.8
TOTAL COST/KWH (USD/KWH) : 1.189 ACCESS ROAD COST (MIL USD) : 1.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000. SCALE) : 3473-1V
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-039-00-01-0-1

SCHEME : DIKATAYAN

RIVER SYSTEM : DIKATAYAN
 STREAM : DIKATAYAN
 WATER RESOURCES REGION : II
 PROVINCE : ISABELA
 COORDINATES : N17-28-13 E122-09-52
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LIPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 222.2 (MAIN : 222.2, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-020-NW-225
 AVER. BASIN RAINFALL (MM/YR) : 4440. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 655.
 AVERAGE DISCHARGE (M3/S) : 26.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 51.5

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 166.0 GROSS STORAGE VOL. (MIL M3) : 822.3
 AVERAGE OPERATING LEVEL (EL.M) : 147.0 ACTIVE STORAGE VOL. (MIL M3) : 578.0
 MINIMUM OPERATING LEVEL (EL.M) : 108.9 DEAD STORAGE VOL. (MIL M3) : 244.3
 DRAWDOWN DEPTH (M) : 57.1 SEDIMENT VOL. (MIL M3) : 15.6

MAIN DAM (WEIR) CREST ELEVATION (EL.M) : 172.0 CREST LENGTH (M) : 596.0
 DAM HEIGHT (M) : 157.0 EMBANKMENT VOL. (MIL M3) : 14.17

WATERWAY HEADRACE : LENGTH (M) : 550.0 DIAMETER (WIDTH) (M) : 4.8 NOS. : 2
 PENSTOCK : HORIZONTAL L (M) : 220.0 DIAMETER (M) : 3.8 NOS. : 2
 DIVERSION : LENGTH (M) : 950.0 DIAMETER (M) : 8.5 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 80.5

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 110.9 AVERAGE NET HEAD (M) : 128.6
 /HEAD FIRM DISCHARGE (M3/S) : 18.5 TAILWATER LEVEL (EL.M) : 15.0

POWER INSALLED CAPACITY (MW) : 117.5 ANNUAL TOTAL ENERGY (GWH) : 239.8
 /ENERGY FIRM POWER (MW) : 19.6 FIRM ENERGY (GWH) : 171.5
 MIN. GUARANTEED POWER (MW) : 78.8 SECONDARY ENERGY (GWH) : 68.3

TRANSMISSION LINE LENGTH (KM) : 27.0 TO : TUGUEGARAO 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 10.0 FROM : FROM NEAREST PUBLIC ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 286.6 POWER COST (MIL USD) : 278.7
 TOTAL COST/KW (USD/KW) : 2439.8 TRANSMISSION COST (MIL USD) : 5.1
 TOTAL COST/KWH (USD/KWH) : 1.493 ACCESS ROAD COST (MIL USD) : 2.9

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3472-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 2-047-00-01-0-1

SCHEME : PALANAN

RIVER SYSTEM : PALANAN WATER RESOURCES REGION : II
 STREAM : PINACANAUAN PROVINCE : ISABELA

COORDINATES : N16-55-15 E122-23-50
 STUDY LEVEL : IDENTIFIED
 IN THE PREVIOUS STUDY

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 358.0 (MAIN : 358., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-2-063-NP-
 AVER. BASIN RAINFALL (MM/YR) : 3000. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 874.
 AVERAGE DISCHARGE (M3/S) : 18.4 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 54.8

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.18

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 94.0 GROSS STORAGE VOL. (MIL M3) : 153.3
 AVERAGE OPERATING LEVEL (EL.M) : 86.9 ACTIVE STORAGE VOL. (MIL M3) : 103.2
 MINIMUM OPERATING LEVEL (EL.M) : 72.6 DEAD STORAGE VOL. (MIL M3) : 50.2
 DRAWDOWN DEPTH (M) : 21.4 SEDIMENT VOL. (MIL M3) : 25.1
 MAIN DAM CREST ELEVATION (EL.M) : 100.0 CREST LENGTH (M) : 250.0
 (WEIR) DAM HEIGHT (M) : 65.0 EMBANKMENT VOL. (MIL M3) : 1.04
 WATERWAY HEADRAGE : LENGTH (M) : 500.0 DIAMETER (WIDTH) (M) : 4.9 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 80.0 DIAMETER (M) : 4.0 NOS. : 1
 DIVERSION : LENGTH (M) : 610.0 DIAMETER (M) : 6.7 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 53.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 56.4 AVERAGE NET HEAD (M) : 50.3
 /HEAD FIRM DISCHARGE (M3/S) : 9.4 TAILWATER LEVEL (EL.M) : 35.0
 POWER UNSATLLED CAPACITY (MW) : 23.4 ANNUAL TOTAL ENERGY (GWH) : 65.2
 /ENERGY FIRM POWER (MW) : 3.9 FIRM ENERGY (GWH) : 34.1
 MIN. GUARANTEED POWER (MW) : 15.9 SECONDARY ENERGY (GWH) : 31.1

TRANSMISSION LINE LENGTH (KM) : 68.0 TO : ILAGAN 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 27.0 FROM : PALANAN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 73.4 POWER COST (MIL USD) : 63.4
 TOTAL COST/KW (USD/KW) : 3143.9 TRANSMISSION COST (MIL USD) : 2.4
 TOTAL COST/KWH (USD/KWH) : 1.691 ACCESS ROAD COST (MIL USD) : 7.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3470-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-013-00-01-0-1

SCHEME : MALUPA

COORDINATES : N15-44-40 E121-21-30
 STUDY LEVEL : IDENTIFIED
 IN THE PREVIOUS STUDY

WATER RESOURCES REGION : 111
 PROVINCE : QUEZON

RIVER SYSTEM : CABATANGAN
 STREAM : MALUPA

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 203.0 (MAIN : 203.0 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-4-001-NW-3118
 AVER. BASIN RAINFALL (MM/YR) : 2503. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 242.
 AVERAGE DISCHARGE (M3/S) : 14.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 17.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.61

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 217.5 GROSS STORAGE VOL. (MIL M3) : 363.7
 AVERAGE OPERATING LEVEL (EL.M) : 201.8 ACTIVE STORAGE VOL. (MIL M3) : 272.8
 MINIMUM OPERATING LEVEL (EL.M) : 170.4 DEAD STORAGE VOL. (MIL M3) : 110.9
 DRAWDOWN DEPTH (M) : 47.1 SEDIMENT VOL. (MIL M3) : 14.2

MAIN DAM (WEIR) CREST ELEVATION (EL.M) : 223.5 CREST LENGTH (M) : 1236.7
 DAM HEIGHT (M) : 129.5 EMBANKMENT VOL. (MIL M3) : 31.86

WATERWAY HEADRACE : LENGTH (M) : 840.0 DIAMETER (WIDTH) (M) : 2.6 NOS. : 1
 PENSTOCK : HORIZONTAL (M) : 260.0 DIAMETER (M) : 2.4 NOS. : 1
 DIVERSION : LENGTH (M) : 1520.0 DIAMETER (M) : 8.4 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 89.8

DISCHARGE /HEAD PLANT MAX. DISCHARGE (M3/S) : 16.5 AVERAGE NET HEAD (M) : 102.6
 FIRM DISCHARGE (M3/S) : 8.2 TAILWATER LEVEL (EL.M) : 94.0

POWER /ENERGY INSTALLED CAPACITY (MW) : 13.9 ANNUAL TOTAL ENERGY (GWH) : 66.3
 FIRM POWER (MW) : 7.0 FIRM ENERGY (GWH) : 61.0
 MIN. GUARANTEED POWER (MW) : 9.2 SECONDARY ENERGY (GWH) : 25.3

TRANSMISSION LINE LENGTH (KM) : 52.0 TO : MUNOZ 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 18.0 FROM : MARIA AURORA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 403.1 POWER COST (MIL USD) : 396.0
 TOTAL COST/KW (USD/KW) : 28952.1 TRANSMISSION COST (MIL USD) : 1.9
 TOTAL COST/KWH (USD/KWH) : 5.878 ACCESS ROAD COST (MIL USD) : 5.1

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3267-11
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-023-00-01-0-1

SCHEME : UMIRAY-3

RIVER SYSTEM : UMIRAY
STREAM : UMIRAY

WATER RESOURCES REGION : 111
PROVINCE : AURORA

COORDINATES : N15-04-32 E121-21-35
STUDY LEVEL : IDENTIFIED
IN THE PREVIOUS STUDY

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 335.0 (MAIN : 335.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-4-003-NW-430
AVER. BASIN RAINFALL (MM/YR) : 4954. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879.
AVERAGE DISCHARGE (M3/S) : 47.3 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.62

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 201.0 GROSS STORAGE VOL. (MIL M3) : 1488.9
AVERAGE OPERATING LEVEL (EL.M) : 182.5 ACTIVE STORAGE VOL. (MIL M3) : 924.4
MINIMUM OPERATING LEVEL (EL.M) : 145.4 DEAD STORAGE VOL. (MIL M3) : 564.5
DRAWDOWN DEPTH (M) : 55.6 SEDIMENT VOL. (MIL M3) : 23.4
MAIN DAM CREST ELEVATION (EL.M) : 207.0 CREST LENGTH (M) : 1203.0
(WEIR) DAM HEIGHT (M) : 147.0 EMBANKMENT VOL. (MIL M3) : 25.91
WATERWAY HEADRACE : LENGTH (M) : 1190.0 DIAMETER (WIDTH) (M) : 5.8 NOS. : 2
PENSTOCK : HORIZONTAL L (M) : 470.0 DIAMETER (M) : 4.4 NOS. : 2
DIVERSION : LENGTH (M) : 1300.0 DIAMETER (M) : 6.7 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 168.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 158.6 AVERAGE NET HEAD (M) : 117.7
/HEAD FIRM DISCHARGE (M3/S) : 39.7 TAILWATER LEVEL (EL.M) : 60.0
POWER UNSATTLLED CAPACITY (MW) : 153.7 ANNUAL TOTAL ENERGY (GWH) : 392.8
/ENERGY FIRM POWER (MW) : 38.4 FIRM ENERGY (GWH) : 336.6
MIN. GUARANTEED POWER (MW) : 100.3 SECONDARY ENERGY (GWH) : 56.1

TRANSMISSION LINE LENGTH (KM) : 52.0 TO : SAN JOSE 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1

ACCESS ROAD LENGTH (KM) : 20.0 FROM : ULALIKAN POINT

CONSTRUCTION COST

TOTAL COST (MIL USD) : 453.4 POWER COST (MIL USD) : 439.0
TOTAL COST/KW (USD/KWH) : 2949.8 TRANSMISSION COST (MIL USD) : 3.7
TOTAL COST/KWH (USD/KWH) : 1.283 ACCESS ROAD COST (MIL USD) : 5.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3265-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-023-00-02-0-1

SCHEME : UPPER UMIRAY

RIVER SYSTEM : UMIRAY
 STREAM : UMIRAY

WATER RESOURCES REGION : III
 PROVINCE : AURORA

COORDINATES : N14-57-25 E121-21-39
 STUDY LEVEL : NEWLY IDENTIFIED
 THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 211.4 (MAIN : 211., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-4-003-NW-430
 AVER. BASIN RAINFALL (MM/YR) : 5164. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 379.
 AVERAGE DISCHARGE (M3/S) : 31.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 322.0 GROSS STORAGE VOL. (MIL M3) : 993.1
 AVERAGE OPERATING LEVEL (EL.M) : 300.4 ACTIVE STORAGE VOL. (MIL M3) : 738.9
 MINIMUM OPERATING LEVEL (EL.M) : 257.2 DEAD STORAGE VOL. (MIL M3) : 254.1
 DRAWDOWN DEPTH (M) : 64.8 SEDIMENT VOL. (MIL M3) : 14.8

MAIN DAM CREST ELEVATION (EL.M) : 328.0 CREST LENGTH (M) : 408.0
 (WEIR) DAM HEIGHT (M) : 191.0 EMBANKMENT VOL. (MIL M3) : 20.50

WATERWAY HEADRACE : LENGTH (M) : 520.0 DIAMETER (WIDTH) (M) : 5.9 NOS. : 2
 PENSTOCK : HORIZONTAL L (M) : 200.0 DIAMETER (M) : 4.4 NOS. : 2
 DIVERSION : LENGTH (M) : 1300.0 DIAMETER (M) : 8.5 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 109.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 164.1 AVERAGE NET HEAD (M) : 150.0
 /HEAD FIRM DISCHARGE (M3/S) : 27.3 TAILWATER LEVEL (EL.M) : 137.0

POWER INSATLLED CAPACITY (MW) : 216.1 ANNUAL TOTAL ENERGY (GWH) : 358.1
 /ENERGY FIRM POWER (MW) : 36.0 FIRM ENERGY (GWH) : 315.5
 MIN. GUARANTEED POWER (MW) : 150.3 SECONDARY ENERGY (GWH) : 42.6

TRANSMISSION LINE LENGTH (KM) : 41.0 TO : SAN JOSE 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 38.5 FROM : FROM NEAREST PUBLIC ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 401.8 POWER COST (MIL USD) : 383.7
 TOTAL COST/KW (USD/KW) : 1859.4 TRANSMISSION COST (MIL USD) : 7.1
 TOTAL COST/KWH (USD/KWH) : 1.224 ACCESS ROAD COST (MIL USD) : 11.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3284-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-025-01-01-0-1

SCHEME : CATMON

RIVER SYSTEM : PAMPANGA
STREAM : ANGAT

WATER RESOURCES REGION : III
PROVINCE : BULACAN

COORDINATES : N15-02-35 E121-13-59
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LAPPs

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 254.0 (MAIN : 254., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-009-NW-326
AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 258.
AVERAGE DISCHARGE (M3/S) : 8.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 8.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 300.0 GROSS STORAGE VOL. (MIL M3) : 258.6
AVERAGE OPERATING LEVEL (EL.M) : 289.0 ACTIVE STORAGE VOL. (MIL M3) : 180.3
MINIMUM OPERATING LEVEL (EL.M) : 266.9 DEAD STORAGE VOL. (MIL M3) : 78.3
DRAWDOWN DEPTH (M) : 33.1 SEDIMENT VOL. (MIL M3) : 17.8

MAIN DAM CREST ELEVATION (EL.M) : 306.0 CREST LENGTH (M) : 266.8
(WEIR) DAM HEIGHT (M) : 91.0 EMBANKMENT VOL. (MIL M3) : 2.56

WATERWAY HEADRAGE : LENGTH (M) : 550.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
PENSTOCK : HORIZONTAL (M) : 110.0 DIAMETER (M) : 1.8 NOS. : 1
DIVERSION : LENGTH (M) : 660.0 DIAMETER (M) : 8.8 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 43.4

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 7.7 AVERAGE NET HEAD (M) : 72.0
/HEAD FIRM DISCHARGE (M3/S) : 3.8 TAILWATER LEVEL (EL.M) : 215.0

POWER INSATLLED CAPACITY (MW) : 4.6 ANNUAL TOTAL ENERGY (GWH) : 32.9
FIRM POWER (MW) : 2.3 FIRM ENERGY (GWH) : 20.0
MIN. GUARANTEED POWER (MW) : 3.0 SECONDARY ENERGY (GWH) : 12.9

TRANSMISSION LINE LENGTH (KM) : 34.0 TO : SAN JOSE 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 33.0 FROM : ACLE

CONSTRUCTION COST

TOTAL COST (MIL USD) : 78.4 POWER COST (MIL USD) : 67.7
TOTAL COST/KW (USD/KW) : 17211.4 TRANSMISSION COST (MIL USD) : 1.4
TOTAL COST/KWH (USD/KWH) : 3.290 ACCESS ROAD COST (MIL USD) : 9.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3265-111
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-025-02-02-0-1

SCHEME : BALINTINGON

RIVER SYSTEM : PAMPANGA
 STREAM : SUMACBAO
 WATER RESOURCES REGION : 111
 PROVINCE : NUEVA ECIJA
 COORDINATES : N15-18-01 E121-07-19
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 225.5 (MAIN : 226.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-3-052-NW-3&1
 AVER. BASIN RAINFALL (MM/YR) : 2872.0 DEWINDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 204.
 AVERAGE DISCHARGE (M3/S) : 10.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 6.4

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.61

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 160.0 GROSS STORAGE VOL. (MIL M3) : 326.2
 AVERAGE OPERATING LEVEL (EL.M) : 149.9 ACTIVE STORAGE VOL. (MIL M3) : 193.6
 MINIMUM OPERATING LEVEL (EL.M) : 129.6 DEAD STORAGE VOL. (MIL M3) : 132.6
 DRAWDOWN DEPTH (M) : 30.4 SEDIMENT VOL. (MIL M3) : 15.8
 MAIN DAM CREST ELEVATION (EL.M) : 166.0 CREST LENGTH (M) : 427.5
 (WEIR) DAM HEIGHT (M) : 92.0 EMBANKMENT VOL. (MIL M3) : 4.48
 WATERWAY HEADRACE : LENGTH (M) : 660.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 120.0 DIAMETER (M) : 2.1 NOS. : 1
 DIVERSION : LENGTH (M) : 890.0 DIAMETER (M) : 8.6 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 55.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 12.0 AVERAGE NET HEAD (M) : 72.9
 /HEAD FIRM DISCHARGE (M3/S) : 6.0 TAILWATER LEVEL (EL.M) : 74.0
 POWER INSATLLED CAPACITY (MW) : 7.2 ANNUAL TOTAL ENERGY (GWH) : 43.7
 /ENERGY FIRM POWER (MW) : 3.6 FIRM ENERGY (GWH) : 31.4
 MIN. GUARANTEED POWER (MW) : 4.9 SECONDARY ENERGY (GWH) : 12.2

TRANSMISSION LINE LENGTH (KM) : 33.0 TO : CABANATUAN 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 22.0 FROM : PAPAYA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 104.5 POWER COST (MIL USD) : 96.9
 TOTAL COST/KW (USD/KW) : 14562.1 TRANSMISSION COST (MIL USD) : 1.3
 TOTAL COST/KWH (USD/KWH) : 2.977 ACCESS ROAD COST (MIL USD) : 6.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3265-IV
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-025-02-03-0-1
 COORDINATES : N15-21-39 E121-10-26
 STUDY LEVEL : UNSCALED
 (PRE-F/S, RECONNAISSANCE)

SCHEME : PAPAYA
 RIVER SYSTEM : PAMPANGA
 STREAM : CHICO
 WATER RESOURCES REGION : III
 PROVINCE : NUEVA ECIIJA

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 125.0 (MAIN : 125.0, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-052-NW-361
 AVER. BASIN RAINFALL (MM/YR) : 2491. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 204.
 AVERAGE DISCHARGE (M3/S) : 4.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 6.4

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 161.0 GROSS STORAGE VOL. (MIL M3) : 127.2
 AVERAGE OPERATING LEVEL (EL.M) : 153.5 ACTIVE STORAGE VOL. (MIL M3) : 89.8
 MINIMUM OPERATING LEVEL (EL.M) : 138.5 DEAD STORAGE VOL. (MIL M3) : 37.4
 DRAWDOWN DEPTH (M) : 22.5 SEDIMENT VOL. (MIL M3) : 8.7

MAIN DAM CREST ELEVATION (EL.M) : 167.0 CREST LENGTH (M) : 409.0
 (WEIR) DAM HEIGHT (M) : 75.0 EMBANKMENT VOL. (MIL M3) : 2.33

WATERWAY HEADRACE : LENGTH (M) : 400.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 200.0 DIAMETER (M) : 1.5 NOS. : 1
 DIVERSION : LENGTH (M) : 640.0 DIAMETER (M) : 7.5 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 30.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 4.9 AVERAGE NET HEAD (M) : 59.5
 /HEAD FIRM DISCHARGE (M3/S) : 2.4 TAILWATER LEVEL (EL.M) : 92.0

POWER INSATLLED CAPACITY (MW) : 2.4 ANNUAL TOTAL ENERGY (GWH) : 14.4
 /ENERGY FIRM POWER (MW) : 1.2 FIRM ENERGY (GWH) : 10.5
 MIN. GUARANTEED POWER (MW) : 1.7 SECONDARY ENERGY (GWH) : 3.9

TRANSMISSION LINE LENGTH (KM) : 36.0 TO : CABANATUAN 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 22.0 FROM : PAPAYA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 65.6 POWER COST (MIL USD) : 57.9
 TOTAL COST/KW (USD/KW) : 27365.8 TRANSMISSION COST (MIL USD) : 1.4
 TOTAL COST/KWH (USD/KWH) : 5.619 ACCESS ROAD COST (MIL USD) : 6.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGE ROAD :
 MAP USED (1:50,000 SCALE) : 3266-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-025-03-04-0-1

SCHEME : LUBINGAN

RIVER SYSTEM : PAMPANGA
STREAM : LUBINGAN

WATER RESOURCES REGION : III
PROVINCE : NUEVA ECIJA

COORDINATES : N15-31-00 E121-19-00
STUDY LEVEL : UNSCALED
(PRE-F/S. RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 140.0 (MAIN ; 140.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-4-001-NW-3118
 AVER. BASIN RAINFALL (MM/YR) : 2750.0 DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 242.
 AVERAGE DISCHARGE (M3/S) : 10.9 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 17.1

SELECTED PLAN

TYPE OF DEVELOPMENT

RESERVOIR DEVELOPMENT RATIO : 0.16

RESERVOIR
 FULL SUPPLY LEVEL (EL.M) : 288.3
 AVERAGE OPERATING LEVEL (EL.M) : 271.1
 MINIMUM OPERATING LEVEL (EL.M) : 236.8
 DRAWDOWN DEPTH (M) : 51.5
 GROSS STORAGE VOL. (MIL M3) : 66.9
 ACTIVE STORAGE VOL. (MIL M3) : 54.9
 DEAD STORAGE VOL. (MIL M3) : 12.0
 SEDIMENT VOL. (MIL M3) : 9.8

MAIN DAM (WEIR)
 CREST ELEVATION (EL.M) : 294.3
 DAM HEIGHT (M) : 124.3
 CREST LENGTH (M) : 432.2
 EMBANKMENT VOL. (MIL M3) : 6.85

WATERWAY
 HEADRAGE : LENGTH (M) : 720.0
 PENSTOCK : HORIZONT. L (M) : 140.0
 DIVERSION : LENGTH (M) : 1370.0
 EXCAVATION VOL TOTAL (1000 M3) : 67.7
 DIAMETER (WIDTH) (M) : 2.5
 DIAMETER (M) : 1.8
 DIAMETER (M) : 7.7
 NOS. : 1
 NOS. : 1
 NOS. : 1

DISCHARGE /HEAD
 PLANT MAX. DISCHARGE (M3/S) : 8.6
 FIRM DISCHARGE (M3/S) : 4.3
 AVERAGE NET HEAD (M) : 98.3
 TAILWATER LEVEL (EL.M) : 170.0

POWER /ENERGY
 INSTALLED CAPACITY (MW) : 6.9
 FIRM POWER (MW) : 3.5
 MIN. GUARANTEED POWER (MW) : 4.3
 ANNUAL TOTAL ENERGY (GWH) : 57.6
 FIRM ENERGY (GWH) : 30.4
 SECONDARY ENERGY (GWH) : 27.4

TRANSMISSION LINE
 LENGTH (KM) : 58.0 TO : MUNOZ
 ACCESS ROAD LENGTH (KM) : 6.0 FROM : LIGAYA
 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1

CONSTRUCTION COST

TOTAL COST (MIL USD) : 132.1
 TOTAL COST/KW (USD/KW) : 19605.1
 TOTAL COST/KWH (USD/KWH) : 3.521
 POWER COST (MIL USD) : 132.1
 TRANSMISSION COST (MIL USD) : 2.1
 ACCESS ROAD COST (MIL USD) : 1.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3266-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-027-00-01-0-1

SCHEME : GUMAIN

RIVER SYSTEM : COLO
STREAM : GUMAIN

WATER RESOURCES REGION : 111
PROVINCE : PAMPANGA

COORDINATES : N15-01-30 E120-27-45
STUDY LEVEL : UNSCALED
(PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 121.0 (MAIN : 121.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-3-052-NW-361
AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 204.
AVERAGE DISCHARGE (M3/S) : 3.0 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 6.4

SELECTED PLAN

TYPE OF DEVELOPMENT

RESERVOIR DEVELOPMENT RATIO : 0.51

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 118.0 GROSS STORAGE VOL. (MIL M3) : 60.8
AVERAGE OPERATING LEVEL (EL.M) : 108.9 ACTIVE STORAGE VOL. (MIL M3) : 48.5
MINIMUM OPERATING LEVEL (EL.M) : 90.8 DEAD STORAGE VOL. (MIL M3) : 12.3
DRAWDOWN DEPTH (M) : 27.4 SEDIMENT VOL. (MIL M3) : 8.5
CREST ELEVATION (EL.M) : 124.0 CREST LENGTH (M) : 340.1
DAM HEIGHT (M) : 73.0 EMBANKMENT VOL. (MIL M3) : 2.46

WATERWAY HEADRACE : LENGTH (M) : 540.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 140.0 DIAMETER (M) : 1.3 NOS. : 1
DIVERSION : LENGTH (M) : 910.0 DIAMETER (M) : 6.6 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 33.7

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 3.4 AVERAGE NET HEAD (M) : 66.3
/HEAD FIRM DISCHARGE (M3/S) : 1.7 TAILWATER LEVEL (EL.M) : 51.0
POWER INSATLLED CAPACITY (MW) : 1.6 ANNUAL TOTAL ENERGY (GWH) : 10.0
/ENERGY FIRM POWER (MW) : 0.8 FIRM ENERGY (GWH) : 6.9
MIN. GUARANTEED POWER (MW) : 1.0 SECONDARY ENERGY (GWH) : 3.1

TRANSMISSION LINE LENGTH (KM) : 21.0 TO : HERMOSA 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 6.0 FROM : PANLAG

CONSTRUCTION COST

TOTAL COST (MIL USD) : 62.5 POWER COST (MIL USD) : 59.8
TOTAL COST/KW (USD/KW) : 39696.3 TRANSMISSION COST (MIL USD) : 1.0
TOTAL COST/KWH (USD/KWH) : 7.985 ACCESS ROAD COST (MIL USD) : 1.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3065-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-00-02-0-1

SCHEME : PILA
 RIVER SYSTEM : AGNO
 STREAM : PILA

WATER RESOURCES REGION : 111
 PROVINCE : PANGASINAN

COORDINATES : N15-44-37 E120-15-20
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 114.0 (MAIN : 114., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-017-NW-325
 AVER. BASIN RAINFALL (MM/YR) : 2500. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 128.
 AVERAGE DISCHARGE (M3/S) : 5.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 7.4

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 193.0 GROSS STORAGE VOL. (MIL M3) : 179.9
 AVERAGE OPERATING LEVEL (EL.M) : 177.8 ACTIVE STORAGE VOL. (MIL M3) : 134.4
 MINIMUM OPERATING LEVEL (EL.M) : 147.5 DEAD STORAGE VOL. (MIL M3) : 45.5
 DRAWDOWN DEPTH (M) : 45.5 SEDIMENT VOL. (MIL M3) : 8.0

MAIN DAM CREST ELEVATION (EL.M) : 199.0 CREST LENGTH (M) : 983.5
 (WEIR) DAM HEIGHT (M) : 113.0 EMBANKMENT VOL. (MIL M3) : 17.35

WATERWAY HEADRAGE : LENGTH (M) : 520.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 260.0 DIAMETER (M) : 1.8 NOS. : 1
 DIVERSION : LENGTH (M) : 1000.0 DIAMETER (M) : 6.6 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 37.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 8.0 AVERAGE NET HEAD (M) : 88.8
 /HEAD FIRM DISCHARGE (M3/S) : 4.0 TAILWATER LEVEL (EL.M) : 86.0

POWER INSATLLED CAPACITY (MW) : 5.9 ANNUAL TOTAL ENERGY (GWH) : 31.9
 /ENERGY FIRM POWER (MW) : 2.9 FIRM ENERGY (GWH) : 25.6
 MIN. GUARANTEED POWER (MW) : 3.7 SECONDARY ENERGY (GWH) : 6.3

TRANSMISSION LINE LENGTH (KM) : 42.0 TO : CAMILING NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 10.0 FROM : PIAS 69 K V SINGLE CIRCUIT

CONSTRUCTION COST

TOTAL COST (MIL USD) : 243.4 POWER COST (MIL USD) : 238.9
 TOTAL COST/KW (USD/KW) : 41604.6 TRANSMISSION COST (MIL USD) : 1.6
 TOTAL COST/KWH (USD/KWH) : 8.847 ACCESS ROAD COST (MIL USD) : 2.9

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3067-111
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-00-03-0-1

SCHEME : SAN NICOLAS

COORDINATES : N16-07-20 E120-46-50
STUDY LEVEL : IDENTIFIED
IN THE PREVIOUS STUDY

WATER RESOURCES REGION : III
PROVINCE : PANGASINAN

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 310.0 (MAIN : 310., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-093-NP-
AVER. BASIN RAINFALL (MM/YR) : 2570. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 690.
AVERAGE DISCHARGE (M3/S) : 15.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 42.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.50

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 240.1
AVERAGE OPERATING LEVEL (EL.M) : 222.7
MINIMUM OPERATING LEVEL (EL.M) : 188.0
DRAWDOWN DEPTH (M) : 52.2

GROSS STORAGE VOL. (MIL M3) : 357.4
ACTIVE STORAGE VOL. (MIL M3) : 247.5
DEAD STORAGE VOL. (MIL M3) : 109.9
SEDIMENT VOL. (MIL M3) : 21.7

MAIN DAM CREST ELEVATION (EL.M) : 246.1
(WEIR) DAM HEIGHT (M) : 130.1

CREST LENGTH (M) : 795.3
EMBANKMENT VOL. (MIL M3) : 16.00

WATERWAY HEADRACE : LENGTH (M) : 790.0
PENSTOCK : HORIZONTAL L (M) : 310.0
DIVERSTON : LENGTH (M) : 1470.0
EXCAVATION VOL TOTAL (1000 M3) : 85.4

DIAMETER (WIDTH) (M) : 2.9
DIAMETER (M) : 2.5
DIAMETER (M) : 8.2

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 19.5
/HEAD FIRM DISCHARGE (M3/S) : 9.8

AVERAGE NET HEAD (M) : 101.7
TAILWATER LEVEL (EL.M) : 116.0

POWER INSATLLED CAPACITY (MW) : 16.4
/ENERGY FIRM POWER (MW) : 8.2
MIN. GUARANTEED POWER (MW) : 10.3

ANNUAL TOTAL ENERGY (GWH) : 97.1
FIRM ENERGY (GWH) : 71.7
SECONDARY ENERGY (GWH) : 25.4

TRANSMISSION LINE LENGTH (KM) : 25.0 TO : SAN MANUEL NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 2.0 FROM : STA. MARIA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 250.1
TOTAL COST/KW (USD/KW) : 15282.0
TOTAL COST/KWH (USD/KWH) : 3.153

POWER COST (MIL USD) : 248.4
TRANSMISSION COST (MIL USD) : 1.1
ACCESS ROAD COST (MIL USD) : 0.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3168-11
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-00-04-0-1

SCHEME : TABU

RIVER SYSTEM : AGNO
STREAM : AGNO

WATER RESOURCES REGION : III
PROVINCE : BENGUET

COORDINATES : N16-16-43 E120-44-33
STUDY LEVEL : UNSCALED
(PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 1070.0 (MAIN : 1070.0, INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-3-093-NP-
AVER. BASIN RAINFALL (MM/YR) : 2838. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 690.
AVERAGE DISCHARGE (M3/S) : 63.3 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER.D:CHARGE (M3/S) : 42.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.06

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 414.0 GROSS STORAGE VOL. (MIL M3) : 221.6
AVERAGE OPERATING LEVEL (EL.M) : 404.4 ACTIVE STORAGE VOL. (MIL M3) : 127.5
MINIMUM OPERATING LEVEL (EL.M) : 385.1 DEAD STORAGE VOL. (MIL M3) : 94.1
DRAWDOWN DEPTH (M) : 28.9 SEDIMENT VOL. (MIL M3) : 74.9

MAIN DAM CREST ELEVATION (EL.M) : 420.0 CREST LENGTH (M) : 250.0
(WEIR) DAM HEIGHT (M) : 108.0 EMBANKMENT VOL. (MIL M3) : 3.08

WATERWAY HEADRACE : LENGTH (M) : 3000.0 DIAMETER (WIDTH) (M) : 5.6 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 160.0 DIAMETER (M) : 4.4 NOS. : 1
DIVERSION : LENGTH (M) : 1250.0 DIAMETER (M) : 7.6 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 192.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 75.1 AVERAGE NET HEAD (M) : 109.0
FIRM DISCHARGE (M3/S) : 12.5 TAILWATER LEVEL (EL.M) : 290.0

POWER INSATTLLED CAPACITY (MW) : 67.4 ANNUAL TOTAL ENERGY (GWH) : 460.2
FIRM POWER (MW) : 11.2 FIRM ENERGY (GWH) : 98.3
MIN.GUARANTEED POWER (MW) : 52.8 SECONDARY ENERGY (GWH) : 361.9

TRANSMISSION LINE LENGTH (KM) : 27.0 TO : SAN MANUEL 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
ACCESS ROAD LENGTH (KM) : 6.0 FROM : DALUPIRIP

CONSTRUCTION COST

TOTAL COST (MIL USD) : 156.9 POWER COST (MIL USD) : 156.9
TOTAL COST/KW (USD/KW) : 2402.4 TRANSMISSION COST (MIL USD) : 3.2
TOTAL COST/KWH (USD/KWH) : 0.782 ACCESS ROAD COST (MIL USD) : 1.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3168-IV
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-00-05-0-2

SCHEME : AGNO-1

COORDINATES : N16-33-47 E120-47-55
 STUDY LEVEL : NEWLY IDENTIFIED
 THROUGH LHPPS

WATER RESOURCES REGION : III
 PROVINCE : BENGUET

RIVER SYSTEM : AGNO
 STREAM : AGNO

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 347.1 (MAIN : 347.1 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-093-NP-
 AVER. BASIN RAINFALL (MM/YR) : 2941. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 690.
 AVERAGE DISCHARGE (M3/S) : 21.7 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 42.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.70

PONDAGE FULL SUPPLY LEVEL (EL.M) : 824.3 PONDAGE STORAGE VOL. (1000M3) : 129.3
 AVERAGE OPERATING LEVEL (EL.M) : 823.8 ACTIVE STORAGE VOL. (1000M3) : 28.0
 MINIMUM OPERATING LEVEL (EL.M) : 823.4
 DRAWDOWN DEPTH (M) : 0.9

MAIN DAM CREST ELEVATION (EL.M) : 824.3 CREST LENGTH (M) : 60.8
 WEIR HEIGHT (M) : 7.3 WEIR CONCRETE VOL. (1000 M3) : 7.8

WATERWAY HEADRACE : LENGTH (M) : 2300.0 DIAMETER (WIDTH) (M) : 2.7 NOS. : 1
 PENSTOCK : HORIZONT. L (M) : 165.0 DIAMETER (M) : 2.1 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 13.7

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 11.3 AVERAGE NET HEAD (M) : 49.4
 /HEAD FIRM DISCHARGE (M3/S) : 1.0 TAILWATER LEVEL (EL.M) : 770.0

POWER INSALLED CAPACITY (MW) : 4.6 ANNUAL TOTAL ENERGY (GWH) : 25.9
 /ENERGY FIRM POWER (MW) : 0.4 FIRM ENERGY (GWH) : 3.5
 MIN. GUARANTEED POWER (MW) : 0.4 SECONDARY ENERGY (GWH) : 22.4

TRANSMISSION LINE LENGTH (KM) : 26.0 TO : LA TRINIDAD FROM : NEAREST PUBLIC ROAD 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1

ACCESS ROAD LENGTH (KM) : 9.0 FROM : NEAREST PUBLIC ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 13.6 POWER COST (MIL USD) : 9.9
 TOTAL COST/KW (USD/KW) : 2965.8 TRANSMISSION COST (MIL USD) : 1.1
 TOTAL COST/KWH (USD/KWH) : 1.336 ACCESS ROAD COST (MIL USD) : 2.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3169-1 1964
 TECHNICAL COMMENT : - NOT PROCEEDED TO 2ND SCREENING DUE TO DECREASE OF EXPECTED POWER AND ENERGY CAUSED BY MAXIMUM DISCHARGE CONSTRAINT.

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-00-06-0-2

SCHEME : AGNO-2

RIVER SYSTEM : AGNO
STREAM : AGNO

WATER RESOURCES REGION : III
PROVINCE : BENGUET

COORDINATES : N16-37-25 E120-49-47
STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TDPO, INFORMATION

CATCHMENT AREA (KM2) : 255.7 (MAIN : 256., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-093-NP-
AVER. BASIN RAINFALL (MM/YR) : 3011. DEWADATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 690.
AVERAGE DISCHARGE (M3/S) : 16.5 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 42.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.70

PONDAGE FULL SUPPLY LEVEL (EL.M) : 1014.1 PONDAGE STORAGE VOL. (1000M3) : 82.9
AVERAGE OPERATING LEVEL (EL.M) : 1013.6 ACTIVE STORAGE VOL. (1000M3) : 21.3
MINIMUM OPERATING LEVEL (EL.M) : 1013.1
DRAWDOWN DEPTH (M) : 1.1

MAIN DAM CREST ELEVATION (EL.M) : 1014.1 CREST LENGTH (M) : 52.4
(WEIR) WEIR HEIGHT (M) : 7.1 WEIR CONCRETE VOL. (1000 M3) : 6.7

WATERWAY HEADRACE : LENGTH (M) : 7950.0 DIAMETER (WIDTH) (M) : 2.4 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 385.0 DIAMETER (M) : 1.8 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 38.0

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 8.6 AVERAGE NET HEAD (M) : 148.5
/HEAD FIRM DISCHARGE (M3/S) : 0.7 TAILWATER LEVEL (EL.M) : 850.0

POWER INSATLLED CAPACITY (MW) : 10.5 ANNUAL TOTAL ENERGY (GWH) : 59.1
/ENERGY FIRM POWER (MW) : 0.9 FIRM ENERGY (GWH) : 7.9
MIN. GUARANTEED POWER (MW) : 0.8 SECONDARY ENERGY (GWH) : 51.2

TRANSMISSION LINE LENGTH (KM) : 27.6 TO : LA TRINIDAD 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 4.3 FROM : FROM NEAREST NATIONAL ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 21.8 POWER COST (MIL USD) : 19.4
TOTAL COST/KW (USD/KW) : 2070.9 TRANSMISSION COST (MIL USD) : 1.2
TOTAL COST/KWH (USD/KWH) : 0.937 ACCESS ROAD COST (MIL USD) : 1.2

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - SCARCE POPULATION
SUBMERGED ROAD : PROVINCIAL ROAD 2.5 KMS.
MAP USED (1:50,000 SCALE) : 3169-1 1964
TECHNICAL COMMENT : - TWO STREAM INTAKES

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-00-07-0-2

SCHEME : AGNO-3

RIVER SYSTEM : AGNO
STREAM : AGNO

WATER RESOURCES REGION : III
PROVINCE : BENGUET

COORDINATES : N16-40-42 E120-49-20
STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 195.7 (MAIN : 196., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-093-NP-
AVER. BASIN RAINFALL (MM/YR) : 2885. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 590.
AVERAGE DISCHARGE (M3/S) : 11.9 EVAPORATION RATE (MM/DAY) : 2.5 GAGE AVER. DISCHARGE (M3/S) : 42.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.70

PONDAGE FULL SUPPLY LEVEL (EL.M) : 1215.2 PONDAGE STORAGE VOL. (1000M3) : 32.6
AVERAGE OPERATING LEVEL (EL.M) : 1214.0 ACTIVE STORAGE VOL. (1000M3) : 15.3
MINIMUM OPERATING LEVEL (EL.M) : 1212.8
DRAWDOWN DEPTH (M) : 2.5

MAIN DAM CREST ELEVATION (EL.M) : 1215.2 CREST LENGTH (M) : 75.2
(WEIR) WEIR HEIGHT (M) : 8.2 WEIR CONCRETE VOL. (1000 M3) : 11.2

WATERWAY HEADRACE : LENGTH (M) : 7250.0 DIAMETER (WIDTH) (M) : 2.1 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 395.0 DIAMETER (M) : 1.5 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 25.9

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 6.2 AVERAGE NET HEAD (M) : 183.0
/HEAD FIRM DISCHARGE (M3/S) : 0.5 TAILWATER LEVEL (EL.M) : 1015.0

POWER UNSATLLED CAPACITY (MW) : 9.3 ANNUAL TOTAL ENERGY (GWH) : 52.4
/ENERGY FIRM POWER (MW) : 0.8 FIRM ENERGY (GWH) : 7.0
MIN. GUARANTEED POWER (MW) : 0.7 SECONDARY ENERGY (GWH) : 45.4

TRANSMISSION LINE LENGTH (KM) : 32.0 TO : LA TRINIDAD FROM : NATIONAL ROAD BESIDE DAMSITE 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 0.

CONSTRUCTION COST

TOTAL COST (MIL USD) : 17.1 POWER COST (MIL USD) : 15.8
TOTAL COST/KW (USD/KW) : 1836.9 TRANSMISSION COST (MIL USD) : 1.3
TOTAL COST/KWH (USD/KWH) : 0.829 ACCESS ROAD COST (MIL USD) : 0.

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - SCARCE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3170-11 1964
TECHNICAL COMMENT : - THICK ALLUVIAL DEPOSITS AT THE INTAKE SITE
- THREE STREAM INTAKES

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-01-08-0-1

SCHEME : CAMILING-1

RIVER SYSTEM : AGNO
 STREAM : CAMILING
 WATER RESOURCES REGION : III
 PROVINCE : TARLAC
 COORDINATES : N15-33-29 E120-20-29
 STUDY LEVEL : UNSCALED
 (PRE-F/S. RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 243.0 (MAIN : 243.0, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-017-NW-325
 AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 128.
 AVERAGE DISCHARGE (M3/S) : 10.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 7.4

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR ; RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 210.0 GROSS STORAGE VOL. (MIL M3) : 321.5
 AVERAGE OPERATING LEVEL (EL.M) : 195.2 ACTIVE STORAGE VOL. (MIL M3) : 224.9
 MINIMUM OPERATING LEVEL (EL.M) : 165.7 DEAD STORAGE VOL. (MIL M3) : 96.6
 DRAWDOWN DEPTH (M) : 44.3 SEDIMENT VOL. (MIL M3) : 17.0

MAIN DAM CREST ELEVATION (EL.M) : 216.0 CREST LENGTH (M) : 1423.0
 (WEIR) DAM HEIGHT (M) : 112.8 EMBANKMENT VOL. (MIL M3) : 22.34

WATERWAY HEADRACE : LENGTH (M) : 850.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 540.0 DIAMETER (M) : 2.2 NOS. : 1
 DIVERSION : LENGTH (M) : 1440.0 DIAMETER (M) : 7.8 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 75.6

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 13.9 AVERAGE NET HEAD (M) : 85.5
 /HEAD FIRM DISCHARGE (M3/S) : 7.0 TAILWATER LEVEL (EL.M) : 103.2

POWER INSTALLED CAPACITY (MW) : 9.8 ANNUAL TOTAL ENERGY (GWH) : 54.7
 /ENERGY FIRM POWER (MW) : 4.9 FIRM ENERGY (GWH) : 43.0
 MIN. GUARANTEED POWER (MW) : 6.1 SECONDARY ENERGY (GWH) : 11.6

TRANSMISSION LINE LENGTH (KM) : 25.0 TO : BAMBANG 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 6.0 FROM : SAN BARTOLOME

CONSTRUCTION COST

TOTAL COST (MIL USD) : 306.2 POWER COST (MIL USD) : 303.4
 TOTAL COST/KW (USD/KW) : 31178.6 TRANSMISSION COST (MIL USD) : 1.1
 TOTAL COST/KWH (USD/KWH) : 6.584 ACCESS ROAD COST (MIL USD) : 1.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3068-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-01-09-0-1
 COORDINATES : N15-32-52 E120-18-32
 STUDY LEVEL : UNSCALED
 (PRE-F/S.RECONNAISSANCE)

SCHEME : CAMILING-2
 RIVER SYSTEM : AGNO
 STREAM : CAMILING
 WATER RESOURCES REGION : III
 PROVINCE : TARLAC

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 191.2 (MAIN : 191.2, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-017-NW-325
 AVER. BASIN RAINFALL (MM/YR) : 2250. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 123.
 AVERAGE DISCHARGE (M3/S) : 8.0 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 7.4

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75
 RESERVOIR FULL SUPPLY LEVEL (EL.M) : 254.0 GROSS STORAGE VOL. (MIL M3) : 254.9
 AVERAGE OPERATING LEVEL (EL.M) : 238.9 ACTIVE STORAGE VOL. (MIL M3) : 189.6
 MINIMUM OPERATING LEVEL (EL.M) : 208.6 DEAD STORAGE VOL. (MIL M3) : 65.4
 DRAWDOWN DEPTH (M) : 45.4 SEDIMENT VOL. (MIL M3) : 13.4
 MAIN DAM CREST ELEVATION (EL.M) : 260.0 CREST LENGTH (M) : 545.0
 (WEIR) DAM HEIGHT (M) : 112.0 EMBANKMENT VOL. (MIL M3) : 7.05
 WATERWAY HEADRACE : LENGTH (M) : 440.0 DIAMETER (WIDTH) (M) : 2.5 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 350.0 DIAMETER (M) : 2.1 NOS. : 1
 DIVERSION : LENGTH (M) : 980.0 DIAMETER (M) : 7.4 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 45.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 11.3 AVERAGE NET HEAD (M) : 87.1
 /HEAD FIRM DISCHARGE (M3/S) : 5.6 TAILWATER LEVEL (EL.M) : 148.0
 POWER INSATLLED CAPACITY (MW) : 8.1 ANNUAL TOTAL ENERGY (GWH) : 44.2
 /ENERGY FIRM POWER (MW) : 4.0 FIRM ENERGY (GWH) : 35.4
 MIN. GUARANTEED POWER (MW) : 5.0 SECONDARY ENERGY (GWH) : 8.7

TRANSMISSION LINE LENGTH (KM) : 29.0 TO : CAMILING 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 12.0 FROM : SAN BARTOLOME

CONSTRUCTION COST

TOTAL COST (MIL USD) : 135.2 POWER COST (MIL USD) : 130.6
 TOTAL COST/KW (USD/KW) : 16717.7 TRANSMISSION COST (MIL USD) : 1.2
 TOTAL COST/KWH (USD/KWH) : 3.554 ACCESS ROAD COST (MIL USD) : 3.4

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3066-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 3-077-04-10-0-2

SCHEME : PAMPANG

RIVER SYSTEM : AGNO
STREAM : PAMPANG

WATER RESOURCES REGION : III
PROVINCE : BENGUET

COORDINATES : N16-14-16 E120-48-16
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 192.7 (MAIN : 193. INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-3-093-NP-
AVER. BASIN RAINFALL (MM/YR) : 2629. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 690.
AVERAGE DISCHARGE (M3/S) : 10.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 42.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RUN-OF-RIVER OUTPUT FACTOR : 0.70

PONDAGE FULL SUPPLY LEVEL (EL.M) : 363.5 PONDAGE STORAGE VOL. (1000M3) : 52.4
AVERAGE OPERATING LEVEL (EL.M) : 363.1 ACTIVE STORAGE VOL. (1000M3) : 13.1
MINIMUM OPERATING LEVEL (EL.M) : 362.6
DRAWDOWN DEPTH (M) : 0.9

MAIN DAM CREST ELEVATION (EL.M) : 363.5 CREST LENGTH (M) : 50.5
(WEIR) WEIR HEIGHT (M) : 6.5 WEIR CONCRETE VOL. (1000 M3) : 5.6

WATERWAY HEADRADE : LENGTH (M) : 5060.0 DIAMETER (WIDTH) (M) : 2.0
PENSTOCK : HORIZONT. L (M) : 215.0 DIAMETER (M) : 1.5
EXCAVATION VOL TOTAL (1000 M3) : 16.0

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 5.3 AVERAGE NET HEAD (M) : 146.0
/HEAD FIRM DISCHARGE (M3/S) : 0.5 TAILWATER LEVEL (EL.M) : 206.0

POWER INSATLLED CAPACITY (MW) : 6.3 ANNUAL TOTAL ENERGY (GWH) : 35.6
/ENERGY FIRM POWER (MW) : 0.5 FIRM ENERGY (GWH) : 4.8
MIN. GUARANTEED POWER (MW) : 0.5 SECONDARY ENERGY (GWH) : 30.8

TRANSMISSION LINE LENGTH (KM) : 35.0 TO : SAN MANUEL NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 22.0 FROM : SAN NICOLAS

CONSTRUCTION COST

TOTAL COST (MIL USD) : 18.4 POWER COST (MIL USD) : 10.7
TOTAL COST/KW (USD/KW) : 2893.3 TRANSMISSION COST (MIL USD) : 1.4
TOTAL COST/KWH (USD/KWH) : 1.309 ACCESS ROAD COST (MIL USD) : 6.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3168-1
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 4-007-00-01-0-1

SCHEME : KANAN

RIVER SYSTEM : AGOS
STREAM : KANAN

WATER RESOURCES REGION : IV
PROVINCE : QUEZON

COORDINATES : N14-44-30 E121-31-54
STUDY LEVEL : UNSCALED
(PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 364.3 (MAIN : 364., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-4-003-NW-430
AVER. BASIN RAINFALL (MM/YR) : 5589. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879.
AVERAGE DISCHARGE (M3/S) : 58.5 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 294.0 GROSS STORAGE VOL. (MIL M3) : 1857.2
AVERAGE OPERATING LEVEL (EL.M) : 273.0 ACTIVE STORAGE VOL. (MIL M3) : 1384.1
MINIMUM OPERATING LEVEL (EL.M) : 231.0 DEAD STORAGE VOL. (MIL M3) : 473.1
DRAWDOWN DEPTH (M) : 63.0 SEDIMENT VOL. (MIL M3) : 25.5

MAIN DAM CREST ELEVATION (EL.M) : 300.0 CREST LENGTH (M) : 880.0
(WEIR) DAM HEIGHT (M) : 200.0 EMBANKMENT VOL. (MIL M3) : 27.23

WATERWAY HEADRACE : LENGTH (M) : 880.0 DIAMETER (WIDTH) (M) : 5.7 NOS. : 2
PENSTOCK : HORIZONTAL L (M) : 220.0 DIAMETER (M) : 4.3 NOS. : 2
DIVERSION : LENGTH (M) : 1260.0 DIAMETER (M) : 8.2 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 186.4

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 153.8 AVERAGE NET HEAD (M) : 158.9
/HEAD FIRM DISCHARGE (M3/S) : 51.3 TAILWATER LEVEL (EL.M) : 100.0

POWER INSATLLED CAPACITY (MW) : 213.9 ANNUAL TOTAL ENERGY (GWH) : 690.7
/ENERGY FIRM POWER (MW) : 71.3 FIRM ENERGY (GWH) : 624.4
MIN. GUARANTEED POWER (MW) : 153.1 SECONDARY ENERGY (GWH) : 66.3

TRANSMISSION LINE LENGTH (KM) : 18.6 TO : INFANTA 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 14.0 FROM : NEAREST PROVINCIAL ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 475.8 POWER COST (MIL USD) : 467.9
TOTAL COST/KW (USD/KW) : 2224.7 TRANSMISSION COST (MIL USD) : 3.9
TOTAL COST/KWH (USD/KWH) : 0.738 ACCESS ROAD COST (MIL USD) : 4.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3364-111 1970
TECHNICAL COMMENT : - NONE

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 4-007-00-02-0-1

SCHEME : DARAITAN

RIVER SYSTEM : AGOS
STREAM : KALIWA

WATER RESOURCES REGION : IV
PROVINCE : QUEZON

COORDINATES : N14-36-00 E121-25-10
STUDY LEVEL : UNSCALED
(PRE-F/S, RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 325.0 (MAIN : 325.0, INTER TRANSFER TOTAL : 0.1) STREAM GAGE ID : 4-4-003-NW-430
AVER. BASIN RAINFALL (MM/YR) : 3681. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879.
AVERAGE DISCHARGE (M3/S) : 32.7 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.40

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 234.0 GROSS STORAGE VOL. (MIL M3) : 541.1
AVERAGE OPERATING LEVEL (EL.M) : 221.8 ACTIVE STORAGE VOL. (MIL M3) : 413.1
MINIMUM OPERATING LEVEL (EL.M) : 197.4 DEAD STORAGE VOL. (MIL M3) : 128.1
DRAWDOWN DEPTH (M) : 36.6 SEDIMENT VOL. (MIL M3) : 22.7

MAIN DAM CREST ELEVATION (EL.M) : 240.0 CREST LENGTH (M) : 280.0
(WEIR) DAM HEIGHT (M) : 97.5 EMBANKMENT VOL. (MIL M3) : 2.75

WATERWAY HEADRAGE : LENGTH (M) : 400.0 DIAMETER (WIDTH) (M) : 6.4 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 140.0 DIAMETER (M) : 4.9 NOS. : 1
DIVERSION : LENGTH (M) : 750.0 DIAMETER (M) : 7.9 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 88.9

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 96.0 AVERAGE NET HEAD (M) : 77.5
/HEAD FIRM DISCHARGE (M3/S) : 24.0 TAILWATER LEVEL (EL.M) : 142.5

POWER INSATLLED CAPACITY (MW) : 61.2 ANNUAL TOTAL ENERGY (GWH) : 176.6
/ENERGY FIRM POWER (MW) : 15.3 FIRM ENERGY (GWH) : 134.1
MIN. GUARANTEED POWER (MW) : 40.0 SECONDARY ENERGY (GWH) : 42.5

TRANSMISSION LINE LENGTH (KM) : 23.0 TO : DOLORES 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
ACCESS ROAD LENGTH (KM) : 20.0 FROM : STA. MARIA

CONSTRUCTION COST

TOTAL COST (MIL USD) : 125.9 POWER COST (MIL USD) : 117.3
TOTAL COST/KW (USD/KW) : 2055.8 TRANSMISSION COST (MIL USD) : 2.8
TOTAL COST/KWH (USD/KWH) : 0.857 ACCESS ROAD COST (MIL USD) : 5.7

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3263-1 1970
TECHNICAL COMMENT : - SITE GEOLOGY OF HARD LIMESTONE BUT FAULTED, JOINTED STRUCTURE
SUSCEPTIBLE TO LEAKAGE.
- NOT PROCEEDED TO 2ND SCREENING DUE TO MUTUALLY EXCLUSIVE PLAN OF THE COMMITTED LAIBAN DAM.

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 4-007-00-03-0-1

SCHEME : UPPER AGOS-1M

RIVER SYSTEM : AGOS
 STREAM : LENATIN
 WATER RESOURCES REGION : IV
 PROVINCE : RIZAL
 COORDINATES : N14-37-39 E121-24-24
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LHPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 136.0 (MAIN : 136.0, INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-4-003-NW-430
 AVER. BASIN RAINFALL (MM/YR) : 3799. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879.
 AVERAGE DISCHARGE (M3/S) : 14.2 EVAPORATION RATE (MM/DAY) : 3.0 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.70

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 252.0 GROSS STORAGE VOL. (MIL M3) : 446.5
 AVERAGE OPERATING LEVEL (EL.M) : 242.9 ACTIVE STORAGE VOL. (MIL M3) : 313.7
 MINIMUM OPERATING LEVEL (EL.M) : 224.7 DEAD STORAGE VOL. (MIL M3) : 132.8
 DRANDOWN DEPTH (M) : 27.3 SEDIMENT VOL. (MIL M3) : 9.5
 MAIN DAM CREST ELEVATION (EL.M) : 258.0 CREST LENGTH (M) : 244.7
 (WEIR) DAM HEIGHT (M) : 77.7 EMBANKMENT VOL. (MIL M3) : 1.84
 WATERWAY HEADRACE : LENGTH (M) : 1300.0 DIAMETER (WIDTH) (M) : 6.5 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 95.0 DIAMETER (M) : 4.4 NOS. : 1
 DIVERSION : LENGTH (M) : 620.0 DIAMETER (M) : 8.1 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 65.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 72.3 AVERAGE NET HEAD (M) : 75.2
 /HEAD FIRM DISCHARGE (M3/S) : 12.0 TAILWATER LEVEL (EL.-M) : 165.0
 POWER UNSATLLED CAPACITY (MW) : 44.7 ANNUAL TOTAL ENERGY (GWH) : 76.2
 /ENERGY FIRM POWER (MW) : 7.5 FIRM ENERGY (GWH) : 65.3
 MIN. GUARANTEED POWER (MW) : 32.2 SECONDARY ENERGY (GWH) : 11.0

TRANSMISSION LINE LENGTH (KM) : 18.0 TO : DOLORES 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 23.0 FROM : TANAY

CONSTRUCTION COST

TOTAL COST (MIL USD) : 84.9
 TOTAL COST/KW (USD/KW) : 2099.4
 TOTAL COST/KWH (USD/KWH) : 1.369
 POWER COST (MIL USD) : 84.9
 TRANSMISSION COST (MIL USD) : 2.4
 ACCESS ROAD COST (MIL USD) : 6.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3263-1
 TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 4-007-00-04-0-1

SCHEME : UPPER AGOS-1S

COORDINATES : N14-38-15 E121-24-30
STUDY LEVEL : NEWLY IDENTIFIED
THROUGH LHPPS

WATER RESOURCES REGION : IV
PROVINCE : RIZAL

RIVER SYSTEM : AGOS
STREAM : LIMUTAN

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 135.7 (MAIN : 136.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-4-003-NW-430
AVER. BASIN RAINFALL (MM/YR) : 3799. DEGRADATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879.
AVERAGE DISCHARGE (M3/S) : 14.2 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.20

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 252.0 GROSS STORAGE VOL. (MIL M3) : 141.2
AVERAGE OPERATING LEVEL (EL.M) : 242.7 ACTIVE STORAGE VOL. (MIL M3) : 89.4
MINIMUM OPERATING LEVEL (EL.M) : 224.2 DEAD STORAGE VOL. (MIL M3) : 51.7
DRAWDOWN DEPTH (M) : 27.8 SEDIMENT VOL. (MIL M3) : 9.5

MAIN DAM CREST ELEVATION (EL.M) : 258.0 CREST LENGTH (M) : 196.0
(WEIR) DAM HEIGHT (M) : 77.7 EMBANKMENT VOL. (MIL M3) : 1.58

WATERWAY HEADRACE : LENGTH (M) : 500.0 DIAMETER (WIDTH) (M) : 4.5 NOS. : 1
PENSTOCK : HORIZONTAL (M) : 60.0 DIAMETER (M) : 3.7 NOS. : 1
DIVERSION : LENGTH (M) : 600.0 DIAMETER (M) : 8.1 NOS. : 1
EXCAVATION VOL TOTAL (1000 M3) : 39.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 46.9 AVERAGE NET HEAD (M) : 60.7
/HEAD FIRM DISCHARGE (M3/S) : 7.8 TAILWATER LEVEL (EL.M) : 180.3

POWER INSATLLED CAPACITY (MW) : 23.5 ANNUAL TOTAL ENERGY (GWH) : 61.0
/ENERGY FIRM POWER (MW) : 3.9 FIRM ENERGY (GWH) : 34.3
MIN. GUARANTEED POWER (MW) : 15.5 SECONDARY ENERGY (GWH) : 26.7

TRANSMISSION LINE LENGTH (KM) : 18.0 TO : DOLORES 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
ACCESS ROAD LENGTH (KM) : 23.0 FROM : TANAY

CONSTRUCTION COST

TOTAL COST (MIL USD) : 70.6 POWER COST (MIL USD) : 63.1
TOTAL COST/KW (USD/KWH) : 3007.5 TRANSMISSION COST (MIL USD) : 0.9
TOTAL COST/KWH (USD/KWH) : 1.669 ACCESS ROAD COST (MIL USD) : 5.6

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :
MAP USED (1:50,000 SCALE) : 3263-1
TECHNICAL COMMENT :

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 4-007-00-05-0-1

SCHEME : UPPER AGOS-2

RIVER SYSTEM : AGOS
 STREAM : KAWAN
 WATER RESOURCES REGION : IV
 PROVINCE : QUEZON
 COORDINATES : N14-48-40 E121-30-42
 STUDY LEVEL : NEWLY IDENTIFIED THROUGH LIPPS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 286.4 (MAIN : 286.4 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-4-003-NW-430
 AVER. BASIN RAINFALL (MM/YR) : 5798. DEMUNATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879.
 AVERAGE DISCHARGE (M3/S) : 48.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.75

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 316.0 GROSS STORAGE VOL. (MIL M3) : 1526.3
 AVERAGE OPERATING LEVEL (EL.M) : 299.8 ACTIVE STORAGE VOL. (MIL M3) : 1137.3
 MINIMUM OPERATING LEVEL (EL.M) : 267.9 DEAD STORAGE VOL. (MIL M3) : 389.1
 DRAWDOWN DEPTH (M) : 48.7 SEDIMENT VOL. (MIL M3) : 20.0
 MAIN DAM CREST ELEVATION (EL.M) : 322.0 CREST LENGTH (M) : 430.0
 (WEIR) DAM HEIGHT (M) : 156.0 EMBANKMENT VOL. (MIL M3) : 10.71
 WATERWAY HEADRACE : LENGTH (M) : 380.0 DIAMETER (WIDTH) (M) : 5.2 NOS. : 2
 PENSTOCK : HORIZONT. L (M) : 180.0 DIAMETER (M) : 4.0 NOS. : 2
 DIVERSION : LENGTH (M) : 800.0 DIAMETER (M) : 7.5 NOS. : 2
 EXCAVATION VOL TOTAL (1000 M3) : 92.8

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 125.5 AVERAGE NET HEAD (M) : 130.9
 /HEAD FIRM DISCHARGE (M3/S) : 41.8 TAILWATER LEVEL (EL.M) : 166.0
 POWER INSTALLED CAPACITY (MW) : 135.2 ANNUAL TOTAL ENERGY (GWH) : 439.1
 /ENERGY FIRM POWER (MW) : 45.1 FIRM ENERGY (GWH) : 394.8
 MIN. GUARANTEED POWER (MW) : 96.9 SECONDARY ENERGY (GWH) : 44.4

TRANSMISSION LINE LENGTH (KM) : 21.0 TO : INFANTA 230 K V DOUBLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 18.6 FROM : NEAREST PROVINCIAL ROAD

CONSTRUCTION COST

TOTAL COST (MIL USD) : 261.4 POWER COST (MIL USD) : 251.8
 TOTAL COST/KW (USD/KW) : 1933.2 TRANSMISSION COST (MIL USD) : 4.3
 TOTAL COST/KWH (USD/KWH) : 0.641 ACCESS ROAD COST (MIL USD) : 5.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : FOREST - SCARCE POPULATION
 SUBMERGED ROAD : NONE
 MAP USED (1:50,000 SCALE) : 3364-111 1970
 TECHNICAL COMMENT : - FAULTS AT THE RIGHT ABUTMENT
 - ADAPTABILITY OF THE PLAN DEPENDS ON ACCESSIBILITY

INVENTORY OF HYDROPOWER SITES

SCHEME ID : 4-115-01-01-0-1

SCHEME : WAWA

RIVER SYSTEM : PASIG
STREAM : WAWA

WATER RESOURCES REGION : IV
PROVINCE : RIZAL

COORDINATES : N14-43-30 E121-11-24
STUDY LEVEL : UNSCALED
(PRE-F/S.RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 283.2 (MAIN : 283.2 INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-4-003-NW-430
AVER. BASIN RAINFALL (MM/YR) : 3445. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 879
AVERAGE DISCHARGE (M3/S) : 26.4 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 116.1

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.67

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 151.0 GROSS STORAGE VOL. (MIL M3) : 835.0
AVERAGE OPERATING LEVEL (EL.M) : 136.9 ACTIVE STORAGE VOL. (MIL M3) : 558.2
MINIMUM OPERATING LEVEL (EL.M) : 108.8 DEAD STORAGE VOL. (MIL M3) : 276.9
DRAWDOWN DEPTH (M) : 42.2 SEDIMENT VOL. (MIL M3) : 19.8
MAIN DAM CREST ELEVATION (EL.M) : 157.0 CREST LENGTH (M) : 277.5
(WEIR) DAM HEIGHT (M) : 132.7 EMBANKMENT VOL. (MIL M3) : 6.21
WATERWAY HEADRACE : LENGTH (M) : 440.0 DIAMETER (WIDTH) (M) : 5.3 NOS. : 1
PENSTOCK : HORIZONT. L (M) : 160.0 DIAMETER (M) : 4.2 NOS. : 1
DIVERSION : LENGTH (M) : 890.0 DIAMETER (M) : 7.5 NOS. : 2
EXCAVATION VOL TOTAL (1000 M3) : 91.1

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 67.1 AVERAGE NET HEAD (EL.M) : 110.1
/HEAD FIRM DISCHARGE (M3/S) : 22.4 TAILWATER LEVEL (EL.M) : 24.3
POWER INSATLLED CAPACITY (MW) : 60.9 ANNUAL TOTAL ENERGY (GWH) : 201.8
/ENERGY FIRM POWER (MW) : 20.3 FIRM ENERGY (GWH) : 177.7
MIN. GUARANTEED POWER (MW) : 43.2 SECONDARY ENERGY (GWH) : 24.1

TRANSMISSION LINE LENGTH (KM) : 21.0 TO : DOLORES 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
ACCESS ROAD LENGTH (KM) : 3.6 FROM : MONTALBAN

CONSTRUCTION COST

TOTAL COST (MIL USD) : 164.4 POWER COST (MIL USD) : 160.8
TOTAL COST/KW (USD/KW) : 2701.5 TRANSMISSION COST (MIL USD) : 2.6
TOTAL COST/KWH (USD/KWH) : 0.889 ACCESS ROAD COST (MIL USD) : 1.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - DENSE POPULATION
SUBMERGED ROAD : NONE
MAP USED (1:50,000 SCALE) : 3263-IV 1970
TECHNICAL COMMENT : - SADDLE FORMATION (+/- EL 180.0 M.) AT THE LEFT BANK
- SITE GEOLOGY OF WELL BEDDED AND MASSIVE LIMESTONE STRUCTURE WITH DEVELOPMENT OF JOINTS FAULTS AND CAVES SUSCEPTIBLE LEAKAGE.

I N V E N T O R Y O F H Y D R O P O W E R S I T E S

SCHEME ID : 5-014-01-01-0-1

SCHEME : BOSIGON

RIVER SYSTEM : MATOCCON WATER RESOURCES REGION : V COORDINATES : N14-10-07 E122-38-54
 STREAM : BOSIGON PROVINCE : CAMARINES NORTE STUDY LEVEL : NEWLY IDENTIFIED THROUGH LRPSS

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 335.7 (MAIN : 336., INTER TRANSFER TOTAL : 0.) STREAM GAGE ID : 4-5-001-NW-501
 AVER. BASIN RAINFALL (MM/YR) : 3923. DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 28.
 AVERAGE DISCHARGE (M3/S) : 36.3 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 3.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.38

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 80.0 GROSS STORAGE VOL. (MIL M3) : 546.4
 AVERAGE OPERATING LEVEL (EL.M) : 72.3 ACTIVE STORAGE VOL. (MIL M3) : 435.5
 MINIMUM OPERATING LEVEL (EL.M) : 56.8 DEAD STORAGE VOL. (MIL M3) : 110.9
 DRAWDOWN DEPTH (M) : 23.2 SEDIMENT VOL. (MIL M3) : 23.5

MAIN DAM (WEIR) CREST ELEVATION (EL.M) : 86.0 CREST LENGTH (M) : 295.5
 DAM HEIGHT (M) : 63.0 EMBANKMENT VOL. (MIL M3) : 1.45

WATERWAY HEADRACE : LENGTH (M) : 600.0 DIAMETER (WIDTH) (M) : 4.9 NOS. : 2
 PENSTOCK : HORIZONT. L (M) : 90.0 DIAMETER (M) : 4.1 NOS. : 2
 DIVERSION : LENGTH (M) : 600.0 DIAMETER (M) : 7.3 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 50.3

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 114.1 AVERAGE NET HEAD (M) : 47.6
 /HEAD FIRM DISCHARGE (M3/S) : 19.0 TAILWATER LEVEL (EL.M) : 23.0

POWER INSATLLED CAPACITY (MW) : 44.7 ANNUAL TOTAL ENERGY (GWH) : 122.9
 /ENERGY FIRM POWER (MW) : 7.4 FIRM ENERGY (GWH) : 65.3
 MIN. GUARANTEED POWER (MW) : 28.8 SECONDARY ENERGY (GWH) : 57.6

TRANSMISSION LINE LENGTH (KM) : 30.0 TO : LABO 115 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 0. FROM : NATIONAL ROAD BESIDE DAMSITE

CONSTRUCTION COST

TOTAL COST (MIL USD) : 91.7 POWER COST (MIL USD) : 88.2
 TOTAL COST/KW (USD/KW) : 2051.2 TRANSMISSION COST (MIL USD) : 3.4
 TOTAL COST/KWH (USD/KWH) : 1.111 ACCESS ROAD COST (MIL USD) : 0.

OTHER INFORMATION

LAND USE IN RESERVOIR AREA : MIXED - SCARCE POPULATION
 SUBMERGED ROAD : PROVINCIAL ROAD 10.0 KMS.
 MAP USED (1:50,000 SCALE) : 3562-IV 1975
 TECHNICAL COMMENT : - TOPOGRAPHIC LIMIT +/- EL 90.0 M
 - SITE GEOLOGY OF DEEPLY WEATHERED BASALTIC FLOW UNDER THICK COVERAGE OF RESIDUAL SOIL

INVENTORY OF HYDROPOWER SITES

SCHEME ID : 5-020-00-01-0-1

SCHEME : PULANTUNA

RIVER SYSTEM : BICOL
 STREAM : PULANTUNA
 WATER RESOURCES REGION : V
 PROVINCE : CAMARINES SUR

COORDINATES : N13-52-01 E122-54-50
 STUDY LEVEL : UNSCALED
 (PRE-F/S-RECONNAISSANCE)

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 201.0 (MAIN : 201.0 INTER TRANSFER TOTAL : 0.0) STREAM GAGE ID : 4-5-001-NW-501
 AVER. BASIN RAINFALL (MM/YR) : 3500 DENUDATION RATE (MM/YR) : 1.4 GAGE CATCHMENT (KM2) : 28
 AVERAGE DISCHARGE (M3/S) : 19.1 EVAPORATION RATE (MM/DAY) : 3.5 GAGE AVER. DISCHARGE (M3/S) : 3.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR RESERVOIR DEVELOPMENT RATIO : 0.15

RESERVOIR FULL SUPPLY LEVEL (EL.M) : 65.0 GROSS STORAGE VOL. (MIL M3) : 129.1
 AVERAGE OPERATING LEVEL (EL.M) : 59.9 ACTIVE STORAGE VOL. (MIL M3) : 88.3
 MINIMUM OPERATING LEVEL (EL.M) : 49.7 DEAD STORAGE VOL. (MIL M3) : 40.7
 DRAWDOWN DEPTH (M) : 15.3 SEDIMENT VOL. (MIL M3) : 14.1
 MAIN DAM CREST ELEVATION (EL.M) : 71.0 CREST LENGTH (M) : 157.5
 (WEIR) DAM HEIGHT (M) : 50.2 EMBANKMENT VOL. (MIL M3) : 0.57
 WATERWAY HEADRACE : LENGTH (M) : 490.0 DIAMETER (WIDTH) (M) : 3.6 NOS. : 1
 PENSTOCK : HORIZONTAL L (M) : 120.0 DIAMETER (M) : 3.1 NOS. : 1
 DIVERSION : LENGTH (M) : 640.0 DIAMETER (M) : 6.6 NOS. : 1
 EXCAVATION VOL TOTAL (1000 M3) : 27.4

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 29.8 AVERAGE NET HEAD (M) : 37.2
 /HEAD FIRM DISCHARGE (M3/S) : 7.4 TAILWATER LEVEL (EL.M) : 20.8
 POWER INSATLLED CAPACITY (MW) : 9.1 ANNUAL TOTAL ENERGY (GWH) : 45.5
 /ENERGY FIRM POWER (MW) : 2.3 FIRM ENERGY (GWH) : 19.9
 MIN. GUARANTEED POWER (MW) : 6.3 SECONDARY ENERGY (GWH) : 25.6

TRANSMISSION LINE LENGTH (KM) : 36.0 TO : LABO 69 K V SINGLE CIRCUIT NOS. OF CIRCUIT : 1
 ACCESS ROAD LENGTH (KM) : 4.5 FROM : VILLAZAR

CONSTRUCTION COST

TOTAL COST (MIL USD) : 39.7 POWER COST (MIL USD) : 37.0
 TOTAL COST/KW (USD/KW) : 4366.7 TRANSMISSION COST (MIL USD) : 1.4
 TOTAL COST/KWH (USD/KWH) : 1.424 ACCESS ROAD COST (MIL USD) : 1.3

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :
 MAP USED (1:50,000 SCALE) : 3561-1
 TECHNICAL COMMENT :

C - 7 INVENTORY OF

EXISTING HYDROELECTRIC PLANT

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : MAGAT

RIVER SYSTEM : CAGAYAN
STREAM : MAGAT

WATER RESOURCES REGION : II
PROVINCE :

COORDINATES : N16-47-53 E121-22-37

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 4143.0
AVER. BASIN RAINFALL (MM/YR) : -
AVERAGE DISCHARGE (M3/S) : 210.0

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	193.0	GROSS STORAGE VOL. (MIL M3) :	1250.0
	AVERAGE OPERATING LEVEL (EL,M) :	178.6	ACTIVE STORAGE VOL. (MIL M3) :	782.0
	MINIMUM OPERATING LEVEL (EL,M) :	164.0	DEAD STORAGE VOL. (MIL M3) :	468.0
	DRAWDOWN DEPTH (M) :	29.0	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	200.0	CREST LENGTH (M) :	416.0
	DAM HEIGHT (M) :	114.0	EMBANKMENT VOL. (MIL M3) :	18.0
WATERWAY	HEADRACE : LENGTH (M) :	630.0	DIAMETER (WIDTH) (M) :	12.0
	PENSTOCK : HORIZONT. L (M) :	300.0	DIAMETER (M) :	5.8
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	456.0	AVERAGE NET HEAD (M) :	67.5
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	103.0
POWER /ENERGY	INSTALLED CAPACITY (MW) :	360.0	ANNUAL TOTAL ENERGY (GWH) :	1237.0
	FIRM POWER (MW) :	-	FIRM ENERGY (GWH) :	723.0
	MIN. GUARANTEED POWER (MW) :	200.0	SECONDARY ENERGY (GWH) :	514.0

TRANSMISSION LINE LENGTH (KM) : 14.4 TO : SANTIAGO FROM :
ACCESS ROAD LENGTH (KM) : - FROM :
230 K.V NOS.OF CIRCUIT : 2

CONSTRUCTION COST

TOTAL COST (MIL US\$) : 391.3
TOTAL COST/KW (US\$/KW) : 1087.0
TOTAL COST/KWH (US\$/KWH) : 0.446

POWER COST (MIL US\$) : 374.8
TRANSMISSION COST (MIL US\$) : 3.5
ACCESS ROAD COST (MIL US\$) : 13.0

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : ANGAT

RIVER SYSTEM : PAMPANGA
 STREAM : ANGAT

WATER RESOURCES REGION : III
 PROVINCE :

COORDINATES : N14-54-55 E121-10-06

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 568.0
 AVER. BASIN RAINFALL (MM/YR) : -
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	217.0	GROSS STORAGE VOL. (MIL M3) :	1075.0
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	850.0
	MINIMUM OPERATING LEVEL (EL,M) :	180.0	DEAD STORAGE VOL. (MIL M3) :	225.0
	DRAWDOWN DEPTH (M) :	37.0	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	223.5	CREST LENGTH (M) :	368.0
	DAM HEIGHT (M) :	131.0	EMBANKMENT VOL. (MIL M3) :	-
WATERWAY	HEADRACE : LENGTH (M) :	457.0	DIAMETER (WIDTH) (M) :	8.0
	PENSTOCK : HORIZONT. L (M) :	-	DIAMETER (M) :	4.5
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	-	AVERAGE NET HEAD (M) :	-
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	-
POWER /ENERGY	INSTALLED CAPACITY (MW) :	218.0	ANNUAL TOTAL ENERGY (GWH) :	398.0
	FIRM POWER (MW) :	150.0	FIRM ENERGY (GWH) :	280.0
	MIN. GUARANTEED POWER (MW) :	-	SECONDARY ENERGY (GWH) :	118.0

TRANSMISSION- LINE LENGTH (KM) : - TO : - FROM : NATIONAL ROAD
 115 K V NOS. OF CIRCUIT : 2

CONSTRUCTION COST

TOTAL COST (MIL US\$) :	-	POWER COST (MIL US\$) :	-
TOTAL COST/KW (US\$/KW) :	-	TRANSMISSION COST (MIL US\$) :	-
TOTAL COST/KWH (US\$/KWH) :	-	ACCESS ROAD COST (MIL US\$) :	-

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : PANTABANGAN
 RIVER SYSTEM : PAMPANGA
 STREAM : PAMPANGA
 WATER RESOURCES REGION : III
 PROVINCE :
 COORDINATES : N16-49-00 E120-06-35

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 853.0
 AVER. BASIN RAINFALL (MM/YR) : 1940.
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	216.0	GROSS STORAGE VOL. (MIL M3) :	3000.0
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	1757.0
	MINIMUM OPERATING LEVEL (EL,M) :	177.0	DEAD STORAGE VOL. (MIL M3) :	1243.0
	DRAWDOWN DEPTH (M) :	39.0	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	232.0	CREST LENGTH (M) :	1615.0
	DAM HEIGHT (M) :	107.0	EMBANKMENT VOL. (MIL M3) :	12.9
WATERWAY	HEADRACE : LENGTH (M) :	576.0	DIAMETER (WIDTH) (M) :	7.0
	PENSTOCK : HORIZONT. L (M) :	133.0	DIAMETER (M) :	6.0
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-	AVERAGE NET HEAD (M) :	-
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	82.0	TAILWATER LEVEL (EL,M) :	128.0
	FIRM DISCHARGE (M3/S) :	-	ANNUAL TOTAL ENERGY (GWH) :	-
POWER /ENERGY	INSTALLED CAPACITY (MW) :	100.0	FIRM ENERGY (GWH) :	263.0
	FIRM POWER (MW) :	30.0	SECONDARY ENERGY (GWH) :	-
	MIN. GUARANTEED POWER (MW) :	-		

TRANSMISSION LINE LENGTH (KM) : 2.0 TO : MUNOZ DOUBLE CIRCUIT NOS.OF CIRCUIT : 2
 ACCESS ROAD LENGTH (KM) : 26.5 FROM :

CONSTRUCTION COST

TOTAL COST (MIL US\$) : -
 TOTAL COST/KW (US\$/KW) : -
 TOTAL COST/KWH (US\$/KWH) : -
 POWER COST (MIL US\$) : -
 TRANSMISSION COST (MIL US\$) : -
 ACCESS ROAD COST (MIL US\$) : -

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : MASINAY

RIVER SYSTEM : PAMPANGA
 STREAM : PAMPANGA

WATER RESOURCES REGION : III
 PROVINCE :

COORDINATES : N15-47-18 E121-05-39

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 898.6
 AVER. BASIN RAINFALL (MM/YR) : -
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	128.5	GROSS STORAGE VOL. (MIL M3) :	-
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	4.9
	MINIMUM OPERATING LEVEL (EL,M) :	125.5	DEAD STORAGE VOL. (MIL M3) :	-
	DRAWDOWN DEPTH (M) :	3.0	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	121.0	CREST LENGTE (M) :	336.0
	DAM HEIGHT (M) :	25.0	EMBANKMENT VOL. (MIL M3) :	-
WATERWAY	HEADRACE : LENGTH (M) :	-	DIAMETER (WIDTH) (M) :	-
	PENSTOCK : HORIZONT. L (M) :	-	DIAMETER (M) :	-
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	84.0	AVERAGE NET HEAD (M) :	-
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	-
POWER /ENERGY	INSTALLED CAPACITY (MW) :	12.0	ANNUAL TOTAL ENERGY (GWH) :	45.0
	FIRM POWER (MW) :	-	FIRM ENERGY (GWH) :	-
	MIN. GUARANTEED POWER (MW) :	-	SECONDARY ENERGY (GWH) :	-

TRANSMISSION
 LINE LENGTH (KM) : - TO : - NOS. OF CIRCUIT : -
 ACCESS ROAD LENGTH (KM) : - FROM : -

CONSTRUCTION COST

TOTAL COST	(MIL US\$) :	-	POWER COST	(MIL US\$) :	-
TOTAL COST/KW	(US\$/KW) :	-	TRANSMISSION COST	(MIL US\$) :	-
TOTAL COST/KWH	(US\$/KWH) :	-	ACCESS ROAD COST	(MIL US\$) :	-

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : AMBUKLAO
 RIVER SYSTEM : AGNO
 STREAM : AGNO
 WATER RESOURCES REGION : III
 PROVINCE :
 COORDINATES : N16-28-42 E120-44-45

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 686.0
 AVER. BASIN RAINFALL (MM/YR) : 2295.
 AVERAGE DISCHARGE (M3/S) : 30.0

SELECTED PLAN
 TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	752.2	GROSS STORAGE VOL. (MIL M3) :	327.2
	AVERAGE OPERATING LEVEL (EL,M) :	724.6	ACTIVE STORAGE VOL. (MIL M3) :	258.0
	MINIMUM OPERATING LEVEL (EL,M) :	694.0	DEAD STORAGE VOL. (MIL M3) :	69.2
	DRAWDOWN DEPTH (M) :	58.2	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	758.0	CREST LENGTH (M) :	452.0
	DAM HEIGHT (M) :	129.0	EMBANKMENT VOL. (MIL M3) :	5.8
WATERWAY	HEADRACE : LENGTH (M) :	558.0	DIAMETER (WIDTH) (M) :	7.0
	PENSTOCK : HORIZONT. L (M) :	-	DIAMETER (M) :	-
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	-	AVERAGE NET HEAD (M) :	-
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	574.0
POWER /ENERGY	INSTALLED CAPACITY (MW) :	75.0	ANNUAL TOTAL ENERGY (GWH) :	-
	FIRM POWER (MW) :	21.4	FIRM ENERGY (GWH) :	300.0
	MIN. GUARANTEED POWER (MW) :	11.0	SECONDARY ENERGY (GWH) :	-

TRANSMISSION LINE LENGTH (KM) : 30.0/8.0/18.0 TO : BAYOMBONG/BINGA/BAGUIO 230/69/13.2 K V NOS.OF CIRCUIT : 2/2/1

ACCESS ROAD LENGTH (KM) : 36.0 FROM : BAGUIO

CONSTRUCTION COST
 TOTAL COST (MIL US\$) : 66.0
 TOTAL COST/KW (US\$/KW) : 880.0
 TOTAL COST/KWH (US\$/KWH) : 0.220
 POWER COST (MIL US\$) : 54.2
 TRANSMISSION COST (MIL US\$) : 8.6
 ACCESS ROAD COST (MIL US\$) : 3.3

OTHER INFORMATION
 LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : BINGA

RIVER SYSTEM : AGNO
STREAM : AGNO

WATER RESOURCES REGION : III
PROVINCE : -

COORDINATES : N16-25-10 E120-43-29

HYDRO/TOPO. INFORMATION

CAUGHTMENT AREA (KM2) : 936.0
AVER. BASIN RAINFALL (MM/YR) : 3328.
AVERAGE DISCHARGE (M3/S) : 52.3

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	575.0	GROSS STORAGE VOL. (MIL M3) :	90.6
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	33.0
	MINIMUM OPERATING LEVEL (EL,M) :	555.0	DEAD STORAGE VOL. (MIL M3) :	57.6
	DRAWDOWN DEPTH (M) :	20.0	SEDIMENT VOL. (MIL M3) :	32.6
MAIN DAM	CREST ELEVATION (EL,M) :	586.0	CREST LENGTH (M) :	215.0
	DAM HEIGHT (M) :	107.4	EMBANKMENT VOL. (MIL M3) :	1.9
WATERWAY	HEADRACE : LENGTH (M) :	760.0	DIAMETER (WIDTH) (M) :	5.6
	PENSTOCK : HORIZONT. L (M) :	-	DIAMETER (M) :	2.4
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	84.8	AVERAGE NET HEAD (M) :	149.0
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	416.5
POWER /ENERGY	INSTALLED CAPACITY (MW) :	100.0	ANNUAL TOTAL ENERGY (GWH) :	516.0
	FIRM POWER (MW) :	28.6	FIRM ENERGY (GWH) :	481.3
	MIN. GUARANTEED POWER (MW) :	-	SECONDARY ENERGY (GWH) :	34.7

TRANSMISSION LINE LENGTH (KM) : - TO : SAN MANUEL - FROM : - NOS. OF CIRCUIT : -

ACCESS ROAD LENGTE (KM) :

CONSTRUCTION COST

TOTAL COST (MIL US\$) :	49.7	POWER COST (MIL US\$) :	34.8
TOTAL COST/KW (US\$/KW) :	497.0	TRANSMISSION COST (MIL US\$) :	12.0
TOTAL COST/KWH (US\$/KWH) :	0.101	ACCESS ROAD COST (MIL US\$) :	2.9

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : KALAYAN
 RIVER SYSTEM : PASIG
 STREAM : CALIRAYA
 WATER RESOURCES REGION : IV
 PROVINCE :
 COORDINATES : N14-19-00 E121-28-00

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 129.0
 AVER. BASIN RAINFALL (MM/YR) : -
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN

TYPE OF DEVELOPMENT : PUMPED STORAGE
 86.0

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	288.0	GROSS STORAGE VOL. (MIL M3) :	86.0
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	78.0
	MINIMUM OPERATING LEVEL (EL,M) :	286.0	DEAD STORAGE VOL. (MIL M3) :	8.0
	DRAWDOWN DEPTH (M) :	-	SEDIMENT VOL. (MIL M3) :	-

MAIN DAM	CREST ELEVATION (EL,M) :	-	CREST LENGTH (M) :	-
	DAM HEIGHT (M) :	42.0	EMBANKMENT VOL. (MIL M3) :	-
WATERWAY	HEADRACE : LENGTH (M) :	-	DIAMETER (WIDTH) (M) :	-
	PENSTOCK : HORIZONTAL L (M) :	1300.0	DIAMETER (M) :	6.0
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		

DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	120.0	AVERAGE NET HEAD (M) :	282.0
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	-1.5
POWER /ENERGY	INSTALLED CAPACITY (MW) :	300.0	ANNUAL TOTAL ENERGY (GWH) :	263.0
	FIRM POWER (MW) :	300.0	FIRM ENERGY (GWH) :	263.0
	MIN. GUARANTEED POWER (MW) :	80.0	SECONDARY ENERGY (GWH) :	-

TRANSMISSION LINE LENGTH (KM) : - TO : - FROM : -
 230 K V NOS.OF CIRCUIT : -

CONSTRUCTION COST

TOTAL COST (MIL US\$) :	-	POWER COST (MIL US\$) :	-
TOTAL COST/KW (US\$/KW) :	-	TRANSMISSION COST (MIL US\$) :	-
TOTAL COST/KWH (US\$/KWH) :	-	ACCESS ROAD COST (MIL US\$) :	-

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : CALIRAYA
 RIVER SYSTEM : PASIG
 STREAM : CALIRAYALUMOT
 WATER RESOURCES REGION : IV
 PROVINCE :
 COORDINATES : N14-16-05 E121-30-30

HYDRO/TOPO. INFORMATION
 CATCHMENT AREA (KM2) : 129.0
 AVER. BASIN RAINFALL (MM/YR) : 3000.
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN
 TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	288.0	GROSS STORAGE VOL. (MIL M3) :	86.0
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	78.0
	MINIMUM OPERATING LEVEL (EL,M) :	276.0	DEAD STORAGE VOL. (MIL M3) :	8.0
	DRAWDOWN DEPTH (M) :	12.0	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	292.0	CREST LENGTH (M) :	500.0
	DAM HEIGHT (M) :	42.0	EMBANKMENT VOL. (MIL M3) :	-
WATERWAY	HEADRACE : LENGTH (M) :	1125.0	DIAMETER (WIDTH) (M) :	2.5
	PENSTOCK : HORIZONT. L (M) :	740.0	DIAMETER (M) :	-
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	-
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	-	AVERAGE NET HEAD (M) :	276.5
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	165.0
POWER /ENERGY	INSTALLED CAPACITY (MW) :	32.0	ANNUAL TOTAL ENERGY (GWH) :	192.0
	FIRM POWER (MW) :	-	FIRM ENERGY (GWH) :	180.0
	MIN. GUARANTEED POWER (MW) :	-	SECONDARY ENERGY (GWE) :	12.0

TRANSMISSION LINE LENGTH (KM) : 85.8 TO : MAKATI LINE FROM :
 ACCESS ROAD LENGTH (KM) : - FROM :
 115 K V NOS.OF CIRCUIT : 1

CONSTRUCTION COST
 TOTAL COST (MIL US\$) : - POWER COST (MIL US\$) : -
 TOTAL COST/KW (US\$/KW) : - TRANSMISSION COST (MIL US\$) : -
 TOTAL COST/KWH (US\$/KWH) : - ACCESS ROAD COST (MIL US\$) : -

OTHER INFORMATION
 LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : BOTOCAN

RIVER SYSTEM : BOTOCAN
 STREAM : BOTOCAN

WATER RESOURCES REGION : IV
 PROVINCE :

COORDINATES : N - - E - -

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : 64.8
 AVER. BASIN RAINFALL (MM/YR) : -
 AVERAGE DISCHARGE (M3/S) : 4.7

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR DEVELOPMENT RATIO :

RESERVOIR FULL SUPPLY LEVEL (EL,M) : 505.8
 AVERAGE OPERATING LEVEL (EL,M) : 503.0
 MINIMUM OPERATING LEVEL (EL,M) : 499.1
 DRAWDOWN DEPTH (M) : 6.7

GROSS STORAGE VOL. (MIL M3) : 0.4
 ACTIVE STORAGE VOL. (MIL M3) : 0.3
 DEAD STORAGE VOL. (MIL M3) : 0.1
 SEDIMENT VOL. (MIL M3) : -

MAIN DAM CREST ELEVATION (EL,M) : -
 DAM HEIGHT (M) : 32.0

WATERWAY HEADRACE : LENGTH (M) : 1180.5
 PENSTOCK : HORIZONT. L (M) : 187.8
 DIVERSION : LENGTH (M) : -
 EXCAVATION VOL TOTAL (1000 M3) : -

CREST LENGTH (M) : 55.8
 EMBANKMENT VOL. (MIL M3) : -

DIAMETER (WIDTH) (M) : 2.0 NOS. : 1
 DIAMETER (M) : 1.5 NOS. : 2
 DIAMETER (M) : - NOS. : -

DISCHARGE PLANT MAX. DISCHARGE (M3/S) : 107.8
 /HEAD FIRM DISCHARGE (M3/S) : 25.4

POWER /ENERGY INSTALLED CAPACITY (MW) : 17.0
 FIRM POWER (MW) : 4.0
 MIN. GUARANTEED POWER (MW) : 3.0

ANNUAL TOTAL ENERGY (GWH) : 54.0
 FIRM ENERGY (GWH) : 32.0
 SECONDARY ENERGY (GWH) : 22.0

TRANSMISSION LINE LENGTH (KM) : - TO : -
 ACCESS ROAD LENGTH (KM) : - FROM : -

115 K V NOS.OF CIRCUIT : -

CONSTRUCTION COST

TOTAL COST (MIL US\$) : -
 TOTAL COST/KW (US\$/KW) : -
 TOTAL COST/KWE (US\$/KWE) : -

POWER COST (MIL US\$) : -
 TRANSMISSION COST (MIL US\$) : -
 ACCESS ROAD COST (MIL US\$) : -

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : LAKE BUHI-BARIT
 RIVER SYSTEM : LAKE BUHI-BARIT WATER RESOURCES REGION : V COORDINATES : N13-23-30 E123-28-45
 STREAM : BARIT PROVINCE

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : -
 AVER. BASIN RAINFALL (MM/YR) : -
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	95.0	GROSS STORAGE VOL. (MIL M3) :	3.3
	AVERAGE OPERATING LEVEL (EL,M) :	93.8	ACTIVE STORAGE VOL. (MIL M3) :	1.2
	MINIMUM OPERATING LEVEL (EL,M) :	92.0	DEAD STORAGE VOL. (MIL M3) :	2.1
	DRAWDOWN DEPTH (M) :	-	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	97.0	CREST LENGTH (M) :	135.0
	DAM HEIGHT (M) :	90.0	EMBANKMENT VOL. (MIL M3) :	-
WATERWAY	BEADFACE : LENGTH (M) :	231.0	DIAMETER (WIDTH) (M) :	2.3
	PENSTOCK : HORIZONT. L (M) :	-	DIAMETER (M) :	-
	DIVERSION : LENGTH (M) :	125.0	DIAMETER (M) :	3.5
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	12.3	AVERAGE NET HEAD (M) :	-
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	-
POWER /ENERGY	INSTALLED CAPACITY (MW) :	1.8	ANNUAL TOTAL ENERGY (GWH) :	-
	FIRM POWER (MW) :	-	FIRM ENERGY (GWH) :	-
	MIN. GUARANTEED POWER (MW) :	-	SECONDARY ENERGY (GWH) :	-

TRANSMISSION LINE LENGTH (KM) : TO : FROM : NOS.OP CIRCUIT : -

CONSTRUCTION COST

TOTAL COST (MIL US\$) :	-	POWER COST (MIL US\$) :	-
TOTAL COST/KW (US\$/KW) :	-	TRANSMISSION COST (MIL US\$) :	-
TOTAL COST/KWH (US\$/KWH) :	-	ACCESS ROAD COST (MIL US\$) :	-

OTHER INFORMATION

LAND USE IN RESERVOIR AREA :
 SUBMERGED ROAD :

I N V E N T O R Y O F E X I S T I N G H Y D R O E L E C T R I C P L A N T

SCHEME : CAWAYAN

RIVER SYSTEM : CAWAYAN
 STREAM : CAWAYAN

WATER RESOURCES REGION : V
 PROVINCE :

COORDINATES : N13-00-00 E123-57-30

HYDRO/TOPO. INFORMATION

CATCHMENT AREA (KM2) : -
 AVER. BASIN RAINFALL (MM/YR) : -
 AVERAGE DISCHARGE (M3/S) : -

SELECTED PLAN

TYPE OF DEVELOPMENT : RESERVOIR

RESERVOIR	FULL SUPPLY LEVEL (EL,M) :	-	GROSS STORAGE VOL. (MIL M3) :	-
	AVERAGE OPERATING LEVEL (EL,M) :	-	ACTIVE STORAGE VOL. (MIL M3) :	-
	MINIMUM OPERATING LEVEL (EL,M) :	-	DEAD STORAGE VOL. (MIL M3) :	-
	DRAWDOWN DEPTH (M) :	-	SEDIMENT VOL. (MIL M3) :	-
MAIN DAM	CREST ELEVATION (EL,M) :	-	CREST LENGTH (M) :	-
	DAM HEIGHT (M) :	-	EMBANKMENT VOL. (MIL M3) :	-
WATERWAY	HEADRACE : LENGTH (M) :	-	DIAMETER (WIDTH) (M) :	NOS. : -
	PENSTOCK : HORIZONT. L (M) :	-	DIAMETER (M) :	NOS. : -
	DIVERSION : LENGTH (M) :	-	DIAMETER (M) :	NOS. : -
	EXCAVATION VOL TOTAL (1000 M3) :	-		
DISCHARGE /HEAD	PLANT MAX. DISCHARGE (M3/S) :	0.65	AVERAGE NET HEAD (M) :	77.2
	FIRM DISCHARGE (M3/S) :	-	TAILWATER LEVEL (EL,M) :	-
POWER /ENERGY	INSTALLED CAPACITY (MW) :	0.4	ANNUAL TOTAL ENERGY (GWH) :	3.1
	FIRM POWER (MW) :	-	FIRM ENERGY (GWH) :	-
	MIN. GUARANTEED POWER (MW) :	-	SECONDARY ENERGY (GWH) :	-
TRANSMISSION LINE	LENGTH (KM) :	-		
	TO :	-		
	FROM :	-		
ACCESS ROAD	LENGTH (KM) :	-		
CONSTRUCTION COST				
	TOTAL COST (MIL US\$) :	-	POWER COST (MIL US\$) :	-
	TOTAL COST/KW (US\$/KW) :	-	TRANSMISSION COST (MIL US\$) :	-
	TOTAL COST/KWH (US\$/KWH) :	-	ACCESS ROAD COST (MIL US\$) :	-
OTHER INFORMATION				
	LAND USE IN RESERVOIR AREA :			
	SUBMERGED ROAD			

NOS. OF CIRCUIT : -

