THE REPUBLIC OF VENEZUELA

STUDY ON CHAMA RIVER BASIN CONSERVATION PROJECT

VOLUME 4

DATA BOOK

FEBRUARY 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

THE REPUBLIC OF VENEZUELA

STUDY
ON
CHAMA RIVER BASIN CONSERVATION PROJECT

VOLUME 4

DATA BOOK

FEBRUARY 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

DATA BOOK

TABLE OF CONTENTS

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : ✓

1.2 Date of Survey : 3 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama/Mucuy/Desborrancadero

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : upper 40°, lower 25°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 30 cm

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Schist, Sandstone

3.2 Strike :

3.3 Joint :

3.4 Remarks : no creep

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapesoidal / 1000 m

6.2 Torrent Width : 50 m

6.3 Channel Width : 5 m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : 300 cm

(2) Mean Grain Size : 30 cm

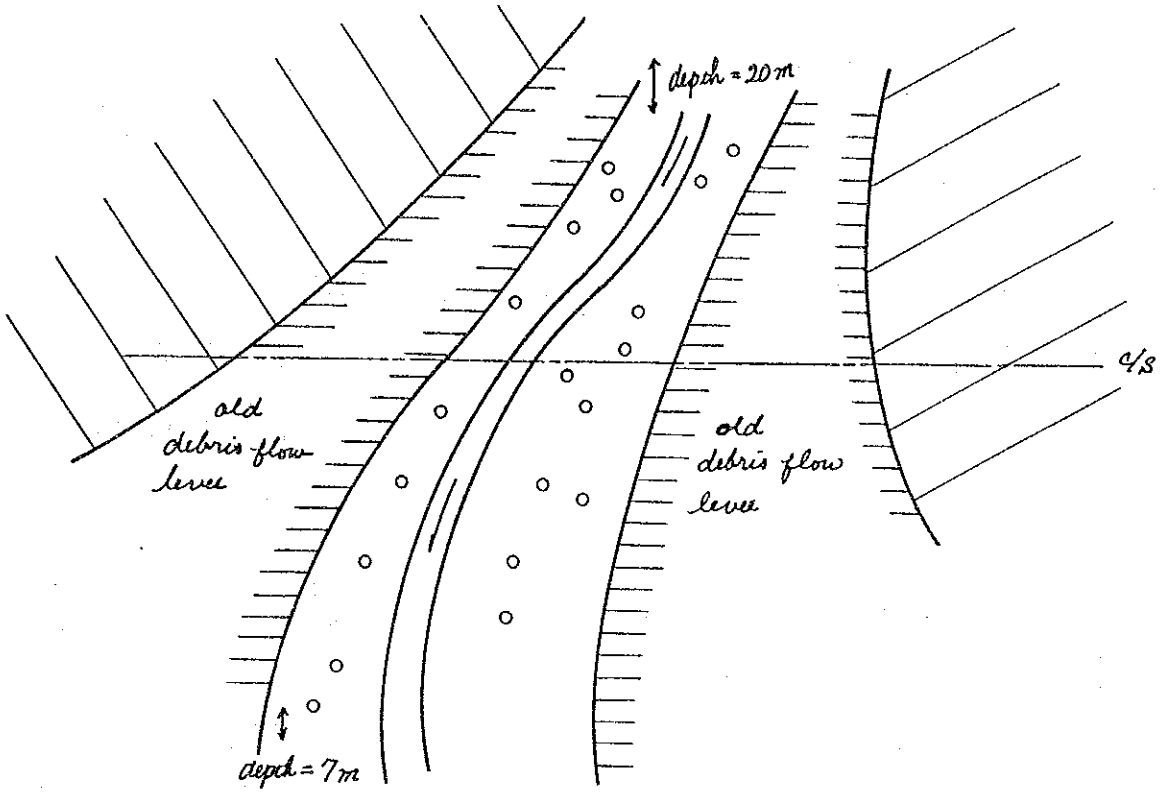
(3) Shape : Gr. Grnic semi-angular

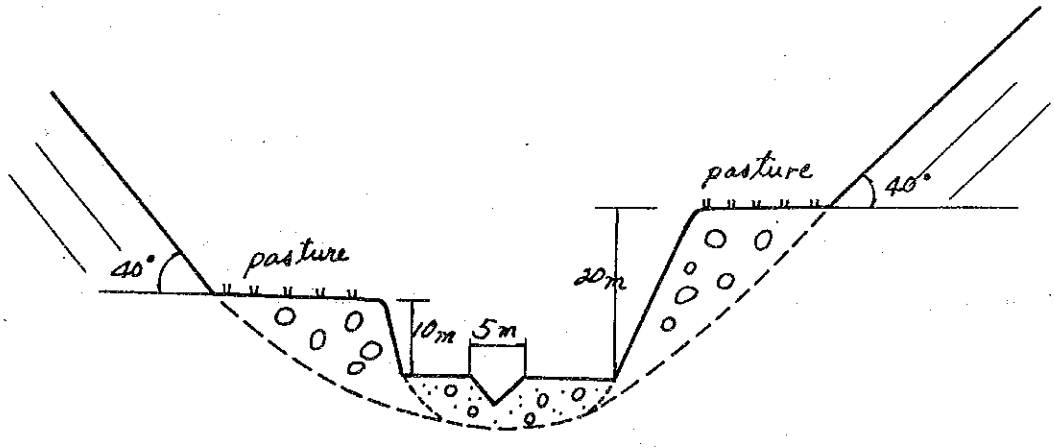
7. OTHER CONDITIONS

7.1 Land Use : pasture and partial cropland

7.2 Existing Structures : _____

7.3 Past Damage : houses were destroyed in 1988


depth = 20m
c/s
old debris flow levee
old debris flow levee
depth = 7m


40°
pasture
10m
5m
20m
pasture
40°

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 2

1.2 Date of Survey : 3 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / Mucujun

1.4 Location of Sampling Point :

1.5 Type : (Mass Wasting / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : concave slope

2.2 Mountain Slope Gradient : 15°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 50 ~ 60 cm

2.5 Weathering Condition : no gully

3. GEOLOGY

3.1 Name of Bedrock : Schist

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : Hmax = 5 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : U-shape / 400 m

6.2 Torrent Width : 30 m

6.3 Channel Width : 5 m

6.4 Torrent Gradient : 5.7 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 200 cm

(2) Mean Grain Size : 30 cm

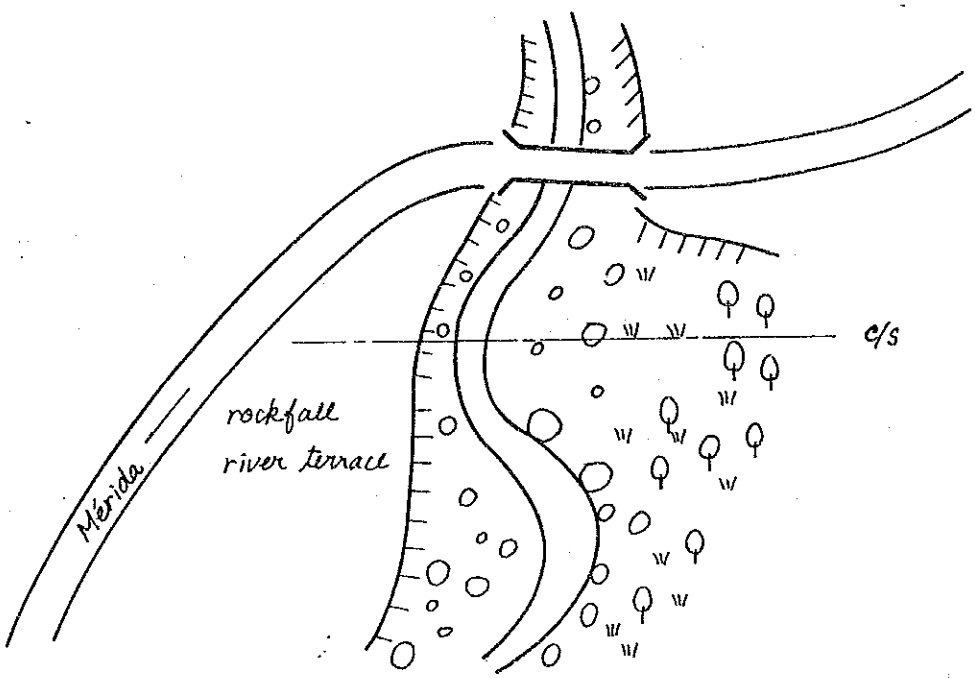
(3) Shape : semi-angular, semi-circle

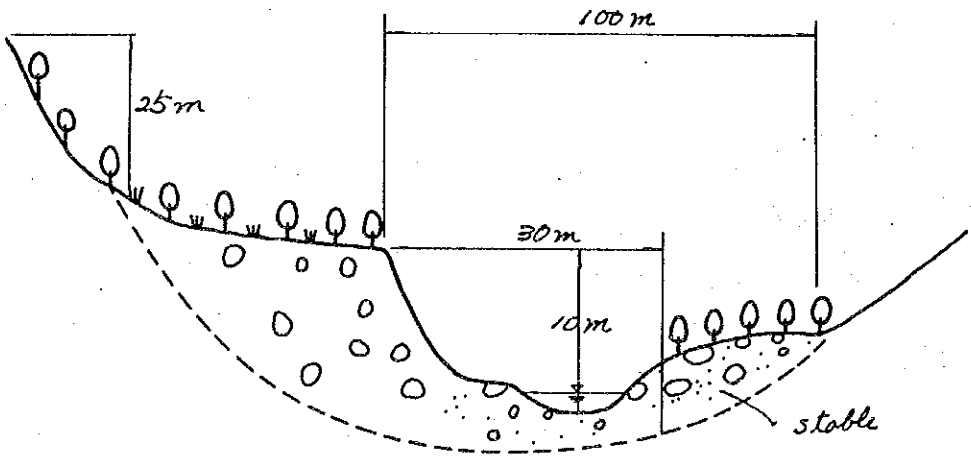
7. OTHER CONDITIONS

7.1 Land Use : pasture

7.2 Existing Structures : bridge

7.3 Past Damage : _____


c/s
rockfall
river terrace
Mérida


100 m
25 m
30 m
10 m
stable

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 3

1.2 Date of Survey : 3 Jan 1989

1.3 Name of River/ Tributary/Torrent : Chama / La Mucuy

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 25 ~ 35°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Schist

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapesoidal / 500 m

6.2 Torrent Width : 40 m

6.3 Channel Width : 8 m

6.4 Torrent Gradient : 6.5 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 200 cm

(2) Mean Grain Size : 30 cm

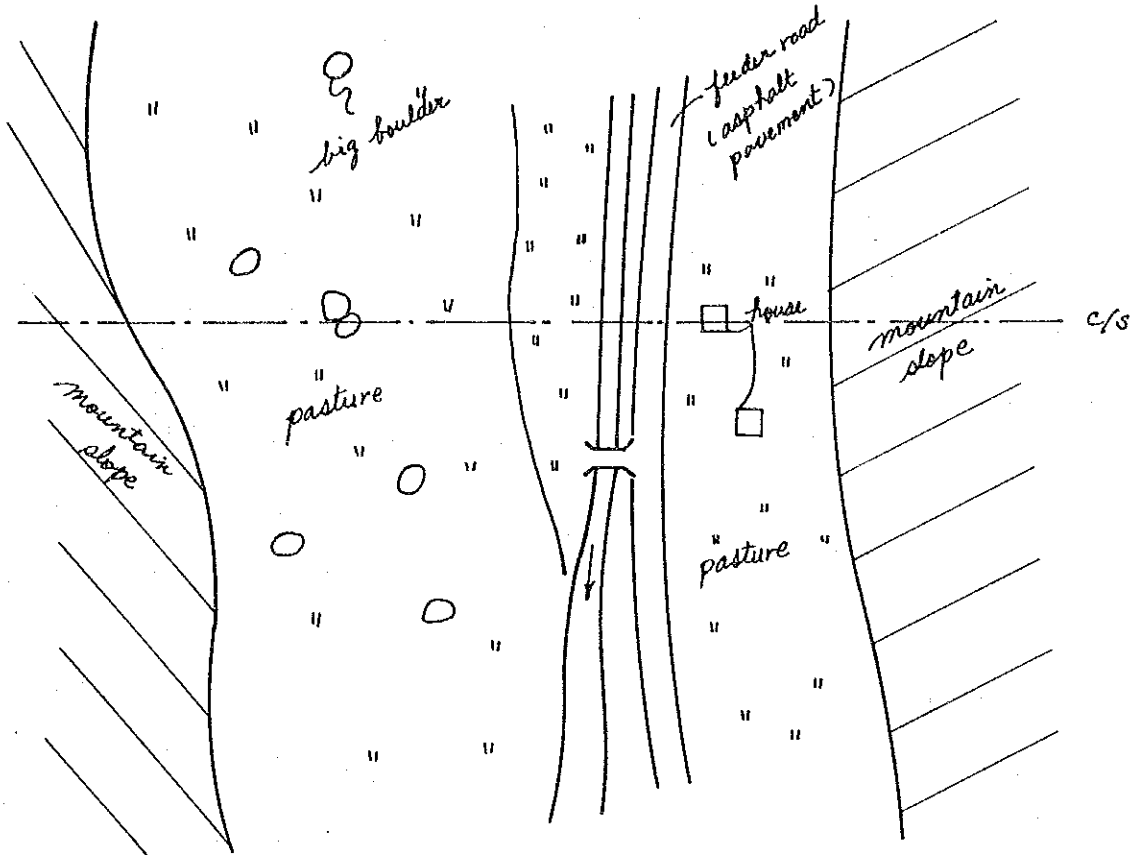
(3) Shape : semi-angular, semi-circle

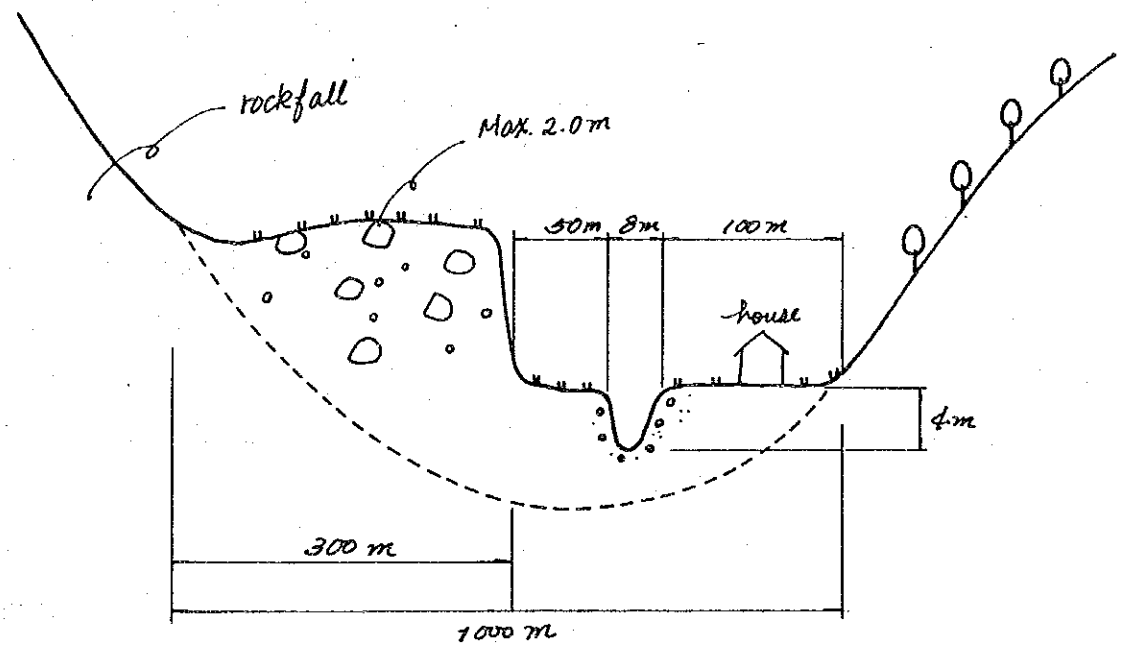
7. OTHER CONDITIONS

7.1 Land Use : pasture and some houses

7.2 Existing Structures : concrete bridge

7.3 Past Damage : old bridge was flashed away.


big boulder
feeder road (asphalt pavement)
house
c/s
mountain slope
pasture
mountain slope
pasture


rockfall
Max. 2.0m
50m
8m
100m
house
4m
300 m
1000 m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 4

1.2 Date of Survey : 4 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chana / La Lucia

1.4 Location of Sampling Point : El Guamo

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 15°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 30cm

2.5 Weathering Condition : weathered

3. GEOLOGY

3.1 Name of Bedrock : Black Shale

3.2 Strike : right N25°E30°S

3.3 Joint : right N45°W80°SW, EW85°N

3.4 Remarks : land slide

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : slide

5.3 Length/Width/Depth : 300 m/ 120 m/ 8 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : 100.000 m^3

(3) Expanding : 100.000 m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

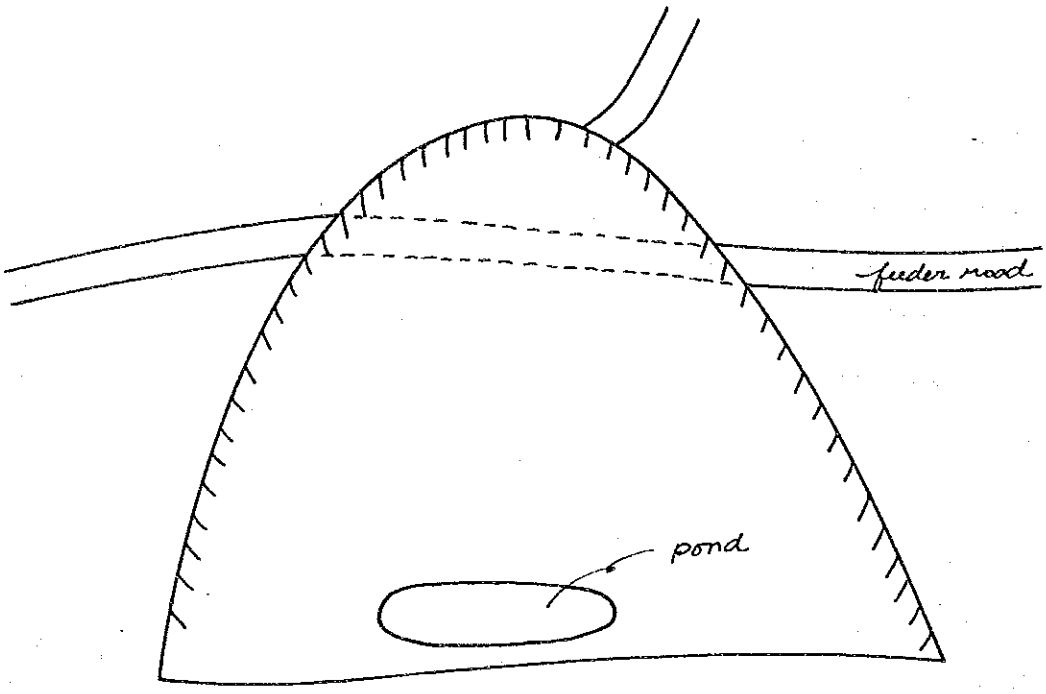
(3) Shape : _____

7. OTHER CONDITIONS

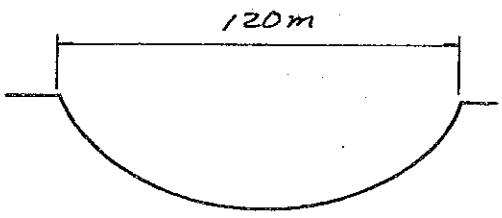
7.1 Land Use : pasture

7.2 Existing Structures : _____

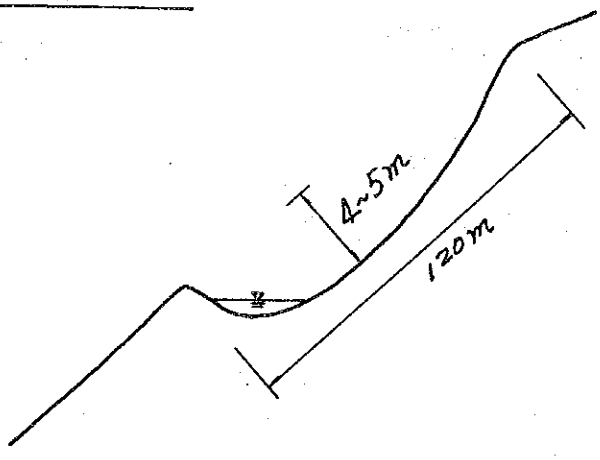
7.3 Past Damage : _____



PLAN



FRONT VIEW



SIDE VIEW

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 5

1.2 Date of Survey : 5 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / La Gonzalez

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : straight / convex slope

2.2 Mountain Slope Gradient : 45°

2.3 Mountain Slope Direction: NW - SE

2.4 Depth of Surface Soil : 30 ~ 50 cm

2.5 Weathering Condition : small scale failure

3. GEOLOGY

3.1 Name of Bedrock : Sandstone

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest and grass

4.2 Height and Density : Hmax = 12 m, eparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapesoidal / 400 m

6.2 Torrent Width : 100 m

6.3 Channel Width : 5 m

6.4 Torrent Gradient : 3 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 300 cm

(2) Mean Grain Size : 50 cm

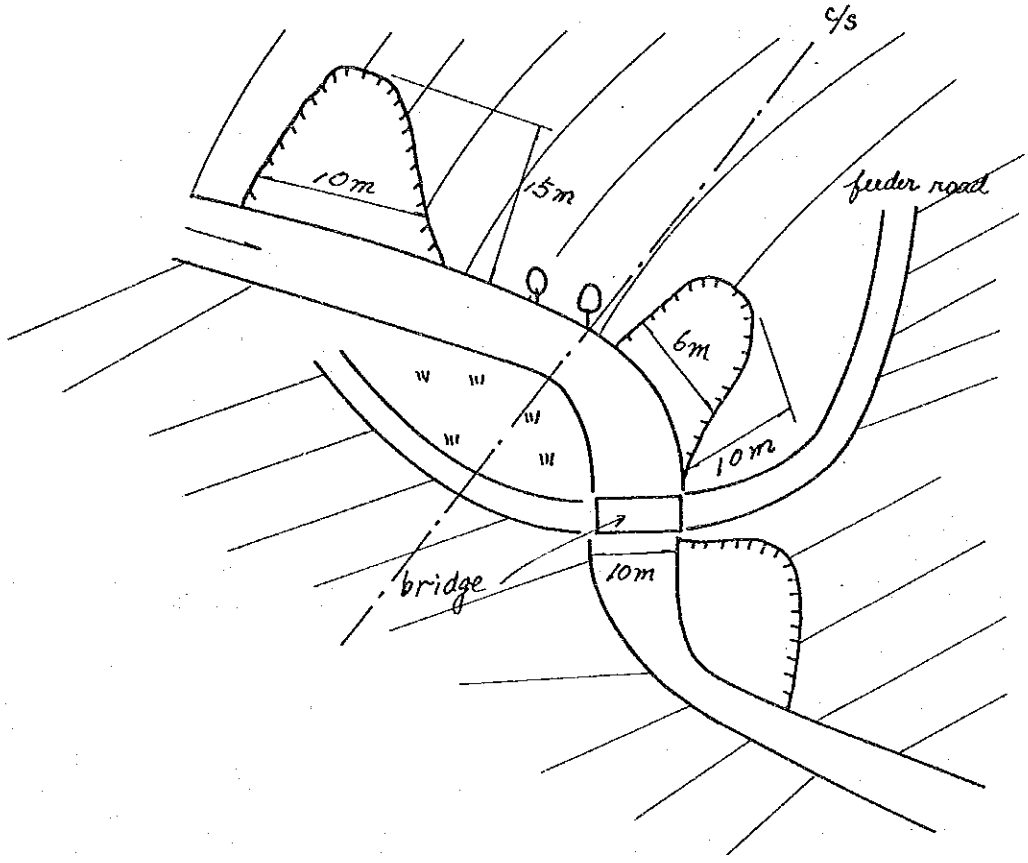
(3) Shape : semi-angular, semi-circle

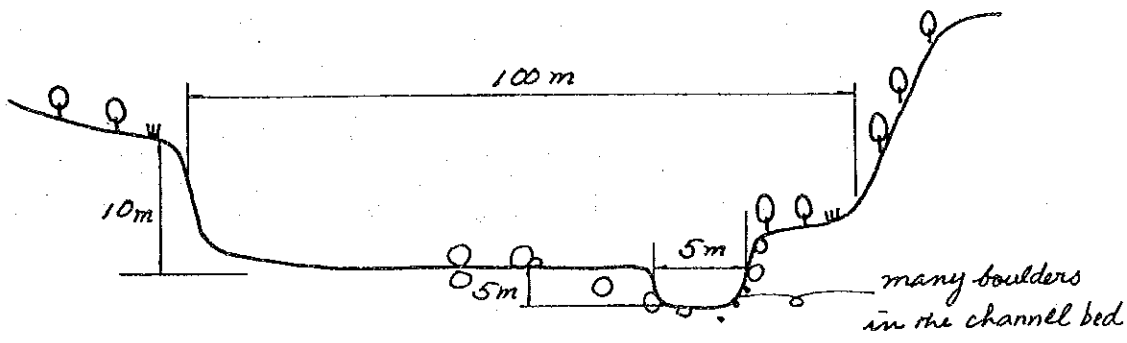
7. OTHER CONDITIONS

7.1 Land Use : cropland

7.2 Existing Structures : bridge

7.3 Past Damage : _____


c/s
10m
15m
feeder road
6m
10m
bridge
10m


100 m
10m
5m
5m
many boulders
in the channel bed

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 6

1.2 Date of Survey : 5 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / La Gonzalez

1.4 Location of Sampling Point : confluence with Chama River

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 10°

2.3 Mountain Slope Direction: N-S

2.4 Depth of Surface Soil : 10~20cm

2.5 Weathering Condition : many gullies

3. GEOLOGY

3.1 Name of Bedrock : sandstone of river terrace

3.2 Strike :

3.3 Joint :

3.4 Remarks : stable terrace

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : Hmax = 7m, sparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : Trapesoidal / 200 m

6.2 Torrent Width : 15.0 m

6.3 Channel Width : 11.5 m

6.4 Torrent Gradient : 7 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 100 cm

(2) Mean Grain Size : 20 cm

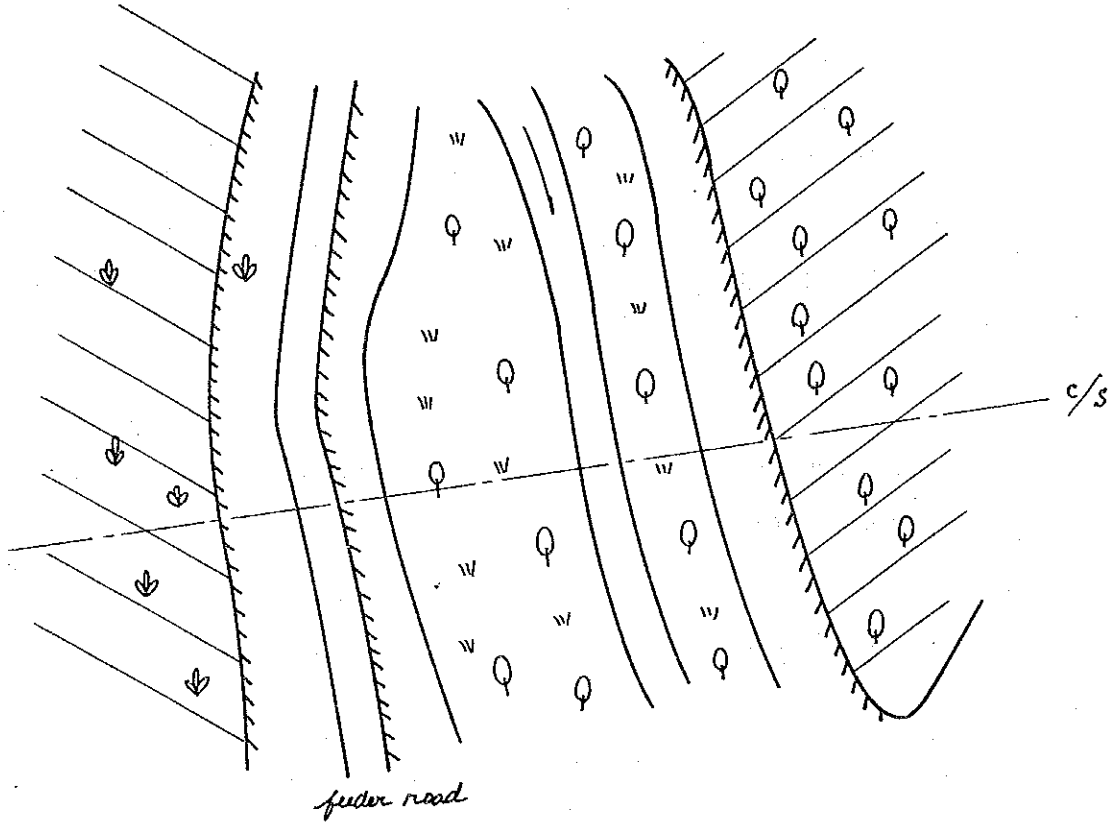
(3) Shape : circle, semi-circle

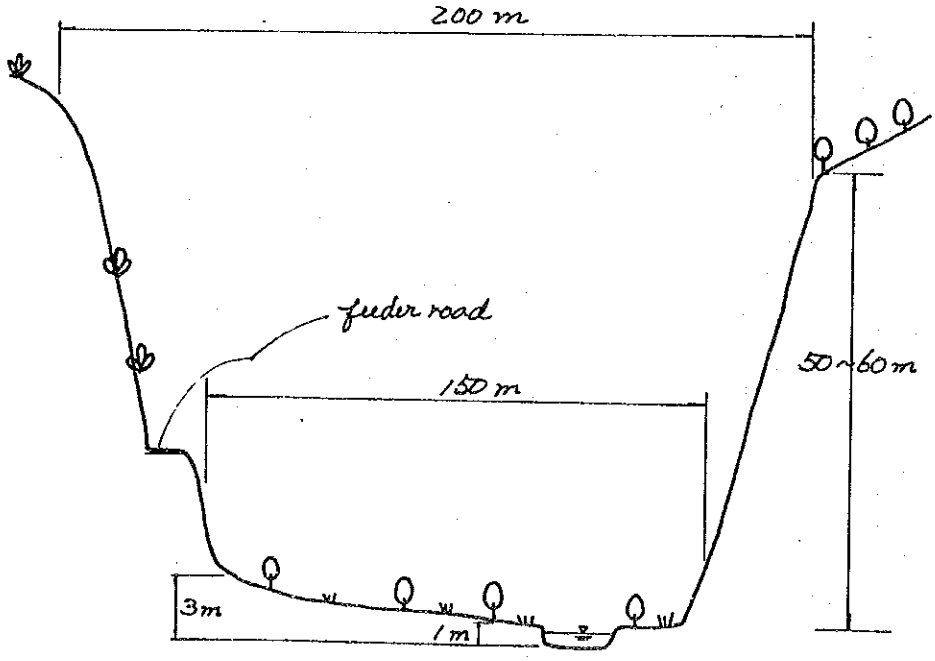
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : Road Route No. 7

7.3 Past Damage : _____


c/s
feeder road


200 m
feeder road
150 m
50~60 m
3m
1m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 7

1.2 Date of Survey : 5 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : Higueroncs

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient :

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : rockfall

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : Hmax = 5m, sparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (~~Slope Failure~~ / Debris Flow)

5.2 Failure/Flow Type : debris flow

5.3 Length/Width/Depth : 1,200 m/ 30 m/ 4 m

5.4 Sediment Volume

(1) Failured : 48,000 m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

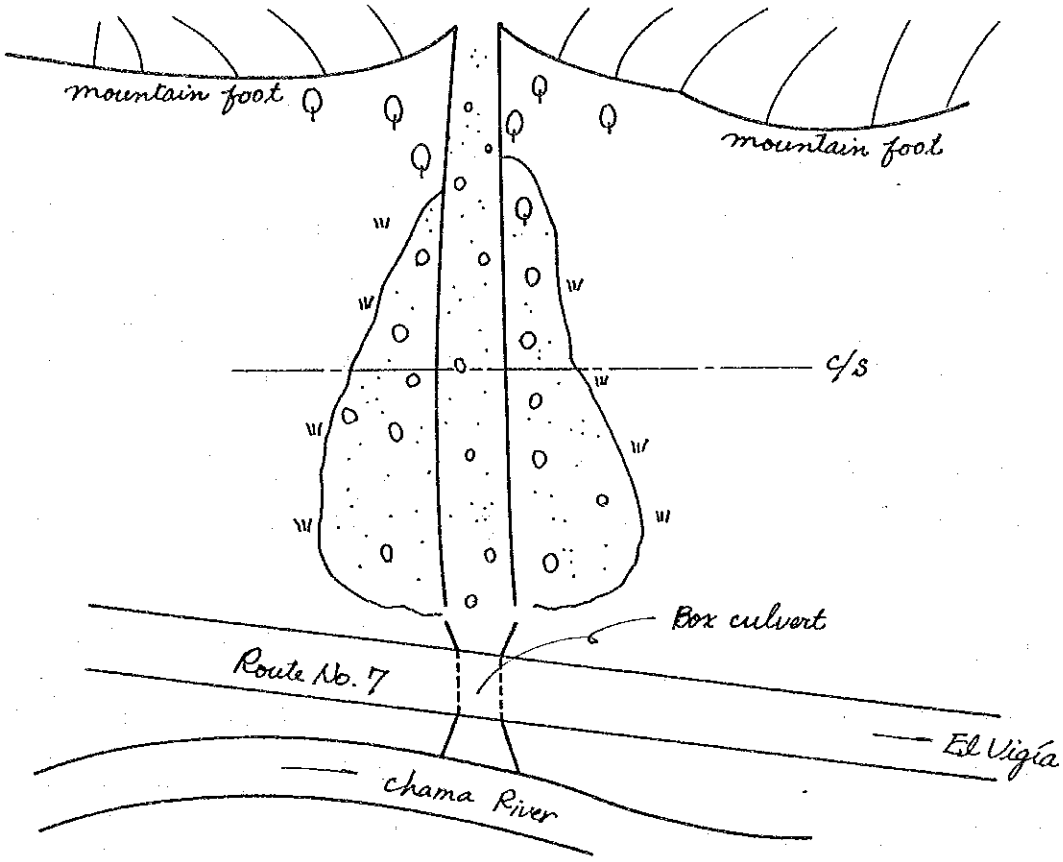
(3) Shape : _____

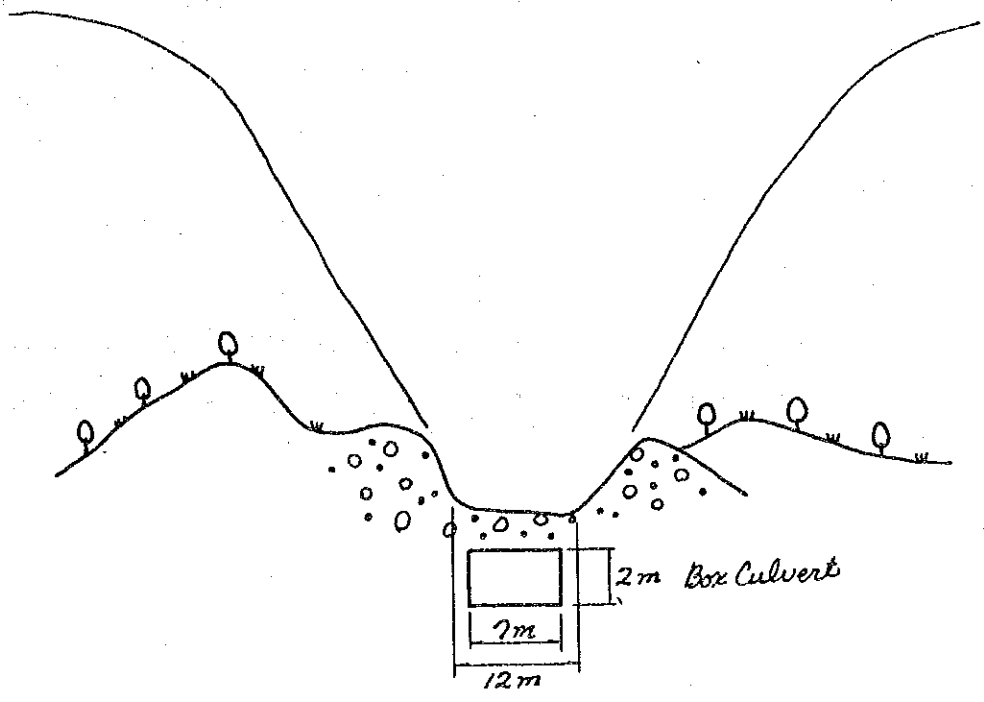
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : box culvert for drainage

7.3 Past Damage : 2 houses were destroyed


mountain foot
mountain foot
c/s
Box culvert
Route No. 7
El Vigía
Chama River


2m Box Culvert
7m
12m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 8

1.2 Date of Survey : 5 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / Qd. Portuguesa

1.4 Location of Sampling Point : Manzano

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 35°

2.3 Mountain Slope Direction: SW-NE

2.4 Depth of Surface Soil : 100 cm

2.5 Weathering Condition : no gully

3. GEOLOGY

3.1 Name of Bedrock : Granite

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : Hmax = 5 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : slide

5.3 Length/Width/Depth : 150 m/ 38 m/ 5 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : ≥5,000 m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

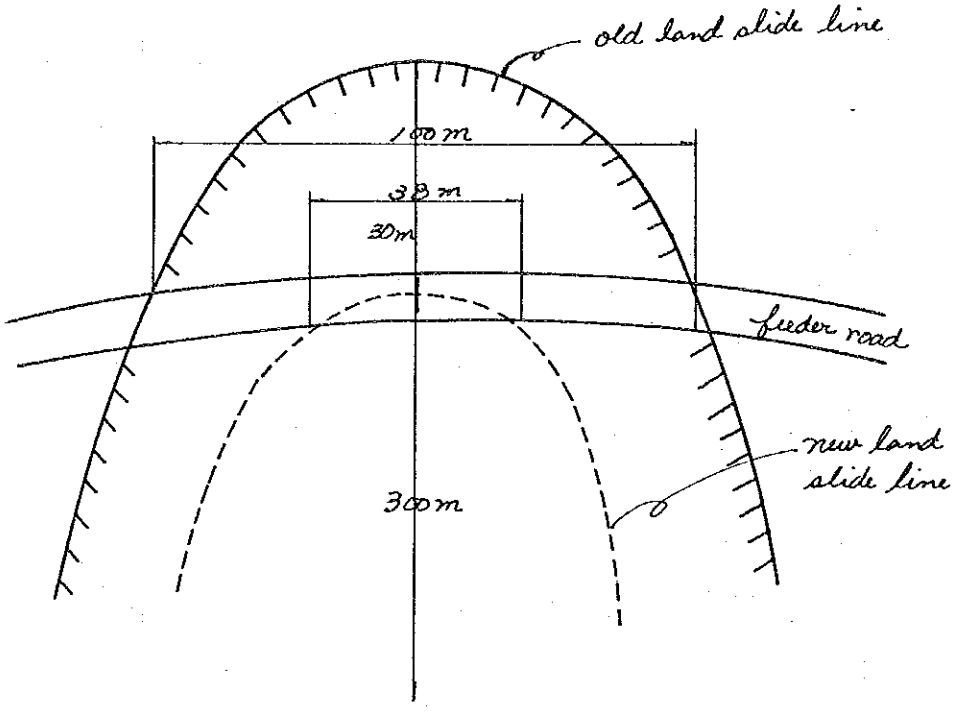
(3) Shape : _____

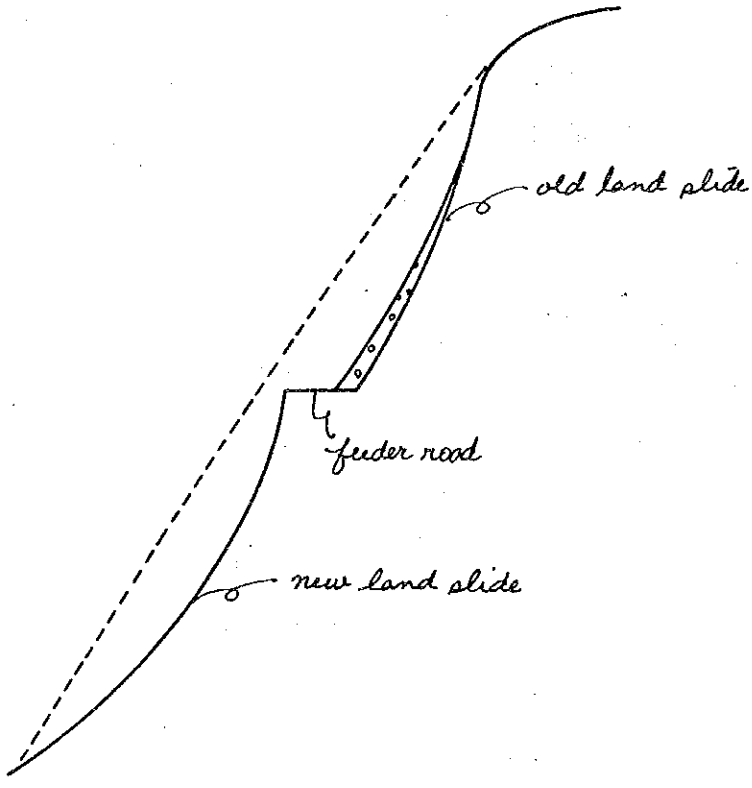
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : road was partially scoured.


old land slide line
100 m
38 m
30m
feeder road
new land slide line
300m


old land slide
feeder road
new land slide

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 9

1.2 Date of Survey : 5 Jan. 1981

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : between La Portuguesa and Agua Caliente rivers

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 25°

2.3 Mountain Slope Direction: E-W

2.4 Depth of Surface Soil : 100cm

2.5 Weathering Condition : many small scale failures

3. GEOLOGY

3.1 Name of Bedrock : Granite

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : glide

5.3 Length/Width/Depth : 20 m/ 5 m/ 90 m

5.4 Sediment Volume

(1) Failured : 10,000 m^3

(2) Residual : 2,000 m^3

(3) Expanding : 5,000 m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : / m

6.2 Torrent Width : m

6.3 Channel Width : m

6.4 Torrent Gradient : °

6.5 Channel Bed Material

(1) Maximum Grain Size : cm

(2) Mean Grain Size : cm

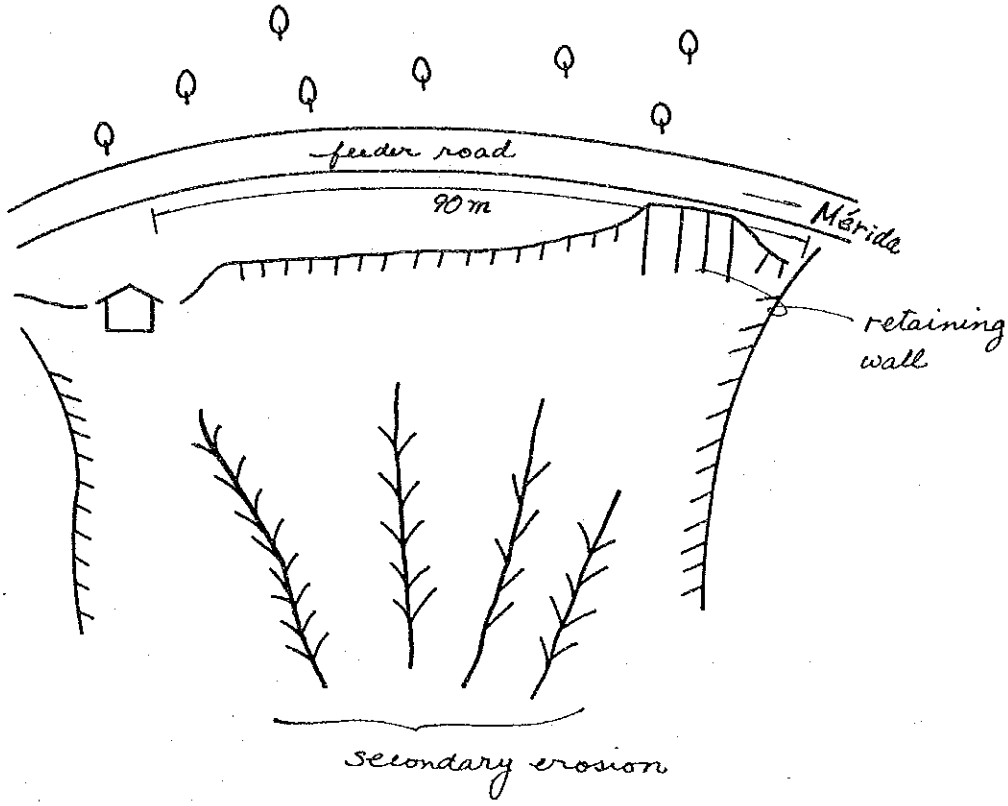
(3) Shape :

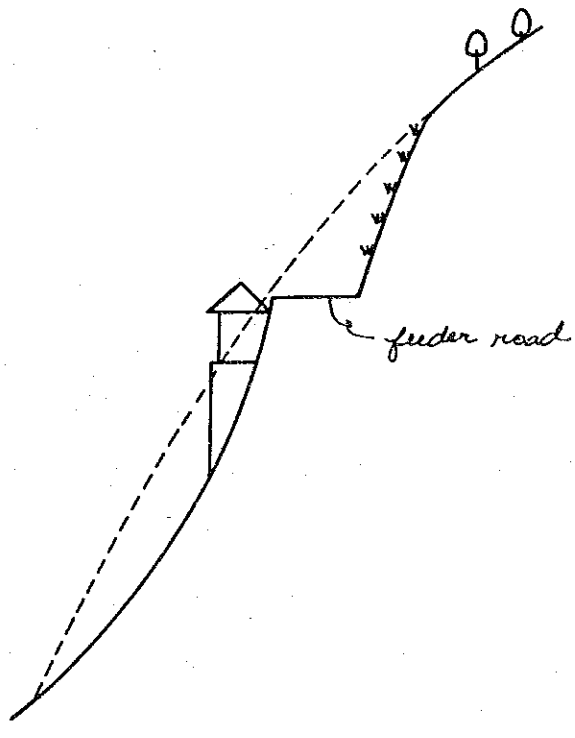
7. OTHER CONDITIONS

7.1 Land Use :

7.2 Existing Structures :

7.3 Past Damage : slope failured in Nov. 1987.


feeder road
90 m
Mérida
retaining wall
secondary erosion


feeder road

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 10

1.2 Date of Survey : 5 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : San Onofre

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : Convex slope

2.2 Mountain Slope Gradient : 35°

2.3 Mountain Slope Direction: N20°W

2.4 Depth of Surface Soil : 20cm

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : rockfall of river terrace

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : sparce

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (~~Slope Failure~~ / Debris Flow)

5.2 Failure/Flow Type : debris flow

5.3 Length/Width/Depth : 200 m/ 50 m/ 4 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : 4,000 m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

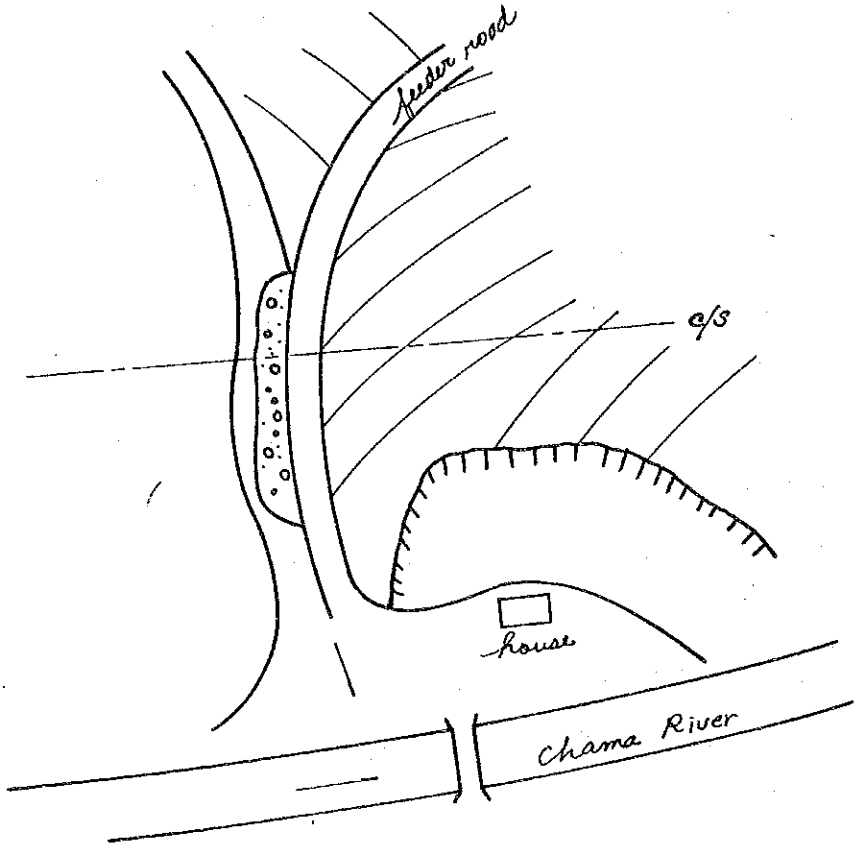
(3) Shape : _____

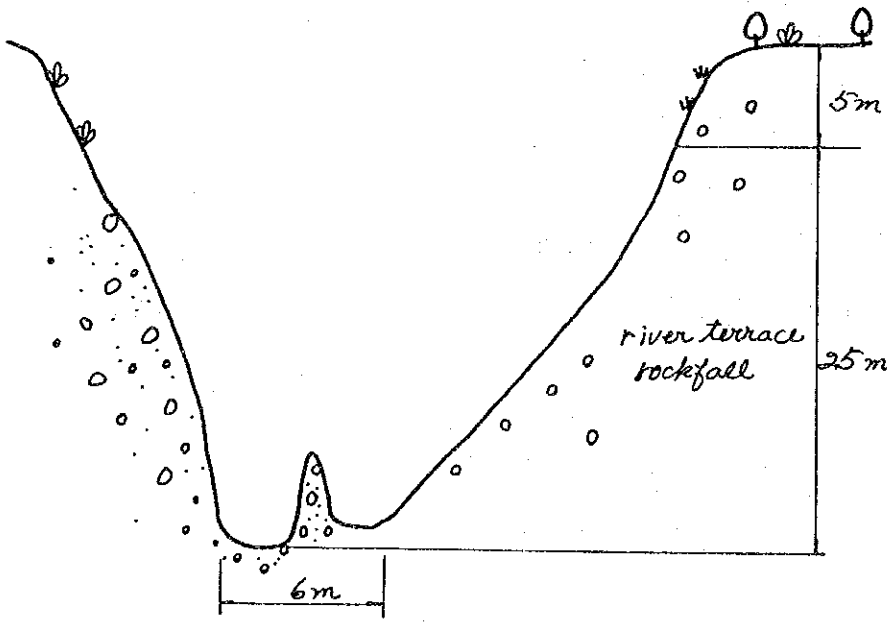
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : bridge was destroyed


feeder road
c/s
house
Chama River


5m
river terrace
rockfall
25m
6m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 11

1.2 Date of Survey : 6 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Mocoties / Qd. Romero

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : streight slope

2.2 Mountain Slope Gradient : 80°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 50 cm

2.5 Weathering Condition : non

3. GEOLOGY

3.1 Name of Bedrock : Crystalline Schist

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : V-shape / _____ m

6.2 Torrent Width : 4 m

6.3 Channel Width : 1 m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : 20 cm

(2) Mean Grain Size : 6~7 cm

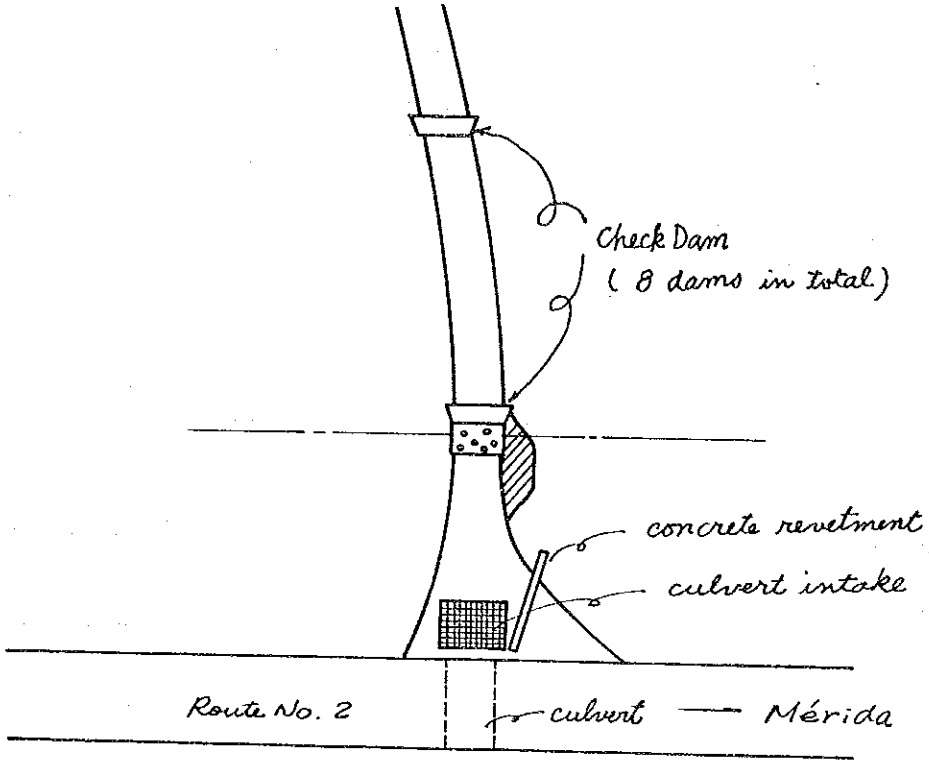
(3) Shape : semi-angular, semi-circle

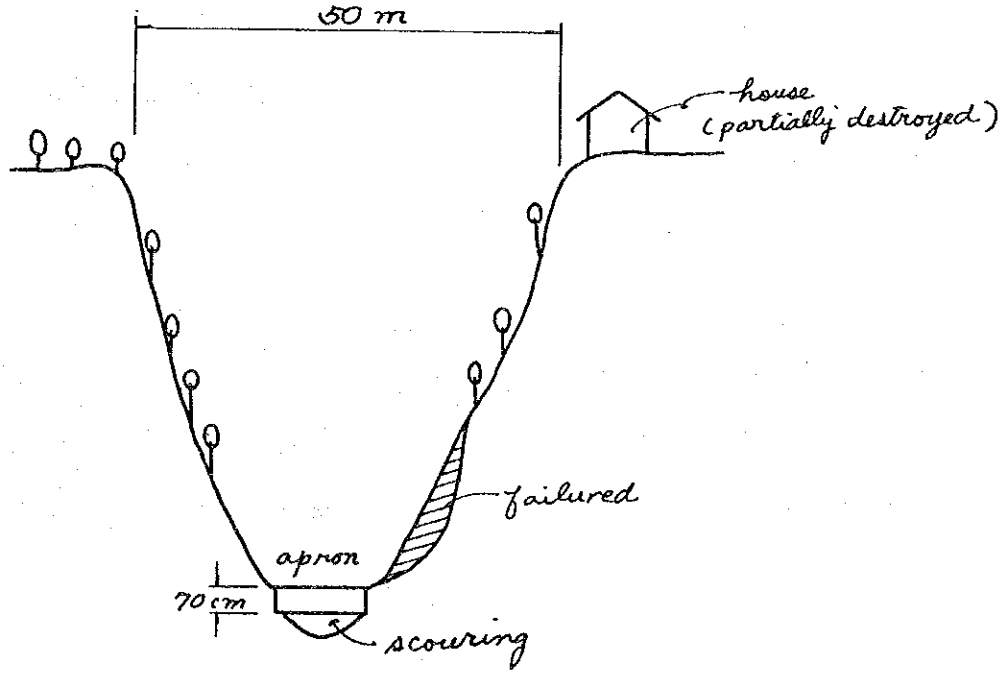
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : 10 check dams (constructed by MARNR)

7.3 Past Damage : _____


Check Dam
(8 dams in total.)
concrete revetment
culvert intake
Route No. 2
culvert
Mérida


50 m
house
(partially destroyed)
failured
apron
70 cm
scouring

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 12

1.2 Date of Survey : 6 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Mocoties I

1.4 Location of Sampling Point : Sta. Cruz

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape :

2.2 Mountain Slope Gradient :

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Crystalline Schist

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : grassland

4.2 Height and Density :

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

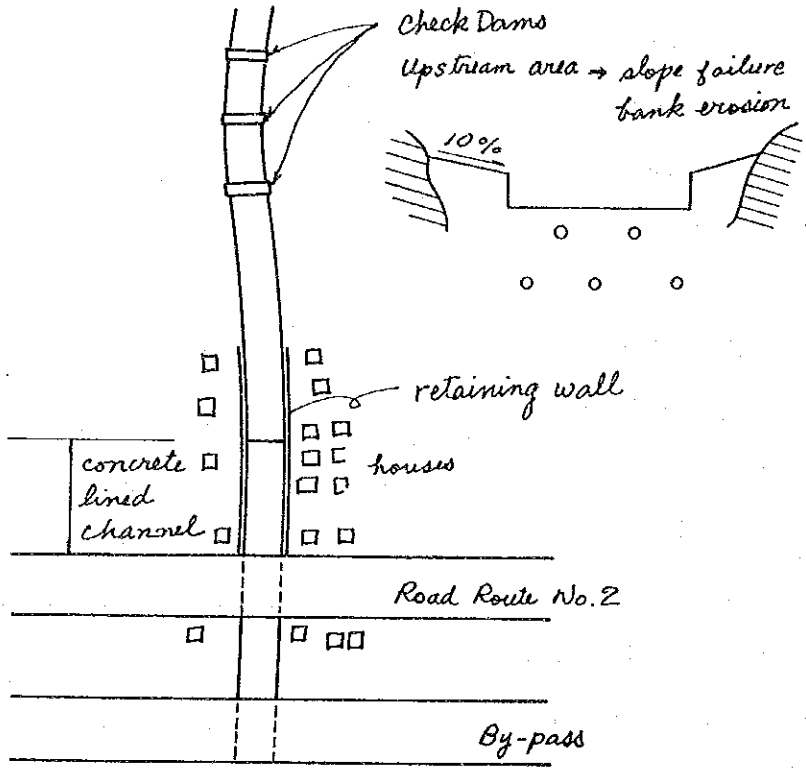
(3) Shape : _____

7. OTHER CONDITIONS

7.1 Land Use : residence

7.2 Existing Structures : several check dams constructed by MARNR

7.3 Past Damage : small scale slope failure


Check Dams
Upstream area → slope failure
bank erosion
10%
retaining wall
houses
concrete
lined
channel
Road Route No. 2
By-pass

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 13

1.2 Date of Survey : 6 Jan. 1989

1.3 Name of River/ Tributary/Torrent : chama

1.4 Location of Sampling Point : Palmita

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 80°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Granite and Sandstone

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : 10 m/ 40 m/ 1~2 m

5.4 Sediment Volume

(1) Failured : 9,000 m^3

(2) Residual : 800 m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

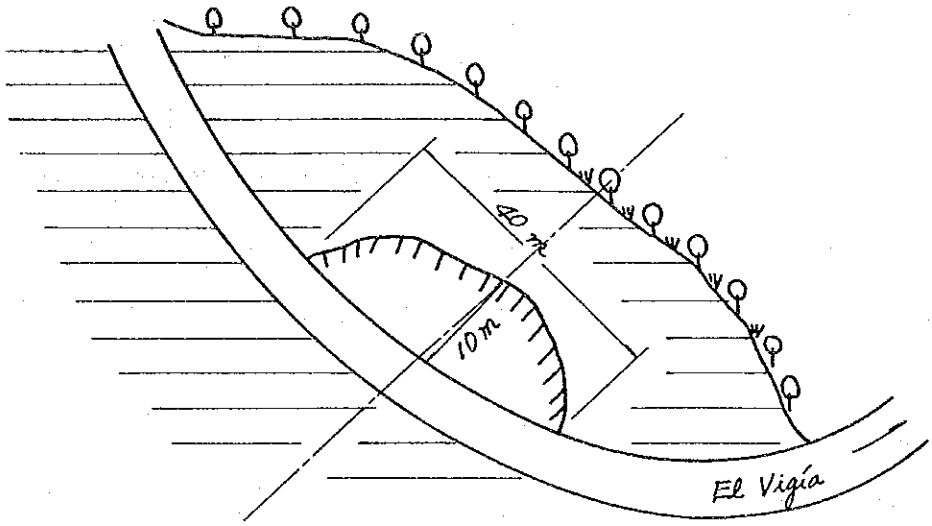
(3) Shape : _____

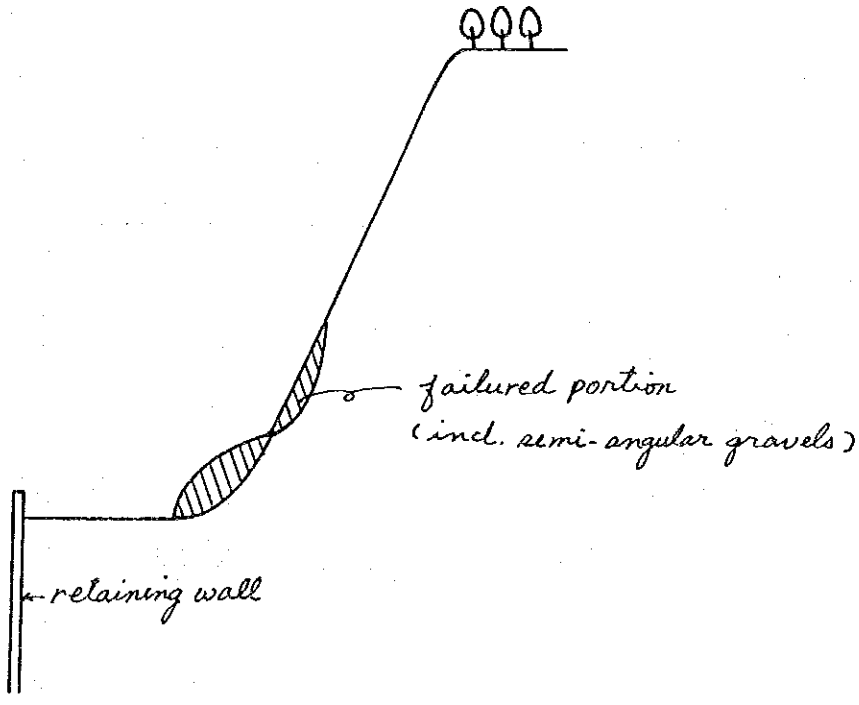
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


40 m
10 m
El Vigía


failured portion
(incl. semi-angular gravels)
retaining wall

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 14

1.2 Date of Survey : 7 Jan. 1988

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : Pte. Real

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape :

2.2 Mountain Slope Gradient :

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Granite

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : Hmax = 5 m, sparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (~~Slope Failure~~ / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : 100 m/ 20~30 m/ 5~10 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

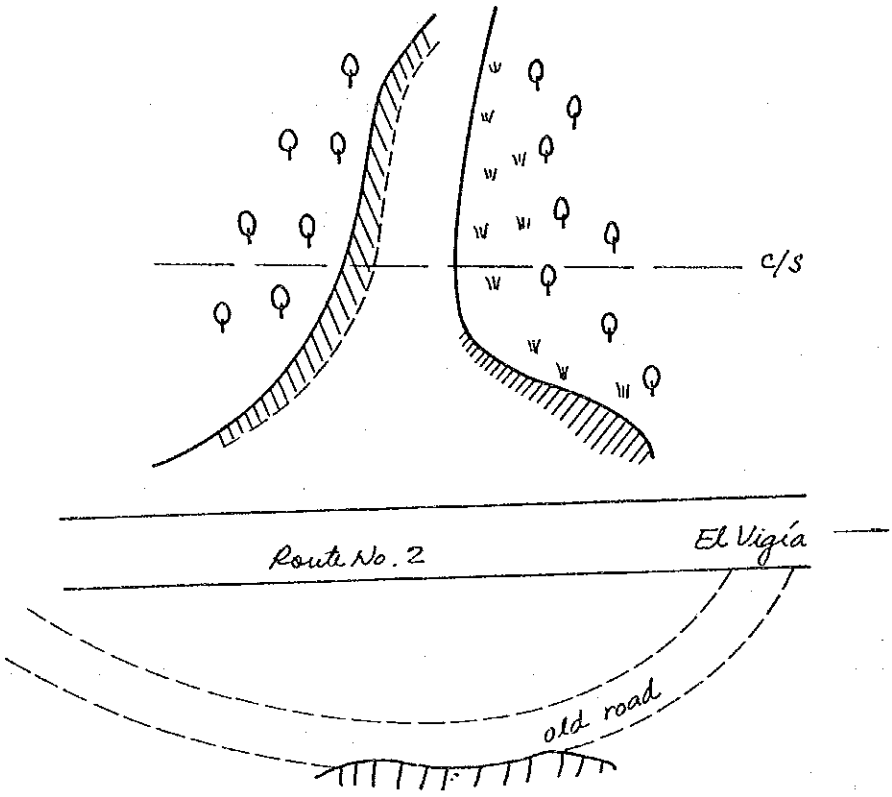
(3) Shape : _____

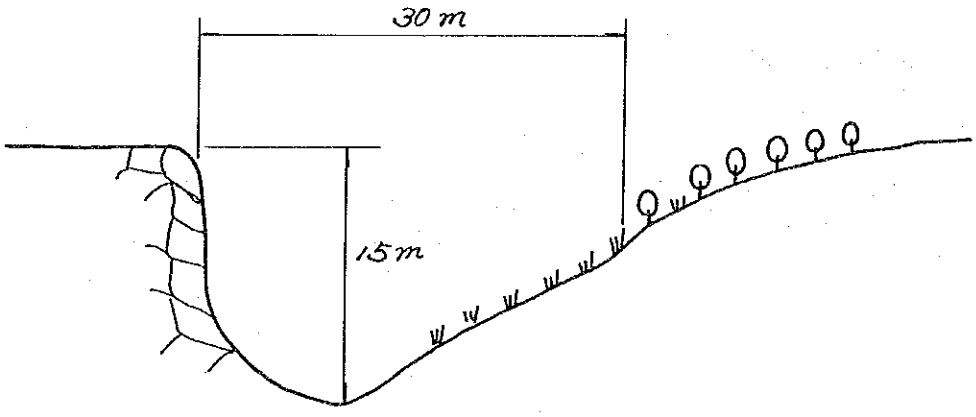
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : Road Route No. 7

7.3 Past Damage : debris flow in 1983


c/s
Route No. 2
El Vigía
old road


30 m
15 m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 15

1.2 Date of Survey : 7 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Mocotics / Qd. Tabacal

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 45°

2.3 Mountain Slope Direction: E - W

2.4 Depth of Surface Soil : 30 cm

2.5 Weathering Condition : few gullies

3. GEOLOGY

3.1 Name of Bedrock : rockfall

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 10m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : V-shape / 15 m

6.2 Torrent Width : 4 m

6.3 Channel Width : 0.5 m

6.4 Torrent Gradient : 6 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 30 cm

(2) Mean Grain Size : 10 cm

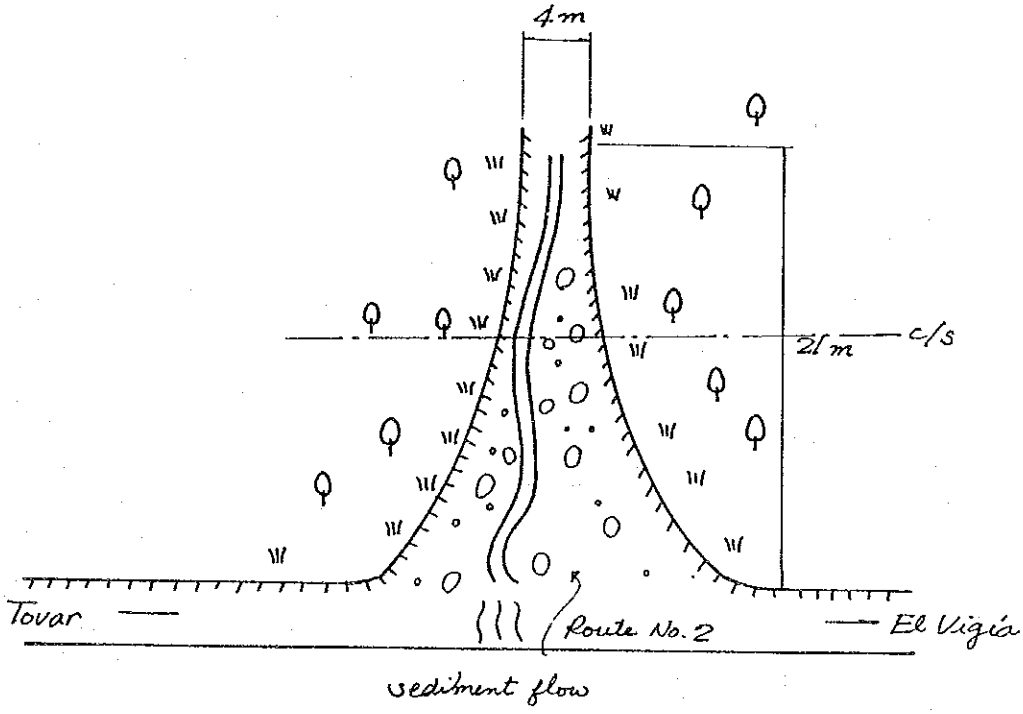
(3) Shape : semi-circle, semi-angular

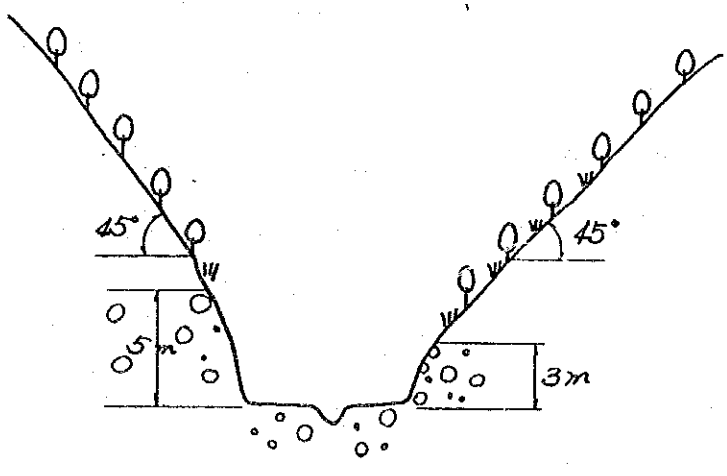
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : Road Route No. 2

7.3 Past Damage : _____


4m
21m
c/s
Tovar
Route No. 2
El Vigía
sediment flow


45°
45°
5m
3m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 16

1.2 Date of Survey : 7 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Mocotics / Caciguito

1.4 Location of Sampling Point :

1.5 Type : ~~(Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 45°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock :

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover :

4.2 Height and Density :

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapesoidal / 50 m

6.2 Torrent Width : 10 m

6.3 Channel Width : 1.5 m

6.4 Torrent Gradient : 5 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 50 cm

(2) Mean Grain Size : 10 cm

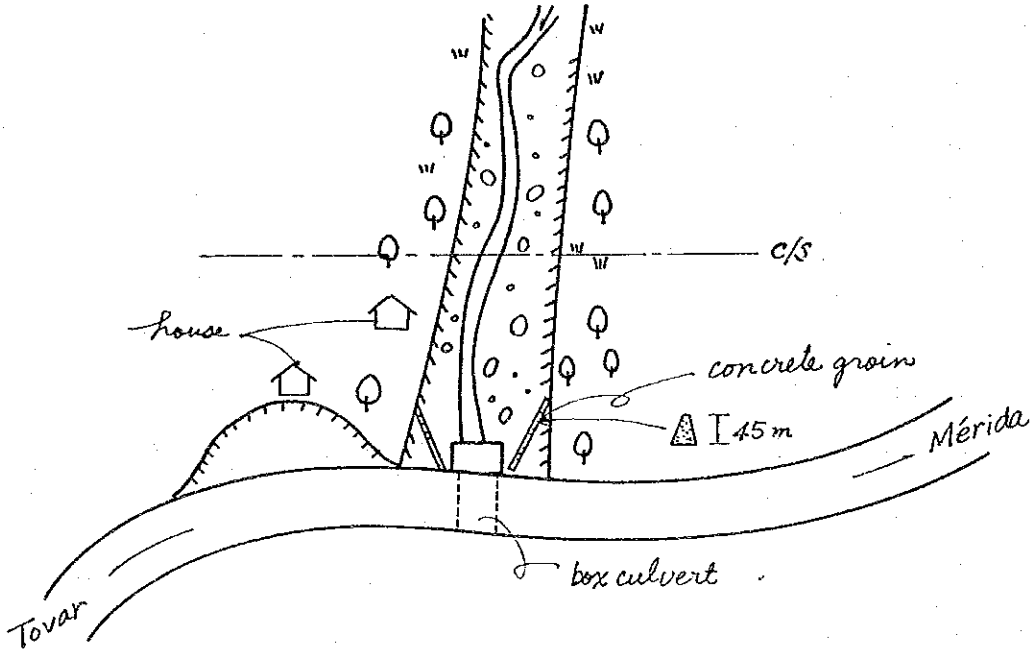
(3) Shape : semi-circle, semi-angular

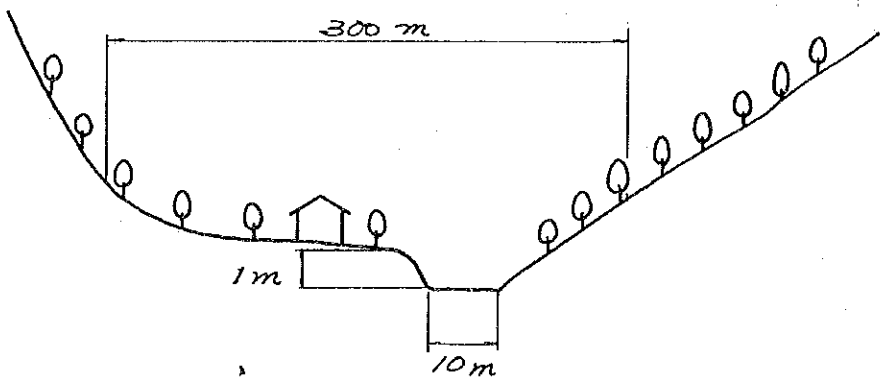
7. OTHER CONDITIONS

7.1 Land Use : cropland and houses

7.2 Existing Structures : _____

7.3 Past Damage : _____


c/s
house
concrete groin
I 45 m
Mérida
box culvert
Tovar


300 m
1 m
10 m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 17

1.2 Date of Survey : 7 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Mocotíes / El Peñon

1.4 Location of Sampling Point : Crossing Point of Road Route No. 2

1.5 Type : (~~Mass-Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : Granite

2.2 Mountain Slope Gradient : 40°

2.3 Mountain Slope Direction: _____

2.4 Depth of Surface Soil : 100 cm

2.5 Weathering Condition : weathered

3. GEOLOGY

3.1 Name of Bedrock : _____

3.2 Strike : _____

3.3 Joint : _____

3.4 Remarks : _____

4. VEGETATION

4.1 Vegetation Cover : High Forest

4.2 Height and Density : Hmax = 10 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : V-shape / 100 m

6.2 Torrent Width : 6 m

6.3 Channel Width : 5 m

6.4 Torrent Gradient : 10 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 20 cm

(2) Mean Grain Size : 5 cm

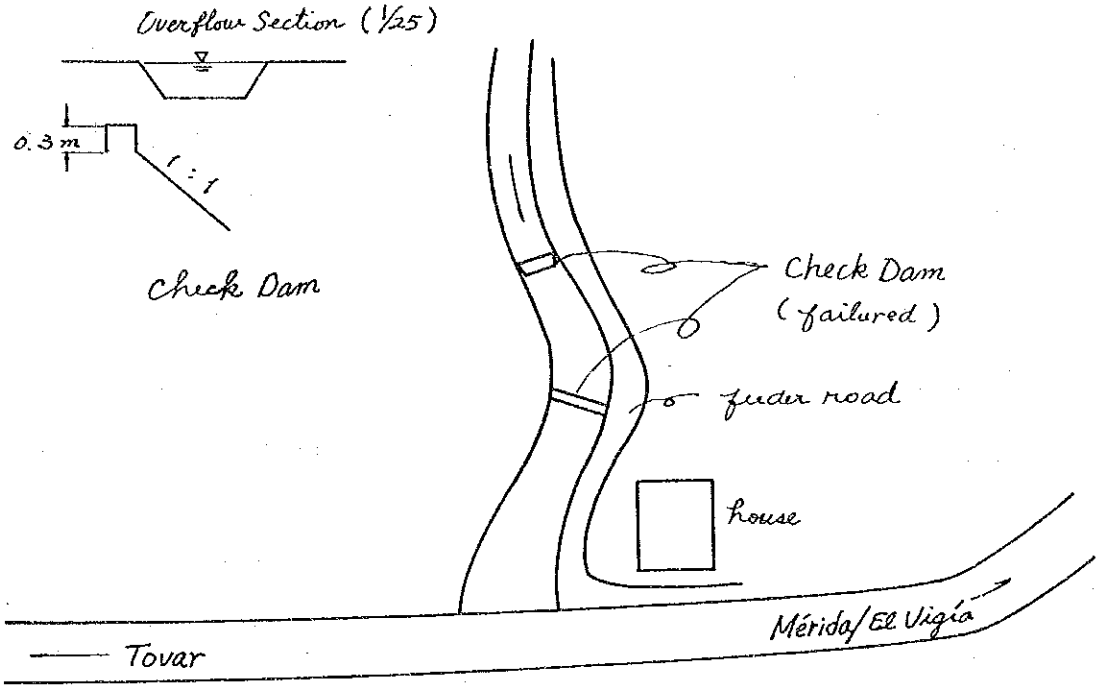
(3) Shape : semi-angular, semi-circle

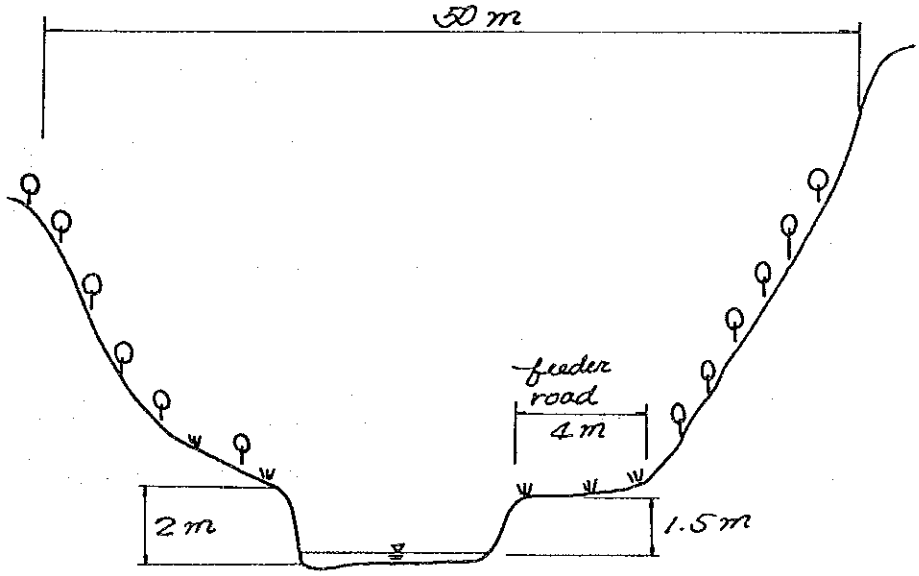
7. OTHER CONDITIONS

7.1 Land Use : partially residence

7.2 Existing Structures : non

7.3 Past Damage : non


Overflow Section (1/25)
0.3 m
1 : 1
Check Dam
Check Dam
(failured)
feder road
house
Mérida/El Vigía
Tovar


50 m
feeder
road
4 m
2 m
1.5 m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 18

1.2 Date of Survey : 7 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point :

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 60°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 100 cm

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Granite

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : high forest

4.2 Height and Density : Hmax = 11 m, dense

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : glide

5.3 Length/Width/Depth : 100 m/ 10~20 m/ 3~5 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

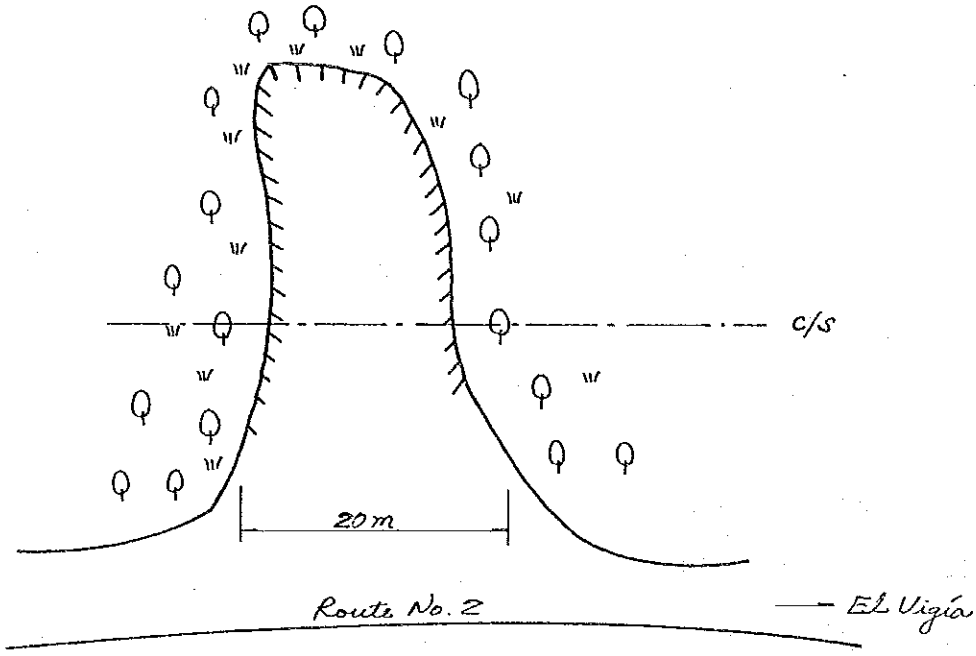
(3) Shape : _____

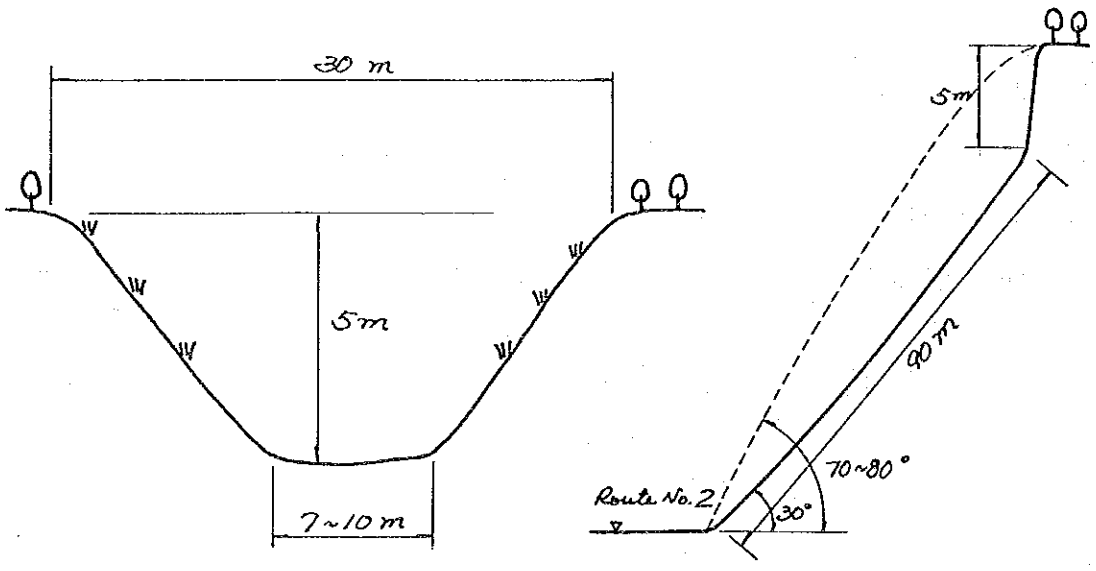
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : slope failured on 6 Jan. 1989.


c/s
20m
Route No. 2
El Vigía


30 m
5m
7~10 m
5m
90 m
70~80°
30°
Route No. 2

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 19

1.2 Date of Survey : 8. Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : near the Chama No. 2 Bridge

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 45°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 20 cm

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : rockfall

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : sparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : glide

5.3 Length/Width/Depth : 100 m/ 300 m/ 5 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

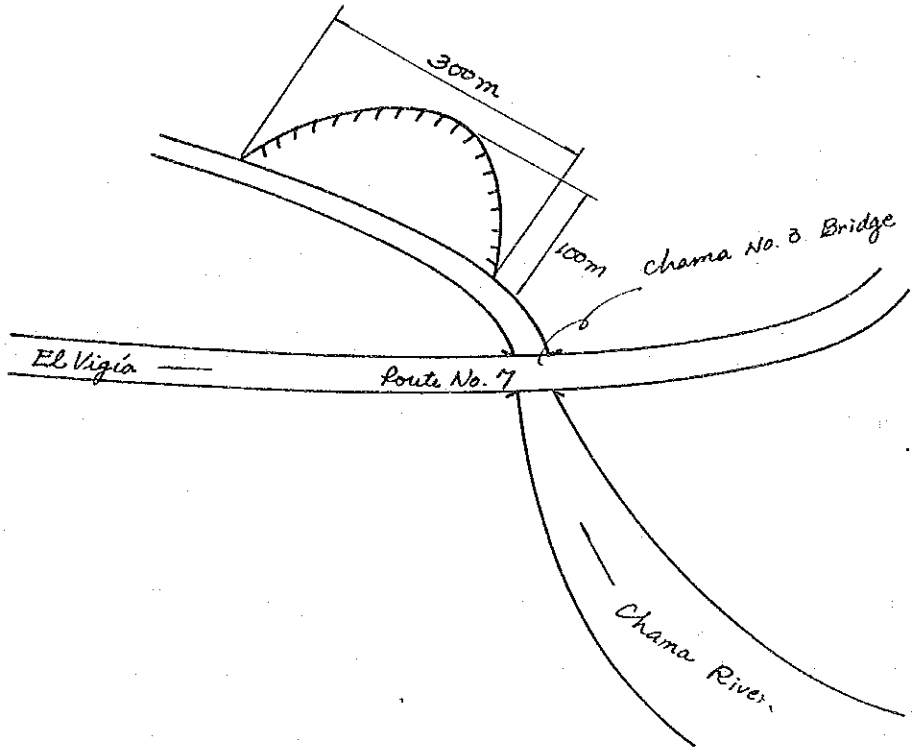
(3) Shape : _____

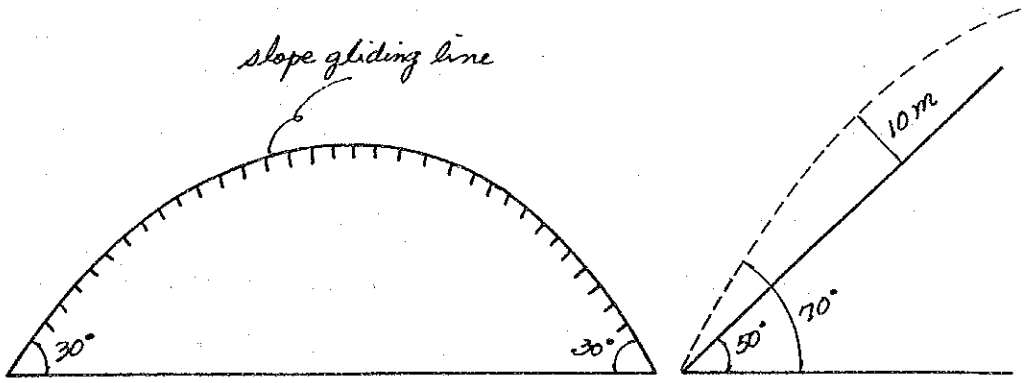
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


300m
100m
Chama No. 8 Bridge
El Vigía
Route No. 7
Chama River


slope gliding line
30°
30°
10m
50°
70°

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 20

1.2 Date of Survey : 8 Jan 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : right side at the confluence with N. Señora

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 40°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : rockfall

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : sparse

...12

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : 100 m/ 100~200 m/ 5 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

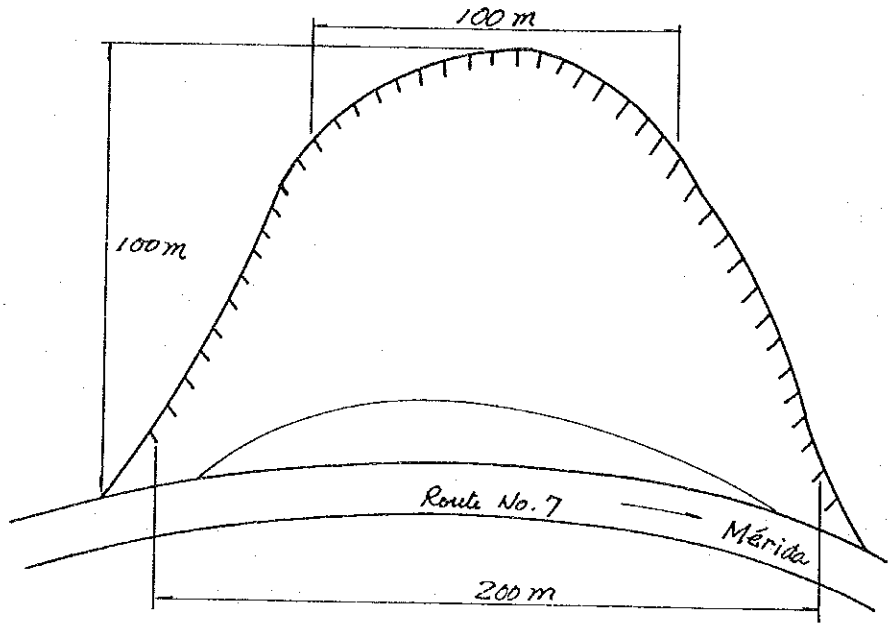
(3) Shape : _____

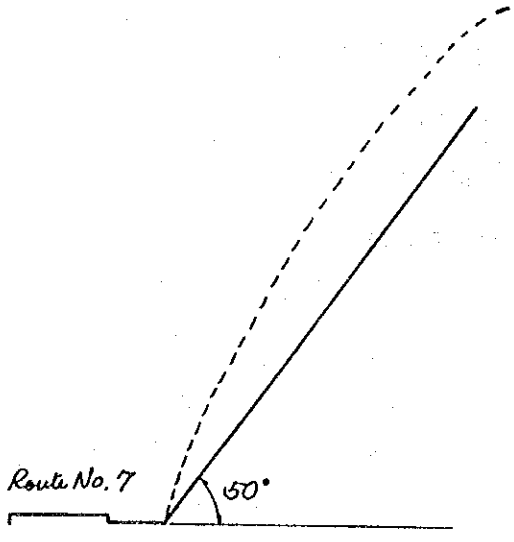
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


100 m
100 m
Route No. 7
Mérida
200 m


Route No. 7
50°

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 21

1.2 Date of Survey : 9 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama/Nuestra Señora/ Mucusuru

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 40 ~ 45°

2.3 Mountain Slope Direction: S30°W , N30°E

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Black Schist

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : sparse grass

4.2 Height and Density :

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapesoidal / 50 m

6.2 Torrent Width : 24 m

6.3 Channel Width : 4 m

6.4 Torrent Gradient : 3.7 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 100 cm

(2) Mean Grain Size : 30 cm

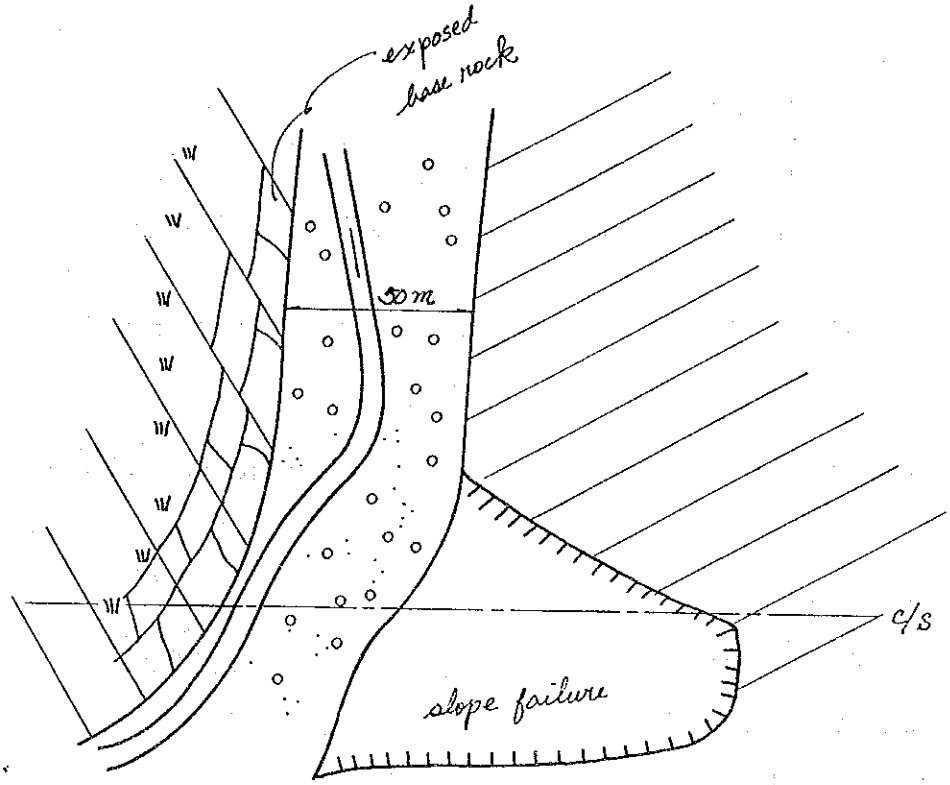
(3) Shape : _____

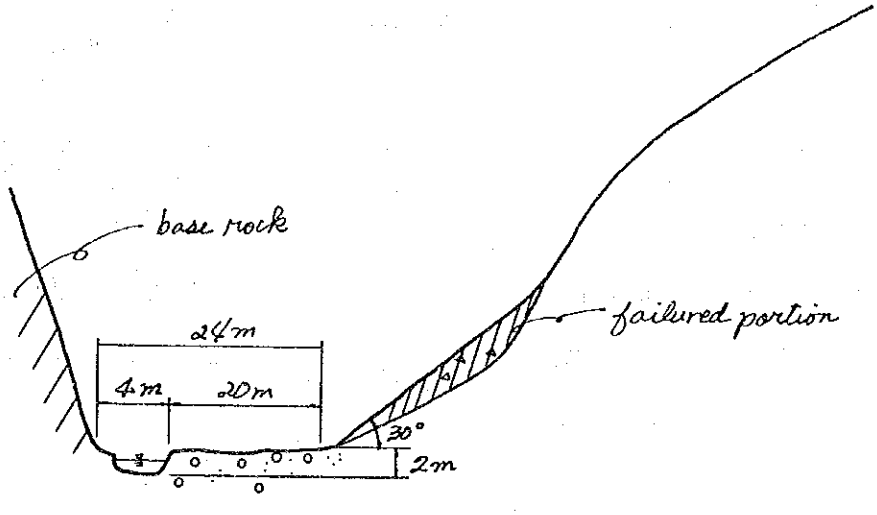
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


exposed
base rock
30m
c/s
slope failure


base rock
24m
4m
20m
30°
2m
failured portion

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : ZZ

1.2 Date of Survey : 9 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / Nuestra Señora / Mucuñas

1.4 Location of Sampling Point :

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 40°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 10 cm

2.5 Weathering Condition : many gullies

3. GEOLOGY

3.1 Name of Bedrock : Black Schist

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : sparse grass

4.2 Height and Density :

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapezoidal / 22 m

6.2 Torrent Width : 12 m

6.3 Channel Width : 6 m

6.4 Torrent Gradient : 37 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 200 cm

(2) Mean Grain Size : 40 cm

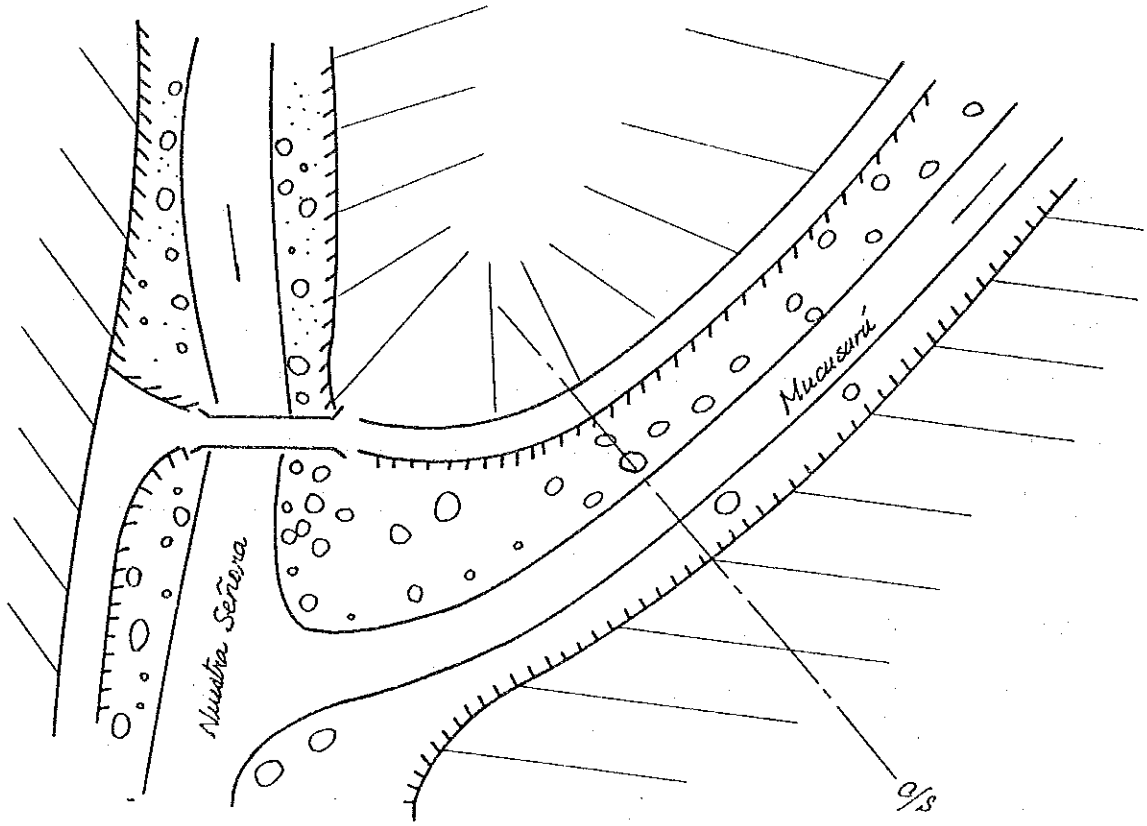
(3) Shape : angular, semi-angular

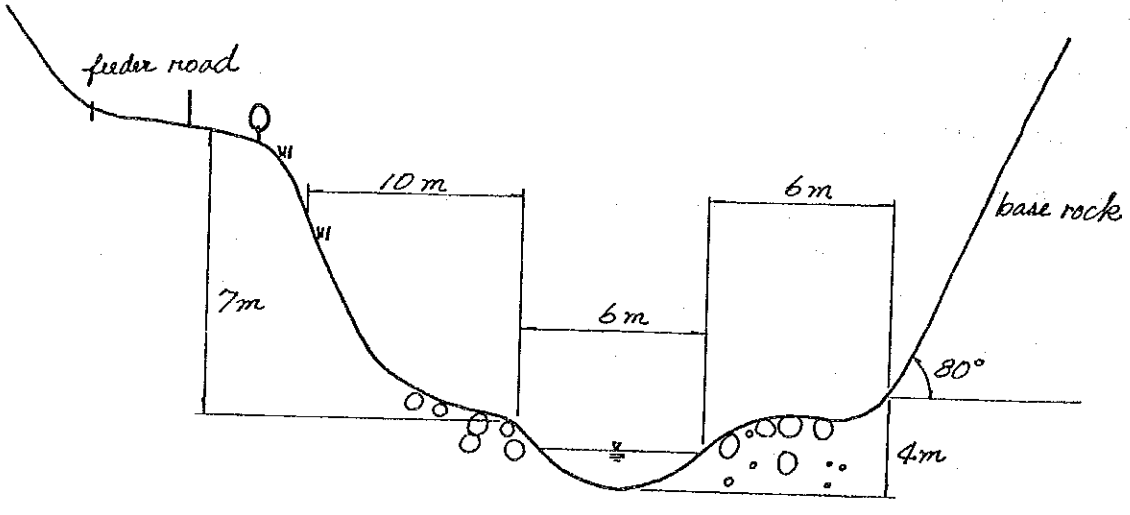
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


Nuestra Señora
Mucuripe
S/S


feeder road
VI
VI
10 m
6 m
base rock
7m
6 m
80°
4m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 23

1.2 Date of Survey : 9 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / Nuestra Señora

1.4 Location of Sampling Point : confluence with Mucusas River

1.5 Type : (~~Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : upper 50°, lower 20°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 10 cm

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Black Schist, Sandstone

3.2 Strike : N60°E 65°N

3.3 Joint : ① N35°W65°S ② EW45°S ③ N35°W90°

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : sparse grass

4.2 Height and Density :

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : V-shape / _____ m

6.2 Torrent Width : 17 m

6.3 Channel Width : 9.5 m

6.4 Torrent Gradient : 0.94 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 150 cm

(2) Mean Grain Size : 40 cm

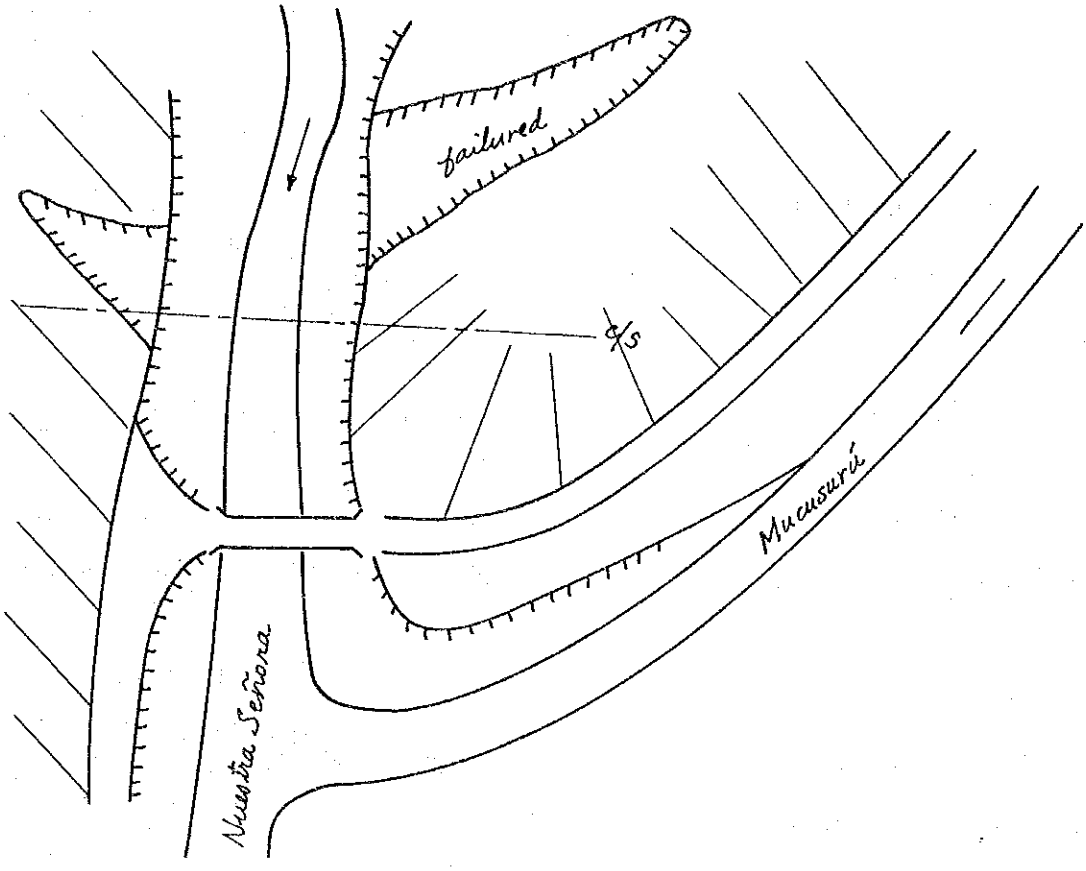
(3) Shape : semi-angular, semi-circle

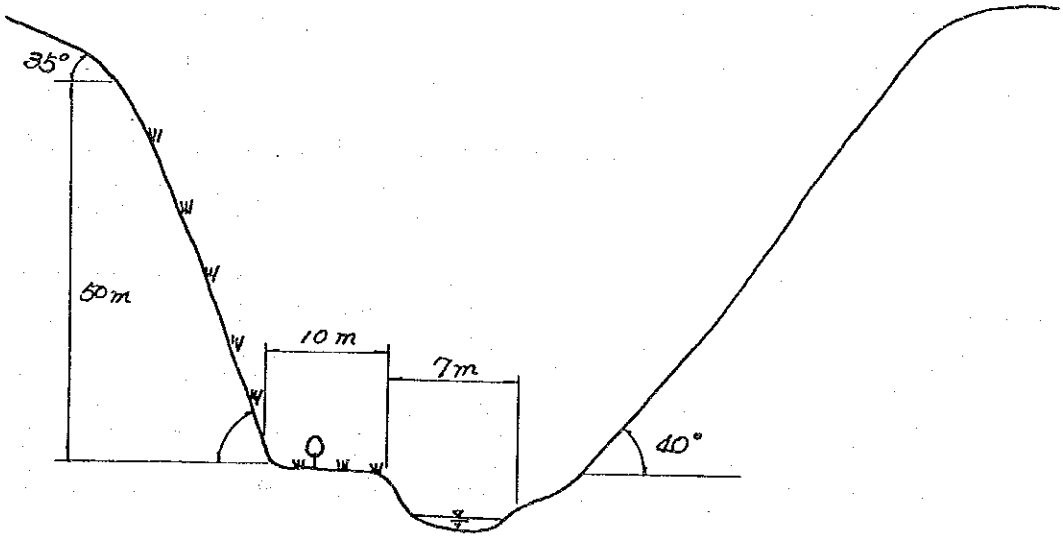
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


failured
Nuestra Señora
Mucuruú


35°
50m
10 m
7m
40°

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 24

1.2 Date of Survey : 10 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama / Nuestra Señora

1.4 Location of Sampling Point :

1.5 Type : ~~(Mass Wasting~~ / Torrent Erosion)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : upper 40~45°, lower 30°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 20 cm

2.5 Weathering Condition : many gullies

3. GEOLOGY

3.1 Name of Bedrock : Schist

3.2 Strike : upper N50°E 50°W, lower N70°E 90

3.3 Joint : upper NW65°E lower N10°W 90, N10°W 35°E

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : Hmax = 2m, sparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / Debris Flow)

5.2 Failure/Flow Type : _____

5.3 Length/Width/Depth : _____ m/ _____ m/ _____ m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : trapezoidal / 60 m

6.2 Torrent Width : 5~6 m

6.3 Channel Width : 4 m

6.4 Torrent Gradient : 2 °

6.5 Channel Bed Material

(1) Maximum Grain Size : 100 cm

(2) Mean Grain Size : 30 cm

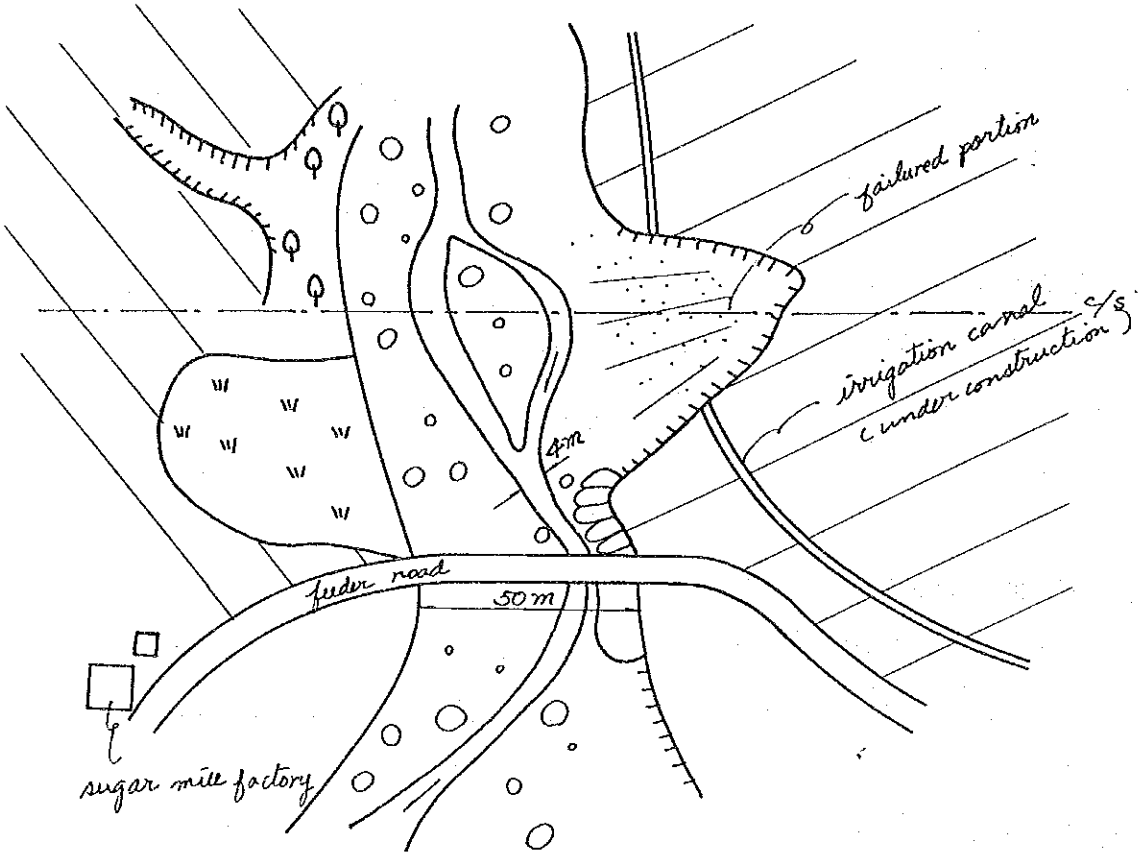
(3) Shape : semi-angular, semi-circle

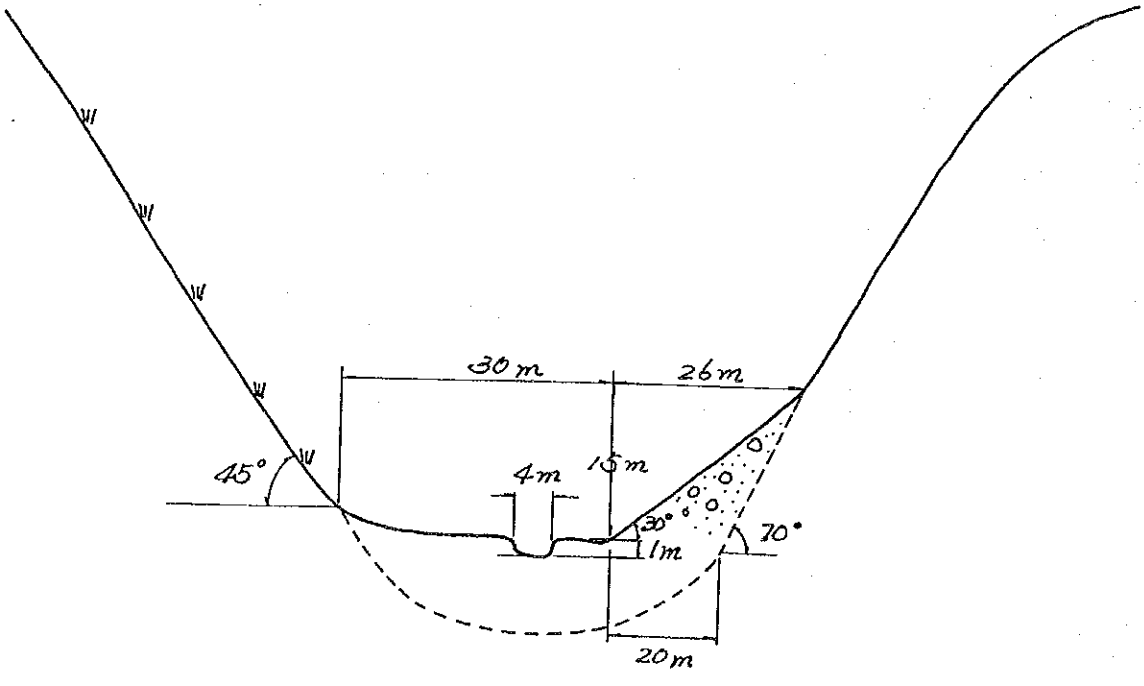
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


failured portion
irrigation canal c/s
(under construction)
4m
feeder road
50m
sugar mill factory


30m
26m
45°
4m
15m
30°
1m
70°
20m

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 25

1.2 Date of Survey : 10 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : near the Chama No. 3 Bridge

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : straight slope

2.2 Mountain Slope Gradient : 35°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil :

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : Black Schist

3.2 Strike : N40°W 45°S

3.3 Joint : N10°W 15°E, EW80°N

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest (cocultus)

4.2 Height and Density : sparse

...12

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (~~Slope Failure~~ / Debris Flow)

5.2 Failure/Flow Type : debris flow (fan type)

5.3 Length/Width/Depth : 200 m/ 600 m/ 5 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

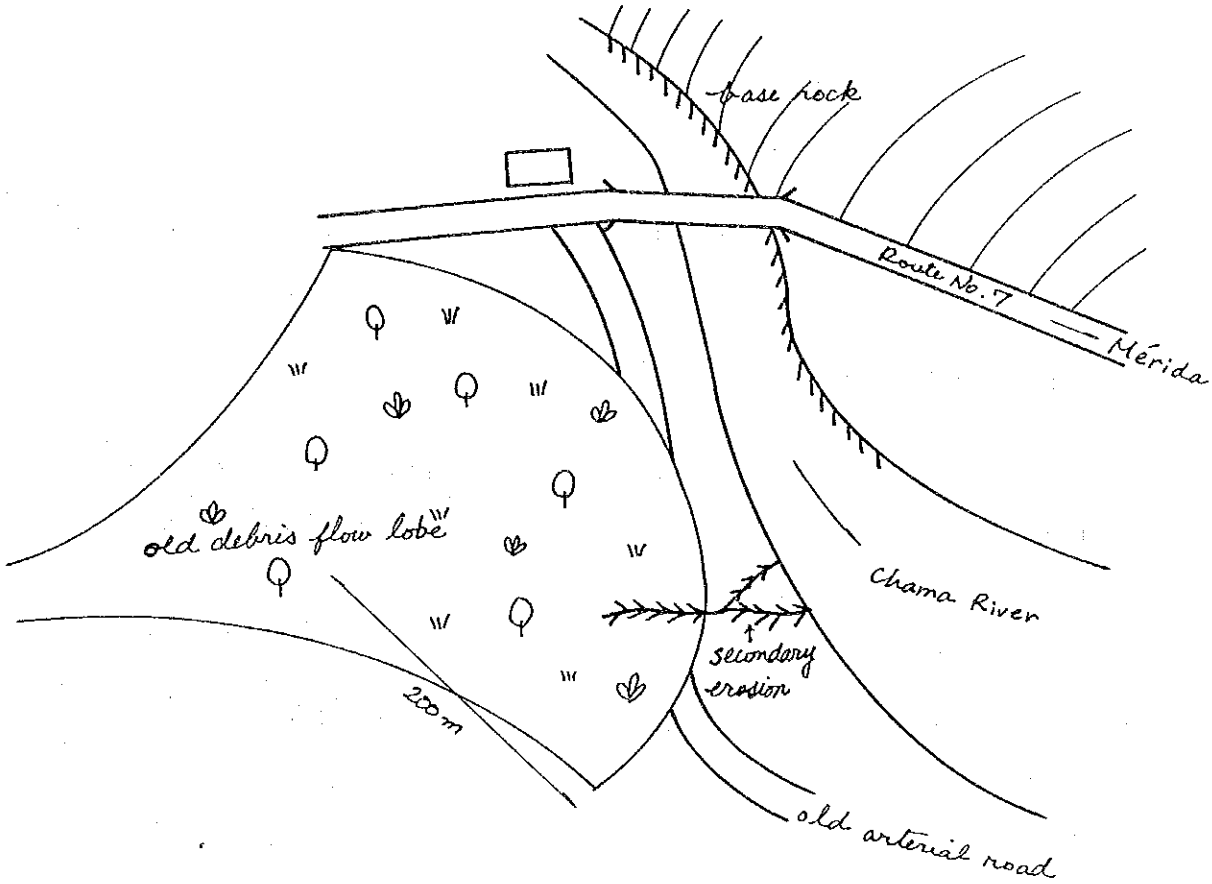
(3) Shape : _____

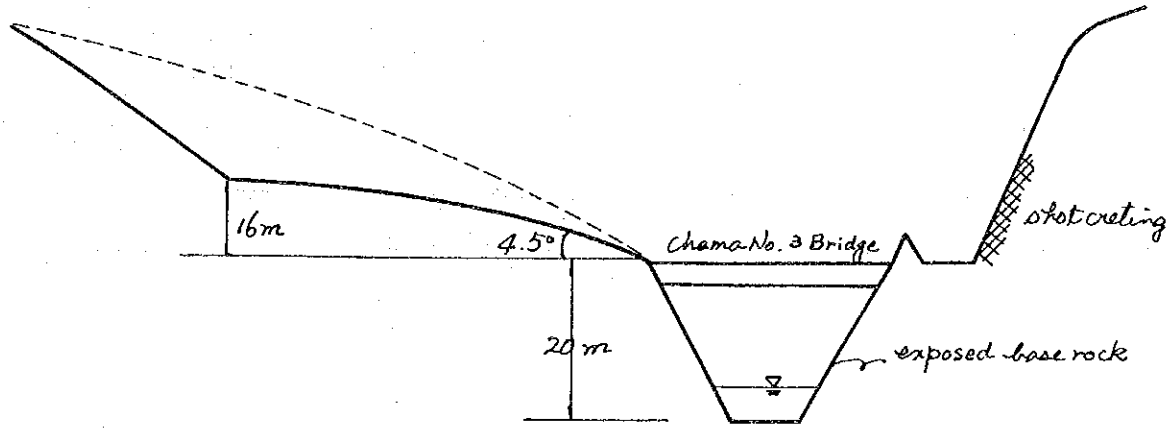
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


base rock
Route No. 7
Mérida
old debris flow lobe
Chama River
secondary erosion
200m
old arterial road


16m
4.5°
Chama No. 3 Bridge
shotcreting
20m
exposed base rock

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 26

1.2 Date of Survey : 10 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : between Pta. Real and Chama No. 3 Bridge

1.5 Type : (Mass Wasting / ~~Torrent Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 40°

2.3 Mountain Slope Direction:

2.4 Depth of Surface Soil : 20 cm

2.5 Weathering Condition :

3. GEOLOGY

3.1 Name of Bedrock : rockfall partially including Granite

3.2 Strike :

3.3 Joint :

3.4 Remarks : depth of rockfall : 10 m

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : sparse

...12

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (Slope Failure / ~~Debris Flow~~)

5.2 Failure/Flow Type : glide

5.3 Length/Width/Depth : 50 m/ 40 m/ 10 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

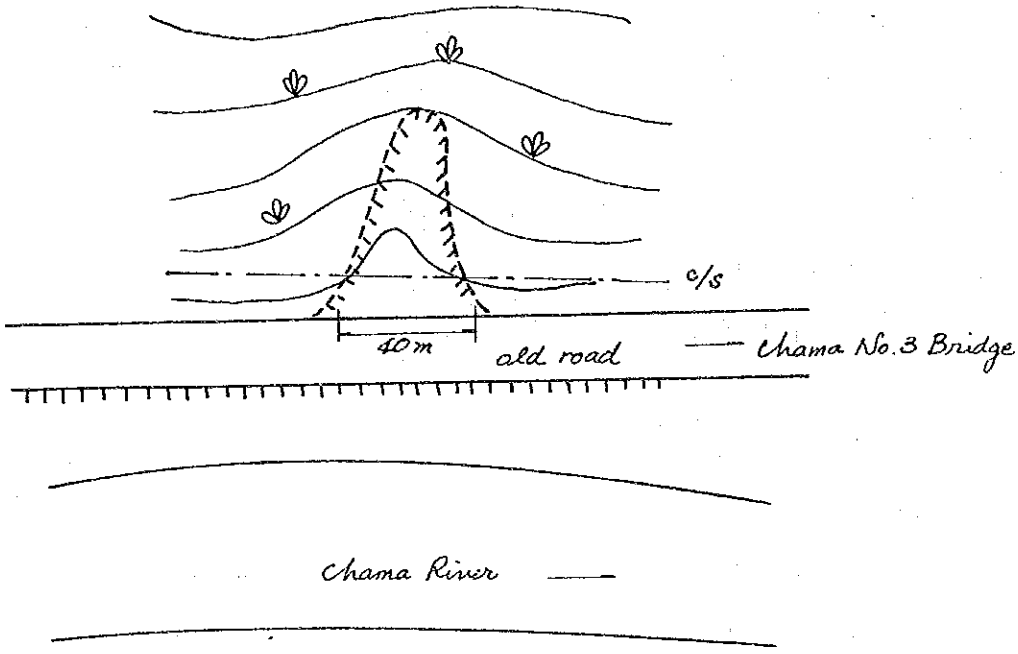
(3) Shape : _____

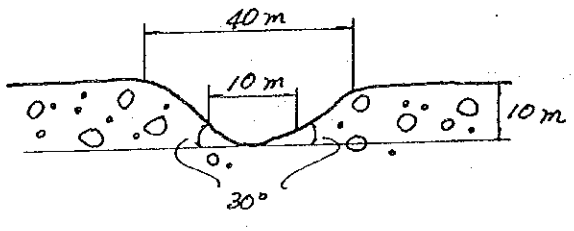
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : _____


c/s
40 m
old road
Chama No.3 Bridge
Chama River


40 m
10 m
10 m
30°

SAMPLING SURVEY RECORD

1. SURVEY CONDITION

1.1 Record Number : 27

1.2 Date of Survey : 10 Jan. 1989

1.3 Name of River/ Tributary/Torrent : Chama

1.4 Location of Sampling Point : left side at the confluence with La Gonzalez

1.5 Type : (Mass Wasting / ~~Torrent-Erosion~~)

2. TOPOGRAPHY

2.1 Mountain Shape : convex slope

2.2 Mountain Slope Gradient : 20°

2.3 Mountain Slope Direction: NW - SE

2.4 Depth of Surface Soil : 20 cm

2.5 Weathering Condition : many gullies

3. GEOLOGY

3.1 Name of Bedrock : rockfall

3.2 Strike :

3.3 Joint :

3.4 Remarks :

4. VEGETATION

4.1 Vegetation Cover : low forest

4.2 Height and Density : sparse

.../2

Sampling Survey Record/2

5. MASS WASTING

5.1 Type : (~~Slope Failure~~ / Debris Flow)

5.2 Failure/Flow Type : debris flow (straight type)

5.3 Length/Width/Depth : 400 m/ 80 m/ 5 m

5.4 Sediment Volume

(1) Failured : _____ m^3

(2) Residual : _____ m^3

(3) Expanding : _____ m^3

6. TORRENT EROSION

6.1 Gorge Type/Width : _____ / _____ m

6.2 Torrent Width : _____ m

6.3 Channel Width : _____ m

6.4 Torrent Gradient : _____ °

6.5 Channel Bed Material

(1) Maximum Grain Size : _____ cm

(2) Mean Grain Size : _____ cm

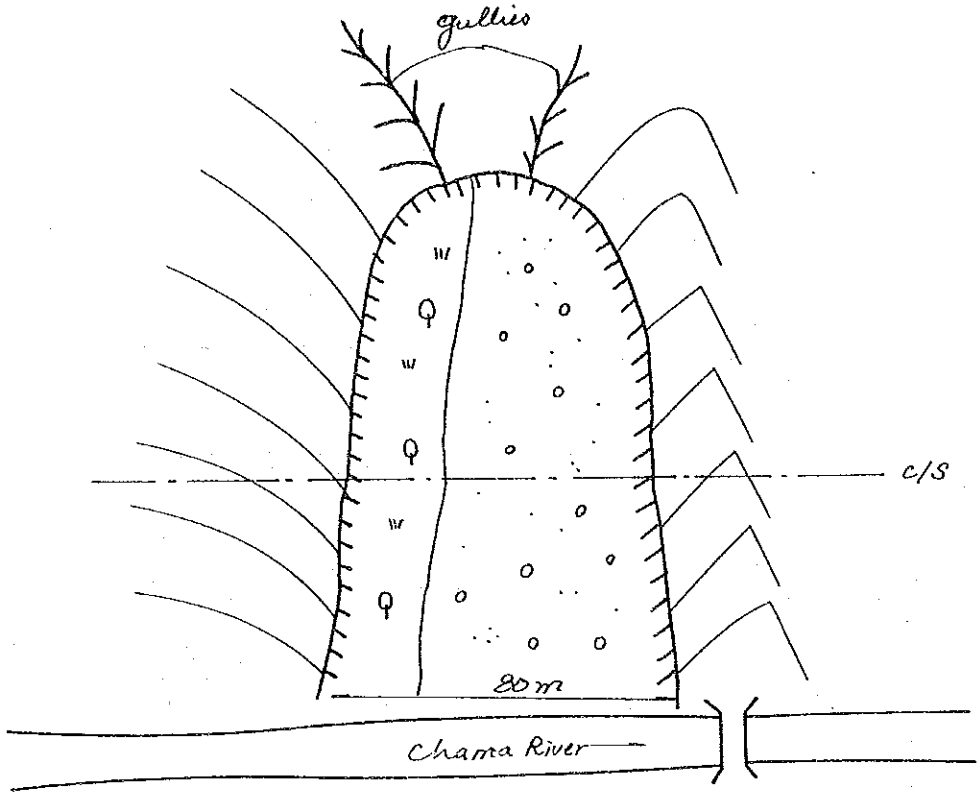
(3) Shape : _____

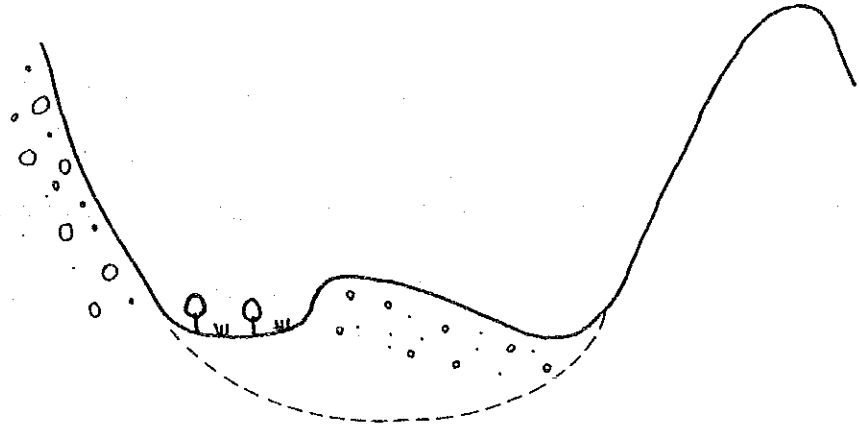
7. OTHER CONDITIONS

7.1 Land Use : _____

7.2 Existing Structures : _____

7.3 Past Damage : debris flow occured in 1988


gullies
c/s
80m
Chama River



**** 1967 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	3691.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	3577.9	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	1671.6	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	2121.6	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	2102.4	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2167.6
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	1998.6	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	1671.6	9800.5	3691.0	.0	.0	.0	.0	.0	.0	2167.6

**** 1968 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	4618.4	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	7931.4	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	2812.8	.0	.0	.0	.0	.0	2593.7	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	4685.5	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	2420.9	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	2250.5	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	9748.7	2420.9	******	.0	.0	.0	2593.7	.0	.0

**** 1969 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	1689.5	.0	.0	.0	1615.8	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	8682.1	3851.9	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	1594.4	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	3528.3	.0	.0	.0	.0	.0	.0	.0	1622.8
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	2841.2	.0	.0	.0	.0	.0	.0	1717.5	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1880.8	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	2019.1	.0	.0	******	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2543.9	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	3264.8	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	3355.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	3355.5	1689.5	.0	******	.0	1615.8	.0	2019.1	.0	8682.1	******	1622.8

**** 1970 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	2396.5	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	1586.7	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	2288.6	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	2644.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	1460.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	2279.1	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1530.2	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	1586.7	4932.5	.0	.0	.0	1460.0	4675.6	1530.2	.0

**** 1971 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	1609.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	1866.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	1712.4	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	3187.2	5651.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	1770.4	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	1609.7	.0	3187.2	5651.0	.0	.0	1770.4	3578.4	.0	.0	.0

**** 1972 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	1561.8	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	3167.8	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	3566.7	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	2746.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	1945.3	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	4314.2	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	1760.2	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	******	.0	.0	.0	.0	.0	.0	.0	.0

**** 1973 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1847.8
12	.0	.0	.0	.0	.0	1859.6	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1684.1	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	2981.8	.0	.0	.0
18	.0	.0	.0	.0	2132.5	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	3050.4	.0	.0	.0	.0	.0	1476.7	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	3050.4	2132.5	1859.6	.0	.0	2981.8	1476.7	1684.1	1847.8

**** 1974 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	2330.9	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	1763.2	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	1569.0	.0	.0
	.0	.0	.0	.0	4094.1	.0	.0	.0	.0	1569.0	.0	.0

**** 1975 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	2125.8	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	3027.5
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1734.6
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	3741.8	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	3741.8	2125.8	.0	.0	.0	.0	.0	.0	4762.1

**** 1976 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	2176.6	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	2483.9	.0	.0	.0	.0	.0	.0	.0	1637.4	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	3143.2	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	1721.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	6027.3	.0	.0
	.0	2483.9	.0	.0	.0	.0	.0	.0	4864.2	9841.3	.0	.0

**** 1977 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	2419.3	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1730.1	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	2162.9	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	5318.3	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	2162.9	.0	.0	.0	.0	7737.6	1730.1	.0

**** 1978 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1687.2
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	1502.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	1510.5	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	2232.3	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	1519.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	2260.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	2260.7	4531.5	.0	.0	.0	.0	.0	2232.3	.0	1687.2

**** 1979 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	3100.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1609.7	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1615.1	.0
22	.0	.0	.0	.0	4682.0	.0	.0	.0	.0	2890.3	.0	.0
23	.0	.0	.0	1876.5	.0	.0	.0	.0	.0	.0	.0	2283.2
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	1876.5	4682.0	.0	.0	.0	.0	2890.3	6324.7	2283.2

**** 1980 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	1989.3	.0	.0	2234.6	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	1589.7	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	2140.8	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	2140.8	.0	.0	.0	1989.3	.0	1589.7	2234.6	.0

**** 1981 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	2016.7	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	3527.1	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	4352.8	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	3009.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	2807.4	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	6789.5	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	3355.5	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	3725.9	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	2454.8	.0	.0	.0	.0	.0	2402.8	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	2072.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	5810.8	.0	.0	.0	.0	.0	.0	.0
	.0	2072.5	3009.5	******	******	2016.7	.0	.0	.0	2402.8	.0	.0

**** 1982 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	2226.8	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1640.5	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2697.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	2434.5	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	4249.7	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	1591.3	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	4025.8	2226.8	.0	.0	.0	.0	4249.7	4337.4	.0

**** 1983 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	2142.6	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	1658.2	3417.7	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	2697.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	3373.2	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	3373.2	4839.6	.0	.0	.0	1658.2	3417.7	.0	.0

**** 1984 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	1671.6	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	2452.2	.0	.0	.0	.0	.0	3204.6	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	4123.8	.0	.0	.0	.0	.0	3204.6	.0	.0

**** 1985 ****

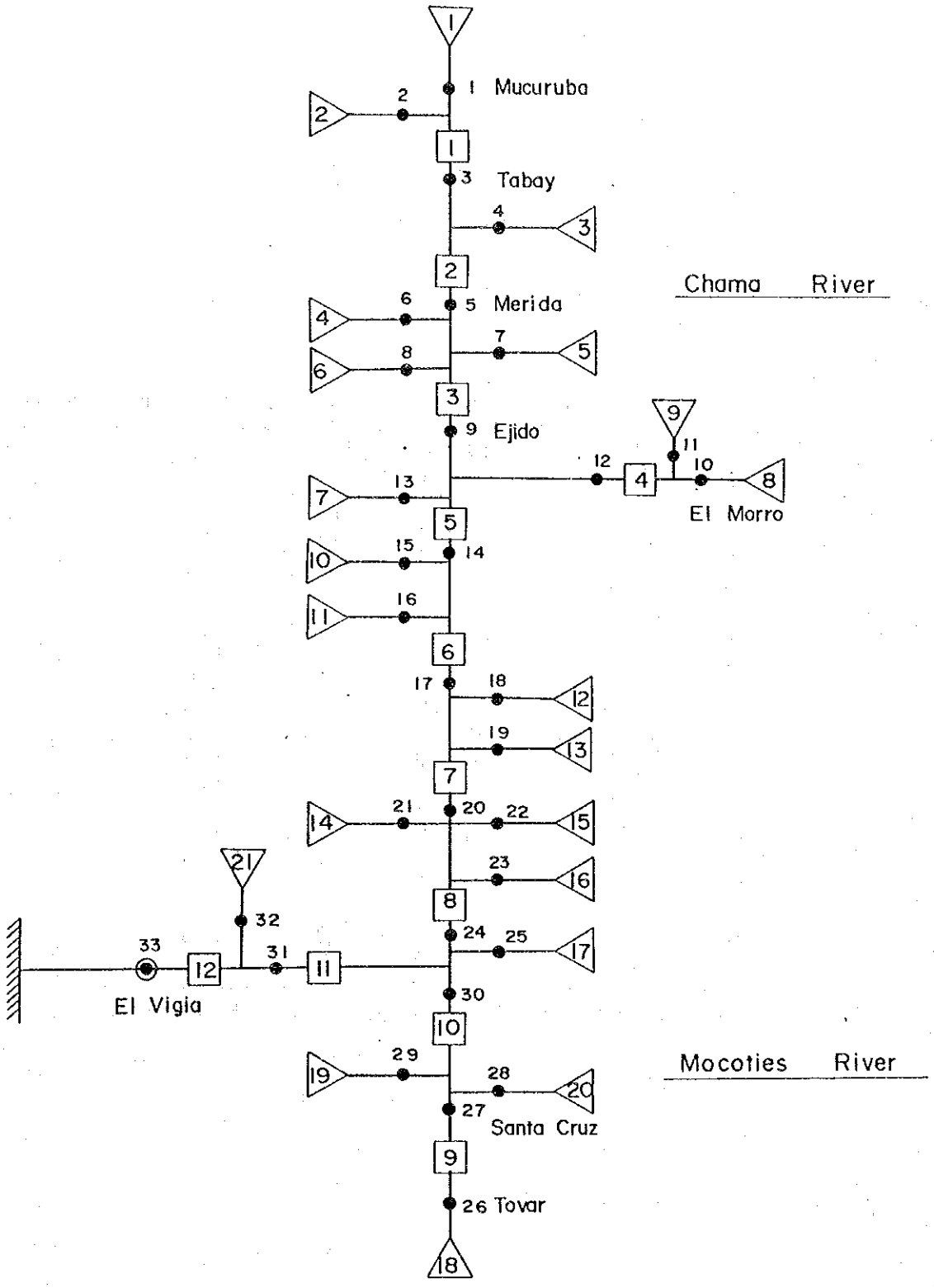
	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	1861.3	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	3078.1	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1757.4
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	1919.7	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	2064.3	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	4939.4	1919.7	.0	.0	.0	.0	2064.3	.0	1757.4

**** 1986 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	1953.3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	2032.9	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	1951.1	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	1882.1	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	5868.3	.0	.0	.0	.0	1951.1	.0	.0

**** 1987 ****

	1	2	3	4	5	6	7	8	9	10	11	12
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	7391.3	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	2067.5	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	1687.2	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	.0	.0	.0	.0	3754.7	.0	.0	.0	.0	7391.3	.0	.0



MODEL DIAGRAM FOR SEDIMENT TRANSPORTATION AND BALANCE STUDY

STUDY ON CHAMA RIVER BASIN CONSERVATION PROJECT

JAPAN INTERNATIONAL COOPERATION AGENCY

****
** Sediment Discharge (76) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	146.4	5.6
2	33.1	2.1
3	4.7	1.6
4	4.7	3.2
5	.0	3.0
6	.0	2.0
7	47.2	1.5
8	344.7	2.6
9	727.2	2.8
10	61.4	1.8
11	.0	1.0
12	599.7	.5
13	255.0	1.2
14	566.6	1.6
15	722.5	.4
16	1175.8	5.2
17	61.4	1.4
18	.0	4.6
19	.0	3.3
20	.0	2.3
21	.0	2.9
Monthly Average Discharge =		50.4(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	146	11.60	44.35
2	33	4.20	16.30
3	2510	7.60	60.65
4	0	15.20	12.44
5	3066	7.90	73.10
6	0	26.90	24.99
7	0	4.20	23.41
8	0	41.80	15.80
9	1534	30.90	137.30
10	0	51.40	20.37
11	727	4.20	22.59
12	1876	6.60	42.96
13	0	15.60	11.91
14	4320	21.70	192.17
15	0	50.20	14.41
16	0	31.80	7.68
17	5669	3.90	214.26
18	75	2.10	3.93
19	254	.70	9.13
20	6014	3.90	227.32
21	0	31.80	12.80
22	68	1.50	3.03
23	1175	1.50	32.46
24	8337	3.90	270.69
25	0	26.60	8.96
26	0	9.30	28.90
27	162	15.90	28.90
28	0	58.70	14.37
29	0	1.00	20.80
30	0	83.90	64.08
31	4599	2.10	332.66
32	0	1.80	18.26
33	7282	2.10	348.16

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	146	146	0	.00	0
2	33	33	0	.00	0
3	179	179	0	.00	456
4	4	0	4	.00	0
5	179	179	0	.00	604
6	4	0	4	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	179	179	0	.00	1392
10	344	0	344	.00	0
11	727	727	0	.00	0
12	727	1876	-1149	-1.07	1072
13	47	0	47	.00	0
14	2055	4320	-2264	-1.91	1185
15	61	0	61	.00	0
16	0	0	0	.00	0
17	4320	5669	-1349	-1.11	1218
18	599	75	524	.00	0
19	254	254	0	.00	0
20	6000	6014	-14	-.01	2152
21	566	0	566	.00	0
22	722	68	653	.00	0
23	1175	1175	0	.00	0
24	7259	8337	-1078	-.80	1345
25	61	0	61	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	8337	4599	3738	7.24	516
32	0	0	0	.00	0
33	4599	7282	-2682	-1.11	2415

VOLUME OF SCOURED SEDIMENT = -8538(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 6006(10^3m3)

****
** Sediment Discharge (77) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	121.9	4.6
2	27.5	1.7
3	3.9	1.3
4	3.9	2.6
5	.0	2.4
6	.0	1.6
7	39.3	1.2
8	287.0	2.1
9	605.5	2.3
10	51.1	1.5
11	.0	.8
12	499.4	.4
13	212.3	.9
14	471.8	1.3
15	601.6	.3
16	979.1	4.3
17	51.1	1.2
18	.0	3.8
19	.0	2.7
20	.0	1.9
21	.0	2.4
Monthly Average Discharge =		41.4(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	121	11.60	36.39
2	27	4.20	13.38
3	1862	7.60	49.77
4	0	15.20	10.21
5	2271	7.90	59.98
6	0	26.90	20.51
7	0	4.20	19.21
8	0	41.80	12.96
9	978	30.90	112.66
10	0	51.40	16.71
11	605	4.20	18.54
12	1311	6.60	35.25
13	0	15.60	9.77
14	3160	21.70	157.68
15	0	50.20	11.82
16	0	31.80	6.30
17	4632	3.90	175.81
18	36	2.10	3.22
19	212	.70	7.49
20	4929	3.90	186.52
21	0	31.80	10.50
22	35	1.50	2.49
23	979	1.50	26.63
24	6895	3.90	222.12
25	0	26.60	7.35
26	0	9.30	23.71
27	59	15.90	23.71
28	0	58.70	11.79
29	0	1.00	17.07
30	0	83.90	52.58
31	3744	2.10	272.96
32	0	1.80	14.98
33	5963	2.10	285.68

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	121	121	0	.00	0
2	27	27	0	.00	0
3	149	149	0	.00	456
4	3	0	3	.00	0
5	149	149	0	.00	604
6	3	0	3	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	149	149	0	.00	1392
10	287	0	287	.00	0
11	605	605	0	.00	0
12	605	1311	-706	-.66	1072
13	39	0	39	.00	0
14	1461	3160	-1699	-1.43	1185
15	51	0	51	.00	0
16	0	0	0	.00	0
17	3160	4632	-1472	-1.21	1218
18	499	36	462	.00	0
19	212	212	0	.00	0
20	4881	4929	-47	-.02	2152
21	471	0	471	.00	0
22	601	35	566	.00	0
23	979	979	0	.00	0
24	5943	6895	-951	-.71	1345
25	51	0	51	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	6895	3744	3151	6.11	516
32	0	0	0	.00	0
33	3744	5963	-2219	-.92	2415

VOLUME OF SCOURED SEDIMENT = -7096(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 5088(10^3m3)

****
** Sediment Discharge (78) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	100.9	6.0
2	22.8	2.2
3	3.3	1.7
4	3.3	3.4
5	.0	3.2
6	.0	2.1
7	32.6	1.6
8	237.7	2.8
9	501.4	3.1
10	42.3	2.0
11	.0	1.0
12	413.5	.5
13	175.8	1.2
14	390.7	1.7
15	498.2	.4
16	810.7	5.6
17	42.3	1.5
18	.0	5.0
19	.0	3.6
20	.0	2.5
21	.0	3.1
Monthly Average Discharge =		54.2(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	100	11.60	47.65
2	22	4.20	17.52
3	2858	7.60	65.17
4	0	15.20	13.37
5	3386	7.90	78.53
6	0	26.90	26.85
7	0	4.20	25.15
8	0	41.80	16.97
9	1705	30.90	147.51
10	0	51.40	21.89
11	501	4.20	24.27
12	2102	6.60	46.16
13	0	15.60	12.79
14	4783	21.70	206.46
15	0	50.20	15.48
16	0	31.80	8.25
17	6091	3.90	230.19
18	92	2.10	4.22
19	175	.70	9.81
20	6462	3.90	244.23
21	0	31.80	13.75
22	81	1.50	3.26
23	810	1.50	34.87
24	8932	3.90	290.83
25	0	26.60	9.63
26	0	9.30	31.05
27	175	15.90	31.05
28	0	58.70	15.44
29	0	1.00	22.35
30	0	83.90	68.84
31	4955	2.10	357.40
32	0	1.80	19.62
33	7829	2.10	374.06

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	100	100	0	.00	0
2	22	22	0	.00	0
3	123	123	0	.00	456
4	3	0	3	.00	0
5	123	123	0	.00	604
6	3	0	3	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	123	123	0	.00	1392
10	237	0	237	.00	0
11	501	501	0	.00	0
12	501	2102	-1601	-1.49	1072
13	32	0	32	.00	0
14	2226	4783	-2556	-2.16	1185
15	42	0	42	.00	0
16	0	0	0	.00	0
17	4783	6091	-1308	-1.07	1218
18	413	92	320	.00	0
19	175	175	0	.00	0
20	6359	6462	-102	-.05	2152
21	390	0	390	.00	0
22	498	81	416	.00	0
23	810	810	0	.00	0
24	7354	8932	-1577	-1.17	1345
25	42	0	42	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	8932	4955	3976	7.71	516
32	0	0	0	.00	0
33	4955	7829	-2873	-1.19	2415

VOLUME OF SCOURED SEDIMENT = -10019(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 5465(10^3m3)

****
** Sediment Discharge (79) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	241.2	6.6
2	54.5	2.4
3	7.8	1.9
4	7.8	3.7
5	.0	3.5
6	.0	2.4
7	77.8	1.8
8	568.1	3.1
9	1198.4	3.4
10	101.2	2.2
11	.0	1.2
12	988.3	.6
13	420.2	1.4
14	933.8	1.9
15	1190.6	.5
16	1937.7	6.2
17	101.2	1.7
18	.0	5.5
19	.0	4.0
20	.0	2.7
21	.0	3.5
Monthly Average Discharge =		60.0(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	241	11.60	52.73
2	54	4.20	19.38
3	3283	7.60	72.11
4	0	15.20	14.79
5	3943	7.90	86.90
6	7	26.90	29.72
7	0	4.20	27.83
8	0	41.80	18.78
9	2123	30.90	163.23
10	0	51.40	24.22
11	1198	4.20	26.86
12	2479	6.60	51.08
13	0	15.60	14.16
14	5514	21.70	228.47
15	0	50.20	17.13
16	0	31.80	9.13
17	6740	3.90	254.73
18	126	2.10	4.67
19	420	.70	10.86
20	7151	3.90	270.26
21	0	31.80	15.22
22	98	1.50	3.61
23	1937	1.50	38.59
24	9844	3.90	321.83
25	0	26.60	10.65
26	0	9.30	34.36
27	242	15.90	34.36
28	0	58.70	17.09
29	0	1.00	24.73
30	0	83.90	76.18
31	5506	2.10	395.50
32	0	1.80	21.71
33	8672	2.10	413.93

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	241	241	0	.00	0
2	54	54	0	.00	0
3	295	295	0	.00	456
4	7	0	7	.00	0
5	295	295	0	.00	604
6	7	7	0	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	303	303	0	.00	1392
10	568	0	568	.00	0
11	1198	1198	0	.00	0
12	1198	2479	-1281	-1.19	1072
13	77	0	77	.00	0
14	2783	5514	-2731	-2.30	1185
15	101	0	101	.00	0
16	0	0	0	.00	0
17	5514	6740	-1225	-1.01	1218
18	988	126	861	.00	0
19	420	420	0	.00	0
20	7287	7151	136	.06	2152
21	933	0	933	.00	0
22	1190	98	1092	.00	0
23	1937	1937	0	.00	0
24	9186	9844	-657	-.49	1345
25	101	0	101	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	9844	5506	4337	8.41	516
32	0	0	0	.00	0
33	5506	8672	-3166	-1.31	2415

VOLUME OF SCOURED SEDIMENT = -9062(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 8218(10^3m3)

****
** Sediment Discharge (80) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	80.6	4.4
2	18.2	1.6
3	2.6	1.2
4	2.6	2.5
5	.0	2.3
6	.0	1.5
7	26.0	1.2
8	189.7	2.0
9	400.2	2.2
10	33.8	1.4
11	.0	.8
12	330.1	.4
13	140.3	.9
14	311.9	1.3
15	397.6	.3
16	647.2	4.0
17	33.8	1.1
18	.0	3.6
19	.0	2.6
20	.0	1.8
21	.0	2.3
Monthly Average Discharge =		39.3(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	80	11.60	34.51
2	18	4.20	12.69
3	1686	7.60	47.19
4	0	15.20	9.68
5	2076	7.90	56.87
6	0	26.90	19.45
7	0	4.20	18.21
8	0	41.80	12.29
9	893	30.90	106.82
10	0	51.40	15.85
11	400	4.20	17.58
12	1140	6.60	33.42
13	0	15.60	9.27
14	2908	21.70	149.51
15	0	50.20	11.21
16	0	31.80	5.98
17	4392	3.90	166.70
18	34	2.10	3.06
19	140	.70	7.10
20	4665	3.90	176.86
21	0	31.80	9.96
22	25	1.50	2.36
23	647	1.50	25.25
24	6552	3.90	210.61
25	0	26.60	6.97
26	0	9.30	22.49
27	55	15.90	22.49
28	0	58.70	11.18
29	0	1.00	16.19
30	0	83.90	49.85
31	3542	2.10	258.82
32	0	1.80	14.21
33	5651	2.10	270.88

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	80	80	0	.00	0
2	18	18	0	.00	0
3	98	98	0	.00	456
4	2	0	2	.00	0
5	98	98	0	.00	604
6	2	0	2	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	98	98	0	.00	1392
10	189	0	189	.00	0
11	400	400	0	.00	0
12	400	1140	-739	-.69	1072
13	25	0	25	.00	0
14	1238	2908	-1670	-1.41	1185
15	33	0	33	.00	0
16	0	0	0	.00	0
17	2908	4392	-1484	-1.22	1218
18	330	34	295	.00	0
19	140	140	0	.00	0
20	4567	4665	-97	-.05	2152
21	311	0	311	.00	0
22	397	25	371	.00	0
23	647	647	0	.00	0
24	5338	6552	-1214	-.90	1345
25	33	0	33	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	6552	3542	3009	5.83	516
32	0	0	0	.00	0
33	3542	5651	-2108	-.87	2415

VOLUME OF SCOURED SEDIMENT = -7314(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 4277(10^3m3)

****
** Sediment Discharge (81) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	311.1	7.1
2	70.3	2.6
3	10.0	2.0
4	10.0	4.0
5	.0	3.8
6	.0	2.5
7	100.4	1.9
8	732.6	3.3
9	1545.5	3.6
10	130.5	2.3
11	.0	1.2
12	1274.6	.6
13	541.9	1.5
14	1204.3	2.1
15	1535.5	.5
16	2499.0	6.6
17	130.5	1.8
18	.0	5.9
19	.0	4.3
20	.0	2.9
21	.0	3.7
Monthly Average Discharge =		64.4(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	311	11.60	56.65
2	70	4.20	20.83
3	3595	7.60	77.48
4	10	15.20	15.89
5	4371	7.90	93.38
6	10	26.90	31.93
7	0	4.20	29.91
8	0	41.80	20.18
9	2428	30.90	175.39
10	0	51.40	26.02
11	1545	4.20	28.86
12	2781	6.60	54.88
13	0	15.60	15.21
14	6161	21.70	245.48
15	0	50.20	18.40
16	0	31.80	9.81
17	7242	3.90	273.70
18	141	2.10	5.02
19	541	.70	11.66
20	7683	3.90	290.39
21	0	31.80	16.35
22	113	1.50	3.87
23	2498	1.50	41.46
24	10547	3.90	345.80
25	0	26.60	11.45
26	0	9.30	36.92
27	297	15.90	36.92
28	0	58.70	18.36
29	0	1.00	26.57
30	0	83.90	81.85
31	5933	2.10	424.96
32	0	1.80	23.33
33	9325	2.10	444.76

****
**
** Sediment Balance **
**
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	311	311	0	.00	0
2	70	70	0	.00	0
3	381	381	0	.00	456
4	10	10	0	.00	0
5	391	391	0	.00	604
6	10	10	0	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	401	401	0	.00	1392
10	732	0	732	.00	0
11	1545	1545	0	.00	0
12	1545	2781	-1236	-1.15	1072
13	100	0	100	.00	0
14	3183	6161	-2977	-2.51	1185
15	130	0	130	.00	0
16	0	0	0	.00	0
17	6161	7242	-1081	-.89	1218
18	1274	141	1133	.00	0
19	541	541	0	.00	0
20	7925	7683	242	.11	2152
21	1204	0	1204	.00	0
22	1535	113	1422	.00	0
23	2498	2498	0	.00	0
24	10295	10547	-251	-.19	1345
25	130	0	130	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	10547	5933	4613	8.94	516
32	0	0	0	.00	0
33	5933	9325	-3392	-1.40	2415

VOLUME OF SCOURED SEDIMENT = -8938(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 9709(10^3m3)

****
** Sediment Discharge (82) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	131.7	5.9
2	29.7	2.2
3	4.2	1.7
4	4.2	3.3
5	.0	3.1
6	.0	2.1
7	42.5	1.6
8	310.1	2.7
9	654.2	3.0
10	55.2	1.9
11	.0	1.0
12	539.5	.5
13	229.4	1.2
14	509.8	1.7
15	649.9	.4
16	1057.8	5.5
17	55.2	1.5
18	.0	4.9
19	.0	3.5
20	.0	2.4
21	.0	3.1
Monthly Average Discharge =		53.1(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	131	11.60	46.71
2	29	4.20	17.17
3	2761	7.60	63.88
4	0	15.20	13.10
5	3310	7.90	76.98
6	0	26.90	26.32
7	0	4.20	24.65
8	0	41.80	16.64
9	1670	30.90	144.59
10	0	51.40	21.45
11	654	4.20	23.79
12	2040	6.60	45.24
13	0	15.60	12.54
14	4658	21.70	202.38
15	0	50.20	15.17
16	0	31.80	8.09
17	5970	3.90	225.64
18	85	2.10	4.14
19	229	.70	9.62
20	6334	3.90	239.39
21	0	31.80	13.48
22	72	1.50	3.19
23	1057	1.50	34.18
24	8762	3.90	285.07
25	0	26.60	9.44
26	0	9.30	30.44
27	171	15.90	30.44
28	0	58.70	15.14
29	0	1.00	21.91
30	0	83.90	67.48
31	4854	2.10	350.33
32	0	1.80	19.23
33	7673	2.10	366.66

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	131	131	0	.00	0
2	29	29	0	.00	0
3	161	161	0	.00	456
4	4	0	4	.00	0
5	161	161	0	.00	604
6	4	0	4	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	161	161	0	.00	1392
10	310	0	310	.00	0
11	654	654	0	.00	0
12	654	2040	-1386	-1.29	1072
13	42	0	42	.00	0
14	2201	4658	-2456	-2.07	1185
15	55	0	55	.00	0
16	0	0	0	.00	0
17	4658	5970	-1312	-1.08	1218
18	539	85	454	.00	0
19	229	229	0	.00	0
20	6285	6334	-49	-.02	2152
21	509	0	509	.00	0
22	649	72	577	.00	0
23	1057	1057	0	.00	0
24	7464	8762	-1298	-.96	1345
25	55	0	55	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	8762	4854	3908	7.57	516
32	0	0	0	.00	0
33	4854	7673	-2819	-1.17	2415

VOLUME OF SCOURED SEDIMENT = -9321(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 5921(10^3m3)

****
** Sediment Discharge (83) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	136.5	4.9
2	30.8	1.8
3	4.4	1.4
4	4.4	2.8
5	.0	2.6
6	.0	1.7
7	44.0	1.3
8	321.4	2.3
9	678.1	2.5
10	57.2	1.6
11	.0	.8
12	559.2	.4
13	237.8	1.0
14	528.4	1.4
15	673.7	.3
16	1096.3	4.6
17	57.2	1.3
18	.0	4.1
19	.0	2.9
20	.0	2.0
21	.0	2.6
Monthly Average Discharge =		44.3(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	136	11.60	38.90
2	30	4.20	14.30
3	2055	7.60	53.21
4	0	15.20	10.91
5	2540	7.90	64.12
6	0	26.90	21.93
7	0	4.20	20.54
8	0	41.80	13.86
9	1119	30.90	120.44
10	0	51.40	17.87
11	678	4.20	19.82
12	1478	6.60	37.68
13	0	15.60	10.45
14	3534	21.70	168.57
15	0	50.20	12.64
16	0	31.80	6.74
17	4966	3.90	187.95
18	44	2.10	3.45
19	237	.70	8.01
20	5274	3.90	199.41
21	0	31.80	11.23
22	46	1.50	2.66
23	1096	1.50	28.47
24	7352	3.90	237.46
25	0	26.60	7.86
26	0	9.30	25.35
27	87	15.90	25.35
28	0	58.70	12.61
29	0	1.00	18.25
30	0	83.90	56.21
31	4013	2.10	291.81
32	0	1.80	16.02
33	6379	2.10	305.41

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	136	136	0	.00	0
2	30	30	0	.00	0
3	167	167	0	.00	456
4	4	0	4	.00	0
5	167	167	0	.00	604
6	4	0	4	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	167	167	0	.00	1392
10	321	0	321	.00	0
11	678	678	0	.00	0
12	678	1478	-800	-.75	1072
13	44	0	44	.00	0
14	1646	3534	-1888	-1.59	1185
15	57	0	57	.00	0
16	0	0	0	.00	0
17	3534	4966	-1432	-1.18	1218
18	559	44	514	.00	0
19	237	237	0	.00	0
20	5249	5274	-24	-.01	2152
21	528	0	528	.00	0
22	673	46	627	.00	0
23	1096	1096	0	.00	0
24	6416	7352	-935	-.70	1345
25	57	0	57	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	7352	4013	3338	6.47	516
32	0	0	0	.00	0
33	4013	6379	-2366	-.98	2415

VOLUME OF SCOURED SEDIMENT = -7448(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 5497(10^3m3)

****
** Sediment Discharge (84) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	84.1	5.4
2	19.0	2.0
3	2.7	1.5
4	2.7	3.0
5	.0	2.8
6	.0	1.9
7	27.1	1.4
8	198.0	2.5
9	417.8	2.7
10	35.3	1.7
11	.0	.9
12	344.6	.5
13	146.5	1.1
14	325.6	1.6
15	415.1	.4
16	675.5	5.0
17	35.3	1.4
18	.0	4.4
19	.0	3.2
20	.0	2.2
21	.0	2.8
Monthly Average Discharge =		48.5(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	84	11.60	42.67
2	18	4.20	15.69
3	2394	7.60	58.36
4	0	15.20	11.97
5	2912	7.90	70.33
6	0	26.90	24.05
7	0	4.20	22.53
8	0	41.80	15.20
9	1374	30.90	132.11
10	0	51.40	19.60
11	417	4.20	21.74
12	1775	6.60	41.34
13	0	15.60	11.46
14	4111	21.70	184.91
15	0	50.20	13.86
16	0	31.80	7.39
17	5453	3.90	206.16
18	72	2.10	3.78
19	146	.70	8.79
20	5787	3.90	218.73
21	0	31.80	12.31
22	58	1.50	2.92
23	675	1.50	31.23
24	8035	3.90	260.47
25	0	26.60	8.62
26	0	9.30	27.81
27	133	15.90	27.81
28	0	58.70	13.83
29	0	1.00	20.02
30	0	83.90	61.65
31	4419	2.10	320.09
32	0	1.80	17.57
33	7004	2.10	335.01

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	84	84	0	.00	0
2	18	18	0	.00	0
3	103	103	0	.00	456
4	2	0	2	.00	0
5	103	103	0	.00	604
6	2	0	2	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	103	103	0	.00	1392
10	198	0	198	.00	0
11	417	417	0	.00	0
12	417	1775	-1357	-1.27	1072
13	27	0	27	.00	0
14	1878	4111	-2233	-1.88	1185
15	35	0	35	.00	0
16	0	0	0	.00	0
17	4111	5453	-1341	-1.10	1218
18	344	72	271	.00	0
19	146	146	0	.00	0
20	5672	5787	-115	-.05	2152
21	325	0	325	.00	0
22	415	58	356	.00	0
23	675	675	0	.00	0
24	6521	8035	-1513	-1.12	1345
25	35	0	35	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	8035	4419	3616	7.01	516
32	0	0	0	.00	0
33	4419	7004	-2585	-1.07	2415

VOLUME OF SCOURED SEDIMENT = -9146(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 4870(10^3m3)

****
** Sediment Discharge (85) **
****

Sub-basin No.	Sediment Discharge (10^3m3)	FLOW Discharge (m3/s)
1	114.8	6.1
2	25.9	2.2
3	3.7	1.7
4	3.7	3.4
5	.0	3.2
6	.0	2.2
7	37.0	1.6
8	270.3	2.8
9	570.3	3.1
10	48.1	2.0
11	.0	1.1
12	470.3	.5
13	200.0	1.3
14	444.4	1.8
15	566.6	.4
16	922.0	5.7
17	48.1	1.6
18	.0	5.0
19	.0	3.6
20	.0	2.5
21	.0	3.2
Monthly Average Discharge =		55.1(m3/s)

****
** **
** Bed Load Transport **
** **
****

Base Point	Sediment Transport (10^3m3)	Critical Discharge (m3/sec)	Max Discharge (m3/sec)
1	114	11.60	48.43
2	25	4.20	17.81
3	2916	7.60	66.24
4	0	15.20	13.59
5	3442	7.90	79.83
6	3	26.90	27.30
7	0	4.20	25.57
8	0	41.80	17.25
9	1751	30.90	149.94
10	0	51.40	22.25
11	570	4.20	24.67
12	2147	6.60	46.92
13	0	15.60	13.01
14	4907	21.70	209.86
15	0	50.20	15.73
16	0	31.80	8.39
17	6191	3.90	233.99
18	100	2.10	4.29
19	199	.70	9.97
20	6568	3.90	248.25
21	0	31.80	13.98
22	87	1.50	3.31
23	922	1.50	35.45
24	9073	3.90	295.62
25	0	26.60	9.79
26	0	9.30	31.56
27	189	15.90	31.56
28	0	58.70	15.70
29	0	1.00	22.72
30	0	83.90	69.98
31	5040	2.10	363.29
32	0	1.80	19.94
33	7959	2.10	380.22

****
** **
** Sediment Balance **
** **
****

Base Point	Sediment Inflow (10^3m3)	Sediment Transport (10^3m3)	Sediment Balance (10^3m3)	Sediment Depth (m)	Sediment Width (10^3m3)
1	114	114	0	.00	0
2	25	25	0	.00	0
3	140	140	0	.00	456
4	3	0	3	.00	0
5	140	140	0	.00	604
6	3	3	0	.00	0
7	0	0	0	.00	0
8	0	0	0	.00	0
9	144	144	0	.00	1392
10	270	0	270	.00	0
11	570	570	0	.00	0
12	570	2147	-1577	-1.47	1072
13	37	0	37	.00	0
14	2291	4907	-2615	-2.21	1185
15	48	0	48	.00	0
16	0	0	0	.00	0
17	4907	6191	-1284	-1.05	1218
18	470	100	370	.00	0
19	199	199	0	.00	0
20	6491	6568	-77	-.04	2152
21	444	0	444	.00	0
22	566	87	479	.00	0
23	922	922	0	.00	0
24	7578	9073	-1495	-1.11	1345
25	48	0	48	.00	0
26	0	0	0	.00	0
27	0	0	0	.00	263
28	0	0	0	.00	0
29	0	0	0	.00	0
30	0	0	0	.00	513
31	9073	5040	4032	7.82	516
32	0	0	0	.00	0
33	5040	7959	-2919	-1.21	2415

VOLUME OF SCOURED SEDIMENT = -9968(10^3m3)
VOLUME OF DEPOSIITED SEDIMENT = 5733(10^3m3)

Monthly Rainfall at Major Stations in the Chama River Basin

Serial	Station	Data
3029	Mucuruba	1950-1983
3035	El Vigia	1945-1987
3038	Tabay	1948-1987
3042	Mesa de Ejido	1948-1987
3047	Merida Aeropuerto	1956-1986
3111	Paramo de Mucuchies	1942-1987
3121	Mucuchies	1953-1983
3132	Las Tapias	1968-1987
3141	Tovar	1968-1987
3170	San Juan de Lagnillas	1970-1987
8049	La Punta	1975-1987
8056	San Pedro Chiguara	1970-1987

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: MUCURUBA Tipo: C3 Serial: 3029 Zona: 16
Estado: ME Latitud: 084222 Longitud: 705933 Altitud: 2320 m.s.n.m
Ord.: MA Instalada: 1048 Eliminada: 0184

Totales Mensuales y Anuales de Precipitacion (mm)

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1950	50.2	118.7	43.2	54.8	292.7	89.4	64.4	141.2	79.4	157.5	108.7	22.8	1221.0
1951	6.3	48.0	86.7	83.2	113.6	117.6	121.6	95.0	63.1	29.2	59.4	60.2	885.9
1952	26.9	0.0	23.4	253.4	69.4	78.6	124.8	50.5	57.1	49.7	21.9	81.1	836.9
1953	40.6	2.0	35.3	61.5	109.5	63.7	61.4	49.8	72.8	147.1	61.1	4.6	709.4
1954	32.7	21.9	-	-	-	64.2	108.9	58.1	33.4	212.2	133.8	40.7	-
1955	0.7	34.4	65.6	109.2	121.3	61.2	105.4	71.1	133.8	185.0	42.5	9.5	939.7
1956	110.5	51.3	81.7	75.0	125.4	81.0	67.0	119.5	76.2	134.1	90.0	64.0	1075.7
1957	0.0	20.0	29.0	136.5	256.6	37.0	37.2	46.0	54.0	123.5	104.0	20.0	863.8
1958	0.0	0.0	0.0	6.0	115.7	-	-	18.7	19.2	0.0	0.0	10.3	-
1959	9.0	0.0	21.3	56.2	22.0	53.1	36.6	45.8	107.6	134.8	80.8	16.3	583.5
1960	0.0	0.0	18.0	56.3	97.2	62.6	85.7	54.5	46.5	36.6	19.5	101.0	577.9
1961	0.0	0.0	34.8	96.5	75.3	44.3	59.6	46.1	66.5	142.1	98.9	0.0	666.1
1962	0.0	1.6	61.6	60.0	78.4	124.6	54.0	29.2	52.8	57.5	26.0	-	-
1963	8.5	7.3	49.2	170.7	220.9	46.0	49.0	40.9	82.1	142.2	88.0	2.4	907.2
1964	0.0	12.4	4.6	93.7	131.4	57.6	95.0	70.7	50.2	34.5	36.0	7.7	593.8
1965	32.1	13.9	29.4+	82.4+	-	45.5	30.7	68.2	43.8	78.7	104.0	24.2	-
1966	30.1	9.4	7.9	90.9	140.3	80.1	51.3	75.8	76.6	170.0	108.6	85.9	926.9
1967	38.9	15.8	24.5	102.7+	99.4+	53.5	89.6	55.2	93.2	125.2	41.4	60.6	800.0
1968	29.7	9.5	42.0	176.2	158.0	127.9	75.0	27.2	44.2	69.3	55.9	1.6	816.5
1969	56.9	36.3	8.4	236.5	72.6	55.8	41.9	76.9	72.4	229.1	98.9	5.7	991.4
1970	19.2	10.5	33.2	57.0	108.3	75.0	88.2	124.2	68.1	68.8	45.6	63.8	761.9
1971	77.3	94.2	64.4	132.8	144.8	32.8	41.8	91.5	87.0	74.8	86.2	38.4	966.0
1972	54.5	45.6	108.3	202.7	64.4	50.9	18.0	36.4	42.8	57.9	55.9	11.9	749.3
1973	7.9	4.2	66.9	101.9	37.9	31.4	40.6	82.0	121.1	52.5	142.3	27.0	715.7
1974	54.7	53.1	93.0	228.3	107.9	28.0	33.4	30.8	91.9	91.5	96.8	1.4	910.8
1975	0.6	39.8	36.8	130.3	117.6	25.5	50.0	51.9	174.0	117.4	108.1	125.1	977.1
1976	5.9	58.4	125.2	108.8	97.4	65.4	54.1	48.5	65.9	122.1	67.9	2.2	821.8
1977	0.0	3.2	46.6	88.7	146.8	78.3	44.2	62.0	76.8	124.5	148.0	9.1	828.2
1978	49.4	12.1	68.1	287.3	77.9	67.3+	64.8+	73.8	66.0	43.2	20.6	24.8	855.3
1979	0.6	33.7	45.9	108.6	215.0	142.9	98.9	82.4	69.4	138.6	81.3	87.2	1104.5
1980	7.9	35.7	0.5	72.7	75.9	67.1	61.3	74.1	122.6	99.2	89.5	5.3	711.8
1981	10.8	64.8	31.2	182.9	154.2	88.2	36.3	80.7	137.6	123.5	39.4	10.4	960.0
1982	34.6	51.1	90.6	259.7	147.6	27.8	31.8	30.5	47.1	84.4	44.4	30.4	880.0
1983	18.0	19.4	9.7	174.2	129.1	40.9	60.6	50.7	34.3	89.2	17.7	27.6	671.4
Prom:	24.0	27.3	45.1	125.4	122.6	65.6	63.1	63.5	74.4	104.3	71.2	32.8	919.4
Perc:	2.9	3.3	5.5	15.3	15.0	8.0	7.7	7.8	9.1	12.7	8.7	4.0	
D.STD:	26.4	28.4	31.6	69.0	56.8	29.2	27.5	28.2	33.4	53.7	38.3	33.0	
CV:	110.1	103.9	69.9	55.0	46.3	44.4	43.5	44.4	44.9	51.5	53.7	100.5	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

M.A.R.N.R.

FECHA: 13/01/89

DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: EL VIGIA Tipo: PR Serial: 3025 Zona: 16
Estado: ME Latitud: 083627 Longitud: 713747 Altitud: 130 m.s.n.m
Org.: MA Instalada: 0942 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1945	-	-	40.0	442.0	241.0	165.0	114.0	144.0	71.0	143.0	246.0	263.0	-
1946	140.0	92.0	96.0	449.0	132.0	59.0	84.0	30.0	25.0	173.0	323.0	-	-
1947	-	57.0	9.0	-	194.0	87.0	126.0	116.0	50.0	-	-	-	-
1948	-	-	-	-	-	-	-	-	-	-	-	-	-
1949	-	-	-	-	-	-	-	-	-	-	-	-	-
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	177.0	42.0	132.0	99.0	70.0	144.0	43.0	232.0	161.0	163.0	117.0	66.0	1448.0
1954	183.0	176.0	43.0	265.0	118.0	177.0	72.0	69.0	125.0	356.0	343.0	334.0	2201.0
1955	84.0	338.0	349.0	347.0	185.0	144.0	86.0	64.0	173.0	167.0	239.0	232.0	2408.0
1956	314.0	312.0	338.0	145.0	171.0	94.0	100.0	23.0	101.0	289.0	269.0	238.0	2394.0
1957	159.0	64.0	149.0	39.0	313.0	54.0	69.0	40.0	63.0	130.0	203.0	104.0	1386.0
1958	77.0	69.0	86.0	115.0	261.0	79.0	94.0	52.0	62.0	118.0	271.0	175.0	1459.0
1959	64.0	15.0	31.0	52.0	239.0	123.0	68.0	120.0	72.0	221.0	172.0	136.0	1313.0
1960	170.0	17.0	150.0	153.0	128.6	79.7	110.4	61.5	75.2	242.9	85.1	325.0	1598.4
1961	124.1	67.5	21.5	108.5	35.1	79.7	115.7	116.7	127.1	90.1	433.1	179.1	1498.2
1962	77.4	68.4	84.1	124.9	192.2	177.9	75.3	142.0	65.1	122.7	294.5	149.0	1573.5
1963	89.6	65.0	199.1+	336.7+	196.5	55.1	102.0	141.0	65.1	121.5	281.9	36.5	1690.0
1964	7.2	65.0	14.5	220.9	69.5	174.2	125.1	201.0	74.6	278.8	115.9	120.5	1467.8
1965	176.6	191.7	16.8	288.9	187.9	67.4	40.9	132.0	153.3	129.8	252.0	46.1	1683.4
1966	32.4	107.3	101.8	67.4	303.0	212.1	83.9	52.7	112.4	110.5	445.9	413.2	2042.6
1967	183.6	110.7	157.4	374.2	211.7	137.8	124.4	110.0	47.4	147.1	225.9	357.3	2187.5
1968	75.4	142.6	93.9	391.4	119.8	251.0	98.1	92.4	134.8	160.8	334.4	253.7	2148.3
1969	277.3	203.1	125.7	222.3	97.2	152.7	10.7	213.5	110.3	219.4	290.3	247.3	2169.8
1970	182.6	199.9	111.3	165.7	174.8	71.2	116.9	90.5	101.4	210.5	277.9	201.7	1904.4
1971	222.9	337.6	277.8	272.0	139.1	54.7	65.4	92.3	180.5	276.6	167.5	146.9	2233.3
1972	201.5	119.5	214.5	470.1	256.3	43.2	60.8	109.9	83.5	97.0	242.2	120.0	2018.5
1973	122.0	91.6	17.7	126.9	78.8	198.0	65.7	185.6	164.0	165.3	289.8	197.0	1702.4
1974	280.1	88.7	331.1	220.9	160.8	51.1	116.1	56.0	223.3	207.4	93.1	84.5	1913.1
1975	90.3	61.4	65.7	230.3	185.6	226.1	152.6	96.6	45.2	149.9	215.8	397.6	1917.1
1976	68.4	175.7	179.1	194.7	75.8	145.8	16.7	35.9	37.8	317.7	158.1	73.1	1478.8
1977	85.4	5.2	111.9	57.5	105.9	104.7	94.2	121.2	142.2	388.9	110.1	60.6	1387.8
1978	99.2	110.5	182.7	310.2	116.1	139.1	135.8	37.4	52.8	218.2	232.1	328.3	1962.4
1979	77.5	79.4	354.2	433.9	221.7	68.3	115.6	151.2	86.5	341.0	315.2	114.3	2359.4

M.A.R.N.R.

FECHA: 13/01/89

DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: EL VIGIA Tipo: PR Serial: 3035 Zona: 16
Estado: ME Latitud: 083627 Longitud: 713747 Altitud: 130 m.s.n.m
Org.: MA Instalada: 0942 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1980	67.7	131.6	19.1	115.9	64.7	22.6	63.6	170.3	103.9	168.9	266.1	69.7	1284.1
1981	53.6	247.1	112.2	305.7	288.6	148.3	45.8	110.3	114.3	198.3	241.8	183.6	2069.8
1982	85.7	139.5	266.3	397.8	194.1	91.6	94.0	40.0	100.7	134.8	174.1	127.1	1886.7
1983	54.1	9.2	69.0	177.2	328.1	109.4	140.9	123.6	86.5	155.8	138.4	269.2	1660.4
1984	180.4	68.2	51.8	-	-	-	-	-	-	-	-	-	-
1985	106.8	7.8	267.4+	452.2+	265.3	48.1	47.4	104.2	171.6	157.6	134.0	315.3	2077.7
1986	154.7	170.1	158.7	149.2	191.8	80.6	28.9	61.3	91.6	354.1	269.8	97.4	1799.2
1987	49.3	24.6	152.3	67.0	307.6	58.3	,	,	,	,	,	,	-
Prom:	127.6	115.7	136.3	231.1	178.9	112.9	86.2	103.9	101.5	199.3	236.9	190.1	1820.3
Perd:	7.0	6.4	7.5	12.7	9.8	6.2	4.7	5.7	5.6	10.9	13.0	10.4	
D.STD:	66.7	82.1	95.7	121.5	73.1	53.5	35.0	51.7	45.4	78.6	87.3	99.0	
CV:	52.3	70.9	70.2	52.6	40.8	47.4	40.6	49.8	44.8	39.4	36.9	52.1	

* DATO ENGLOBADO + DATO DESENGLOSADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

M.A.R.N.R.

FECHA: 13/01/89

DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: TABAY Tipo: PR Serial: 3038 Zona: 16
Estado: ME Latitud: 083307 Longitud: 710409 Altitud: 1720 m.s.n.m
Ord.: MA Instalada: 1048 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1948	-	-	-	-	-	-	-	-	-	-	135.5	79.5	-
1949	-	20.0	12.3	76.0	198.0	78.0	93.5	162.0	275.5	202.0	141.0	47.0	-
1950	67.0	95.5	7.0	75.0	349.0	154.0	120.0	201.0	163.0	263.5	195.0	120.0	1810.0
1951	0.0	45.0	49.0	102.0	222.5	298.0	172.0	177.0	108.5	160.0	264.0	200.5	1798.5
1952	25.0	5.0	45.2	381.9	190.0	99.5	183.7	73.9	78.2	196.2	54.7	159.8	1565.1
1953	77.9	4.0	49.4	122.1	242.3	167.2	92.2	35.2	146.7	184.4	301.0	17.5	1440.9
1954	-	-	-	-	-	-	-	-	-	-	-	-	-
1955	17.7	205.0	109.1	175.0	198.0	167.0	119.0	109.0	265.3	383.0	226.9	105.7	2080.7
1956	85.6	102.0	95.2	113.0	150.9	106.1	94.9	153.2	95.8	245.3	123.9	112.3	1478.2
1957	25.6	10.5	24.8	96.1	449.7	51.7	100.5	66.5	132.0	248.0	217.2	0.0	1427.6
1958	0.0	0.0	0.0	22.3	76.5	-	-	-	-	173.7	68.9	20.0	-
1959	5.9	0.0	92.4	90.6	63.2	136.1	77.2	75.8	219.7	259.0	259.6	79.2	1357.7
1960	32.4	20.9	20.6	190.5	183.8	169.4	81.9	165.1	174.9	94.8	49.6	204.4	1388.2
1961	1.5	8.6	59.6	154.3	164.0	93.4	109.7	94.3	197.0	333.4	176.6	32.0	1394.4
1962	15.9	7.6	73.3	89.3	177.2	176.7	77.3	210.0	296.2	130.3	203.2	20.9	1477.9
1963	7.6	11.5	113.5	292.7	252.3	122.8	88.0	103.1	163.2	298.0	133.4	29.4	1620.5
1964	0.0	15.4	58.3	185.2	282.4	182.0	180.7	125.9	99.0	107.5	85.3	41.6	1353.3
1965	79.7	20.3	0.5	198.8	236.6	69.1	40.4	178.3	196.6	291.3	191.3	125.4	1628.3
1966	127.3	10.6	9.1	229.6	375.8	179.8	139.1	117.3	105.7	373.4	301.5	123.0	2092.2
1967	56.5	73.5	21.2	208.7	103.8	86.1	96.5	130.8	142.9	187.0	84.9	36.0	1227.9
1968	27.0	16.7	43.7	216.4	291.6	116.1	136.0	77.8	121.1	258.5	164.7	27.4	1507.0
1969	42.7	93.0	53.5	340.9	197.5	138.2	50.5	77.8	200.9	560.6	183.5	71.6	2000.7
1970	28.8	0.0	46.7	213.2	175.7	150.7	177.0	209.7	177.0	339.4	154.6	152.6	1925.4
1971	94.9	99.9	164.5	312.4	448.1	86.8	35.6	178.3	202.5	195.1	241.7	101.9	2161.7
1972	110.1	28.2	122.8	296.2	291.7	111.3	31.8	62.8	194.6	134.8	113.4	51.8	1549.5
1973	3.4	3.5	87.0	127.4	155.9	111.9	103.2	160.2	235.7	221.3	235.7	75.4	1520.6
1974	57.7	69.0	71.9	213.2+	264.0+	55.0	53.5	64.3	143.0	192.7	115.4	24.1	1323.8
1975	8.5	38.7	148.1	107.9	223.8	79.4	109.9	103.9	177.7	226.2	291.1	233.6	1748.8
1976	12.0	65.3	98.9	173.0	309.0	49.2	72.6	110.9	143.8	153.3	103.9	24.3	1316.2
1977	1.8	0.1	71.5	30.1	163.0	53.8	88.3	124.8	172.5	293.7	295.1	19.0	1313.7
1978	49.4	20.0	121.1	377.3	315.0	108.6	81.5	83.8	211.9	171.5	94.5	85.7	1720.3
1979	0.9	59.6	40.7	229.2	236.0	182.6	104.9	170.3	194.1	278.8	261.8	93.9	1852.8
1980	72.6	70.4	8.1	110.0	208.8	93.5	92.2	210.2	250.2	184.0	111.0	16.8	1419.8
1981	0.0	71.0+	110.6+	294.5	265.7+	135.0+	91.3	163.4	141.1	314.1	96.8	98.8	1772.3
1982	107.3	101.1	88.8	304.0	329.6	69.6	64.5	77.6	199.2	222.0	88.1	47.4	1699.2

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: TABAY Tipo: PR Serial: 3039 Zona: 16
Estado: ME Latitud: 083907 Longitud: 710409 Altitud: 1720 m.s.n.m
Org.: MA Instalada: 1048 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1983	32.1	6.2	35.0	272.1	240.8	122.4+	102.0+	118.6	182.9	127.8	151.7	66.0	1457.6
1984	26.3	49.7	43.8	188.3	162.7+	82.7+	109.7	129.9	166.7	226.8	85.2	47.8	1319.6
1985	13.9+	15.4+	154.0	101.5	133.2	82.0	147.0	109.1	242.6	269.7	190.7	143.1	1607.2
1986	18.9	70.4	42.7	298.1	306.9	104.3	43.8	121.5	161.3	374.9	104.6	23.7	1671.1
1987	2.2	32.5	45.1	,	,	,	,	,	,	,	,	,	-
Prom:	36.5	41.0	64.8	189.2	233.1	118.1	98.9	125.8	176.6	239.9	165.8	78.0	1567.6
Porc:	2.3	2.6	4.1	12.1	14.9	7.5	6.3	8.0	11.3	15.3	10.6	5.0	
D.STD:	35.0	42.0	43.0	97.0	93.6	52.0	40.8	49.6	57.1	97.2	77.8	38.6	
CV:	96.0	102.5	66.4	51.3	40.2	44.0	41.2	39.4	32.3	40.5	46.9	75.1	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

FECHA: 13/01/89

M.A.R.N.R.
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: MESA DE EJIDO Tipo: PS Serial: 3042 Zona: 16
Estado: ME Latitud: 083300 Longitud: 711706 Altitud: 1520 m.s.n.m
Org.: MA Instalada: 1148 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1948	-	-	-	-	-	-	-	-	-	-	-	26,2	-
1949	0,8	11,3	-	64,3	188,7	-	17,8	-	127,3	128,7	93,2	38,3	-
1950	45,2	56,3	0,0	33,4	123,6	70,5	60,5	110,4	58,9	167,0	166,2	23,3	945,2
1951	30,1	71,3	50,0	96,5	198,3	115,2	92,3	65,8	95,3	40,9	139,1	55,0	1098,8
1952	18,0	0,0	0,0	92,9	95,4	59,0	88,8	30,3	33,9	86,8	82,5	31,3	621,9
1953	26,9	2,7	11,5	61,4	141,1	69,7	30,9	0,0	60,0	107,4	46,1	23,5	580,2
1954	20,9	0,0	29,9	119,5	125,7	99,7	52,0	76,5	56,4	154,0	247,3	114,8	1084,7
1955	6,4	108,4	39,0	116,1	93,5	99,3	77,2	53,0	136,9	235,4	81,6	48,3	1094,1
1956	83,2	41,4	65,9	66,6	77,5	65,0	39,6	41,4	46,0	60,7	98,6	107,6	793,5
1957	44,9	0,0	0,0	57,4	193,2	55,1	55,5	28,2	35,0	131,0	122,1	39,9	752,3
1958	0,0	0,0	0,0	64,9	61,1	58,2	30,1	39,3	54,0	65,1	164,6	9,0	546,3
1959	0,0	0,0	0,0	98,2	116,3	82,1	31,7	31,9	101,1	149,3	132,4	0,0	743,0
1960	0,0	0,0	0,0	46,3	123,1	63,9	14,5	-	106,9	76,2	22,3	106,1	-
1961	0,0	0,0	19,5	30,7	55,3	37,2	74,2	24,2	82,0	71,4	126,9	24,9	548,3
1962	0,0	0,0	22,9	-	93,6	95,2	-	176,9	91,9	41,6	-	42,8	-
1963	16,2	8,1	44,0	180,3	180,7	66,7	47,9	72,1	64,9	91,2	180,3	7,8	960,2
1964	1,1	13,2	0,5	144,7	123,9	128,7	127,5	60,0	43,2	115,3	109,5	32,4	900,0
1965	14,5	9,3	0,8	59,0	80,4	53,0	81,1	95,7	179,8	195,7	106,5	38,8	914,6
1966	18,9	17,0	5,5	57,3	209,7	172,4	77,4	73,8	92,6	116,0	299,8	185,7	1322,2
1967	39,6	13,8	22,7	179,3	51,8	48,2	57,6	26,1	92,0	76,9	150,3	73,4	830,7
1968	14,4	9,5	2,3	117,5	103,2	199,6	58,1	51,9	109,9	80,1	107,7	24,9	880,1
1969	39,6	10,4	17,8	138,6	82,1	90,3	33,4	89,2	100,4	17,0	176,5	75,3	870,6
1970	75,3	22,6	11,5	42,5	116,3	75,2	96,1	83,7	134,9	163,5	223,9	82,4	1127,9
1971	162,7	49,9	71,4	127,4	119,7	40,1	58,8	127,7	114,6	61,0	70,9	58,7	1062,9
1972	51,0	16,6	57,9	198,2	76,6	86,6	15,5	43,4	64,3	103,8	61,8	37,2	812,8
1973	6,0	0,0	30,2	59,7	56,5	44,9	27,3	65,7	134,8	153,5	89,2	48,7	716,5
1974	25,5	18,9	53,1	42,8	163,7	21,0	45,4	56,7	127,7+	158,1+	65,6	20,3	798,8
1975	1,8	9,3	105,7	46,0	77,6	90,9	48,1	69,3	191,3	143,0	149,0	168,0	1092,0
1976	52,2	58,5	98,6	87,5	115,0	34,1	65,6	61,2	107,7	148,2	52,2	28,5	909,9
1977	0,0	0,1	42,8	26,3	82,3	31,6	32,0	42,8	88,5	171,3	86,4	10,6	614,7
1978	6,7	9,0	86,5	182,5	88,5	100,9	57,5	74,6	87,9	124,9	73,9	35,0	927,9
1979	4,2	4,6	24,2	113,3	174,4	119,1	69,0	85,6	101,5	206,9	193,7	69,5	1168,0
1980	45,6	34,9	0,3	29,2	145,0	57,3	39,1	89,0	134,2	66,4	77,8	26,6	745,9
1981	0,5	0,0	75,2	223,0	205,4+	126,3+	76,7	71,8	169,9	128,4	94,6	18,0	1189,8
1982	49,0	70,3	94,2	108,2	143,0	42,6	36,2	41,1	73,6	109,9	86,6	18,5	873,2

M.A.R.N.R. FECHA: 13/01/99
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: MESA DE EJIDO Tipo: PR Serial: 3042 Zona: 16
Estado: ME Latitud: 083300 Longitud: 711706 Altitud: 1520 m.s.n.m
Org.: MA Instalada: 1148 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1983	17.2	0.7	15.8	213.9	191.0	23.8	82.9	42.7	44.4	116.1	29.0	50.6	853.1
1984	13.7	36.5	4.2	42.8	46.7	16.8	64.1	74.3	21.9	63.2+	64.8+	28.1+	477.1
1985	14.5+	15.5	24.5	86.9	160.6	28.2	49.7	103.5	135.8+	163.2+	149.9	115.0	1052.2
1986	28.6	51.5	7.0	143.6	76.3	67.8	36.0	50.4	109.9+	134.8+	29.8	20.6	755.3
1987	18.9	0.5	17.2	,	,	,	,	,	,	,	,	,	-
Prom:	24.0	19.8	30.3	97.3	120.0	73.6	55.4	64.7	95.3	116.6	116.3	50.5	865.9
Perc:	3.0	2.3	3.5	11.2	13.9	8.5	6.4	7.5	11.0	13.5	13.4	5.8	
D.STD:	31.2	25.4	30.8	55.7	50.1	40.4	25.7	33.0	41.7	51.8	63.3	42.3	
CV:	120.0	128.6	101.6	57.3	41.7	54.9	46.5	51.0	43.9	44.4	54.4	83.8	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: MERIDA AEROPUERTO Tipo: 01 Serial: 3047 Zona: 16
Estado: ME Latitud: 083556 Longitud: 710925 Altitud: 1470 m.s.n.m
Ord.: SM Instalada: 0120 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1956	154.0	129.0	73.0	116.0	141.0	146.0	109.0	153.0	107.0	204.0	185.0	193.0	1714.0
1957	15.0	7.0	21.0	47.0	361.0	106.0	121.0	47.0	116.0	287.0	317.0	90.0	1455.0
1958	7.0	13.0	30.0	150.0	236.0	123.0	116.0	78.0	154.0	217.0	82.0	28.0	1234.0
1959	5.0	2.0	31.0	130.0	267.0	117.0	65.0	123.0	128.0	395.0	150.0	16.0	1429.0
1960	66.0	43.0	9.0	142.0	186.0	262.0	97.0	92.0	179.0	161.0	156.0	135.0	1569.0
1961	3.0	18.0	28.0	61.0	125.0	74.0	121.0	84.0	210.0	241.0	259.0	61.0	1305.0
1962	20.0	7.0	55.0	196.0	249.0	154.0	95.0	187.0	221.0	337.0	136.0	32.0	1689.0
1963	38.0	12.0	52.0	259.0	168.0	205.0	118.0	124.0	234.0	222.0	223.0	18.0	1673.0
1964	0.0	84.0	20.0	139.0	207.0	188.0	289.0	170.0	153.0	140.0	80.0	35.0	1505.0
1965	55.0	13.0	4.0	131.0	236.0	72.0	77.0	110.0	279.0	271.0	278.0	108.0	1634.0
1966	57.0	20.0	32.0	133.0	328.0	265.0	141.0	90.0	235.0	390.0	298.0	219.0	2209.0
1967	99.0	20.0	43.0	239.0	174.0	153.0	160.0	118.0	217.0	156.0	140.0	83.0	1601.0
1968	22.0	18.0	34.0	151.0	290.0	238.0	120.0	163.0	171.0	195.0	162.0	25.0	1589.0
1969	36.0	39.0	35.0	257.0	263.0	301.0	89.0	113.0	209.0	261.0	206.0	69.0	1878.0
1970	91.0	34.0	10.0	102.0	259.0	156.0	143.0	225.0	236.0	354.0	264.0	170.0	2044.0
1971	92.8	95.8	164.7	221.1	318.7	85.5	117.8	150.6	233.5	281.9	218.7	84.0	2065.0
1972	96.9	64.3	111.4	427.7	154.6	149.6	54.7	79.9	230.0	223.4	88.3	58.5	1739.3
1973	9.5	2.5	38.3	84.3	91.7	186.4	127.3	174.9	303.5	242.3	288.7	70.0	1619.4
1974	39.2	43.2	56.9	107.1	292.1	86.2	182.9	88.5	170.2	281.9	273.4	13.7	1636.3
1975	9.4	68.4	62.0	57.5	258.6	99.3	141.6	173.9	369.5	220.7	230.0	165.0	1874.9
1976	52.5	60.8	115.9	231.1	201.4	152.8	105.4	107.2	21.5	330.4	83.6	46.5	1509.1
1977	9.4	0.4	44.7	51.0	233.6	95.9	52.7	107.3	175.8	428.0	244.9	46.8	1490.5
1978	33.0	35.0	142.0	235.0	221.0	282.0	84.0	153.0	156.0	301.0	157.0	59.0	1858.0
1979	61.0	4.0	33.0	227.0	206.0	271.0	74.0	227.0	238.0	370.0	269.0	78.0	2058.0
1980	26.0	40.0	11.0	83.0	233.0	142.0	111.0	129.0	244.0	192.0	143.0	124.0	1468.0
1981	3.0	164.0	112.0	388.0	335.0	279.0	132.0	196.0	173.0	242.0	169.0	61.0	2254.0
1982	60.0	150.0	127.0	224.0	415.0	204.0	107.0	61.0	181.0	348.0	157.0	39.0	2074.0
1983	83.0	62.0	25.0	265.0	330.0	109.0	164.0	164.0	210.0	721.0	109.0	111.0	1853.0
1984	70.0	107.0	18.0	11.0	198.0	164.0	0.0	167.0	321.0	301.0	128.0	71.0	1556.0
1985	7.4	30.4	167.7	142.5	252.1	122.0	146.7	198.3	209.6	370.9	237.7	121.5	2006.8
1986	37.5	76.6	-	250.6	314.0	144.0	70.2	139.0	353.1	-	-	-	-
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prom:	49.4	44.2	61.6	168.3	249.7	164.6	119.5	135.9	199.2	263.1	203.1	86.8	1736.4
Perc:	2.8	2.7	3.5	9.7	14.3	9.5	6.9	7.8	10.9	15.2	11.7	5.0	
D.STD:	39.0	40.5	47.1	86.9	88.8	63.9	46.1	56.7	69.2	89.7	91.4	53.4	
CV:	78.9	87.5	76.4	51.6	35.7	38.8	38.6	41.7	34.1	34.1	45.0	61.5	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

M.A.R.N.R. FECHA: 13/01/89

DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE

DIRECCION DE HIDROLOGIA Y METEOROLOGIA

SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA

S I N A I H M E

Estacion: PARAMO DE MUCUCHIES Tipo: PR Serial: 3111 Zona: 16

Estado: ME Latitud: 085105 Longitud: 705019 Altitud: 3685 m.s.n.m

Org.: MA Instalada: 0142 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1942	13,2+	16,8+	29,4	71,6	107,0	122,4	89,0	47,8	14,8	23,4	51,0	28,0	614,4
1943	0,0	10,0	30,6	134,8	79,4	136,0	142,6	65,6	16,0	55,0	0,0	3,6	673,6
1944	0,0	2,0	44,0	67,2	139,6	129,6	-	-	65,6	93,3+	46,3+	4,0	-
1945	0,0	0,0	15,0	112,3+	155,5+	200,8	84,4	42,3	44,0	49,2	6,2	31,2	740,9
1946	0,0	4,0	16,0	150,0	80,0	131,8	153,4	114,6	48,5	49,8	46,0	-	-
1947	0,0	0,0	0,0	30,0	83,0	50,0	135,0	87,0	55,0	59,0	0,0	0,0	499,0
1948	0,0	0,0	0,0	95,0	87,0	75,0	134,0	79,0	93,0	32,0	33,0	5,0	633,0
1949	0,0	0,0	0,0	35,0	102,0	81,0	111,0	113,0	87,0	80,0	25,0	15,0	649,0
1950	37,0	35,0	10,0	38,0	202,0	150,0	130,0	156,0	50,0	75,0	42,0	17,0	942,0
1951	10,0	8,0	51,0	99,0	63,0	206,0	135,0	118,0	75,0	21,0	20,0	35,4	841,4
1952	8,4	0,0	4,9	93,1	71,4	159,9	141,6	90,4	86,8	76,4	17,0	11,6+	761,5
1953	5,3+	2,0	-	59,6	118,6	87,3	95,9	115,2	50,2	58,8	37,5	3,0	-
1954	16,2	19,8	6,9	137,0	144,8	143,0	173,8	93,5	70,8	104,4	33,3	27,3	970,8
1955	4,6	9,3	33,5	97,0	107,8	136,9	176,5	78,8	168,3	136,2	52,5	14,6	1016,0
1956	52,7	25,9	46,7	42,5	145,2	100,3	140,6	146,6	80,9	92,0	33,1	33,0	939,5
1957	0,6	5,4	11,2	21,9	154,1	117,3	189,6	85,3+	62,8+	106,2	65,5	18,4	838,3
1958	0,4	0,0	0,6	25,1	97,6	157,2	69,4	157,9	60,3	71,4	26,6	2,8	669,3
1959	0,0	0,0	44,2	43,6	152,2	185,3	107,7+	89,6+	154,3	102,2	-	-	-
1960	7,3	27,5	18,3	65,8	88,7	118,6	129,1	92,9	67,7	54,7	14,4	44,0	729,0
1961	0,1	0,0	18,7	56,1	59,6	155,5	150,7	109,0	98,7	87,3	34,5+	16,7+	786,9
1962	1,3	0,0	52,3	47,9	100,2	169,5	110,7	147,1	86,4	36,0	31,1	1,4	783,9
1963	13,6	7,2	12,5	87,2	148,1	112,4	101,2+	84,2+	134,9	76,9	69,9	0,4	848,5
1964	0,0	3,1	2,1	48,0	93,9+	122,3+	144,0	136,3	77,2	56,4	22,4	3,6	709,3
1965	14,5	17,5	0,1	27,3	101,2	154,5	200,8+	166,9+	67,0	85,3	75,7	13,1	923,9
1966	4,8	12,6	12,7	50,3	108,5	135,0+	135,2+	112,3+	108,2	88,3	102,1	71,2	941,2
1967	5,1	0,2	7,8	123,6	74,4	184,6	247,3	147,8+	108,8+	108,0	20,6	39,1	1067,3
1968	4,2	3,7	12,7	110,7	137,7+	179,3+	220,9	89,7	86,8	88,2	20,5	7,9	962,3
1969	13,9	19,4	13,1	60,1+	83,3+	0,0	193,9	96,8	88,3	284,3	126,7	17,4	997,2
1970	35,8	29,4	6,7	29,9	65,2	161,3+	161,6+	235,9	138,6	91,3	50,4+	24,4+	1030,5
1971	44,7	20,2	40,1	77,3	102,9	131,7	91,1	122,7+	90,2+	38,9	46,9	22,5	931,2
1972	55,2	27,4	59,4	129,8+	179,6+	155,5	192,5	128,8	66,9	74,6	49,4	13,5	1132,6
1973	5,7	1,6	37,8	59,2	65,1	94,4	161,2	121,9	132,4	71,6	80,4	15,5	846,8
1974	12,5	24,5	42,8	78,6	113,7	78,2	111,2	70,3	109,7	100,0	41,2	0,2	784,9
1975	2,3	8,6	43,6	46,2	111,2	137,2	82,1	97,5	98,6	114,7	36,3	73,1	850,4
1976	9,2	12,1	65,9	81,3	72,3	270,6	211,9	274,5	73,9	72,6	55,3	8,6	1209,2

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: PARAMO DE MUCUCHIES Tipo: PR Serial: 3111 Zona: 16
Estado: ME Latitud: 035105 Longitud: 705019 Altitud: 3695 m.s.n.m
Org.: MA Instalada: 0142 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1977	0.4	0.0	27.6	37.6	138.0	196.0	176.2	128.4	91.0	67.4	34.7	0.6	894.9
1978	7.2	20.3	57.4	141.7	83.0	278.6	97.7	127.9	82.3	59.3	21.4	34.3	1011.1
1979	0.0	5.0	38.6	80.3	105.7	189.4	155.2	90.2	52.3	112.7	48.2	38.6	916.2
1980	0.2	5.1	19.0	94.9	140.4	151.3	169.2	149.5	151.5	79.2	73.1	5.3	1037.7
1981	0.4	30.4	9.2	164.2	141.4+	194.1+	61.2	191.1	105.5	82.8	43.0	10.9	1024.2
1982	11.5	47.4	41.7	159.8	139.8	119.4	163.8	70.8	85.1	90.4	58.0	32.8	1040.5
1983	4.1	10.7	30.9	146.9	241.8	136.4	186.0	108.5	109.1	89.4	4.7	26.3	1094.8
1984	4.3	7.6	8.0	42.4	54.3	191.4	124.6	124.3	98.4	69.5	27.5	0.7	743.0
1985	0.0	2.9	57.8	51.9	93.5	119.7	96.6	148.8	97.4	104.5	41.1	57.3	870.4
1986	3.1	46.0	9.3	152.0	79.7	163.4	153.5	119.5	114.2	115.1	26.9	9.3	992.0
1987	5.9	1.2	32.7	,	,	,	,	,	,	,	,	,	-
Prom:	9.0	11.6	25.0	80.1	111.9	143.3	141.8	117.5	86.8	81.9	40.8	19.5	869.0
Perc:	1.0	1.3	2.9	9.2	12.9	16.5	16.3	13.5	10.0	9.4	4.7	2.2	
D.STD:	13.8	12.7	19.1	43.0	42.8	54.1	46.6	46.6	35.2	41.5	25.6	17.9	
CV:	153.2	110.0	76.6	53.7	38.3	37.9	32.9	39.7	40.5	50.7	62.8	91.7	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

Estacion: MUCUCHIES — Tipo: PC — Serial: [illegible]21 — Zona: 16
Estado: ME — Latitud: 084504 — Longitud: 705503 — Altitud: 2950 m.s.n.m
Org.: MA — Instalada: 0549 — Eliminada: 0184

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1953	5.0	0.0	45.0	36.0	96.1	40.6	61.3	35.9	43.5	67.6	26.8	0.0	457.8
1954	8.0	9.6	9.0	153.7	109.7	75.5	71.6	72.6	58.4	101.4	60.6	2.0	732.1
1955	0.0	11.9	30.6	69.7	76.1	67.3	83.3	35.3	190.2	138.2	42.0	7.4	752.0
1956	39.4	41.2	60.8	-	-	-	59.2	103.3	55.2	66.4	21.4	23.1	-
1957	0.0	7.6	12.3	62.3	144.9	22.5	75.6	66.3	19.3	88.3	32.7	11.3	543.1
1958	0.0	0.0	0.0	24.9	104.5	78.7	47.1	83.4	56.6	74.2	12.6	0.1	482.1
1959	0.0	0.0	3.4	36.4	145.6	67.8	31.4	37.2	92.9	59.2	27.6	0.0	501.5
1960	4.3	6.2	4.6	76.8	77.7	68.0	69.0	50.1	43.8	31.6	7.3	24.1	463.5
1961	0.0	0.0	21.3	50.6	44.7	51.6	72.4	47.5	40.6	101.8	23.6	6.0	460.1
1962	0.0	0.0	6.0	50.6	63.8	135.9	64.4	-	51.9	41.1	21.0	0.0	-
1963	10.0	1.6	6.3	85.8	124.5	51.7	72.2	44.8	89.0	91.3	43.2	0.0	620.4
1964	0.0	0.3	0.0	40.8	75.5	53.9	92.1	73.7	47.2	28.2	13.4	3.8	428.9
1965	9.3	4.8	0.0	27.4	55.9	66.0	47.8	75.7	73.0	51.1	37.1	2.6	450.7
1966	0.0	0.0	9.0	44.4	126.9	63.5	64.7	67.8	69.2	73.9	72.8	45.4	637.6
1967	4.0	0.0	4.5	104.4	31.3	75.4	72.7	66.4	101.8	71.6	24.4	15.8	572.3
1968	9.3	6.3	14.8	111.5	78.7	109.6	73.0	27.6	76.6	56.3	34.8	0.0	598.5
1969	6.3	10.6	5.6	209.4	48.6	51.8	37.0	71.4	77.5	138.2	84.3	4.5	745.2
1970	5.6	9.9	4.7	22.6	88.1	81.4	95.2	131.6	97.3	123.4	32.2	31.6	723.6
1971	42.9	10.7	37.2	75.1	66.6	25.1	36.8	97.2	58.2	15.1	33.7	3.8	502.4
1972	37.4	18.1	30.9	192.3	58.5	75.3	38.6	50.5	58.8	41.6	28.7	0.0	630.7
1973	0.0	0.0	29.4	69.6	41.4	30.8	56.6	58.6	91.1	69.7	105.7	12.9	565.8
1974	0.0	50.3	34.5	71.9	41.5	40.5	34.0	71.6	130.0	86.5	114.2	0.0	675.0
1975	0.0	3.5	23.0	76.3	104.1	40.0	45.0	64.0	153.2	57.8	16.6	70.0	653.5
1976	5.0	3.5	102.5	64.3	69.0	124.8	68.2	71.5	69.0	72.0	33.0	5.0	687.8
1977	0.0	0.0	32.7	24.8	97.0	108.1	83.0	55.0	80.0	58.4	77.0	0.0	616.0
1978	5.9	6.0	15.8	104.5	36.5	234.8	29.5	84.2	56.0	47.3	14.8	11.0	646.3
1979	0.0	15.4	15.0	54.5	64.0	152.0	83.5	86.3	56.3	73.2	32.0	52.0	684.2
1980	3.7	0.0	0.0	32.0	45.5	85.5	108.0	95.0	128.1	84.0	39.7	0.0	621.5
1981	0.0	30.8	4.0	150.6	0.0	111.1	36.0	171.9	37.7	101.1	14.5	0.0	657.7
1982	3.3	19.2	36.0	37.0	66.4	102.3	39.0	72.6	83.0	30.6	19.0	4.5	512.9
1983	1.5	10.0	15.5	65.7	35.5	113.0	61.3	49.2	49.2	34.5	12.5	5.0	452.9
Prom:	6.5	9.0	19.8	74.2	74.0	80.2	61.6	70.6	75.3	70.2	37.4	11.0	589.7
Perc:	1.1	1.5	3.4	12.6	12.5	13.6	10.4	12.0	12.8	11.9	6.3	1.9	
D.STD:	11.6	12.3	21.7	47.4	34.4	43.2	20.7	29.1	36.2	30.9	27.1	17.2	
CV:	179.1	136.9	109.7	63.9	46.5	53.9	33.6	41.2	48.0	44.0	72.4	156.1	

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: LAS TAPIAS Tipo: PR Serial: 3132 Zona: 16
Estado: ME Latitud: 081341 Longitud: 715041 Altitud: 1920 m.s.n.m
Org.: MA Instalada: 0868 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1968	-	-	-	-	-	-	-	-	73.6	40.4	84.3	21.7	-
1969	54.5	20.6	11.9	198.1	58.7	70.2	43.8†	48.1†	72.6	137.9	79.0	103.2	898.6
1970	30.2	67.0	20.3	40.3	150.7	76.3	69.6	47.9	112.3	74.9	62.2	36.1	787.8
1971	34.2	45.6	67.2	42.1	97.5	21.2	48.6	112.4	99.3	52.4	81.9	33.1	735.5
1972	96.7	22.1	74.6	216.0	44.6	62.1	24.9	37.2	28.3	54.2	53.4	13.2	727.3
1973	8.3	2.1	11.6	68.1	54.4	72.8	61.1	102.5	118.9	74.8	152.0	35.2	761.8
1974	46.2	57.3	52.0	62.7	57.0	39.8	46.6	39.9	78.4	121.2	62.4	14.5	677.0
1975	7.4	10.4	29.2	76.2	25.6	51.5	79.1	85.6	139.9	111.6	99.5	112.2	828.2
1976	22.0	37.7	100.1	41.5	55.4	56.7	59.3	93.3	72.7	191.7	72.1	4.7	807.2
1977	2.9	0.5	43.9	65.5	64.0	74.8	39.1	33.6	122.0	85.5	47.8	0.2	579.8
1978	1.7	17.3	62.9	154.6	92.6	51.7	55.8	31.4	72.0	90.0	91.8	65.5	787.3
1979	16.2	8.0	34.5	99.6	97.9	95.9	82.2	47.4	81.7	67.3	98.2	59.4	788.3
1980	59.8	5.9	0.0	52.3	89.0	43.8	18.3	100.4	63.0	34.7	45.7	7.5	518.4
1981	7.2	31.3†	48.1†	214.2	187.0	107.1	27.0	63.0	80.7	61.0	172.6	60.0	1059.2
1982	36.8	29.0	53.4	177.8	103.2	33.5	64.0	23.4	82.2	72.8	62.4	18.9	756.4
1983	22.2	28.2	30.3	161.8	120.6	27.9	82.9	35.6	65.4	70.2	16.3	45.2	706.6
1984	20.7	18.1	19.6	101.7	87.9	75.8	49.3	91.5	57.0†	62.7†	58.6†	30.5†	673.4
1985	8.5	9.0	33.9†	93.3†	74.5†	66.2†	61.7†	43.2	85.7	171.5	81.5	87.2	816.1
1986	24.9	64.0	26.1	70.5	85.9	63.0	90.5	60.7	36.1	121.0	51.0	16.8	710.5
1987	32.3	17.9	31.2	,	,	,	,	,	,	,	,	,	-
Prom:	28.0	25.8	39.5	107.6	85.9	60.5	55.8	61.0	81.1	89.3	77.5	40.3	952.2 -
Perc:	3.7	3.4	5.3	14.3	11.4	8.0	7.4	8.1	10.8	11.9	10.3	5.4	-
D.STD:	23.0	19.7	24.1	63.7	41.7	25.5	23.4	30.6	33.0	46.5	39.6	33.4	
CV:	82.2	76.3	61.0	59.3	48.6	42.1	42.0	50.1	40.7	52.1	51.1	83.1	

* DATO ENGLOBADO † DATO DESENGLOBADOS
- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

N.A.R.N.R.

FECHA: 13/01/89

DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: TOVAR Tipo: C2 Serial: 3141 Zona: 16
Estado: ME Latitud: 082030 Longitud: 714440 Altitud: 952 m.s.n.m
Ors.: MA Instalada: 1968 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1968	-	-	-	-	-	-	-	-	-	-	191.3	82.8	-
1969	83.9	42.0	4.4	158.6	91.5	73.3	74.4	63.2	73.8	180.8	241.0	139.0	1225.9
1970	48.6	37.6	32.5	120.2	239.3	88.3	139.3	61.7	182.8	117.8	176.2	52.0	1296.3
1971	137.2	79.5	109.0	111.1	123.9	73.1	27.3	165.9	225.5	167.8	90.1	45.2	1375.6
1972	98.6	39.6	66.4	290.2	152.5	45.7	69.3	90.4	70.9	199.3	73.7	34.7	1231.3
1973	0.2	3.6	44.8	58.4	152.4	175.1	196.3	123.8	144.9	194.8	442.1	85.6	1622.0
1974	64.4	77.6	67.3	74.5	93.9	95.4	122.2	110.7	121.1	226.5	195.3	59.0	1306.9
1975	16.7	20.8	12.7	126.6	148.2	84.6	115.2	153.0	246.3	162.6	161.5	131.1	1379.3
1976	15.3	10.2	146.5	44.3	53.1	79.5	15.0	91.8	40.3	281.2	57.8	22.2	857.2
1977	27.1	0.8	66.0	14.2	85.6	127.8	85.2	81.7	67.8	152.8	41.5	12.2	762.7
1978	0.0	40.1	47.7	200.4	213.6	108.1	138.9	134.1	173.8	76.1	111.4	47.2	1291.4
1979	10.4	0.0	79.1	128.5	146.7	52.6	212.7	125.6	104.6	137.1	125.9	133.6	1256.8
1980	26.7	22.0	0.0	52.0	157.4	93.8	1.9	115.4	82.9	164.3	190.0	21.9	928.3
1981	19.0	10.3	81.2	312.1	221.5	82.5	59.4	141.6	70.5	85.0	101.4	42.2	1226.7
1982	48.5	61.8	54.2	121.3	153.5	37.7	42.9	11.9	43.5	103.2	42.7	5.5	726.7
1983	33.4	4.0	82.7	119.4	90.5	79.1	58.3	23.6	111.2	182.5	39.0	55.0	878.7
1984	23.2	21.1	26.7	97.2	116.2	55.9	147.0	162.4	128.3	137.4	86.5	61.0	1062.9
1985	6.2	3.2	51.9	76.6	107.7	49.4	82.8	179.6	107.2	217.1	136.4	40.0	1058.1
1986	7.8	65.0	29.4	85.7	125.2	116.7	26.8	109.9	150.4	136.2	94.0	40.7	987.9
1987	20.8	11.9	14.4	,	,	,	,	,	,	,	,	,	-
Prom:	36.2	29.0	53.5	121.7	137.4	84.4	89.7	109.2	119.2	162.4	136.2	58.4	1137.4
Porc:	3.2	2.6	4.7	10.7	12.1	7.4	7.9	9.6	10.5	14.3	12.0	5.1	
D.STD:	35.7	25.7	36.2	79.4	56.7	37.1	60.9	52.5	62.2	61.4	97.1	40.8	
CV:	98.5	88.5	67.6	65.2	41.3	43.9	67.8	48.0	52.2	37.8	71.3	69.8	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: SAN JUAN LAGUNILLAS Tipo: PR Serial: 3170 Zona: 16
Estado: NE Latitud: 083040 Longitud: 712114 Altitud: 1050 m.s.n.m
Org.: MA Instalada: 0970 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1970	-	-	-	-	-	-	-	-	-	112.8	96.2	31.8	-
1971	72.4	19.1	36.5	94.4	64.1	20.1	25.8	59.0†	105.4†	49.5	33.9	13.2	593.4
1972	61.5	13.3	15.4	228.2	107.5	19.8	6.1	26.4	35.9	37.7	37.8	43.0	632.8
1973	8.9	0.0	22.8	35.4	37.4	46.8	29.5	51.8	140.5	61.8	56.9	24.0	515.8
1974	21.5	10.2	22.4	13.4	113.2	53.9	26.4	41.5	73.2	96.3	33.8	8.2	514.0
1975	0.0	1.4	31.2	38.9	78.7	35.0	55.3	74.8	96.7	69.2	50.7	68.6	600.5
1976	1.2	17.3	16.8	57.5	78.9	22.8	33.9	36.3	68.2	120.9	31.1	18.3	503.2
1977	0.0	0.0	4.5	11.7	94.8	19.9	28.2	35.6	56.1	82.0	27.7	2.4	362.9
1978	0.8	17.6	60.6	149.7	71.6	62.0	31.8	37.6	73.5	105.9	15.8	20.6	647.5
1979	0.1	9.7	4.7	77.6	95.5	83.2	33.9	38.1	69.5	71.3	67.4	39.3	590.3
1980	0.2	5.8	0.0	10.5	91.2	32.5	18.5	65.9	111.9	66.9	46.5	10.9	460.8
1981	0.0	17.5	19.0	146.4	132.6	76.7	34.5	41.0	76.0	169.1	36.9	21.6	711.3
1982	32.0	29.3	27.5	75.4	74.8	39.4	25.8	34.3	76.3	40.3	37.1	7.0	499.2
1983	2.1	1.9	19.9	71.9	84.5	21.6	55.0	30.2	34.5	57.7	39.8	6.0	425.1
1984	1.3	27.9	16.0	72.4	25.8†	11.9†	9.3†	69.0	122.5	30.5†	16.2†	8.7†	411.5
1985	2.9	3.7	14.6†	55.2†	58.2†	26.2	42.9†	63.7†	87.4	58.3	37.9	28.6	479.6
1986	18.2	40.7	1.1	114.9	55.0	21.3	21.0	50.1	88.9	134.5	25.1	19.7	590.5
1987	1.9	4.3	40.3	,	,	,	,	,	,	,	,	,	-
Prom:	13.2	12.9	20.8	78.3	79.0	37.1	29.9	47.2	82.3	76.7	40.6	21.9	540.0
Porc:	2.5	2.4	3.8	14.5	14.6	6.9	5.5	8.7	15.2	14.2	7.5	4.1	
D.STD:	21.6	11.3	15.0	58.2	32.2	22.3	14.6	18.2	33.6	35.7	21.3	17.1	
CV:	163.5	87.6	72.2	74.3	40.8	60.1	49.0	38.6	40.8	46.5	52.4	78.3	

* DATO ENGLOBADO
\- DATO DESCONOCIDO
D.STD DESVIACION STANDARD
† DATO DESENGLOBADOS
, DATO FALTANTE
CV COEFICIENTE DE VARIACION

M.A.R.N.R. FECHA: 13/01/89
DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: LA PUNTA Tipo: PR Serial: 8049 Zona: 16
Estado: ME Latitud: 083349 Longitud: 711120 Altitud: 1300 m.s.n.m
Org.: MA Instalada: 1075 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1975	-	-	-	-	-	-	-	-	-	-	236.6	162.5	-
1976	38.7	58.7	62.8	136.3	107.2	72.1	106.5	53.6	159.4	-	61.5	16.2	-
1977	2.4	0.0	26.6	56.5	154.8	155.5	48.7	100.6	113.1	272.0	110.4	14.4	1055.0
1978	9.0	16.3	120.7	250.2	129.8	202.1	53.2	101.6	115.7	198.6	108.4	38.9	1344.5
1979	29.4	5.0	33.8	137.2	159.8	151.7	76.0	130.7	177.2	263.6	227.8	64.6	1456.8
1980	19.4	34.6	1.8	77.9	174.7	124.5	81.1	129.6	191.4	105.6	110.6	57.7	1108.9
1981	1.3	44.8+	66.2+	270.5	301.5	231.2	113.7	147.0	168.9	152.1	134.4	44.2	1675.8
1982	58.2	130.1	79.1	182.1	268.4	110.4	60.3	51.3	171.2	163.7	78.7	40.8	1414.3
1983	58.1	6.4	9.1	188.9	292.4	59.9	111.2	126.1	151.7	126.3	43.8	71.8	1246.2
1984	28.7	40.2	6.1	70.8	102.3	128.4	73.6	129.2	260.3	185.2	71.7	26.6	1123.1
1985	18.3	7.9	79.4	106.5	157.3	94.5	106.4	138.1	179.0	198.8	178.1	72.3	1336.6
1986	79.1	62.7	17.6	172.1	198.5+	142.8+	51.9	118.3+	192.4+	192.3	118.8	23.4	1359.9
1987	3.7	0.0	98.0	,	,	,	,	,	,	,	,	,	-
Prom:	28.9	33.9	50.1	149.9	186.1	133.9	80.2	111.5	171.8	185.9	123.4	52.8	1308.3
Perc:	2.2	2.6	3.8	11.5	14.2	10.2	6.1	8.5	13.1	14.2	9.4	4.0	
D.STD:	24.2	36.2	37.9	77.7	84.3	60.9	32.8	43.6	61.6	70.7	69.2	41.3	
CV:	83.8	106.8	75.6	51.9	45.3	45.4	40.8	39.2	35.8	38.0	56.1	78.3	

* DATO ENGLOBADO + DATO DESENGLOBADOS
\- DATO DESCONOCIDO , DATO FALTANTE
D.STD DESVIACION STANDARD CV COEFICIENTE DE VARIACION

M.A.R.N.R. FECHA: 13/01/89

DIRECCION GENERAL DE INFORMACION E INVESTIGACION DEL AMBIENTE
DIRECCION DE HIDROLOGIA Y METEOROLOGIA
SISTEMA NACIONAL DE INFORMACION HIDROLOGICA Y METEOROLOGICA
S I N A I H M E

Estacion: SAN PEDRO-CHIGUARA Tipo: PR Serial: 8056 Zona: 16
Estado: ME Latitud: 083025 Longitud: 713430 Altitud: 1078 m.s.n.m
Drs.: MA Instalada: 1269 Eliminada:

Totales Mensuales y Anuales de Precipitacion (mm)

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	TOTAL
1970	28.4	50.0	35.0	39.7	153.9	24.1	68.5	43.5	56.6	194.8	102.8	46.0	833.2
1971	229.4	99.4	145.0	58.9	106.2	14.7	13.2	106.1	94.6	139.7	162.9	86.2	1306.3
1972	110.6	70.9	42.6	246.7	32.9	18.3	6.8	46.9	33.1	97.3	106.0	30.7	842.8
1973	4.2	9.4	10.1	48.0	30.7	75.0	37.7	77.5	73.3	69.1	192.2	69.5	696.7
1974	140.4	60.1	131.3	48.9	109.2	24.4	54.1	73.6	70.6	205.1	118.2	36.7	1072.6
1975	9.3	79.9	11.9	112.8	64.2	48.3	52.9	103.0	73.7	146.1	182.6	207.6	1092.3
1976	26.3	146.8	93.5	128.3	61.1	18.8	21.2	109.4	170.6	274.6	63.6	28.9	1143.1
1977	5.8	7.1	75.7	28.4	123.0	25.9	25.1	37.5	32.5	150.7	68.4	23.4	603.5
1978	3.5	56.6	67.8	159.0	54.9	29.8	37.2	31.0	65.8	105.1	67.6	89.6	767.9
1979	20.3	6.5	64.5	105.8	137.8	89.7	34.7	71.3	67.4	215.0	195.2	122.1	1130.3
1980	59.1	34.0	7.9	38.8	92.4	28.9	25.9	50.0	74.5	42.1	126.1	8.3	588.0
1981	1.6	93.2+	96.7+	215.8	132.4	73.1	21.0	31.6	77.3	126.4	120.3	92.7	1082.1
1982	83.7	136.6	42.9	166.0	86.3	81.0	25.6	17.9	95.1	115.8	97.0	92.4	1040.3
1983	8.6	2.1	20.2	108.4	98.8	41.2	40.0	70.8	49.8	120.2	83.4	46.1	689.6
1984	33.2	8.7	4.2	112.4	56.0	62.1	40.0+	88.4+	56.7	244.6	94.8	73.9	875.0
1985	57.7	31.2	136.5	200.1	95.8	44.9	26.6	49.6	56.7	170.5	142.9	117.4	1129.9
1986	118.3	112.0	66.3	64.3	114.1	27.1	17.8	203.8	56.1	247.6	73.5	16.7	1117.6
1987	19.6	20.5	10.8	,	,	,	,	,	,	,	,	,	-
Prom:	53.3	56.9	59.0	110.7	91.2	42.8	32.3	71.3	70.8	159.1	117.5	69.9	934.9
Porc:	5.7	6.1	6.3	11.8	9.8	4.6	3.4	7.6	7.6	17.0	12.6	7.5	
D.STD:	61.7	46.3	46.5	70.8	41.7	25.9	17.3	46.1	34.6	74.4	51.2	51.3	
CV:	115.8	81.4	78.8	63.9	45.7	60.5	53.6	64.7	48.9	46.7	43.6	73.4	

* DATO ENGLOBADO
\+ DATO DESENGLOBADOS
\- DATO DESCONOCIDO
, DATO FALTANTE
D.STD DESVIACION STANDARD
CV COEFICIENTE DE VARIACION

Observed Annual Maximum Rainfall dy
Duration of 1, 3, 6, 9, 12 and 24-hour

Serial	Station	Data
3024	Valle Grande	1963-1983
3027	Palamo La Curata	1964-1983
3029	Mucuruba	1963-1983
3035	El Vigia	1963-1983
3042	Mesa de Ejido	1962-1983
3050	Merida	1963-1970
3070	Palamo El Molino	1964-1983
3071	Tovar Sabaneta	1963-1968
3072	Mucubaji	1969-1977
3080	El Morro	1963-1983
3108	El Meson	1968-1983
3111	Paramo de Mucuchies	1952-1983
3112	Paramo Pico El Aguila	1954-1983
3132	Las Tapias	1969-1983
3141	Tovar	1968-1983
3169	Jaji	1971-1983
3170	San Juan de Lagnillas	1971-1983
8053	La Palmita	1953-1983
8055	La Punta	1963-1975
8056	San Pedro Chiguara	1970-1983
8057	Tostos	1970-1983

Annual Maximum Rainfalls

Station : 3024 VALLE GRANDE
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	24.00	51.00	54.00	55.00	55.00	55.00
1964	39.00	57.00	58.00	58.00	58.00	66.00
1965	32.00	52.00	54.00	55.00	55.00	55.00
1966	32.00	65.00	66.00	66.00	67.00	70.00
1967	33.00	41.00	57.00	59.00	59.00	62.00
1968	43.00	48.00	49.00	49.00	49.00	71.00
1969	25.00	31.00	45.00	45.00	45.00	61.00
1970	42.00	49.00	52.00	53.00	53.00	53.00
1971	34.00	48.00	58.00	59.00	59.00	59.00
1972	23.00	36.00	41.00	44.00	45.00	62.00
1973	24.00	33.00	33.00	33.00	36.00	52.00
1974	19.00	30.00	36.00	37.00	37.00	43.00
1975	18.00	26.00	31.00	32.00	32.00	44.00
1976	29.00	49.00	61.00	64.00	64.00	64.00
1977	31.00	42.00	52.00	63.00	63.00	69.00
1978	64.00	74.00	74.00	74.00	74.00	79.00
1979	25.00	35.00	41.00	41.00	42.00	45.00
1980	40.00	56.00	58.00	58.00	59.00	71.00
1981	27.00	33.00	36.00	37.00	37.00	40.00
1982	35.00	46.00	46.00	46.00	46.00	46.00
1983	36.00	46.00	50.00	50.00	50.00	50.00

Annual Maximum Rainfalls

Station : 3027 PALAMO LA CULATA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1964	11.00	23.00	26.00	32.00	32.00	33.00
1965	11.00	24.00	25.00	27.00	27.00	36.00
1966	18.00	25.00	28.00	32.00	34.00	41.00
1967	15.00	28.00	30.00	30.00	30.00	34.00
1968	17.00	29.00	31.00	31.00	31.00	34.00
1969	22.00	29.00	30.00	31.00	32.00	39.00
1970	22.00	31.00	31.00	31.00	31.00	31.00
1971	12.00	20.00	32.00	37.00	37.00	43.00
1972	13.00	18.00	23.00	24.00	24.00	27.00
1973	30.00	42.00	49.00	49.00	49.00	49.00
1974	18.00	30.00	38.00	39.00	39.00	39.00
1975	16.00	29.00	32.00	41.00	46.00	51.00
1976	21.00	30.00	33.00	33.00	33.00	40.00
1977	28.00	32.00	32.00	32.00	32.00	33.00
1978	28.00	33.00	36.00	38.00	38.00	38.00
1979	14.00	20.00	24.00	25.00	31.00	38.00
1980	20.00	36.00	51.00	54.00	58.00	58.00
1981	20.00	40.00	43.00	43.00	43.00	49.00
1982	28.00	32.00	32.00	32.00	32.00	32.00
1983	18.00	19.00	21.00	22.00	24.00	24.00

Annual Maximum Rainfalls

Station : 3029 MUCURUBA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	22.00	35.00	39.00	42.00	42.00	42.00
1964	20.00	27.00	34.00	34.00	34.00	35.00
1965	11.00	20.00	20.00	20.00	21.00	21.00
1966	21.00	23.00	28.00	28.00	28.00	28.00
1967	14.00	20.00	23.00	23.00	23.00	34.00
1968	19.00	27.00	29.00	29.00	31.00	33.00
1969	16.00	30.00	33.00	35.00	35.00	45.00
1970	17.00	21.00	23.00	23.00	23.00	24.00
1971	24.00	29.00	29.00	29.00	30.00	32.00
1972	13.00	18.00	19.00	20.00	33.00	35.00
1973	23.00	35.00	37.00	39.00	42.00	50.00
1974	32.00	45.00	47.00	47.00	47.00	69.00
1975	36.00	37.00	38.00	38.00	38.00	42.00
1976	19.00	26.00	26.00	27.00	27.00	35.00
1977	35.00	39.00	46.00	47.00	49.00	51.00
1978	16.00	27.00	34.00	37.00	38.00	39.00
1979	33.00	33.00	34.00	34.00	35.00	44.00
1980	22.00	33.00	35.00	35.00	35.00	39.00
1981	13.00	20.00	23.00	24.00	28.00	33.00
1982	12.00	28.00	47.00	48.00	48.00	48.00
1983	12.00	26.00	30.00	32.00	32.00	32.00

Annual Maximum Rainfalls

Station : 3035 EL VIGIA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	38.00	92.00	92.00	127.00	127.00	127.00
1964	63.00	64.00	104.00	104.00	104.00	109.00
1965	67.00	96.00	112.00	113.00	113.00	126.00
1966	63.00	104.00	104.00	104.00	104.00	105.00
1967	78.00	90.00	98.00	100.00	101.00	103.00
1968	76.00	101.00	116.00	117.00	117.00	140.00
1969	57.00	78.00	80.00	81.00	81.00	95.00
1970	58.00	60.00	62.00	64.00	64.00	68.00
1971	92.00	101.00	102.00	102.00	102.00	103.00
1972	60.00	75.00	83.00	83.00	83.00	120.00
1973	56.00	75.00	75.00	75.00	75.00	75.00
1974	56.00	80.00	110.00	117.00	119.00	126.00
1975	82.00	88.00	88.00	88.00	88.00	99.00
1976	44.00	48.00	49.00	49.00	49.00	63.00
1977	49.00	64.00	73.00	73.00	106.00	111.00
1978	55.00	95.00	101.00	102.00	110.00	114.00
1979	64.00	71.00	94.00	95.00	95.00	107.00
1980	68.00	84.00	84.00	84.00	84.00	84.00
1981	58.00	72.00	79.00	80.00	80.00	80.00
1982	62.00	67.00	90.00	92.00	92.00	100.00
1983	53.00	57.00	66.00	81.00	84.00	129.00

Annual Maximum Rainfalls

Station : 3042 MESA DE EJIDO
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1962	13.00	16.00	16.00	16.00	16.00	58.00
1963	38.00	83.00	83.00	83.00	86.00	86.00
1964	34.00	47.00	54.00	54.00	70.00	80.00
1965	26.00	41.00	41.00	50.00	51.00	62.00
1966	37.00	43.00	50.00	50.00	50.00	50.00
1967	23.00	36.00	38.00	40.00	45.00	45.00
1968	26.00	30.00	30.00	30.00	30.00	35.00
1969	37.00	37.00	37.00	37.00	37.00	38.00
1970	33.00	38.00	39.00	49.00	49.00	50.00
1971	35.00	43.00	43.00	44.00	48.00	48.00
1972	41.00	53.00	53.00	53.00	53.00	54.00
1973	19.00	24.00	25.00	36.00	36.00	36.00
1974	54.00	85.00	85.00	85.00	85.00	89.00
1975	20.00	29.00	69.00	69.00	69.00	69.00
1976	22.00	30.00	32.00	36.00	36.00	37.00
1977	20.00	29.00	29.00	29.00	29.00	29.00
1978	52.00	67.00	70.00	70.00	70.00	72.00
1979	33.00	34.00	49.00	49.00	49.00	57.00
1980	43.00	55.00	58.00	58.00	58.00	58.00
1981	50.00	73.00	73.00	74.00	74.00	83.00
1982	30.00	46.00	50.00	50.00	50.00	54.00
1983	24.00	50.00	56.00	56.00	56.00	57.00

Annual Maximum Rainfalls

Station : 3050 MERIDA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	42.00	52.00	58.00	58.00	58.00	72.00
1964	32.00	35.00	35.00	35.00	35.00	46.00
1965	28.00	34.00	39.00	42.00	43.00	66.00
1966	31.00	58.00	62.00	62.00	79.00	87.00
1967	35.00	47.00	47.00	47.00	47.00	56.00
1968	41.00	62.00	63.00	63.00	63.00	63.00
1969	45.00	65.00	65.00	70.00	81.00	89.00
1970	39.00	58.00	65.00	66.00	66.00	68.00

Annual Maximum Rainfalls

Station : 3070 PALAMO EL MOLINO
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1964	27.00	43.00	56.00	61.00	61.00	61.00
1965	17.00	26.00	28.00	28.00	28.00	37.00
1966	21.00	27.00	30.00	38.00	40.00	40.00
1967	22.00	36.00	37.00	37.00	37.00	44.00
1968	38.00	43.00	47.00	49.00	49.00	61.00
1969	46.00	59.00	67.00	73.00	73.00	94.00
1970	35.00	55.00	70.00	74.00	75.00	88.00
1971	30.00	53.00	55.00	60.00	60.00	61.00
1972	25.00	37.00	47.00	48.00	52.00	89.00
1973	39.00	69.00	75.00	75.00	75.00	76.00
1974	16.00	33.00	33.00	33.00	33.00	33.00
1975	36.00	55.00	56.00	56.00	56.00	67.00
1976	34.00	50.00	57.00	57.00	57.00	58.00
1977	29.00	38.00	42.00	44.00	44.00	74.00
1978	32.00	46.00	47.00	48.00	50.00	50.00
1979	31.00	36.00	47.00	51.00	51.00	51.00
1980	27.00	35.00	38.00	38.00	38.00	54.00
1981	41.00	47.00	49.00	53.00	66.00	86.00
1982	31.00	50.00	73.00	78.00	79.00	82.00
1983	43.00	63.00	64.00	64.00	64.00	64.00

Annual Maximum Rainfalls

Station : 3071 TOVAR SABANETA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	43.00	45.00	50.00	52.00	52.00	53.00
1964	46.00	65.00	65.00	65.00	65.00	64.00
1965	39.00	47.00	49.00	49.00	49.00	49.00
1966	49.00	54.00	59.00	64.00	67.00	69.00
1967	46.00	56.00	64.00	64.00	64.00	64.00
1968	30.00	37.00	40.00	41.00	41.00	43.00

Annual Maximum Rainfalls

Station : 3072 MUCUBAJI
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1969	9.00	19.00	23.00	27.00	28.00	38.00
1970	10.00	23.00	32.00	37.00	39.00	39.00
1971	8.00	20.00	27.00	30.00	30.00	31.00
1972	10.00	22.00	29.00	27.00	33.00	41.00
1973	10.00	25.00	28.00	28.00	29.00	30.00
1974	11.00	16.00	17.00	19.00	19.00	23.00
1975	6.00	13.00	19.00	20.00	29.00	31.00
1976	10.00	19.00	29.00	31.00	32.00	35.00
1977	12.00	18.00	28.00	29.00	34.00	36.00

Annual Maximum Rainfalls

Station : 3080 EL MORRO
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	17.00	19.00	27.00	28.00	28.00	28.00
1964	13.00	26.00	30.00	32.00	32.00	33.00
1965	8.00	17.00	18.00	19.00	19.00	19.00
1966	11.00	13.00	14.00	14.00	14.00	15.00
1967	11.00	14.00	16.00	16.00	16.00	16.00
1968	13.00	20.00	21.00	21.00	21.00	34.00
1969	9.00	20.00	28.00	37.00	56.00	58.00
1970	16.00	18.00	21.00	22.00	22.00	26.00
1971	11.00	21.00	26.00	26.00	26.00	26.00
1972	14.00	21.00	25.00	25.00	25.00	26.00
1973	19.00	36.00	37.00	37.00	37.00	49.00
1974	11.00	13.00	13.00	14.00	14.00	14.00
1975	15.00	15.00	18.00	18.00	18.00	25.00
1976	16.00	24.00	25.00	26.00	26.00	26.00
1977	18.00	22.00	25.00	26.00	27.00	27.00
1978	19.00	26.00	30.00	31.00	31.00	36.00
1979	12.00	18.00	18.00	18.00	18.00	18.00
1980	27.00	35.00	36.00	36.00	36.00	37.00
1981	9.00	10.00	11.00	12.00	14.00	17.00
1982	13.00	18.00	21.00	22.00	22.00	25.00
1983	23.00	26.00	26.00	26.00	26.00	27.00

Annual Maximum Rainfalls

Station : 3108 EL MESON
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1968	60.00	82.00	82.00	83.00	83.00	113.00
1969	42.00	50.00	50.00	50.00	50.00	84.00
1970	47.00	54.00	59.00	59.00	59.00	59.00
1971	37.00	42.00	54.00	54.00	54.00	63.00
1972	72.00	73.00	73.00	113.00	115.00	115.00
1973	52.00	62.00	67.00	70.00	70.00	70.00
1974	54.00	77.00	94.00	94.00	94.00	141.00
1975	68.00	89.00	100.00	101.00	101.00	101.00
1976	50.00	55.00	60.00	60.00	60.00	60.00
1977	40.00	58.00	59.00	59.00	59.00	59.00
1978	32.00	49.00	50.00	54.00	55.00	68.00
1979	42.00	51.00	60.00	70.00	70.00	70.00
1980	82.00	112.00	113.00	113.00	113.00	114.00
1981	33.00	41.00	63.00	68.00	69.00	85.00
1982	46.00	64.00	65.00	65.00	65.00	77.00
1983	18.00	18.00	18.00	18.00	18.00	21.00

Annual Maximum Rainfalls

Station : 3111 PARAMO DE MUCUMIES
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1952	9.00	16.00	24.00	26.00	27.00	33.00
1953	7.00	13.00	15.00	20.00	20.00	27.00
1954	19.00	19.00	24.00	31.00	31.00	46.00
1955	12.00	16.00	21.00	31.00	33.00	35.00
1956	8.00	15.00	16.00	20.00	21.00	33.00
1957	10.00	19.00	25.00	28.00	29.00	39.00
1958	9.00	19.00	20.00	21.00	26.00	27.00
1959	12.00	15.00	24.00	26.00	33.00	37.00
1960	10.00	22.00	22.00	29.00	29.00	29.00
1961	11.00	18.00	19.00	24.00	31.00	43.00
1962	10.00	17.00	24.00	25.00	27.00	29.00
1963	10.00	14.00	22.00	27.00	29.00	42.00
1964	8.00	13.00	15.00	15.00	15.00	21.00
1965	10.00	20.00	23.00	28.00	29.00	29.00
1966	7.00	11.00	15.00	16.00	20.00	24.00
1967	10.00	17.00	31.00	43.00	54.00	69.00
1968	6.00	13.00	18.00	19.00	23.00	30.00
1969	6.00	10.00	10.00	10.00	10.00	13.00
1970	10.00	20.00	24.00	34.00	40.00	41.00
1971	8.00	15.00	17.00	18.00	19.00	24.00
1972	9.00	18.00	24.00	27.00	27.00	29.00
1973	9.00	16.00	22.00	27.00	27.00	30.00
1974	11.00	21.00	26.00	29.00	32.00	35.00
1975	6.00	10.00	18.00	20.00	21.00	24.00
1976	10.00	17.00	24.00	24.00	24.00	24.00
1977	8.00	18.00	24.00	24.00	25.00	26.00
1978	11.00	16.00	40.00	49.00	56.00	67.00
1979	9.00	14.00	22.00	28.00	29.00	32.00
1980	9.00	20.00	31.00	34.00	34.00	46.00
1981	11.00	19.00	30.00	35.00	38.00	39.00
1982	7.00	16.00	23.00	27.00	27.00	34.00
1983	10.00	18.00	24.00	25.00	29.00	30.00

Annual Maximum Rainfalls

Station : 3112 PARAMO PICO EL AGUILA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1954	8.00	14.00	15.00	21.00	24.00	30.00
1955	5.00	8.00	10.00	12.00	14.00	16.00
1956	1.00	1.00	2.00	2.00	3.00	4.00
1957	8.00	11.00	18.00	21.00	21.00	30.00
1958	8.00	14.00	21.00	26.00	27.00	29.00
1959	6.00	10.00	20.00	22.00	25.00	41.00
1960	5.00	12.00	18.00	20.00	20.00	20.00
1961	8.00	17.00	21.00	22.00	26.00	39.00
1962	10.00	15.00	22.00	22.00	26.00	41.00
1963	7.00	12.00	24.00	24.00	24.00	41.00
1964	8.00	17.00	24.00	24.00	28.00	31.00
1965	8.00	16.00	19.00	19.00	19.00	19.00
1966	10.00	17.00	26.00	30.00	32.00	34.00
1967	4.00	6.00	31.00	32.00	32.00	34.00
1968	7.00	13.00	18.00	18.00	22.00	26.00
1969	9.00	18.00	24.00	28.00	30.00	35.00
1970	7.00	17.00	27.00	27.00	29.00	35.00
1971	6.00	15.00	16.00	16.00	16.00	21.00
1972	9.00	17.00	19.00	21.00	21.00	21.00
1973	10.00	13.00	16.00	19.00	20.00	23.00
1974	9.00	15.00	16.00	16.00	17.00	26.00
1975	6.00	10.00	14.00	14.00	15.00	17.00
1976	8.00	14.00	14.00	21.00	23.00	24.00
1977	6.00	12.00	14.00	16.00	16.00	17.00
1978	6.00	12.00	17.00	20.00	21.00	25.00
1979	7.00	12.00	18.00	22.00	23.00	26.00
1980	15.00	24.00	27.00	28.00	29.00	31.00
1981	11.00	15.00	23.00	28.00	30.00	32.00
1982	8.00	14.00	17.00	19.00	21.00	32.00
1983	8.00	15.00	23.00	24.00	24.00	25.00

Annual Maximum Rainfalls

Station : 3132 LAS TAPIAS
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1969	24.00	37.00	38.00	42.00	49.00	51.00
1970	26.00	38.00	38.00	38.00	38.00	49.00
1971	14.00	19.00	20.00	21.00	21.00	24.00
1972	24.00	30.00	40.00	53.00	53.00	57.00
1973	23.00	29.00	31.00	31.00	32.00	43.00
1974	20.00	22.00	26.00	26.00	28.00	30.00
1975	21.00	27.00	29.00	29.00	29.00	33.00
1976	14.00	20.00	23.00	23.00	23.00	23.00
1977	14.00	20.00	30.00	34.00	38.00	39.00
1978	18.00	27.00	27.00	27.00	27.00	29.00
1979	33.00	39.00	39.00	39.00	39.00	45.00
1980	17.00	18.00	18.00	18.00	18.00	18.00
1981	14.00	26.00	44.00	44.00	44.00	49.00
1982	25.00	39.00	42.00	42.00	43.00	45.00
1983	18.00	32.00	37.00	44.00	45.00	46.00

Annual Maximum Rainfalls

Station : 3141 TOVAR
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1968	63.00	81.00	84.00	84.00	84.00	93.00
1969	44.00	50.00	50.00	72.00	77.00	77.00
1970	55.00	60.00	61.00	61.00	61.00	61.00
1971	59.00	74.00	77.00	77.00	77.00	77.00
1972	37.00	52.00	57.00	58.00	59.00	70.00
1973	60.00	69.00	72.00	72.00	72.00	92.00
1974	47.00	58.00	68.00	75.00	76.00	76.00
1975	50.00	53.00	53.00	53.00	53.00	53.00
1976	40.00	64.00	77.00	77.00	77.00	77.00
1977	24.00	47.00	47.00	47.00	47.00	53.00
1978	45.00	54.00	55.00	59.00	59.00	63.00
1979	57.00	117.00	123.00	123.00	123.00	131.00
1980	70.00	77.00	77.00	77.00	77.00	78.00
1981	35.00	60.00	61.00	62.00	62.00	62.00
1982	24.00	40.00	40.00	40.00	40.00	41.00
1983	26.00	30.00	38.00	38.00	39.00	50.00

Annual Maximum Rainfalls

Station : 3169 Jaji
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1971	25.00	32.00	34.00	34.00	34.00	43.00
1972	40.00	77.00	77.00	77.00	77.00	77.00
1973	32.00	33.00	33.00	49.00	49.00	61.00
1974	26.00	36.00	40.00	41.00	41.00	50.00
1975	35.00	47.00	56.00	57.00	57.00	62.00
1976	20.00	30.00	32.00	37.00	42.00	42.00
1977	44.00	68.00	73.00	73.00	73.00	73.00
1978	33.00	36.00	45.00	36.00	45.00	50.00
1979	35.00	36.00	36.00	36.00	36.00	45.00
1980	27.00	29.00	44.00	29.00	44.00	46.00
1981	64.00	68.00	68.00	68.00	75.00	75.00
1982	49.00	54.00	54.00	54.00	55.00	56.00
1983	27.00	36.00	40.00	36.00	41.00	52.00

Annual Maximum Rainfalls

Station : 3170 SAN JUAN DE LAGUNILLAS
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1971	44.00	47.00	47.00	47.00	47.00	49.00
1972	44.00	49.00	51.00	57.00	57.00	71.00
1973	53.00	65.00	65.00	65.00	65.00	78.00
1974	45.00	52.00	54.00	55.00	55.00	55.00
1975	24.00	28.00	28.00	28.00	28.00	35.00
1976	18.00	39.00	42.00	50.00	50.00	50.00
1977	34.00	42.00	42.00	42.00	42.00	42.00
1978	25.00	31.00	32.00	32.00	32.00	38.00
1979	27.00	30.00	33.00	33.00	33.00	33.00
1980	37.00	40.00	41.00	41.00	41.00	41.00
1981	29.00	39.00	43.00	44.00	44.00	44.00
1982	22.00	27.00	38.00	38.00	38.00	39.00
1983	22.00	24.00	24.00	24.00	24.00	24.00

Annual Maximum Rainfalls

Station : 8053 LA PALMITA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1953	60.00	98.00	125.00	125.00	125.00	125.00
1954	40.00	50.00	51.00	52.00	54.00	62.00
1955	47.00	63.00	63.00	63.00	63.00	65.00
1956	56.00	58.00	58.00	58.00	70.00	82.00
1957	56.00	90.00	116.00	123.00	123.00	123.00
1958	56.00	82.00	83.00	83.00	84.00	84.00
1959	74.00	81.00	81.00	81.00	81.00	81.00
1960	53.00	60.00	63.00	63.00	63.00	63.00
1961	28.00	31.00	42.00	42.00	42.00	44.00
1962	67.00	84.00	91.00	91.00	91.00	121.00
1963	35.00	38.00	39.00	40.00	40.00	47.00
1964	49.00	79.00	80.00	80.00	80.00	80.00
1965	48.00	63.00	63.00	63.00	63.00	91.00
1966	47.00	49.00	59.00	59.00	59.00	97.00
1967	64.00	74.00	75.00	75.00	75.00	108.00
1968	58.00	83.00	86.00	87.00	87.00	96.00
1969	58.00	72.00	81.00	85.00	89.00	99.00
1970	70.00	71.00	73.00	85.00	85.00	85.00
1971	52.00	56.00	57.00	57.00	70.00	71.00
1972	63.00	72.00	72.00	73.00	73.00	76.00
1973	51.00	52.00	55.00	55.00	55.00	69.00
1974	58.00	63.00	63.00	63.00	71.00	71.00
1975	31.00	46.00	64.00	69.00	69.00	69.00
1976	61.00	71.00	86.00	87.00	87.00	108.00
1977	51.00	70.00	70.00	70.00	90.00	90.00
1978	51.00	60.00	72.00	72.00	72.00	75.00
1979	66.00	73.00	73.00	73.00	73.00	83.00
1980	57.00	65.00	66.00	66.00	66.00	87.00
1981	63.00	81.00	83.00	83.00	83.00	83.00
1982	57.00	60.00	77.00	79.00	79.00	88.00
1983	40.00	50.00	53.00	54.00	54.00	58.00

Annual Maximum Rainfalls

Station : 8055 LA PUNTA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1963	32.00	39.00	40.00	40.00	40.00	53.00
1964	31.00	61.00	62.00	62.00	63.00	63.00
1965	36.00	50.00	53.00	55.00	63.00	65.00
1966	31.00	57.00	59.00	60.00	60.00	60.00
1967	44.00	49.00	49.00	49.00	49.00	49.00
1968	39.00	39.00	39.00	40.00	45.00	46.00
1969	36.00	59.00	68.00	69.00	72.00	75.00
1970	40.00	42.00	44.00	44.00	44.00	44.00
1971	30.00	49.00	53.00	53.00	53.00	54.00
1972	15.00	15.00	18.00	19.00	19.00	23.00
1973	24.00	33.00	33.00	33.00	33.00	33.00
1974	27.00	33.00	39.00	39.00	39.00	44.00
1975	16.00	17.00	21.00	21.00	21.00	23.00

Annual Maximum Rainfalls

Station : 8056 SAN PEDRO DE CHIGUARA
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1970	69.00	100.00	106.00	113.00	118.00	121.00
1971	52.00	69.00	71.00	71.00	85.00	94.00
1972	31.00	36.00	37.00	42.00	42.00	43.00
1973	27.00	30.00	30.00	30.00	31.00	37.00
1974	51.00	74.00	74.00	74.00	74.00	79.00
1975	36.00	45.00	60.00	61.00	64.00	74.00
1976	61.00	82.00	91.00	91.00	91.00	91.00
1977	37.00	41.00	43.00	44.00	45.00	58.00
1978	26.00	40.00	46.00	50.00	51.00	56.00
1979	79.00	95.00	95.00	95.00	95.00	95.00
1980	39.00	45.00	45.00	45.00	45.00	45.00
1981	46.00	56.00	61.00	64.00	65.00	79.00
1982	32.00	37.00	43.00	46.00	48.00	57.00
1983	39.00	51.00	54.00	54.00	54.00	55.00

Annual Maximum Rainfalls

Station : 8057 TOSTOS
Unit : mm

Year	1-hr	3-hr	6-hr	9-hr	12-hr	24-hr
1970	26.00	32.00	33.00	33.00	33.00	34.00
1971	15.00	21.00	23.00	23.00	23.00	39.00
1972	21.00	37.00	41.00	41.00	41.00	58.00
1973	26.00	28.00	30.00	30.00	31.00	36.00
1974	23.00	29.00	31.00	31.00	31.00	43.00
1975	5.00	5.00	5.00	5.00	5.00	5.00
1976	11.00	15.00	15.00	15.00	15.00	15.00
1977	23.00	37.00	37.00	37.00	37.00	38.00
1978	15.00	19.00	23.00	23.00	23.00	34.00
1979	18.00	26.00	26.00	26.00	26.00	26.00
1980	21.00	24.00	24.00	24.00	24.00	27.00
1981	13.00	14.00	14.00	14.00	14.00	14.00
1982	19.00	23.00	25.00	25.00	25.00	25.00
1983	3.00	16.00	20.00	20.00	20.00	20.00