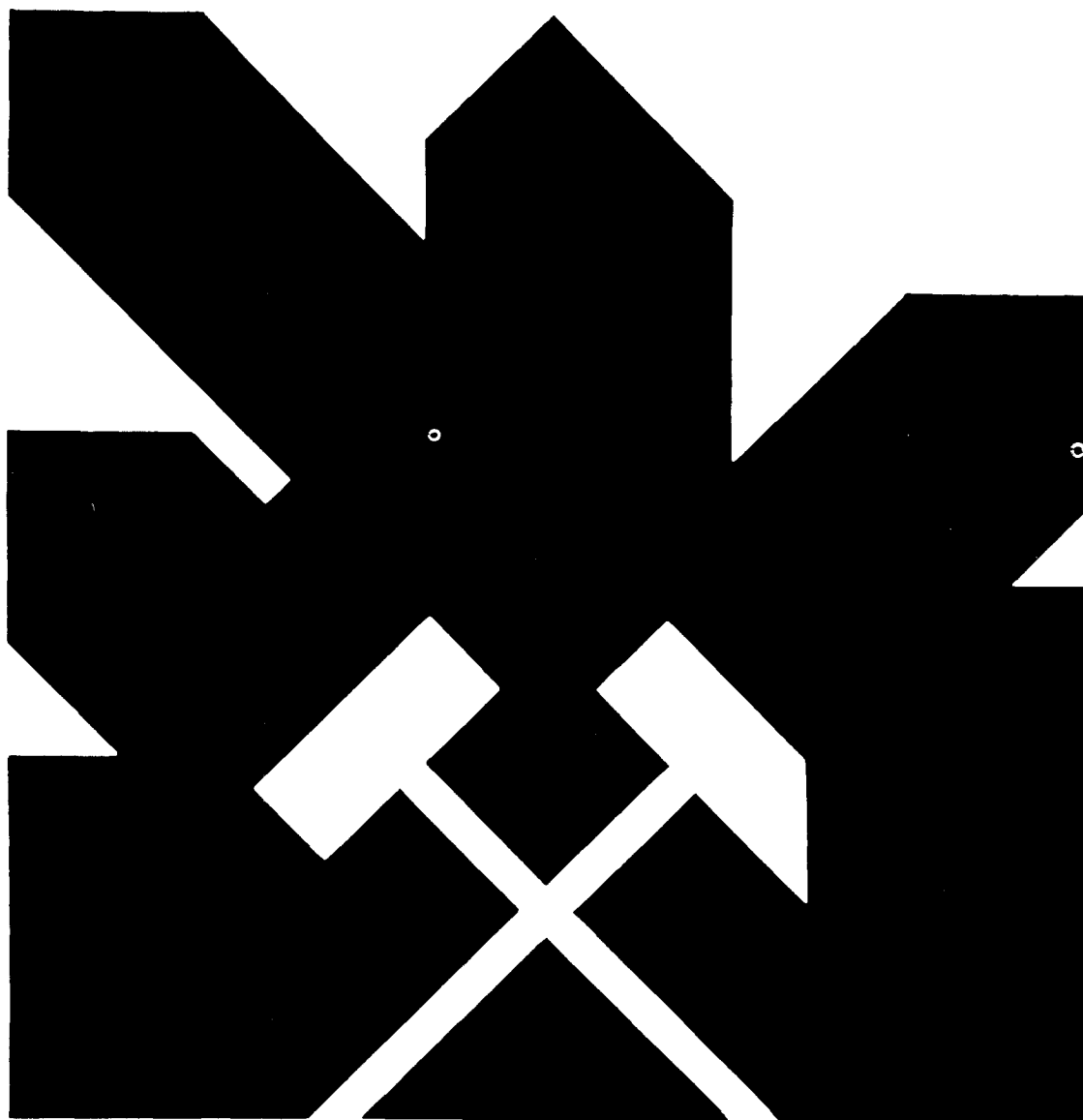


MINISTERIO DE INDUSTRIA Y ENERGIA  
SECRETARIA DE LA ENERGIA Y RECURSOS MINERALES

ESTUDIO HIDROGEOLOGICO PARA RECARGA ARTIFICIAL  
EN LAS ISLAS CANARIAS

(SUBSISTEMA ACUIFERO ARINAGA-TIRAJANA)

ANEXO 3.- ESTUDIO HIDROLOGICO DE AVENIDAS EN  
LOS BARRANCOS DEL SECTOR  
ARINAGA - TIRAJANA



INSTITUTO GEOLOGICO Y MINERO DE ESPAÑA

36523

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"Convenio para la Realización de  
Estudios Hidrogeológicos de apo  
yo a la Gestión Hídrica en Astu  
rias, Cantabria, Murcia, Casti  
lla-La Mancha, Andalucía, Extre  
madura y Canarias"

ESTUDIO HIDROLOGICO

## ESTUDIO HIDROLOGICO

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## 1. INTRODUCCION

El propósito de los trabajos recogidos en el presente estudio hidrológico ha sido el determinar, con el mayor grado de aproximación posible, los caudales y volúmenes de avenida con probabilidad de presentación en las distintas cuencas estudiadas. Dichas avenidas se han estudiado en función de su período de recurrencia y se ha estimado la forma y volumen del hidrograma además del caudal máximo.

Las cuencas analizadas se encuentran localizadas en la isla de Gran Canaria y pertenecen a los barrancos de Tirajana, Balos, La Licencia, Los Corralillos y Guayadeque. Se han estudiado un total de nueve subcuencas parciales.

El proceso seguido ha constado de los siguientes pasos:

- Revisión de los antecedentes existentes en forma de estudios e informes.
- Estudio de las características generales de las cuencas parciales consideradas.
- Determinación de la distribución de cultivos, aprovechamientos del suelo y vegetación existentes.
- Recopilación y análisis de los datos sobre pluviometría de la zona estudiada.
- Estimación de los hidrogramas de avenidas para periodos de recurrencia de 2, 5, 10, 15 y 20 años.

En los apartados siguientes se describen cada uno de estos pasos detalladamente.

## 2. PLANTEAMIENTO DEL PROBLEMA

En la isla de Gran Canaria no existen propiamente rios ya que las escorrentías no son permanentes y están sujetas a grandes variaciones, función de los parámetros hidrológicos que las condicionan. La combinación de elevados gradientes de inclinación, la variabilidad climatológica, la irregularidad y escasez de las precipitaciones medias, no permiten más que corrientes intermitentes, función de la distribución de las precipitaciones y de la alimentación producida por las aguas subterráneas.

Debido a estos motivos y a la carencia de datos directos de aforos con suficiente extensión y garantía, tanto en las cuencas estudiadas, como en cuencas próximas, no ha sido posible estudiar las avenidas a partir de datos directos de caudales máximos ni por comparación con otras cuencas hidrológicamente afines.

Por lo tanto se plantea la necesidad de realizar el estudio de máximas avenidas a partir de un análisis estadístico de las precipitaciones máximas registradas en los observatorios pluviométricos de la zona, que permitirá definir el régimen de precipitaciones extremas en las cuencas estudiadas y determinar por métodos hidrométricos, las máximas avenidas con probabilidad de presentación en función de su periodo de recurrencia. También se han calculado los caudales de avenida mediante métodos empíricos con el único objeto de servir de contraste con los resultados obtenidos mediante la aplicación del método hidrométrico, que han sido los finalmente adoptados.

### 3. METODOLOGIA DE CALCULO ADOPTADA

El proceso de cálculo seguido en el presente "Estudio Hidrológico" se ha desarrollado de acuerdo con la metodología expuesta en los párrafos siguientes.

Se ha realizado un estudio de avenidas con objeto de determinar los hidrogramas de avenida en las nueve subcuencas analizadas, considerando periodos de recurrencia de 2, 5, 10, 15 y 20 años, respectivamente y utilizando el método hidrométrico, dada la ausencia de datos directos, para permitir llegar a una estimación lo más -- ajustada posible.

En primer lugar se determinan las características físicas más importantes de las cuencas estudiadas, que permitirán el cálculo de los tiempos de concentración y el trazado de las curvas isocronas. Así mismo, y dada la gran influencia que tendrá en el cálculo de los hidrogramas de avenida una correcta determinación de los parámetros que definen la infiltración y el almacenamiento en las cuencas, se ha realizado un análisis de la distribución de los cultivos y aprovechamientos del suelo en la zona estudiada, lo que ha permitido definir unos valores de los parámetros de infiltración para cada tipo de suelo o cultivo y a partir de ellos determinar para cada subcuenca, en función de la distribución de suelos y cultivos existente en la misma, las pérdidas por intercepción, retención e infiltración y deducir la esorrentía producida en función de las características del aguacero considerado en cada caso.

Posteriormente y en base a los datos de precipitaciones máximas en 24 horas registrados en los observatorios pluviométricos existentes en la zona, se ha determinado el régimen de precipitaciones extremas en las subcuencas estudiadas, utilizando ajustes estadísticos de tipo Gumbel y mediante el método de los polígonos de Thiessen.

Una vez determinadas las características físicas y las precipitaciones máximas se han calculado los hidrogramas de avenida en las subcuencas consideradas para los períodos de recurrencia anteriormente citados.

Para ello se ha utilizado el método hidrométrico mediante la aplicación del hidrograma unitario de Clark, a través del modelo matemático HEC-1 que simula el proceso de precipitación, intercepción e infiltración, transformación del exceso de precipitación en escorrentía, y transporte del hidrograma a lo largo de los cauces. Se han analizado tormentas de diferentes duraciones adoptando finalmente como tormentas pésimas, en cada cuenca, aquellas que dan lugar a un mayor caudal de avenida.

Con objeto de servir de contraste a los resultados obtenidos mediante la aplicación del método hidrométrico, que en base a los datos existentes, son los más fiables y han sido los definitivamente adoptados, también se han calculado los caudales máximos de avenida utilizando fórmulas empíricas.



#### 4. CARACTERÍSTICAS FÍSICAS PRINCIPALES DE LAS CUENCAS ESTUDIADAS

##### 4.1 Características físicas generales

En la figura nº 1 se presenta el plano de situación general de la zona estudiada, localizada en la parte sudeste de la isla de Gran Canaria.

Se han considerado un total de nueve subcuencas parciales, reflejadas en la figura nº 2, que son las citadas a continuación:

- Barranco de Tirajana. Subcuencas T-1 y T-2
- Barranco de La Licencia. Subcuenca L-1.
- Barranco de Balos. Subcuencas B-1, B-2, B-3 y B-4.
- Barranco de Los Corralillos. Subcuenca C-1.
- Barranco de Guayadeque. Subcuenca G-1.

A partir de la topografía a escala 1:50.000 de las cuencas, reflejada en la figura nº 2, se han determinado las características físicas principales de cada cuenca, superficie, altitud media, longitud del cauce principal y pendiente media que se resumen en el cuadro nº 1.

En las figuras nº 3 a 6 se presentan los perfiles longitudinales de los barrancos estudiados.

##### 4.2 Cálculo del tiempo de concentración

La estimación de los tiempos de concentración de las cuencas estudiadas se ha realizado mediante dos procedimientos:

- Por medio de la aplicación de fórmulas empíricas, como las de Giandotti, Passini, California y Ventura-Heras.
- Por medio de la aplicación sobre el perfil longitudinal del río de una velocidad media deducida de acuerdo con la experiencia actual.

A continuación se describe la metodología utilizada y los resultados obtenidos con la aplicación de cada uno de estos métodos.

a) Aplicación de fórmulas empíricas

Se han empleado las siguientes fórmulas:

- GIANDOTTI

$$T_c = \frac{4 \sqrt{S + 1,5 L}}{0,8 \sqrt{H}}$$

Verificándose

$$\frac{L}{3,6} \geq T_c \geq \frac{L}{3,6 \times 1,5}$$

siendo:

$T_c$  = Tiempo de concentración, en horas.

$S$  = Superficie, en Km<sup>2</sup>.

$L$  = Longitud del cauce principal, en Km.

$H$  = Altura media en metros, sobre el punto de control de la cuenca

## - PASSINI

$$T_c = 0,108 \frac{(S.L)^{1/3}}{I^{1/2}}$$

Siendo:

$T_c$  = Tiempo de concentración, en horas.

$S$  = Superficie, en Km<sup>2</sup>.

$L$  = Longitud máxima, en Km.

$I$  = Pendiente media en tanto por uno.

## - CALIFORNIA

$$T_c = \left( \frac{L^3}{H} \right)^{0,385}$$

Siendo:

$T_c$  = Tiempo de concentración, en horas.

$L$  = Longitud máxima, en Km.

$H$  = Desnivel entre la cabecera de la cuenca y el punto de desagüe en m.

## - VENTURA-HERAS

$$T_c = 0,13 \sqrt{\frac{S}{I}}$$

Siendo:

$T_c$  = Tiempo de concentración, en horas.

$S$  = Superficie, en Km<sup>2</sup>.

$I$  = Pendiente media en tanto por uno.

#### b) Estimación de velocidades medias

La figura nº 7 recoge en forma gráfica la relación entre la velocidad media del agua y la pendiente de acuerdo con las cifras reflejadas en la publicación "Design of Small Dams" del U.S. Bureau of Reclamation.

Aplicando esta relación a cada una de las cuencas estudiadas se calcula la velocidad media en ellas y a partir de ésta se obtiene el tiempo de concentración.

En el cuadro nº 2 se resumen los resultados obtenidos con cada método y el valor del tiempo de concentración definitivamente adoptado para cada subcuenca.

#### 4.3 Curvas isocronas

Una vez determinado el tiempo de concentración de cada cuenca, se ha realizado el mapa de curvas isocronas que se presenta en la figura nº 8.

En el cuadro nº 3 se presentan las superficies limitadas entre isocronas en las cuencas estudiadas, escogiéndose un intervalo de tiempo de 0,25 horas para la representación de las mismas.

## 5. DISTRIBUCION DE CULTIVOS

Con objeto de poder determinar con la mayor precisión posible las características de infiltración de las subcuencas estudiadas, - como uno de los datos básicos para el cálculo de la escorrentía originada en las mismas por un determinado aguacero, se ha realizado - un análisis de la distribución de cultivos y tipos de suelos existentes en la zona, en base a los estudios efectuados por el Ministerio de Agricultura, Pesca y Alimentación.

A partir de los mapas de cultivos y aprovechamientos de la isla de Gran Canaria se ha realizado una división de los mismos en 4 grandes grupos:

- Regadio
- Secano
- Matorral
- Improductivo

Dentro de los terrenos en regadío se han incluido las huertas, cultivos herbáceos, platanera, frutales, cultivos forzados, asociaciones huerta con frutales, olivar o viñedo, asociaciones cultivos herbáceos-frutales, etc.

En el 2º grupo, correspondiente a los terrenos en secano, se han incluido los almendros en secano, olivos de verdeo en secano, pinos canarios, pastizal y las distintas asociaciones, tales como - matorral con almendro en secano, matorral con palmera canaria diseminada, etc.

En el 3<sup>er</sup> grupo se ha considerado el matorral propiamente dicho, que ocupa la mayor parte de la superficie de las cuencas estudiadas.

En el 4º grupo se incluyen las zonas denominadas como improductivas, que corresponden a núcleos urbanos, terrenos urbanizables, roquedales sin vegetación, etc.

En la figura nº 9 se presenta el plano de distribución de los cultivos de acuerdo con la división anteriormente efectuada y en el cuadro nº 4 se reflejan las superficies correspondientes a los cuatro grupos considerados, dentro de cada una de las subcuencas estudiadas.

## 6. ESTIMACION DE MAXIMAS AVENIDAS

### 6.1 Introducción

El propósito de los cálculos incluidos en este apartado ha sido el de establecer, con la máxima precisión posible, las máximas avenidas con probabilidad de presentación en las subcuencas estudiadas, caracterizándolas a través de los siguientes elementos:

- Caudal máximo en función del periodo de recurrencia y de la duración del aguacero.
- Forma aproximada del hidrograma de presentación de la avenida.

Se han utilizado dos procedimientos de cálculo con el fin de - poder establecer comparaciones entre los distintos resultados y llegar a conclusiones de mayor garantía. Los métodos usados han sido - los siguientes:

- Aplicación de fórmulas empíricas. Teniendo en cuenta las características de las cuencas en estudio se han considerado como - más idóneas las fórmulas de Gete, Turazza y Heras. También se han utilizado las curvas envolventes de máximas avenidas de - Canarias. Los resultados obtenidos por aplicación de métodos - empíricos tienen únicamente el valor de servir de contraste - con los deducidos mediante el método hidrométrico.
- Aplicación del método hidrométrico. Mediante este método, que en base a los datos existentes es el de resultados más fiables y ha sido el definitivamente adoptado, se reproduce el comportamiento o respuesta de las cuencas frente a una tormenta de - características fijadas en función del régimen de lluvias máximas.

Se ha aplicado este procedimiento utilizando el modelo matemático HEC-1 mediante el método del hidrograma unitario de Clark, que permite obtener los hidrogramas de avenida a partir del cálculo de los hidrogramas unitarios en las subcuencas consideradas.

## 6.2 Estudio pluviométrico

Para establecer el régimen de precipitaciones máximas en cada cuenca, se ha partido de los datos de precipitaciones máximas en -- 24 horas, facilitados por el Servicio Hidráulico de Las Palmas, registrados en las siguientes estaciones pluviométricas:

2 Hoya del Gamonal	121 Cortijo Pajonales
12 Ingenio Pueblo	126 Bailadero Vivero
33 Cuevas Blancas	132 Barranco Las Palmas
41 Rincón Tenteniguada	133 Sorrueda Presa
54 Santa Lucia	137 Temisas
65 Piletas	138 Sequero Alto
76 Era del Cardón	142 Hornos Presa
81 Aguimes-Cadenas Virgen	152 Ovejero Explosivos
82 Culata de Risco Blanco	175 Lomo Morales
83 Fataga	208 Cortijo Huertas
84 La Barrera	218 Candelillas
100 Taidia	221 Adeje
105 Corralillos	236 Cardoneras Ciel
116 El Moreno	248 Alcaucil
117 Hoya de la Perra	249 Cortijo Lorian

En la figura nº 10 se presenta el plano de situación de las estaciones pluviométricas consideradas, reflejándose en el Apéndice los valores de precipitaciones máximas en 24 horas registrados en las mismas.



Aplicando la distribución de valores extremos de Gumbel a los valores registrados se obtienen las precipitaciones máximas probables en 24 horas para periodos de recurrencia de 2, 5, 10, 15 y 20 años, en cada una de las estaciones pluviométricas. Los resultados obtenidos se presentan también en el Apéndice y se resumen en el cuadro nº 5.

Las precipitaciones máximas probables en 24 horas para los distintos periodos de recurrencia se obtienen, en cada una de las subcuencas estudiadas, mediante el método de los polígonos de Thiessen, suponiendo que cada estación pluviométrica tiene un área de influencia igual a la de su polígono correspondiente, de forma que cualquier punto situado dentro de un polígono determinado tenga como más cercana la estación encerrada dentro del polígono. En la figura nº 11 se presenta el plano de los polígonos de Thiessen que abarcan las cuencas estudiadas, y en el cuadro nº 6 se reflejan las superficies de los mismos.

Las precipitaciones máximas finalmente obtenidas en cada subcuenca se presentan en el cuadro nº 7.

La estimación de la intensidad de lluvia para duraciones del aguacero distintas a 24 horas, se ha realizado en base a las observaciones registradas en el observatorio del aeropuerto de Gando, que es el más próximo a la zona estudiada con registros para intervalos de tiempo inferiores a un día, recogidas en la publicación de D. Francisco Elias "Precipitaciones máximas en España". La relación entre la precipitación para una duración determinada del aguacero y la precipitación en 24 horas, que es prácticamente independiente del periodo de retorno, se refleja en el cuadro nº 8 y gráficamente en la figura nº 12.

### 6.3 Cálculo de los caudales de avenida por métodos empíricos

Dadas las características de las cuencas estudiadas, dentro de la gran variedad de fórmulas existentes para la estimación de los caudales de avenida se han considerado como más apropiadas las siguientes:

#### - GETE

$$Q = (4 + 16 \log T) \sqrt{S}$$

siendo:

Q = Caudal en m<sup>3</sup>/s

T = periodo de recurrencia, en años.

S = superficie de la cuenca, en Km<sup>2</sup>.

#### - TURAZZA

$$Q = \frac{e.H.S}{3,6 \cdot t_c}$$

siendo:

Q = caudal, en m<sup>3</sup>/s

e = coeficiente de escorrentía

H = altura total máxima de precipitación durante un periodo igual al tiempo de concentración

t<sub>c</sub> = tiempo de concentración, en horas

Los valores del coeficiente de escorrentía adoptados, en función del periodo de recurrencia, son los siguientes:

Periodo de recurrencia <u>(años)</u>	<u>Coefficiente de escorrentia</u>
2	0,05
5	0,21
10	0,31
15	0,35
20	0,38

- HERAS

$$Q = C.i.e.s$$

siendo:

Q = caudal, en m<sup>3</sup>/s

i = intensidad horaria de precipitación, en mm.

(Se ha tomado la intensidad media en 3 y 6 horas, dependiendo de la cuenca considerada).

e = coeficiente de escorrentía (los mismos que para el caso anterior)

s = superficie de la cuenca, en Km<sup>2</sup>.

C = coeficiente característico de las cuencas = 0,30

También se han utilizado las curvas envolventes de máximas crecidas de Canarias, publicadas por D. Rafael Heras, que se presentan en la figura nº 13.

Los resultados obtenidos por la aplicación de métodos empíricos se reflejan en el cuadro nº 9 y tienen únicamente el valor de servir de contraste con los deducidos por el método hidrométrico que han sido los definitivamente adoptados.

#### 6.4 Cálculo de los hidrogramas de avenida por el método hidrométrico

Mediante este método, que en base a los datos existentes es el de resultados más fiables, se reproduce el comportamiento o respuesta de las cuencas frente a una tormenta de características fijadas en función del régimen de lluvias máximas. Los hidrogramas de avenida obtenidos por este procedimiento han sido los adoptados definitivamente en el presente estudio.

Dichos hidrogramas se han obtenido mediante la aplicación del modelo matemático HEC-1, cuya metodología se expone en el Apéndice. Para la simulación del proceso precipitación-escorrentía el modelo lo separa en precipitación, intercepción e infiltración, transformación del exceso de precipitación en escorrentía, y transporte y combinación de los hidrogramas. Se ha utilizado el método del hidrograma unitario de Clark, para lo que es necesario conocer los valores de la infiltración y el factor de almacenamiento de cada una de las 9 subcuencas estudiadas.

Las pérdidas por intercepción e infiltración se han calculado mediante el método del número de curva del Soil Conservation Service (S.C.S.) que, basado en la experimentación y experiencia, ha desarrollado una clasificación de los suelos en función de su cobertura vegetal, uso a que se destinan y condiciones de humedad previas, relacionando el tipo de suelo con un número de curva. Las pérdidas de precipitación, en este método, se calculan en base a unos valores de CN (número de curva) y IA (capacidad inicial de humedad almacenada por el suelo en mm). Las fórmulas empleadas son:

$$Q = \frac{(P-IA)^2}{P-IA+S}$$

donde:

Q = exceso de precipitación o escorrentía directa acumulada (mm)

P = precipitación total acumulada (mm)

S = déficit de almacenamiento de humedad (mm)

En función del número de curva se tiene que:

$$S = \frac{25.400 - 254 \text{ CN}}{\text{CN}}$$

Como valor de IA se toma  $IA = 0,2.S$

Para cada una de las subcuencas estudiadas se ha adoptado un número de curva y una infiltración inicial correspondiente, en función de sus características de permeabilidad y capacidad de infiltración. La determinación del número de curva se ha realizado en base a la distribución de cultivos y aprovechamientos del suelo existente en cada subcuenca. Para los cuatro grandes grupos en los que se han dividido los cultivos y suelos, y considerando unas condiciones de humedad, anteriores a la tormenta, medias y una infiltración entre moderada y alta (suelos tipo B según la clasificación del S.C.S.), se han adoptado los siguientes números de curva:

<u>CLASE</u>	<u>Nº DE CURVA</u>
Regadío	67
Secano	70
Matorral	75
Improductivo	80

En función de estos valores y realizando una media ponderada - según la distribución de las 4 clases de terreno consideradas existente en cada subcuenca, reflejada en el cuadro nº 4, se han deducido los valores del número de curva e infiltración inicial para cada subcuenca, que se presentan en el cuadro nº 10.

El cálculo de los valores del factor de almacenamiento R, utilizado en el método del hidrograma unitario de Clark para simular el efecto de almacenamiento de la cuenca, se ha realizado mediante la fórmula de Clark:

$$R = \frac{C \times L}{\sqrt{I}}$$

donde:

R = factor de almacenamiento, en horas

L = longitud del cauce principal, en Km

I = pendiente media del cauce, en tanto por ciento

C = constante que oscila entre 0,5 y 1,35

En el cuadro nº 11 se presentan los valores del factor de almacenamiento para cada subcuenca.

El transporte de los hidrogramas se ha utilizado para simular el movimiento de la onda de avenida a lo largo de los cauces. El método empleado para simular dicho transporte ha sido el de Muskingum, tomando un coeficiente de  $X = 0,25$  y suponiendo velocidades de 2 y 3 m/s, según cada subcuenca, para calcular el tiempo de recorrido en cada tramo.

Los hidrogramas de avenida se calculan mediante el método del hidrograma unitario de Clark que, a partir de los parámetros anteriormente determinados y del régimen de lluvias máximas, transforma el exceso de precipitación en caudal a la salida de la cuenca.

En primer lugar hay que determinar la duración de la tormenta pésima, es decir la que da lugar a unos caudales de avenida mayores.

Se han simulado cinco hipótesis de duración de la tormenta, su poniendo una distribución uniforme de la precipitación, de 1, 2, 3, 6 y 12 horas respectivamente, para un periodo de recurrencia de 20 años.

Las cantidades de precipitación en cada subcuenca para distintas duraciones del aguacero se obtienen a partir de los datos de precipitaciones máximas en 24 horas en las cuencas, mediante la aplicación de los coeficientes deducidos de la figura nº 12.

A partir de estas tormentas uniformes se calculan los hidrogrma mas de avenida en las subcuencas estudiadas, que se presentan resumidos en el Apéndice, cuyos caudales y volúmenes de avenida se reflejan en los cuadros nºs. 12 y 13 respectivamente. En base a los resultados obtenidos se deduce que la duración de la tormenta pésima es de 6 horas en las subcuencas T-1, T-2, B-2, C-1, y G-1, y de 3 horas en las subcuencas L-1, B-1, B-3 y B-4.

El siguiente paso ha sido, ya fijada la duración de la tormenta pésima, calcular los hidrogramas de avenida para periodos de retorno de 2, 5, 10, 15 y 20 años, considerando una tormenta de distri bución no uniforme y de las duraciones anteriormente especificadas en cada cuenca.

En base a los datos de precipitaciones máximas en 24 horas en las subcuencas, para los periodos de retorno considerados, y teniendo en cuenta la relación precipitación-duración deducida, se simulan con el modelo HEC-1 las tormentas para los distintos periodos de re currencia en dichas subcuencas. La cantidad total de precipitación, para una tormenta determinada, es distribuida de forma no uniforme, a lo largo de la duración de la misma, de manera que las intensidades máximas se dan en la parte central del intervalo de duración de la tormenta, lo cual es más desfavorable que la distribuc ión uniforme. El modelo también considera la reducción de la precipitación puntual en función de la superficie de la cuenca.

Los hidrogramas de avenida en las cuencas estudiadas para pe--  
riodos de recurrencia de 2, 5, 10, 15 y 20 años, obtenidos finalmente  
te como conclusión del presente estudio, se presentan en el Apéndice  
y se resumen en los cuadros n<sup>o</sup>s. 14 a 18.



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CUADRO N° 1

CARACTERISTICAS FISICAS DE LAS CUENCAS ESTUDIADAS

SUBCUENCA	SUPERFICIE (Km2)	ALTITUD MEDIA (M)	LONGITUD CAUCE PRINCIPAL (KM)	PENDIENTE MEDIA (M/M)
T-1	19,55	592,55	14,00	0,0881
T-2	43,18	994,16	14,10	0,0993
L-1	1,53	391,56	2,20	0,1205
B-1	2,18	255,34	2,20	0,0455
B-2	7,28	552,47	6,50	0,1026
B-3	2,08	521,54	3,10	0,1355
B-4	10,73	556,18	7,50	0,1385
C-1	10,45	473,49	7,40	0,1187
G-1	19,45	1.140,27	12,20	0,1115

CUADRO Nº 2

VALORES DEL TIEMPO DE CONCENTRACION  
(EN HORAS)

<u>SUBCUENCA</u>	<u>FORMULAS</u>		<u>EMPIRICAS</u>		<u>CALCULO POR LA VELOCIDAD MEDIA</u>	<u>VALOR ADOPTADO</u>
	<u>GIANDOTTI</u>	<u>PASSINI</u>	<u>CALIFORNIA</u>	<u>VENTURA-HERAS</u>		
T-1	2,59*	2,36	1,37	1,94	2,50	2,50
T-2	2,61*	2,90	1,31	2,71	2,42	3,00
L-1	0,61*	0,47	0,29	0,46	0,35	0,50
B-1	0,61*	0,85	0,41	0,90	0,54	0,75
B-2	1,41	1,22	0,71	1,10	1,10	1,00
B-3	0,81	0,55	0,36	0,51	0,48	0,50
B-4	1,80	1,25	0,70	1,14	1,14	1,50
C-1	1,67	1,34	0,74	1,22	1,20	1,50
G-1	2,26*	2,00	1,11	1,72	2,01	2,00

\* Valores tomados de la restricción

$$\frac{L}{3,6} \geq T_c \geq \frac{L}{3,6 \times 1,5}$$

CUADRO Nº 3SUPERFICIES LIMITADAS ENTRE ISOCRONAS

<u>SUBCUENCA</u>	<u>ISOCRONAS (HORAS)</u>	<u>SUPERFICIE PARCIAL (KM2)</u>	<u>SUPERFICIE ACUMULADA (KM2)</u>
T-1	0,00-0,25	1,23	1,23
	0,25-0,50	2,00	3,23
	0,50-0,75	2,55	5,78
	0,75-1,00	3,38	9,16
	1,00-1,25	3,18	12,34
	1,25-1,50	2,60	14,94
	1,50-1,75	1,08	16,02
	1,75-2,00	1,10	17,12
	2,00-2,25	0,90	18,02
	2,25-2,50	1,53	19,55
T-2	0,00-0,25	2,03	2,03
	0,25-0,50	2,90	4,93
	0,50-0,75	3,70	8,63
	0,75-1,00	2,30	10,93
	1,00-1,25	4,69	15,62
	1,25-1,50	5,19	20,81
	1,50-1,75	5,29	26,10
	1,75-2,00	6,32	32,42
	2,00-2,25	3,85	36,27
	2,25-2,50	3,13	39,40
	2,50-2,75	2,53	41,93
2,75-3,00	1,25	43,18	
L-1	0,00-0,25	0,70	0,70
	0,25-0,50	0,83	1,53

CUADRO Nº 3 (CONTINUACION)

SUPERFICIES LIMITADAS ENTRE ISOCRONAS

<u>SUBCUENCA</u>	<u>ISOCRONAS (HORAS)</u>	<u>SUPERFICIE PARCIAL (KM2)</u>	<u>SUPERFICIE ACUMULADA (KM2)</u>
B-1	0,00-0,25	0,75	0,75
	0,25-0,50	1,00	1,75
	0,50-0,75	0,43	2,18
B-2	0,00-0,25	2,00	2,00
	0,25-0,50	2,11	4,11
	0,50-0,75	1,92	6,03
	0,75-1,00	1,25	7,28
B-3	0,00-0,25	0,93	0,93
	0,25-0,50	1,15	2,08
B-4	0,00-0,25	0,94	0,94
	0,25-0,50	0,89	1,83
	0,50-0,75	1,59	3,42
	0,75-1,00	2,69	6,11
	1,00-1,25	2,89	9,00
	1,25-1,50	1,73	10,73
C-1	0,00-0,25	2,05	2,05
	0,25-0,50	1,97	4,02
	0,50-0,75	1,80	5,82
	0,75-1,00	2,27	8,09
	1,00-1,25	1,46	9,55
	1,25-1,50	0,90	10,45

CUADRO Nº 3 (CONTINUACION)SUPERFICIES LIMITADAS ENTRE ISOCRONAS

<u>SUBCUENCA</u>	<u>ISOCRONAS (HORAS)</u>	<u>SUPERFICIE PARCIAL (KM<sup>2</sup>)</u>	<u>SUPERFICIE ACUMULADA (KM<sup>2</sup>)</u>
G-1	0,00-0,25	2,28	2,28
	0,25-0,50	4,14	6,42
	0,50-0,75	2,84	9,26
	0,75-1,00	2,79	12,05
	1,00-1,25	2,08	14,13
	1,25-1,50	1,58	15,71
	1,50-1,75	1,86	17,57
	1,75-2,00	1,88	19,45



CUADRO Nº 4

CULTIVOS Y APROVECHAMIENTOS DE LAS SUBCUENCAS  
EN ESTUDIO

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SUBCUENCA CULTIVO Y APROVECHAMIENTO		T-1	T-2	L-1	B-1	B-2	B-3	B-4	C-1	G-1
		REGADIO	120	1.387,5	22,5	30,0	100,0	15,0	67,5	155,0
SECANO	145	1.022,5	-	-	-	-	47,5	315,0	400,0	
MATORRAL	1.687	1.815,5	130,5	188,0	628,0	193,0	953,0	575,0	1.022,5	
IMPRODUCTIVO	2,5	92,5	-	-	-	-	5,0	-	12,5	
TOTAL	Has.	1.954,5	4.318,0	153,0	218,0	728,0	208,0	1.073,0	1.045,0	1.945,0
	Km2.	19,55	43,18	1,53	2,18	7,28	2,08	10,73	10,45	19,45

\* NOTA : Los valores indicados en el cuadro están en Has.

## CUADRO Nº 5

## PRECIPITACIONES MAXIMAS ANUALES EN 24 H. (MM)

ESTACION PLUVIOMETRICA	PERIODO DE RECURRENCIA (AÑOS)				
	2	5	10	15	20
2	102,8	174,9	222,6	249,6	268,4
12	43,8	78,7	101,8	114,9	124,0
33	103,9	167,6	209,8	233,6	250,3
41	78,3	136,3	174,7	196,4	211,5
54	59,0	128,1	173,8	199,6	217,7
65	33,2	62,1	81,3	92,1	99,6
76	42,6	83,9	111,2	126,7	137,5
81	51,7	98,5	129,4	146,9	159,1
82	70,4	122,5	156,9	176,3	189,9
83	58,3	95,3	119,8	133,6	143,3
84	52,4	84,2	105,2	117,1	125,4
100	75,1	131,9	169,4	190,7	205,5
105	47,7	85,9	111,2	125,5	135,5
116	71,1	113,0	140,6	156,3	167,2
117	65,7	105,1	131,2	146,0	156,3
121	50,8	78,1	96,2	106,4	113,5
126	61,5	93,9	115,3	127,4	135,9
132	34,5	59,9	76,7	86,2	92,8
133	52,5	84,8	106,2	118,2	126,7
137	61,2	122,7	163,4	186,4	202,5
138	65,5	102,7	127,4	141,3	151,0
142	94,0	145,9	180,3	199,7	213,2
152	37,6	69,0	89,8	101,5	109,7
175	54,9	89,7	112,8	125,8	134,9
208	89,2	143,6	179,7	200,0	214,2
218	73,6	123,6	156,8	175,5	188,5
221	32,1	55,6	71,2	80,0	86,1
236	29,5	51,3	65,8	73,9	79,6
248	50,5	94,2	123,1	139,4	150,8
249	84,2	133,3	165,8	184,2	197,0

CUADRO Nº 6SUPERFICIES DE LOS POLIGONOS DE THIESSEN

<u>SUBCUENCA</u>	<u>Nº ESTACION</u>	<u>SUPERFICIE (KM2)</u>
T-1	54	1,65
	76	1,24
	83	0,13
	84	8,21
	117	0,66
	132	2,40
	133	3,77
	137	0,46
	236	1,03
		<u>TOTAL</u>
	=====	
T-2	54	5,61
	82	5,29
	83	1,05
	100	7,47
	117	0,66
	126	1,51
	133	3,10
	138	8,88
	142	0,68
	175	5,46
	208	1,01
	218	0,94
	249	1,52
	<u>TOTAL</u>	<u>43,18</u>
	=====	
L-1	76	1,53
		<u>TOTAL</u>
	=====	

CUADRO Nº 6 (CONTINUACION)

SUPERFICIES DE LOS POLIGONOS DE THIESSEN

<u>SUBCUENCA</u>	<u>Nº ESTACION</u>	<u>SUPERFICIE (KM2)</u>
B-1	76	1,50
	105	0,53
	236	0,15
	<b>TOTAL</b>	<b>2,18</b>
=====		
B-2	76	4,14
	133	1,62
	137	1,33
	248	0,19
	<b>TOTAL</b>	<b>7,28</b>
=====		
B-3	76	0,71
	137	0,05
	248	1,32
	<b>TOTAL</b>	<b>2,08</b>
=====		
B-4	105	0,43
	117	0,10
	121	0,09
	137	8,01
	248	2,10
	<b>TOTAL</b>	<b>10,73</b>
=====		

CUADRO Nº 6 (CONTINUACION)SUPERFICIES DE LOS POLIGONOS DE THIESSEN

<u>SUBCUENCA</u>	<u>Nº ESTACION</u>	<u>SUPERFICIE (KM2)</u>
C-1	81	1,39
	105	3,60
	121	2,54
	137	0,38
	248	2,54
	TOTAL	10,45
=====		
G-1	12	0,35
	33	2,44
	81	0,11
	82	0,01
	116	2,99
	117	3,77
	121	5,90
	137	0,48
	208	0,90
	249	2,50
TOTAL	19,45	
=====		

CUADRO N 7

PRECIPITACIONES MAXIMAS EN 24 H. (MM) EN LAS CUENCAS ESTUDIADAS  
PERIODOS DE RETORNO EN A#OS

<u>CUENCA</u>	<u>2</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>
T-1	49.7	85.0	108.3	121.5	130.8
T-2	66.2	113.3	144.4	162.0	174.3
L-1	42.6	83.9	111.2	126.7	137.5
B-1	43.0	82.2	108.2	122.9	133.2
B-2	48.4	91.5	120.0	136.1	147.4
B-3	48.1	91.4	120.0	136.2	147.5
B-4	58.5	115.1	152.6	173.7	188.5
C-1	50.2	89.0	114.7	129.3	139.4
G-1	69.6	111.1	138.6	154.2	165.0

CUADRO Nº 8INTENSIDADES DE LLUVIA PARA DURACIONES  
DEL AGUACERO DISTINTAS A 24 HORASAEROPUERTO DE GANDO

<u>DURACION DEL AGUACERO</u>	<u>PRECIPITACION TOTAL EN % DE LA DE 24 H.</u>
5 min.	11,0
15 min.	18,0
1 h.	34,0
2 h.	48,0
3 h.	58,0
6 h.	76,4
12 h.	92,0
24 h.	100,0
48 h.	135,3
72 h.	141,5

CUADRO Nº 9

CAUDALES DE AVENIDA CALCULADOS POR METODOS EMPIRICOS

(Q en m<sup>3</sup>/s)

<u>SUBCUENCA</u>	<u>GETE</u>					<u>TURAZZA</u>				
	<u>2 AÑOS</u>	<u>5 AÑOS</u>	<u>10 AÑOS</u>	<u>15 AÑOS</u>	<u>20 AÑOS</u>	<u>2 AÑOS</u>	<u>5 AÑOS</u>	<u>10 AÑOS</u>	<u>15 AÑOS</u>	<u>20 AÑOS</u>
T-1	39,0	67,1	88,4	100,9	109,7	2,9	20,6	38,7	49,0	57,2
T-2	57,9	99,8	131,4	149,9	163,1	7,7	55,2	103,8	131,5	153,6
L-1	10,9	18,8	24,7	28,2	30,7	0,4	3,4	6,7	8,7	10,2
B-1	13,0	22,4	29,5	33,7	36,6	0,5	4,0	7,9	10,1	11,9
B-2	23,8	41,0	54,0	61,6	67,0	1,7	13,2	25,6	32,8	38,5
B-3	12,7	21,9	28,8	32,9	35,8	0,6	5,1	9,9	12,7	14,9
B-4	28,9	49,7	65,5	74,7	81,3	2,4	19,7	38,5	49,5	58,4
C-1	28,5	49,1	64,7	73,8	80,2	2,0	14,8	28,2	35,9	42,0
G-1	38,9	67,0	88,2	100,6	109,4	4,5	30,3	55,7	70,0	81,3



CUADRO Nº 9 (CONTINUACION)

CAUDALES DE AVENIDA CALCULADOS POR METODOS EMPIRICOS

(Q en m<sup>3</sup>/s)

<u>SUBCUENCA</u>	<u>HERAS</u>					<u>ENVOLVENTES DE MAXIMAS CRECIDAS DE CANARIAS</u>				
	<u>2 AÑOS</u>	<u>5 AÑOS</u>	<u>10 AÑOS</u>	<u>15 AÑOS</u>	<u>20 AÑOS</u>	<u>2 AÑOS</u>	<u>5 AÑOS</u>	<u>10 AÑOS</u>	<u>15 AÑOS</u>	<u>20 AÑOS</u>
T-1	1,9	13,3	25,1	31,8	37,1	20,5	26,2	33,5	35,2	37,0
T-2	5,5	29,4	55,4	70,2	109,3	36,7	47,6	64,8	67,9	70,9
L-1	0,2	1,6	3,1	3,9	4,6	3,1	3,8	4,7	5,2	5,7
B-1	0,3	2,2	4,2	5,4	6,4	3,9	5,0	6,3	6,7	7,4
B-2	0,7	5,3	10,3	13,2	15,6	10,2	12,5	15,6	16,7	18,2
B-3	0,3	2,3	4,5	5,8	6,8	3,7	4,8	6,0	6,4	7,1
B-4	1,8	15,1	29,4	37,9	44,6	13,1	17,2	21,5	22,9	24,7
C-1	1,0	7,5	14,2	18,1	21,1	12,8	16,8	20,9	22,3	24,1
G-1	2,6	17,3	31,9	40,1	46,6	20,4	26,1	33,3	35,0	36,8

CUADRO Nº 10VALORES DE INFILTRACION ADOPTADOS

<u>SUBCUENCA</u>	<u>NUMERO DE CURVA</u>	<u>INFILTRACION INICIAL (mm)</u>
T-1	74	17,8
T-2	71	20,7
L-1	74	17,8
B-1	74	17,8
B-2	74	17,8
B-3	74	17,8
B-4	74	17,8
C-1	72	19,8
G-1	72	19,8

CUADRO Nº 11VALORES DEL FACTOR DE ALMACENAMIENTO  
DE CLARK

SUBCUENCA	R (C=0,5)	R (C=1,35)	R ADOPTADO (HORAS)
T-1	2,36	6,37	2,4
T-2	2,24	6,04	2,2
L-1	0,32	0,86	0,3
B-1	0,52	1,39	0,5
B-2	1,01	2,74	1,0
B-3	0,42	1,14	0,4
B-4	1,01	2,72	1,0
C-1	1,07	2,90	1,1
G-1	1,83	4,93	1,8

CUADRO Nº 12TORMENTAS UNIFORMES(CAUDALES DE AVENIDA (m<sup>3</sup>/s))

<u>SUBCUENCA</u>	<u>DURACION DE LA TORMENTA</u>				
	<u>1 HORA</u>	<u>2 HORAS</u>	<u>3 HORAS</u>	<u>6 HORAS</u>	<u>12 HORAS</u>
T-1	6,11	16,73	25,49	36,83	34,07
T-2	19,19	53,01	79,16	111,70	102,54
L-1	3,66	6,02	6,33	5,26	3,48
B-1	3,52	6,70	7,59	6,91	4,70
B-2	8,95	18,49	23,47	24,27	17,41
B-3	5,42	8,82	9,31	7,82	5,19
B-4	22,24	40,78	49,41	49,25	34,77
C-1	7,02	17,35	24,00	28,47	21,73
G-1	12,35	30,09	43,29	57,51	47,91

CUADRO Nº 13TORMENTAS UNIFORMESVOLUMENES DE AVENIDA (Hm<sup>3</sup>)DURACION DE LA TORMENTA

<u>SUBCUENCA</u>	<u>1 HORA</u>	<u>2 HORAS</u>	<u>3 HORAS</u>	<u>6 HORAS</u>	<u>12 HORAS</u>
T-1	0,089	0,244	0,394	0,702	1,009
T-2	0,264	0,747	1,207	2,159	3,116
L-1	0,011	0,025	0,038	0,065	0,090
B-1	0,014	0,033	0,051	0,087	0,122
B-2	0,056	0,134	0,202	0,343	0,476
B-3	0,017	0,040	0,060	0,100	0,138
B-4	0,149	0,323	0,466	0,757	1,028
C-1	0,053	0,144	0,227	0,402	0,572
G-1	0,146	0,371	0,569	0,986	1,387

CUADRO Nº 14

HIDROGRAMAS DE AVENIDAS-RESUMEN

PERIODO DE RECURRENCIA 2 AÑOS

<u>SUBCUENCA</u>	<u>SUPERFICIE (Km<sup>2</sup>)</u>	<u>PRECIPITACION TOTAL (mm)</u>	<u>ESCORRENTIA (mm)</u>	<u>COEFICIENTE DE ESCORRENTIA</u>	<u>TIEMPO DE PUNTA (HORAS)</u>	<u>CAUDAL DE AVENIDA (m<sup>3</sup>/s)</u>	<u>VOLUMEN DE AVENIDA (1000m<sup>3</sup>)</u>
T-1	19,55	31,91	1,93	0,06	6,75	2,19	37,0
T-2	43,18	40,92	3,30	0,08	7,00	8,25	141,0
T-SUMA	62,73	38,11	2,84	0,07	7,50	9,98	178,0
L-1	1,53	21,63	0,16	0,01	3,25	0,07	0,2
B-1	2,18	21,76	0,17	0,01	3,25	0,09	0,4
B-2	7,28	31,99	1,95	0,06	5,75	1,21	14,0
B-3	2,08	24,39	0,45	0,02	3,25	0,22	1,0
B2+B3	9,36	30,30	1,62	0,05	5,75	1,21	15,0
B-4	10,73	28,86	1,22	0,04	3,75	1,64	13,0
B-SUMA	22,27	28,77	1,28	0,04	4,50	2,23	28,4
C-1	10,45	32,87	1,53	0,05	6,00	1,37	16,0
G-1	19,45	44,80	5,05	0,11	6,25	6,39	98,0

CUADRO Nº 17

HIDROGRAMAS DE AVENIDAS-RESUMEN

PERIODO DE RECURRENCIA 15 AÑOS

<u>SUBCUENCA</u>	<u>SUPERFICIE (Km<sup>2</sup>)</u>	<u>PRECIPITACION TOTAL (mm)</u>	<u>ESCORRENCIA (mm)</u>	<u>COEFICIENTE DE ESCORRENCIA</u>	<u>TIEMPO DE PUNTA (HORAS)</u>	<u>CAUDAL DE AVENIDA (m<sup>3</sup>/s)</u>	<u>VOLUMEN DE AVENIDA (1000m<sup>3</sup>)</u>
T-1	19,55	88,89	31,52	0,35	6,00	33,55	612,0
T-2	43,18	113,77	44,01	0,39	6,25	106,71	1.889,0
T-SUMA	62,73	106,02	39,87	0,38	6,75	134,78	2.501,0
L-1	1,53	73,13	21,18	0,29	2,25	6,73	32,0
B-1	2,18	70,80	19,74	0,28	2,50	7,01	43,0
B-2	7,28	102,17	41,00	0,40	4,25	27,33	297,0
B-3	2,08	78,47	24,55	0,31	2,25	9,74	51,0
B2+B3	9,36	96,90	37,18	0,38	4,25	27,78	348,0
B-4	10,73	97,50	37,60	0,39	3,25	47,08	401,0
B-SUMA	22,27	94,64	35,56	0,38	4,00	67,98	792,0
C-1	10,45	96,36	33,43	0,35	4,75	29,02	348,0
G-1	19,45	112,73	45,05	0,40	5,25	55,87	872,0

CUADRO Nº 18

HIDROGRAMAS DE AVENIDAS - RESUMEN

PERIODO DE RECURRENCIA 20 AÑOS

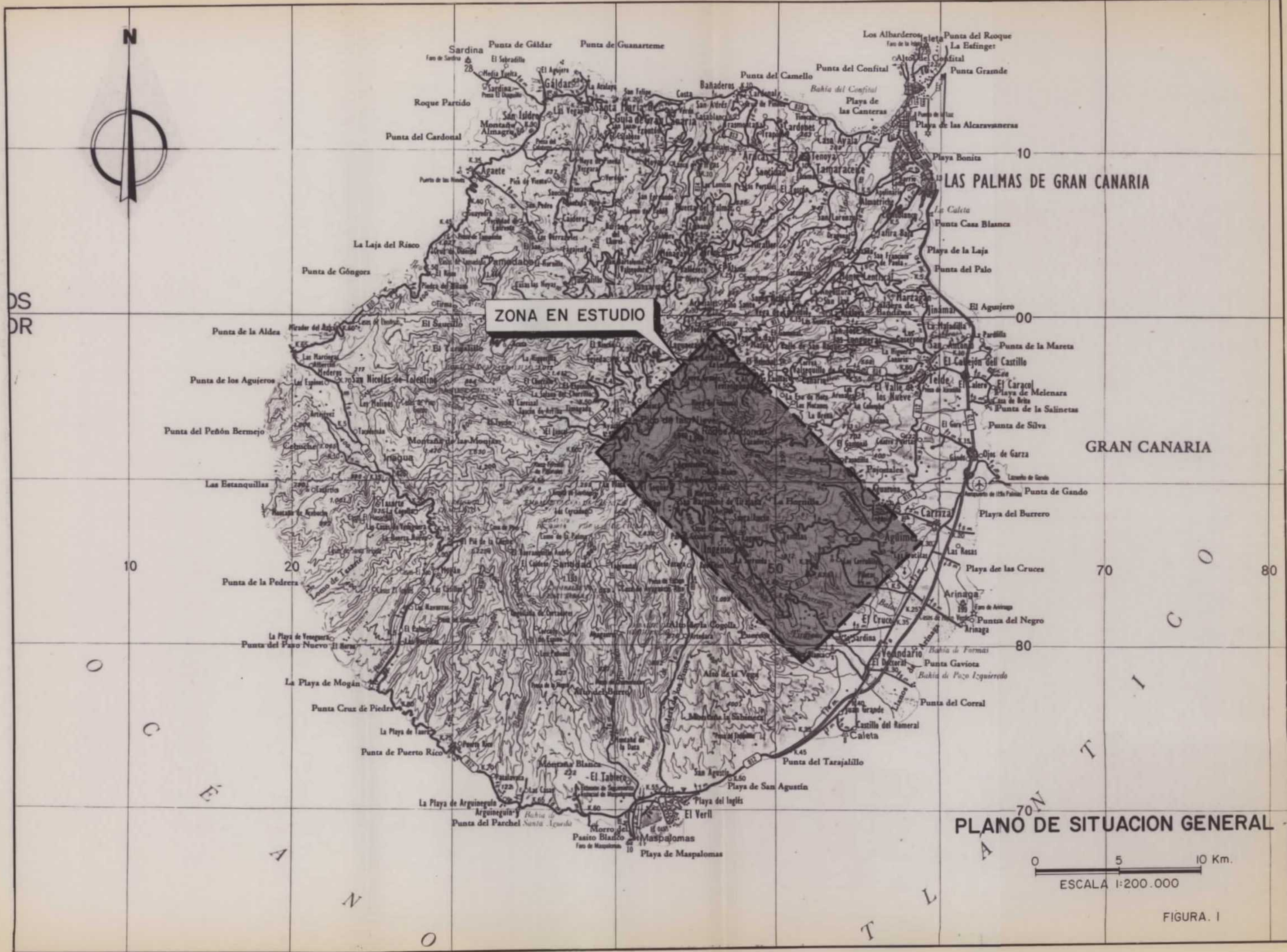
<u>SUBCUENCA</u>	<u>SUPERFICIE (Km<sup>2</sup>)</u>	<u>PRECIPITACION TOTAL (mm)</u>	<u>ESCORRENCIA (mm)</u>	<u>COEFICIENTE DE ESCORRENCIA</u>	<u>TIEMPO DE PUNTA (HORAS)</u>	<u>CAUDAL DE AVENIDA (m<sup>3</sup>/s)</u>	<u>VOLUMEN DE AVENIDA (1000m<sup>3</sup>)</u>
T-1	19,55	95,58	36,22	0,38	6,00	38,54	703,0
T-2	43,18	122,40	50,35	0,41	6,25	122,01	2.162,0
T-SUMA	62,73	114,04	45,67	0,40	6,75	154,31	2.865,0
L-1	1,53	79,40	25,16	0,32	2,25	8,03	38,0
B-1	2,18	76,65	23,39	0,31	2,50	8,33	51,0
B-2	7,28	110,62	47,32	0,43	4,25	31,72	343,0
B-3	2,08	85,02	28,88	0,34	2,25	11,55	60,0
B2+B3	9,36	104,93	43,06	0,41	4,25	32,23	403,0
B-4	10,73	105,72	43,64	0,41	3,25	54,68	466,0
B-SUMA	22,27	102,54	41,31	0,40	4,00	78,82	920,0
C-1	10,45	103,87	38,66	0,37	4,75	33,69	402,0
G-1	19,45	120,68	50,97	0,42	5,25	63,32	986,0



FIGURAS

## INDICE DE FIGURAS

1. PLANO DE SITUACION GENERAL
2. PLANO DE LAS CUENCAS ESTUDIADAS
3. PERFIL LONGITUDINAL DEL BARRANCO DE TIRAJANA
4. PERFIL LONGITUDINAL DEL BARRANCO DE BALOS
5. PERFILES LONGITUDINALES DE LOS BARRANCOS DE LA LICENCIA Y LOS CORRALILLOS
6. PERFIL LONGITUDINAL DEL BARRANCO DE GUAYADEQUE
7. VELOCIDADES ESTIMADAS EN FUNCION DE LA PENDIENTE
8. PLANO DE ISOCRONAS
9. PLANO DE DISTRIBUCION DE LOS CULTIVOS
10. PLANO DE SITUACION DE ESTACIONES PLUVIOMETRICAS
11. PLANO DE LOS POLIGONOS DE THIESSEN CONSIDERADOS
12. RELACION ENTRE LA PRECIPITACION MAXIMA EN 24 H. Y LA PRECIPITACION MAXIMA PARA DISTINTAS DURACIONES DEL AGUACERO.
13. ENVOLVENTES DE MAXIMAS CRECIDAS EN CANARIAS.



LAS PALMAS DE GRAN CANARIA

GRAN CANARIA

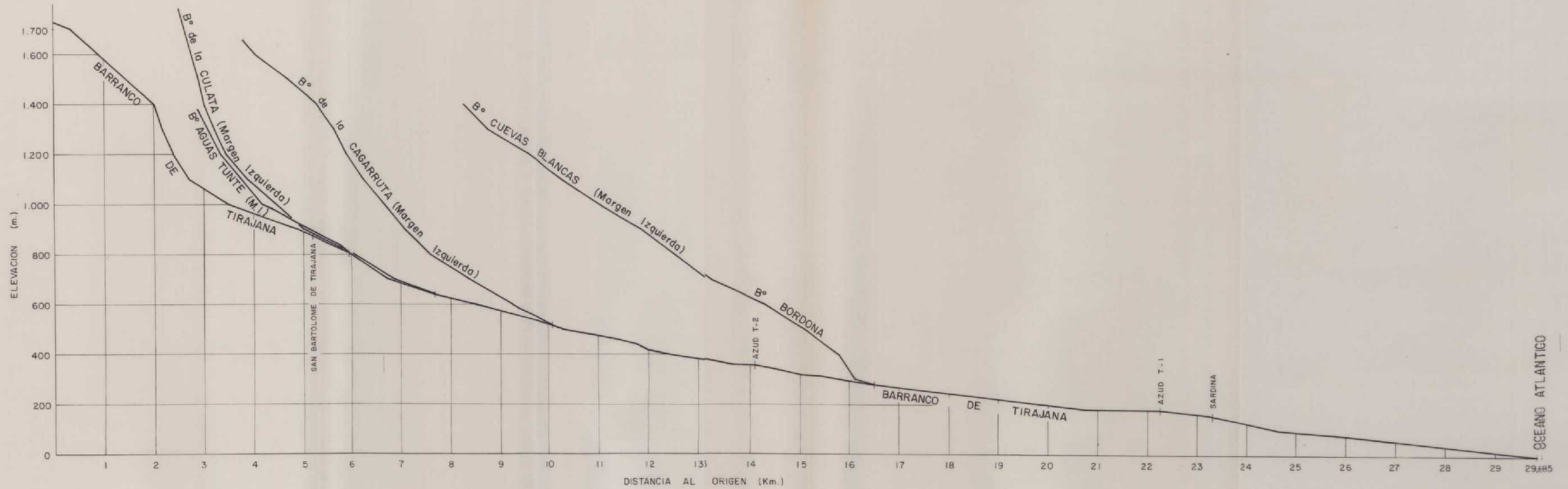
ZONA EN ESTUDIO

PLANO DE SITUACION GENERAL

ESCALA 1:200.000

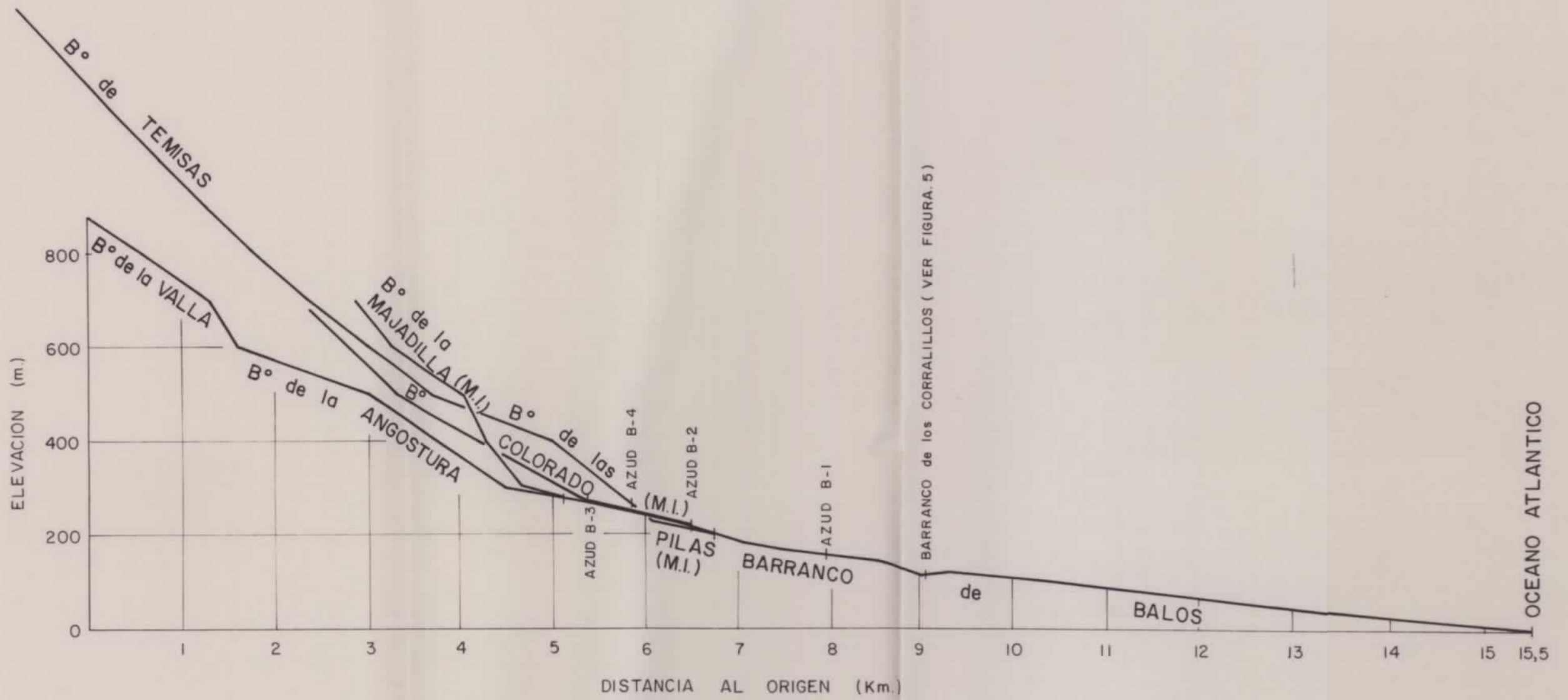
FIGURA. I





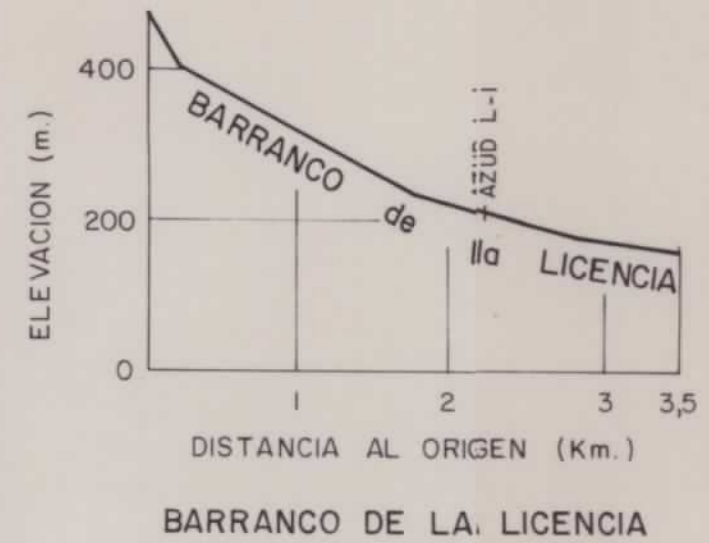
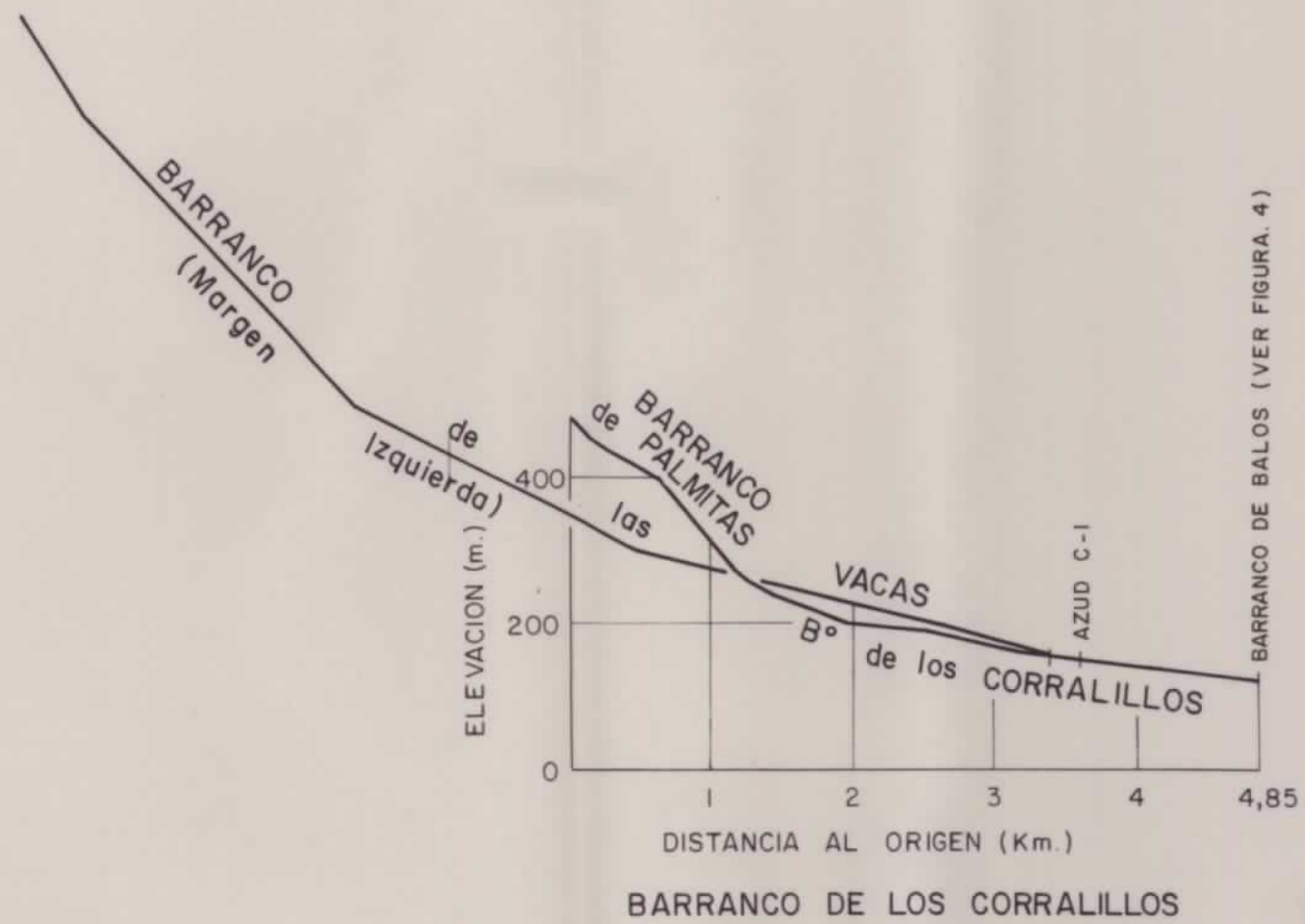
PERFIL LONGITUDINAL DEL  
BARRANCO DE TIRAJANA

ESCALAS | H = 1:50.000  
| V = 1:10.000



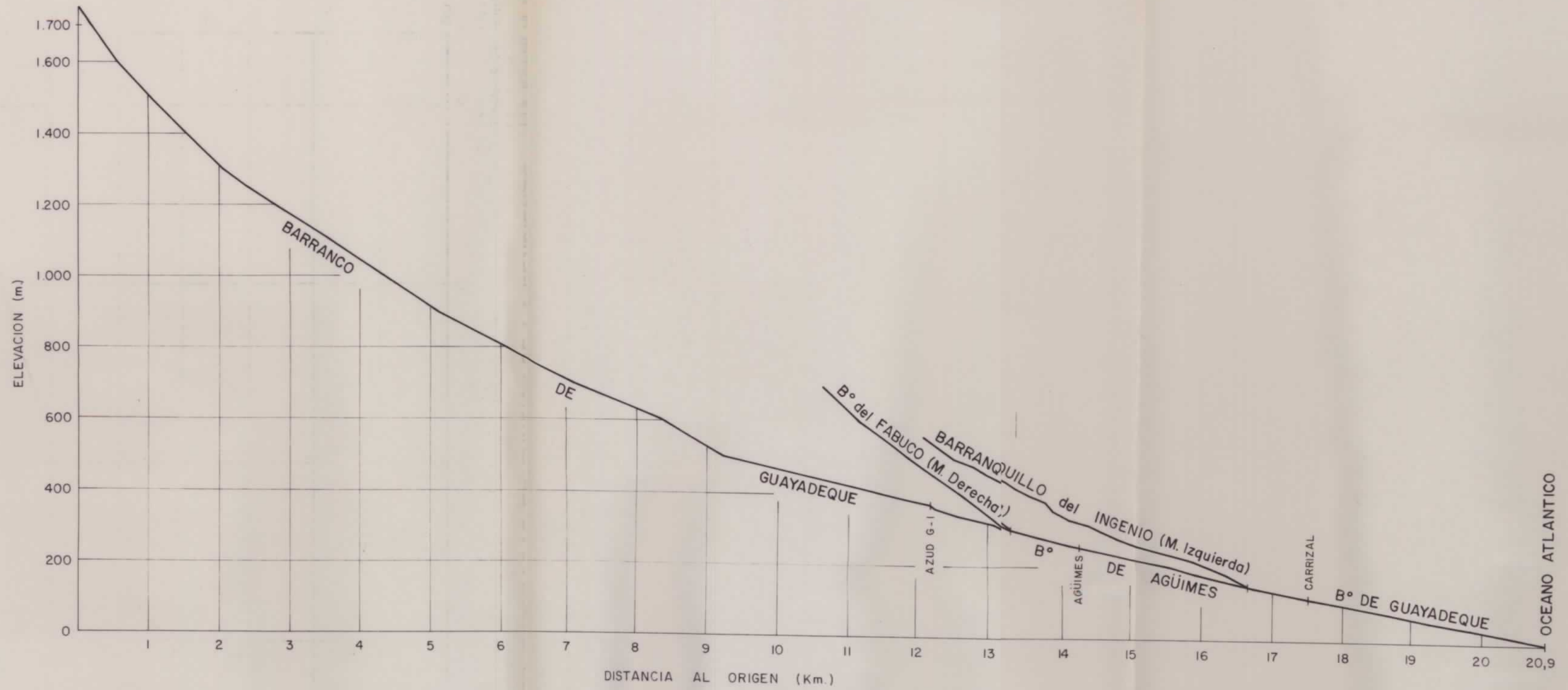
PERFIL LONGITUDINAL DEL  
BARRANCO DE BALOS

ESCALAS H = 1:500.000  
V = 1:100.000



PERFILES LONGITUDINALES DE LOS BARRANCOS DE LA LICENCIA Y LOS CORRALILLOS

ESCALAS | H = 1:50.000  
V = 1:10.000

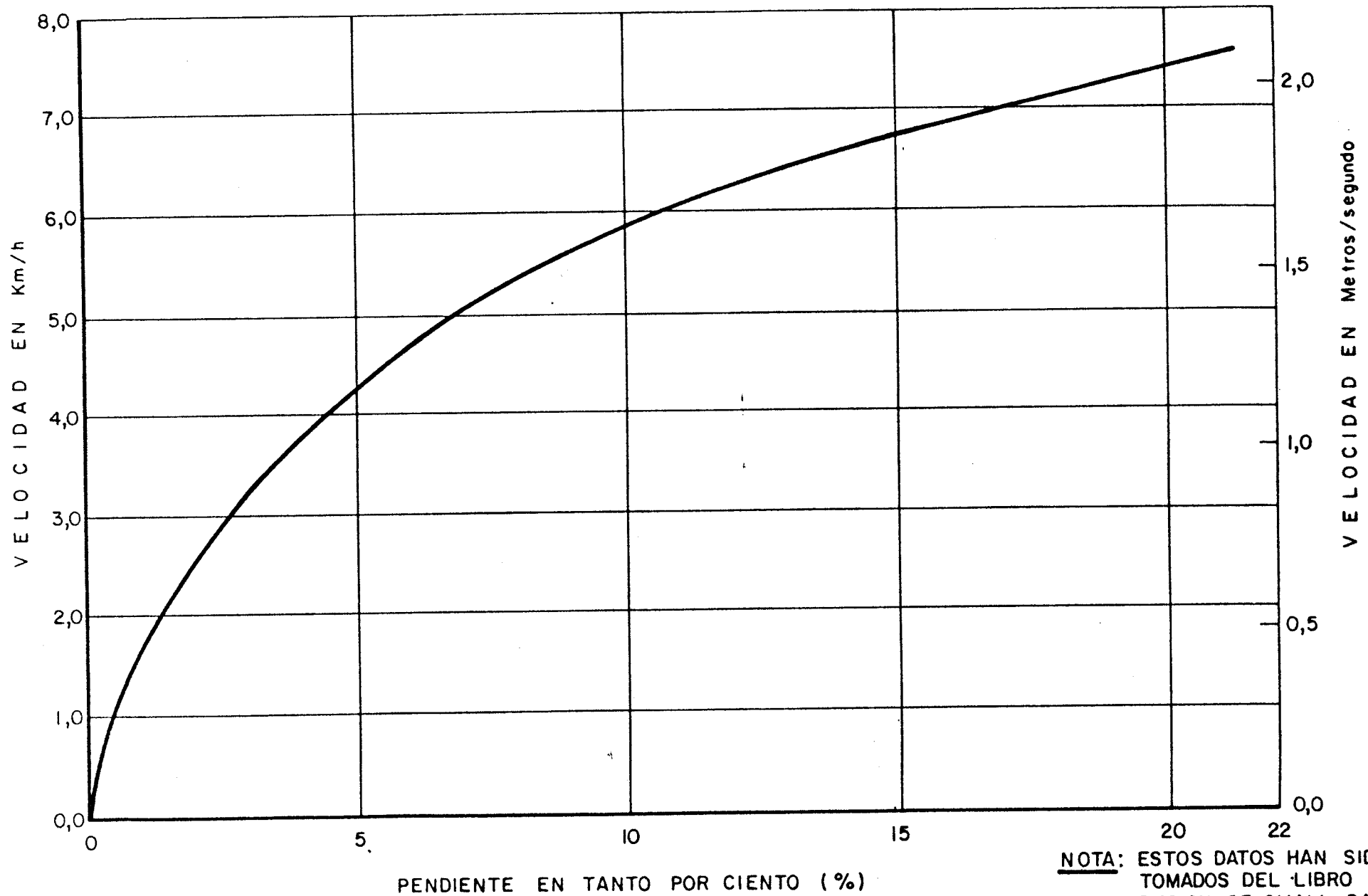


PERFIL LONGITUDINAL DEL  
BARRANCO DE GUAYADEQUE

ESCALAS | H = 1:50.000  
          | V = 1:10.000

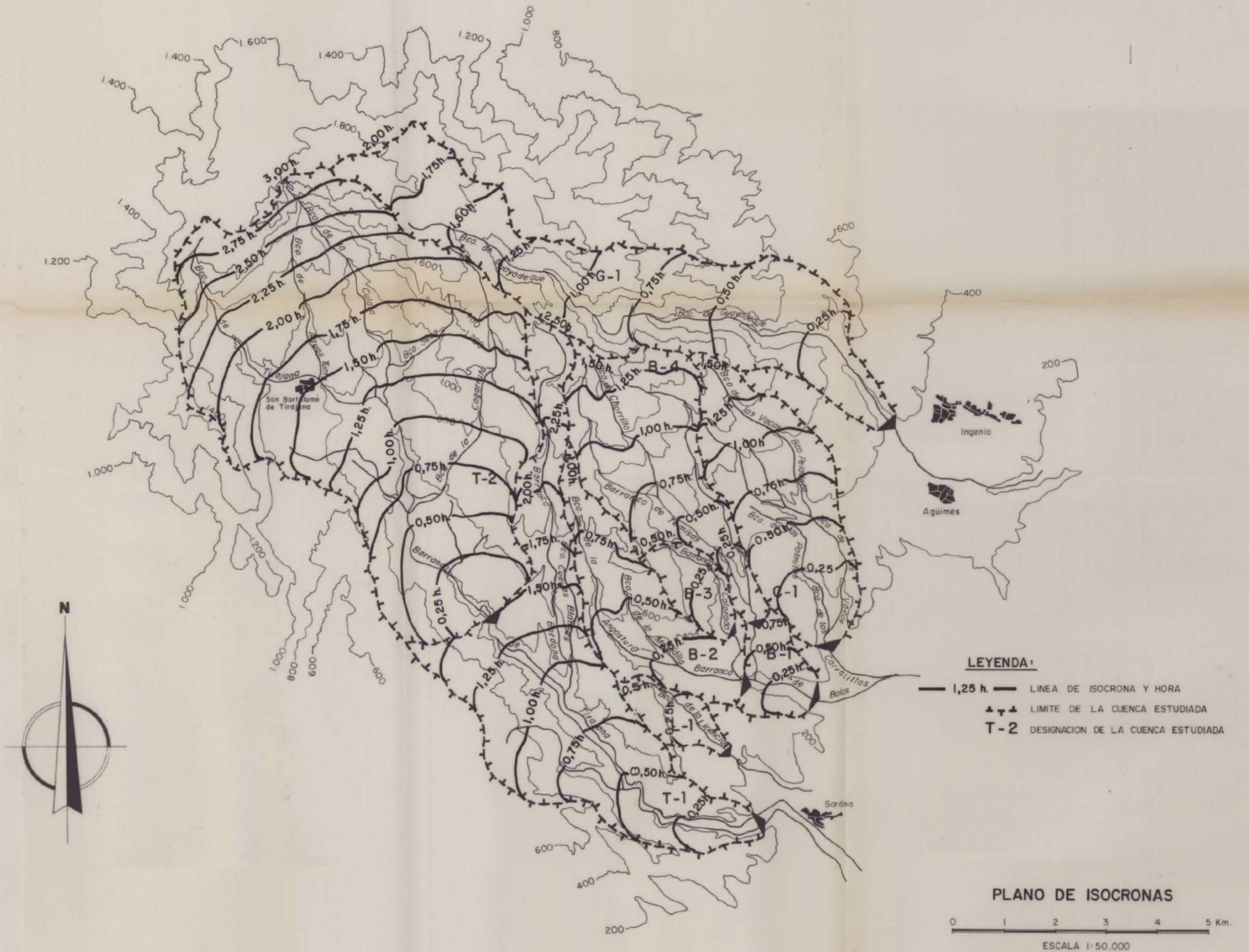


FIGURA 7



NOTA: ESTOS DATOS HAN SIDO TOMADOS DEL LIBRO DESIGN OF SMALL DAMS (U.S. BUREAU OF RECLAMATION)

### VELOCIDADES ESTIMADAS EN FUNCION DE LA PENDIENTE



**LEYENDA:**

- 1,25 h. — LINEA DE ISOCRONA Y HORA
- - - LIMITE DE LA CUENCA ESTUDIADA
- T-2 DESIGNACION DE LA CUENCA ESTUDIADA

**PLANO DE ISOCRONAS**

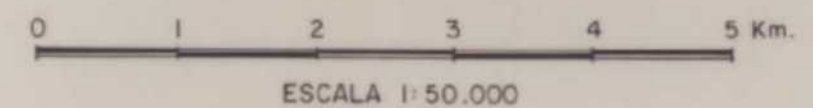


FIGURA. 8

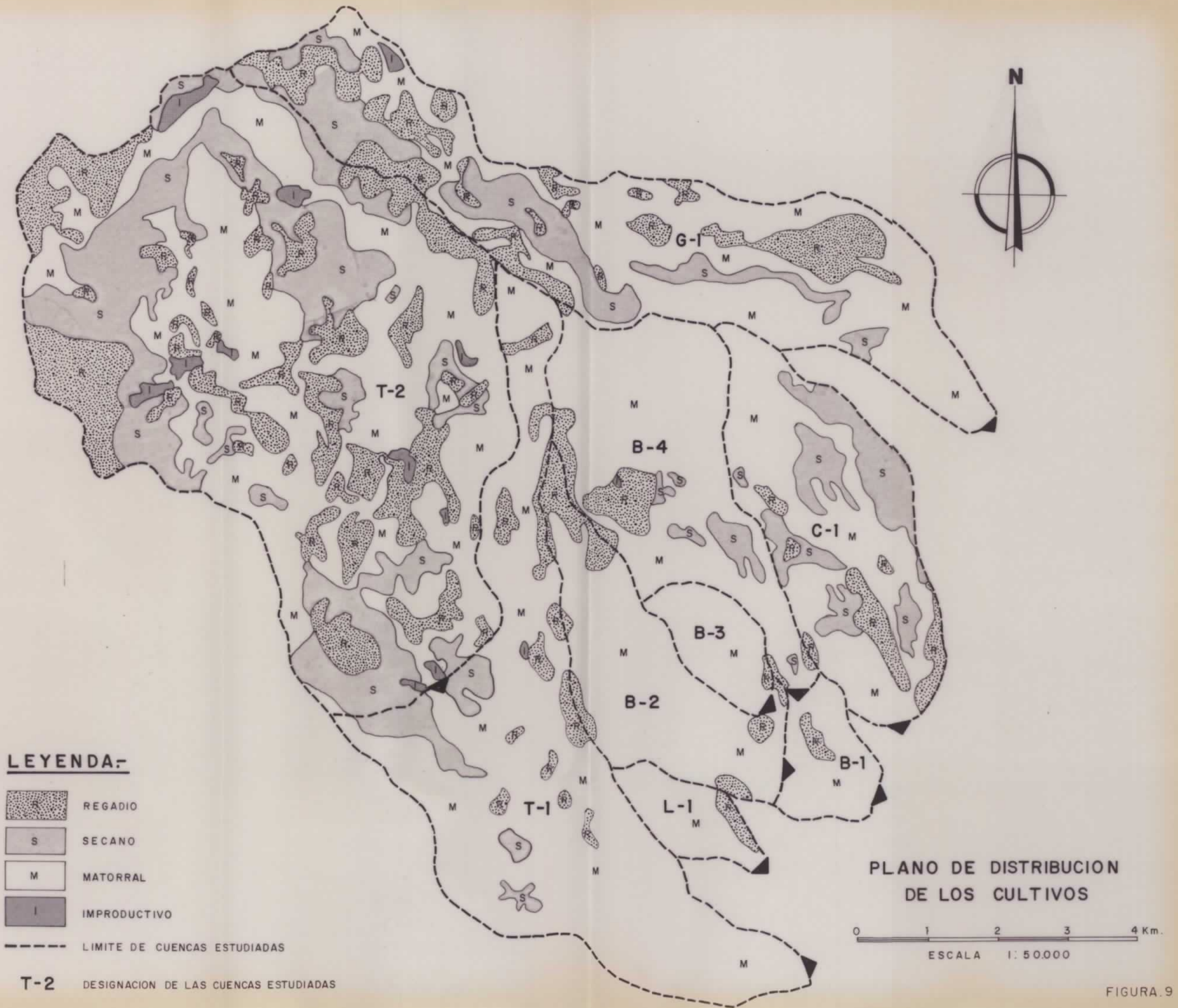


FIGURA. 9



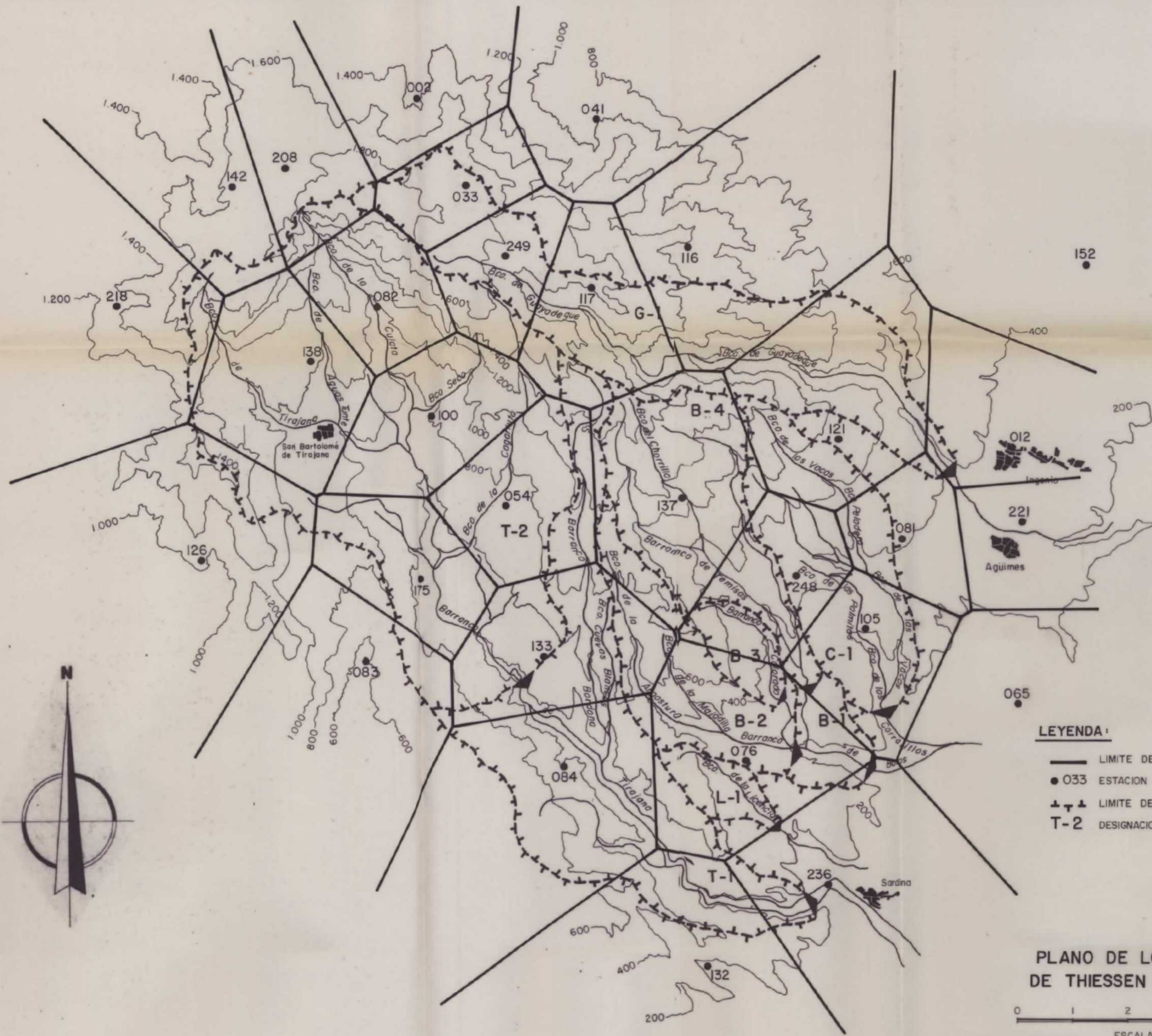
**LEYENDA:**

- 033 ESTACION PLUVIOMETRICA CONSIDERADA Y NUMERO
- ▲▲▲ LIMITE DE LA CUENCA ESTUDIADA
- T-2 DESIGNACION DE LA CUENCA ESTUDIADA

**PLANO DE SITUACION  
DE ESTACIONES PLUVIOMETRICAS**

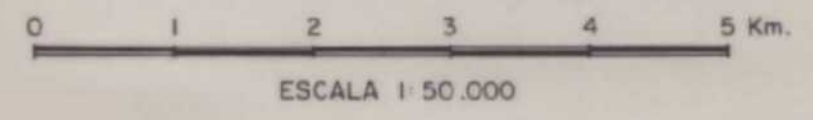
0 1 2 3 4 5 Km.  
ESCALA 1:50.000

FIGURA. 10



- LEYENDA:**
- LIMITE DE POLIGONO
  - 033 ESTACION PLUVIOMETRICA CONSIDERADA Y NUMERO
  - ▲▲▲ LIMITE DE LA CUENCA ESTUDIADA
  - T-2 DESIGNACION DE LA CUENCA ESTUDIADA

**PLANO DE LOS POLIGONOS DE THIESSEN CONSIDERADOS**



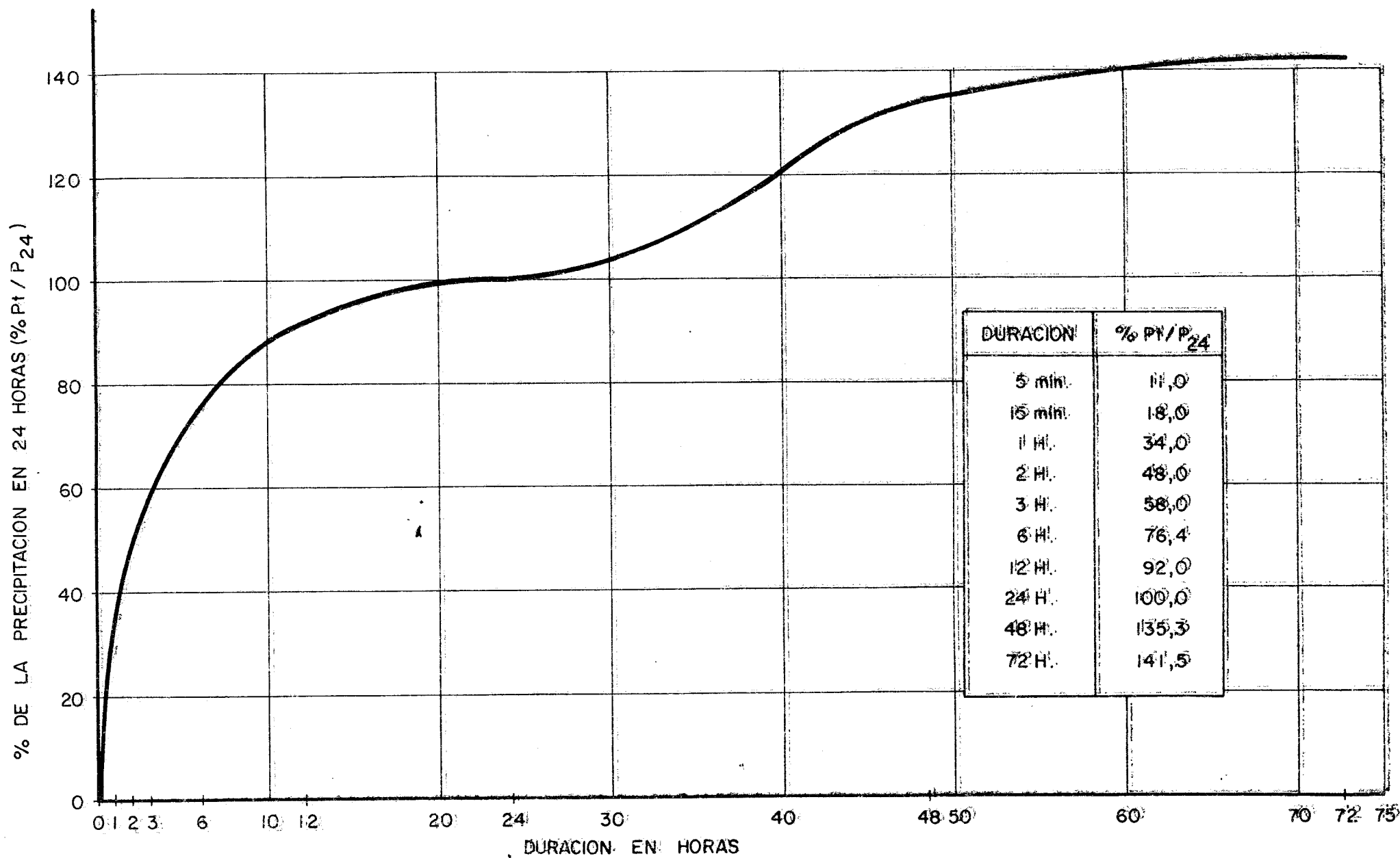


FIGURA. 12

RELACION ENTRE LA PRECIPITACION MAXIMA EN 24 HORAS Y LA PRECIPITACION MAXIMA PARA DISTINTAS DURACIONES DEL AGUACERO.

# CANARIAS

Máxima crecida ( $m^3/seg./Km^2$ ) Superficie de Cuenca ( $Km^2$ )

T = Tiempo de recurrencia en años

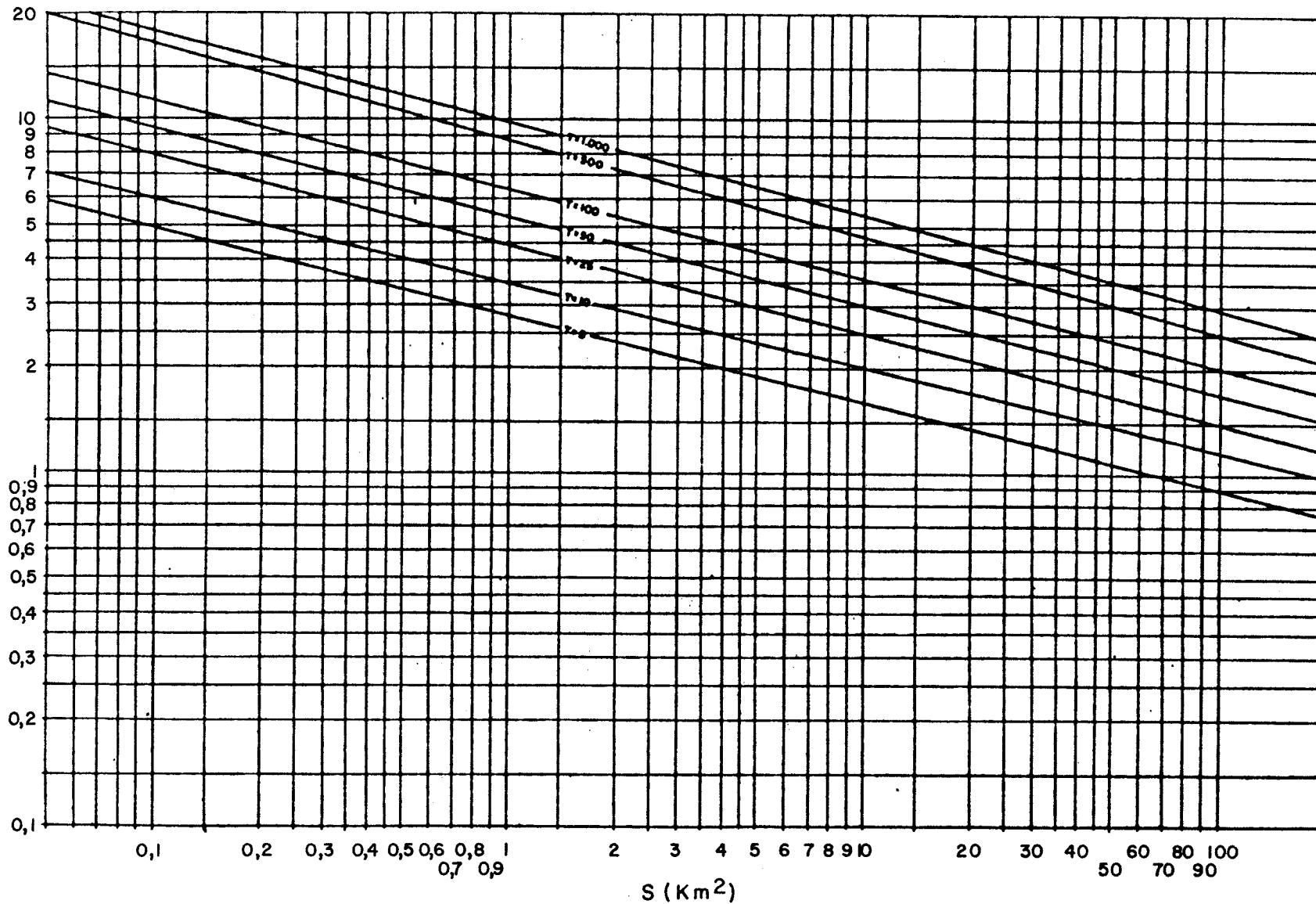


FIGURA. 13

## ENVOLVENTES DE MAXIMAS CRECIDAS EN CANARIAS

APENDICE

SALIDAS DE ORDENADOR



APENDICE

SALIDAS DE ORDENADOR

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1. DESCRIPCION DEL PROGRAMA HEC-1

### MODELO MATEMATICO HEC-1

El modelo matemático HEC-1 está diseñado para la simulación de la escorrentía superficial como respuesta de la cuenca de un río a las precipitaciones que tienen lugar sobre ella. La cuenca se representa mediante un conjunto de componentes hidrológicos e hidráulicos interconectados entre sí. Cada componente simula un aspecto del proceso precipitación-escorrentía dentro de una parte de la cuenca comúnmente llamada subcuenca. Un componente puede representar una subcuenca, el tramo de un río, un embalse, etc.

La representación de los componentes requiere un conjunto de parámetros que especifican sus características particulares y unas relaciones matemáticas que describen el proceso físico. El resultado del proceso de simulación es el cálculo de los hidrogramas de avenida en los puntos deseados de la cuenca.

La subdivisión de una cuenca en un número determinado de subcuencas determina el número y tipo de componentes que son utilizados en el modelo. Los componentes usualmente empleados son los siguientes:

a) Componente de escorrentía superficial

Es usado para representar el movimiento del agua sobre la superficie de la cuenca y en los cauces.

La entrada a este componente es un hidrograma de precipitaciones. El exceso de precipitación es calculado restando las pérdidas por infiltración e intercepción basadas en una función de infiltración de agua en el suelo. El exceso de precipitación resultante es trasladado mediante el método del hi-

rograma unitario, calculando el hidrograma en el punto situado más aguas abajo de la subcuenca.

El caudal de base puede ser tenido en cuenta mediante un método empírico y combinado con el hidrograma de escorrentía superficial para obtener el caudal en el punto de desagüe.

b) Componente de transporte a lo largo de un cauce

Se utiliza para representar el movimiento de la onda de avenida en el cauce de un río. La entrada a este componente es un hidrograma en el punto de aguas arriba de la subcuenca como resultado de escorrentías superficiales, transportes o derivaciones. Este hidrograma es transportado hacia el punto de aguas abajo de la subcuenca, teniendo en cuenta las características del cauce.

c) Componente de embalse

El uso de un componente de embalse es similar al anteriormente descrito. Puede ser utilizado para representar la laminación de un embalse, lago, agujero, obra de drenaje de una carretera, etc. La entrada a este componente es un hidrograma, el cual es trasladado a través del embalse utilizando métodos de almacenamiento.

El caudal de salida del embalse es solamente función del almace

namiento (o elevación del nivel del agua) en el embalse y no depende de controles aguas abajo.

Los componentes del método HEC-1 son usados para simular el proceso precipitación-escorrentía, tal y como ocurre en la cuenca de un río. Este proceso es separado en precipitación, intercepción e infiltración, transformación del exceso de precipitación en caudal en el punto de desagüe de la subcuenca, adición del caudal de base y transporte del hidrograma.

- Precipitación

Con el método de las "tormentas sintéticas a partir de datos de altura de lluvia-duración", se puede generar una tormenta sintética de cualquier duración entre 5 minutos y 10 días, en base a unos datos dados de altura de lluvia-duración. La precipitación puntual es corregida en función del área de la subcuenca mediante la siguiente ecuación:

$$\text{FACTOR} = 1,0 - BV \times (1,0 - \text{EXP} (-0,015 \times \text{AREA}))$$

donde:

FACTOR = Coeficiente de corrección de la precipitación puntual.

BV = Máxima reducción de la precipitación puntual.

AREA = Superficie de la subcuenca.

### . Intercepción e infiltración

La intercepción del agua en la superficie de la cuenca, el almacenamiento en las depresiones y la infiltración son consideradas como pérdidas de la precipitación en el modelo HEC-1.

La intercepción y almacenamiento en depresiones representan el almacenamiento de agua en superficie por árboles, praderas, depresiones locales o superficies donde al agua no tiene libertad para su movimiento. La infiltración representa el movimiento del agua por debajo de la superficie de la cuenca.

La precipitación que no contribuye al proceso de escorrentía se considera perdida para el sistema. Las ecuaciones utilizadas para calcular las pérdidas no tienen en cuenta la humedad del suelo.

El modelo permite el cálculo de las pérdidas medias de precipitación para un intervalo de cálculo que se restan del hietograma de precipitaciones. El exceso de precipitación resultante es utilizado para calcular el hidrograma de avenida para la subcuenca considerada.

El Soil Conservation Service (S.C.S.), basado en la experimentación y experiencia, ha desarrollado una clasificación de los suelos en función de su cobertura vegetal, uso a que se destina y condiciones de humedad previas y ha relacionado el tipo de suelo con un número de curva. Las pérdidas de precipitación, en este método, se calculan en base a unos valores suministrados de CN (número de curva) y IA (capacidad inicial de humedad almacenada por el suelo en mm.) Las fórmulas emplea

das son:

$$ACEXS = \frac{(ACRAN - IA)^2}{ACRAN - IA + S}$$

$$S = \frac{25.400 - 254 CN}{CN}$$

Siendo:

ACEXS = Exceso de precipitación acumulada (mm).

ACRAN = Altura de precipitación acumulada (mm).

S = Déficit actual de almacenamiento de humedad (mm)

#### .Hidrograma unitario

Esta técnica es utilizada dentro del componente de escorrentía superficial para transformar el exceso de precipitación en caudales a la salida de la subcuenca.

El hidrograma unitario puede ser introducido directamente en el programa o se calcula un hidrograma unitario sintético a partir de parámetros suministrados al modelo.

El hidrograma unitario de 1 hora se define como el correspondiente a un exceso de precipitación unitario (1mm) aplicado uniformemente sobre la subcuenca a lo largo de un período de 1 hora. El modelo HEC-1 automáticamente asigna al exceso de precipitación unitario una duración igual a la del intervalo de cálculo seleccionado en la simulación.

El hietograma del exceso de precipitación es transformado en el hidrograma de avenida a la salida de la subcuenca, mediante la ecuación

general:

$$Q(i) = \sum_{j=1}^n \sum_{j=1}^i U(j) \times X(i - j + 1)$$

donde:

$Q(i)$  = Caudal al final del intervalo de cálculo  $i$ .

$U(j)$  = Ordenada  $j$ -ésima del hidrograma unitario.

$X(i)$  = Exceso de precipitación media en el intervalo de cálculo  $i$

$n$  = Número de ordenadas de precipitación.

El hidrograma unitario es característico de la subcuenca y no depende de la tormenta, y las escorrentías debidas a diferentes períodos de precipitación pueden ser linealmente superpuestas.

Para el cálculo de hidrogramas unitarios sintéticos se utiliza fundamentalmente el método del hidrograma unitario de Clark.

Este método requiere tres parámetros para el cálculo del hidrograma:

- El tiempo de concentración de la subcuenca (TC).
- El coeficiente de almacenamiento (R).
- La curva tiempo-superficie que define el área acumulada de la cuenca que contribuye a la escorrentía a la salida de la cuenca en función del tiempo (isocronas).

Las ordenadas de la curva tiempo-superficie son convertidas en volumen de escorrentía por segundo para un exceso unitario e interpoladas para el intervalo de tiempo considerado. El hidrograma resultante es -



transportado a través de un embalse lineal para simular el efecto de almacenamiento de la subcuenca mediante las ecuaciones:

$$Q(2) = CA \cdot I + CB \cdot Q(1)$$

$$CA = \Delta t / (R + 0,5 \cdot \Delta t)$$

$$CB = 1 - CA$$

$$QUNGR = 0,5 (Q(1) + Q(2))$$

donde:

$Q(2)$  = Caudal instantáneo al final del período.

$Q(1)$  = Caudal instantáneo al principio del período.

$I$  = Ordenada del hidrograma trasladado.

$\Delta t$  = Intervalo de cálculo en horas.

$R$  = Factor de almacenamiento de la cuenca en horas.

$QUNGR$  = Ordenada del hidrograma unitario al final del intervalo de cálculo.

#### Transporte de hidrogramas

El transporte de hidrogramas se utiliza para la simulación del movimiento de la onda de avenida a lo largo de cauces y embalses. Los métodos de transporte del modelo HEC-1 están basados en la ecuación de continuidad y en relaciones entre caudales y volúmenes almacenados o niveles. El método "Level-Pool" es el utilizado normalmente para los embalses.

Este método asume un nivel de la superficie del agua en el embalse. Usando el principio de conservación de la masa, la variación en el volumen almacenado ( $S$ ) es un intervalo de tiempo dado ( $\Delta t$ ) es igual a la diferencia entre los volúmenes medios de entrada ( $I \cdot \Delta t$ ) y de salida -

( $0.\Delta t$ ):

$$\frac{S_2 - S_1}{\Delta t} = \frac{I_1 + I_2}{2} - \frac{O_1 + O_2}{2}$$

Es necesario introducir la relación entre volúmenes almacenados y niveles en el embalse.

El caudal desaguado por encima del aliviadero se calcula a partir de la definición de éste, mediante la fórmula:

$$Q = COQW \cdot SPWID \cdot (WSEL - CREL)^{EXPW}$$

donde:

COQW = Coeficiente de desagüe

SPWID= Anchura efectiva del aliviadero.

CREL = Elevación de la cresta del aliviadero.

WSEL = Elevación de la superficie del agua

EXPW = Exponente

IDENTIFICACION DE LA ENTRADA DE DATOS

TIPO DE DATOS	IDENTIFICACION DE LA FICHA	DESCRIPCION DE LOS DATOS
Inicialización del trabajo	ID	Identificación del trabajo
	IT	Control del tiempo del trabajo
	IM	Unidades métricas
	IO	Controles generales de la salida
	IN	Control de tiempo de los datos de entrada.
Variables del sumario de sa lido	VS	Estaciones que forman parte de sumario.
	VV	Variabes del sumario.
Optimización	OU	Controles del hidrograma unitario y pérdidas por infiltración.
	OR	Controles de los métodos de transpor te.
	OS	Optimización de sistema protección - frente a avenidas.
	OO	Optimización de la función objetivo del sistema.
Tipo de trabajo	JP	Datos análisis multiplan.
	JR	Datos análisis multi-ratio
	JD	Datos método altura-área.

TIPO DE DATOS	IDENTIFICACION DE LA FICHA	DESCRIPCION DE LOS DATOS
Control de la fase del trabajo	KK	Identificación de la estación dentro de la red hidrológica.
	KM	Mensaje alfanumérico
	KO	Control de la salida para esta estación.
	KF	Formato de la salida
	KP	Número de plan.
Transformación del hidrograma	HC	Combinación de hidrogramas
	HQ	Curva de niveles-caudales
	HE	Curva de niveles-caudales
	HB	Opción de balance del hidrograma.
Datos del hidrograma	QO	Hidrograma observado
	QI	Hidrograma directamente suministrado
	QS	Hidrograma de niveles
	QP	Distribución del hidrograma.
Datos de la cuenca	BA	Área de la cuenca
	BF	Características del caudal de base
	BI	Hidrograma de entrada procedente de un trabajo anterior.

TIPO DE DATOS	IDENTIFICACION DE LA FICHA	DESCRIPCION DE LOS DATOS
Datos de precipitación	PB	Precipitación total media sobre la cuenca.
	PI	Series de precipitaciones incrementada en el tiempo.
	PC	Series de precipitaciones acumuladas e el tiempo.
	PG	Precipitación total de la tormenta en la estación pluviométrica.
	PI/PC	Series de precipitación incrementada/acumulado en el tiempo para las estaciones pluviométricas con registros.
	PR	Estaciones pluviométricas con registros ponderadas.
	PT	Estaciones de precipitación total ponderadas.
	PW	Pesos para las estaciones pluviométricas.
	PH	Período de recurrencia de la tormenta hipotética.
	PD	Datos alturas-duraciones para la tormenta hipotética.
	PM	Opción de la precipitación máxima probable.
	PS	Opción de la tormenta standard de proyecto.
Datos de infiltración	LE	Función de pérdidas exponenciales de precipitación.
	LM	Función exponencial del deshielo.
	LU	Pérdidas iniciales y uniformes.
	LS	Número de curva del S.C.S.
	LH	Función de Holtan.

TIPO DE DATOS	IDENTIFICACION DE LA FICHA	DESCRIPCION DE LOS DATOS
Datos del hidrograma unitario	UI	Hidrograma unitario directamente <u>su</u> ministrado
	UC	Hidrograma unitario de Clark
	US	Hidrograma unitario de Snyder
	LO	Hidrograma unitario del S.C.S.
	UA	Datos de las isocronas.
	UK	Elemento de flujo superficial en el método de la onda cinemática.
	RK	Canal en el método de la onda cinemática.
Datos de deshielo	MA	Area de la zona y datos de la nieve.
	MC	Coeficiente de deshielo.
	MD	Datos del punto de rocío.
	MS	Datos de radiación solar
	MT	Datos de temperatura
	MW	Datos de viento.
Datos de transporte	RN	No hay transporte para el presente plan.
	RL	Pérdidas en el canal
	RT	Parámetro del método Straddle/Stagger
	RM	Parámetros del método de Muskingum.

TIPO DE DATOS	IDENTIFICACION DE LA FICHA	DESCRIPCION DE LOS DATOS
	RS	Opción de transporte con almacenamiento seguida por fichas SV y SQ si se utiliza el método de Puls modificado.
	RC	Características del canal para el método de el colado normal.
	RX	Coordenadas X de la sección
	RV	Coordenadas Y de la sección
	RK	Canal en el método de la onda cinemática.
Datos del transporte en embalses	SL	Características del desagüe de fondo
	ST	Características de la coronación de la presa
	SW SE	Anchura/altura para la definición de la geometría de la presa.
	SS	Características del aliviadero
	SG	Opción aliviadero tipo Ogee o trapezoidal
	SA SE	Curva caudal-elevación de tailwater para la ficha SG.
	SV	Volumen de embalse
	SQ	Caudal
	SA SE	Datos de superficies de embalse y elevaciones.
	SB	Características de la rotura de la presa.
	SO	Parámetros de optimización
	SD	Función de coste correspondiente a datos de SV.

TIPO DE DATOS	IDENTIFICACION DE LA FICHA	DESCRIPCION DE LOS DATOS	
Dato de derivación	DR	Retorno del caudal derivado.	
	DT	Características de la derivación.	
	DI	Derivación variable en función de los caudales de entrada.	
	DQ		
	DO	Datos para la optimización de la derivación.	
Datos de bombeo	DD	Función de costes para la derivación.	
	WP	Características del bombeo.	
	WO	Datos para la optimización del bombeo.	
	WC	Función de capacidad del bombeo.	
Datos de daños producidos por avenidas	WD	Función de costes del bombeo.	
	EC	Identificación de la opción de daños producidos por avenidas.	
	CN	Nombres de los tipos o categorías de daños.	
	PN	Nombres de los planes.	
	WN	Nombre de la cuenca.	
	TN	Nombre de la zona urbana.	
	Para cada zona afectada por los daños	WT	Situación de la cuenca y de la zona urbana.
		FR	Datos de probabilidades.
		QF	Caudales correspondientes a la ficha FR.
		SF	Niveles correspondientes a la ficha FR.
QS		Caudales para la curva de gastos.	
SQ		Niveles para la curva de gastos.	
SD		Niveles para los datos de daños, DG.	
QD		Caudales para los datos de daños, DG.	
DG		Datos de daños.	
EP	Identificación del final del plan.		
Final del trabajo	ZZ	Fin de trabajo.	



2. PRECIPITACIONES MAXIMAS EN 24 HORAS

## PRECIPITACIONES MAXIMAS EN 24H. 002 HOYA DEL GAMONAL

VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

VALORES OBSERVADOS DE LA VARIABLE	VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA
1951-52 51.20 19/12	
1952-53 110.50 29/01	
1953-54 120.40 22/12	
1954-55 162.60 23/11	
1955-56 400.00 15/02	
1956-57 42.30 17/01	
1957-58 90.20 6/12	
1958-59 110.70 4/03	
1959-60 120.30 23/03	
1960-61 46.20 12/01	
1961-62 137.00 31/12	2 A#OS 102.77
1962-63 220.00 18/11	5 A#OS 174.87
1963-64 70.00 4/01	10 A#OS 222.61
1964-65 250.30 30/01	15 A#OS 249.55
1965-66 72.00 26/10	20 A#OS 268.41
1966-67 36.50 9/12	25 A#OS 282.94
1967-68 135.00 23/11	30 A#OS 294.75
1968-69 175.00 24/11	50 A#OS 327.68
1969-70 105.00 3/01	100 A#OS 372.10
1970-71 190.00 12/02	500 A#OS 474.74
1971-72 130.50 5/02	1000 A#OS 518.87
1972-73 102.00 19/12	
1973-74 79.10 27/03	
1974-75 116.60 21/01	
1975-76 47.00 26/01	
1976-77 40.60 VALOR INTERPOLADO	
1977-78 99.60 22/11	
1978-79 165.00 17/01	
1979-80 92.80 15/03	
1980-81 72.30 6/02	
1981-82 117.50 28/03	
1982-83 37.00 22/10	
1983-84 86.00 9/01	
1984-85 93.30 8/12	
1985-86 59.30 28/01	

PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	113.82275
DESVIACION TIPICA	71.79152

## PRECIPITACIONES MAXIMAS EN 24H. 012 INGENIO PUEBLO

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	57.20	6/12		
1952-53	51.40	21/11		
1953-54	52.90	10/12		
1954-55	153.80	23/11		
1955-56	102.20	15/02		
1956-57	69.20	17/01		
1957-58	95.20	4/12		
1958-59	30.20	4/03		
1959-60	50.40	23/09		
1960-61	29.40	23/12		
1961-62	17.10	2/01	2 A#OS	43.78
1962-63	65.20	24/10	5 A#OS	78.71
1963-64	19.30	05/01	10 A#OS	101.84
1964-65	26.40	31/01	15 A#OS	114.89
1965-66	33.50	26/10	20 A#OS	124.02
1966-67	20.40	27/12	25 A#OS	131.06
1967-68	35.30	26/10	30 A#OS	136.78
1968-69	40.00	31/12	50 A#OS	152.73
1969-70	21.20	15/02	100 A#OS	174.25
1970-71	62.00	11/02	500 A#OS	223.97
1971-72	36.50	22/02	1000 A#OS	245.35
1972-73	63.50	17/12		
1973-74	19.30	08/04		
1974-75	30.20	24/10		
1975-76	18.40	03/12		
1976-77	164.30	11/04		
1977-78	53.00	05/01		
1978-79	48.50	VALOR INTERPOLADO		
1979-80	64.90	24/01		
1980-81	34.10	12/02		
1981-82	25.00	VALOR INTERPOLADO		
1982-83	13.20	VALOR INTERPOLADO		
1983-84	27.00	VALOR INTERPOLADO		
1984-85	32.70	VALOR INTERPOLADO		
1985-86	57.00	VALOR INTERPOLADO		

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA 49.13995  
DESVIACION TIPICA 34.77635

## PRECIPITACIONES MAXIMAS EN 24H. 033 CUEVAS BLANCAS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

1951-52	58.70	29/03
1952-53	185.70	29/01
1953-54	134.30	29/11
1954-55	144.30	05/11
1955-56	334.70	15/02
1956-57	43.90	28/11
1957-58	85.00	04/12
1958-59	146.30	14/03
1959-60	137.50	23/03
1960-61	50.30	23/12
1961-62	165.00	31/12
1962-63	226.50	29/12
1963-64	109.50	04/01
1964-65	195.70	30/01
1965-66	70.10	26/10
1966-67	47.10	05/12
1967-68	118.50	22/11
1968-69	135.00	24/11
1969-70	129.00	02/01
1970-71	110.50	12/02
1971-72	108.00	05/02
1972-73	80.00	17/12
1973-74	53.30	27/03
1974-75	85.00	21/01
1975-76	41.80	27/09
1976-77	39.30	09/10
1977-78	84.20	22/11
1978-79	211.00	17/01
1979-80	72.50	15/03
1980-81	55.80	09/10
1981-82	138.70	09/03
1982-83	58.50	22/10
1983-84	124.00	09/01
1984-85	131.80	08/12
1985-86	68.00	28/01

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	103.93
5 A#OS	167.64
10 A#OS	209.83
15 A#OS	233.64
20 A#OS	250.30
25 A#OS	263.14
30 A#OS	273.58
50 A#OS	302.68
100 A#OS	341.93
500 A#OS	432.63
1000 A#OS	471.63

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	113.69991
DESVIACION TIPICA	63.43980

## PRECIPITACIONES MAXIMAS EN 24H. 041 RINCON TENTENIGUADA

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	78.30
5 A#OS	136.30
10 A#OS	174.70
15 A#OS	196.36
20 A#OS	211.53
25 A#OS	223.22
30 A#OS	232.72
50 A#OS	259.20
100 A#OS	294.94
500 A#OS	377.49
1000 A#OS	412.99

PERIODO	VALOR OBSERVADO	FECHA
1951-52	56.00	19/12
1952-53	70.70	29/01
1953-54	102.00	17/12
1954-55	200.00	23/11
1955-56	284.10	24/10
1956-57	47.90	17/01
1963-64	38.00	04/01
1964-65	100.00	30/01
1965-66	89.60	09/12
1966-67	34.50	06/11
1967-68	80.50	16/11
1968-69	130.00	24/11
1969-70	86.00	02/01
1970-71	155.30	12/02
1971-72	56.50	05/02
1972-73	64.70	17/12
1973-74	44.20	27/03
1974-75	104.20	01/01
1975-76	34.00	27/09
1976-77	34.00	09/11
1977-78	57.00	22/11
1978-79	163.00	16/01
1980-81	39.40	11/01
1981-82	78.00	28/03
1982-83	54.20	22/10
1983-84	72.00	09/01
1984-85	70.00	08/12
1985-86	87.00	17/04

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	86.88567
DESVIACION TIPICA	56.52712

## PRECIPITACIONES MAXIMAS EN 24H. 054 SANTA LUCIA

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	24. 10	10/01		
1952-53	62. 30	21/01		
1953-54	114. 10	16/12		
1954-55	108. 50	05/11		
1955-56	420. 30	23/10		
1956-57	29. 30	16/01		
1957-58	70. 30	03/12		
1958-59	51. 50	01/12		
1959-60	41. 20	21/03		
1960-61	20. 30	03/12	2 A#OS	59. 03
1961-62	83. 30	31/12	5 A#OS	128. 09
1962-63	75. 10	06/02	10 A#OS	173. 82
1963-64	53. 10	04/01	15 A#OS	199. 62
1964-65	60. 50	31/01	20 A#OS	217. 68
1965-66	73. 40	26/10	25 A#OS	231. 59
1966-67	17. 00	09/02	30 A#OS	242. 91
1967-68	86. 00	22/11	50 A#OS	274. 44
1968-69	100. 00	25/11	100 A#OS	316. 99
1969-70	70. 00	01/01	500 A#OS	415. 30
1970-71	143. 00	12/02	1000 A#OS	457. 56
1971-72	80. 00	05/02		
1972-73	79. 50	19/12		
1973-74	37. 00	26/02		
1974-75	22. 00	01/01		
1975-76	29. 00	27/09		
1976-77	18. 00	VALOR	INTERPOLADO	
1977-78	60. 00	05/01		
1978-79	109. 00	16/01		
1979-80	60. 00	VALOR	INTERPOLADO	
1980-81	18. 00	06/02		
1981-82	65. 00	28/03		
1982-83	28. 00	VALOR	INTERPOLADO	
1983-84	48. 00	VALOR	INTERPOLADO	
1984-85	60. 00	VALOR	INTERPOLADO	
1985-86	20. 00	27/02		

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	69. 62282
DESVIACION TIPICA	68. 75943

## PRECIPITACIONES MAXIMAS EN 24H. 055 PILETAS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	52.60	05/12		
1952-53	43.04	14/11		
1953-54	48.20	09/12		
1954-55	154.00	22/11		
1955-56	84.00	23/10		
1956-57	50.40	16/01		
1957-58	80.80	04/12		
1958-59	40.00	04/03		
1959-60	12.00	22/03		
1960-61	17.00	13/12	2 A#OS	33.20
1961-62	14.00	15/02	5 A#OS	62.12
1962-63	65.00	17/11	10 A#OS	81.28
1963-64	12.70	04/12	15 A#OS	92.08
1964-65	21.00	26/12	20 A#OS	99.64
1965-66	30.50	09/03	25 A#OS	105.47
1966-67	18.80	27/12	30 A#OS	110.21
1967-68	36.60	22/11	50 A#OS	123.42
1968-69	35.10	31/12	100 A#OS	141.24
1969-70	22.30	01/03	500 A#OS	182.41
1970-71	75.00	11/02	1000 A#OS	200.11
1971-72	29.50	23/11		
1972-73	57.30	17/12		
1973-74	32.60	07/04		
1974-75	12.10	24/10		
1975-76	13.30	26/03		
1976-77	9.40	11/04		
1977-78	42.00	05/01		
1978-79	27.50	23/01		
1979-80	17.50	25/01		
1980-81	16.50	11/02		
1981-82	43.00	08/02		
1982-83	6.00	18/12		
1983-84	31.00	18/03		
1984-85	42.50	08/12		
1985-86	24.00	17/04		

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	37.63540
DESVIACION TIPICA	28.79807

## PRECIPITACIONES MAXIMAS EN 24H. 076 ERA DEL CARDON

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA		
1951-52	18.20	21/02			
1952-53	62.20	19/11			
1953-54	51.30	VALOR INTERPOLADO	PERIODO DE	VALOR	
1954-55	85.80	22/11	RECURRENCIA	PROBABLE	
1955-56	207.90	24/10			
1956-57	40.00	16/01			
1957-58	81.80	04/12			
1958-59	12.00	01/12			
1959-60	18.00	21/03			
1960-61	22.60	23/12	2 A#OS	42.59	
1961-62	30.90	31/12	5 A#OS	83.89	
1963-64	10.00	20/12	10 A#OS	111.23	
1964-65	38.60	29/01	15 A#OS	126.66	
1965-66	30.10	05/11	20 A#OS	137.46	
1966-67	23.40	27/09	25 A#OS	145.78	
1967-68	24.40	22/11	30 A#OS	152.55	
1968-69	80.90	31/12	50 A#OS	171.41	
1969-70	40.00	24/11	100 A#OS	196.85	
1970-71	70.00	11/02	500 A#OS	255.64	
1971-72	43.30	23/11	1000 A#OS	280.92	
1972-73	72.30	17/12			
1973-74	27.00	26/02			
1974-75	19.90	24/10			
1975-76	16.40	27/09			
1976-77	129.00	11/04			
1977-78	84.00	06/01			
1978-79	78.10	23/01			
1979-80	40.10	25/01			
1980-81	15.00	VALOR INTERPOLADO			
1981-82	49.30	08/02			
1982-83	10.30	VALOR INTERPOLADO			
1983-84	30.00	VALOR INTERPOLADO			

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	48.83745
DESVIACION TIPICA	40.78402



## PRECIPITACIONES MAXIMAS EN 24H. AGUIMES-CADENA VIRGEN 081

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

VALORES OBSERVADOS DE LA VARIABLE	VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA
1951-52 63.40 04/12	
1952-53 85.00 15/11	
1953-54 76.50 09/12	
1954-55 210.00 23/11	
1955-56 77.50 24/10	
1956-57 91.00 16/01	
1957-58 122.00 04/12	
1958-59 16.00 17/02	
1959-60 29.30 22/09	
1960-61 17.40 22/12	2 A#OS 51.72
1961-62 8.00 31/12	5 A#OS 98.45
1962-63 66.00 18/11	10 A#OS 129.39
1963-64 13.00 04/01	15 A#OS 146.85
1964-65 23.50 27/12	20 A#OS 159.07
1967-68 39.80 22/11	25 A#OS 168.49
1968-69 47.40 31/12	30 A#OS 176.15
1969-70 33.10 24/11	50 A#OS 197.49
1970-71 104.60 12/02	100 A#OS 226.28
1971-72 40.80 22/02	500 A#OS 292.80
1972-73 90.70 17/12	1000 A#OS 321.40
1973-74 39.20 28/02	
1974-75 36.40 21/01	
1975-76 28.50 22/03	
1976-77 194.00 VALOR INTERPOLADO	
1977-78 54.00 22/11	
1978-79 38.50 16/01	
1979-80 74.00 25/01	
1980-81 30.50 11/01	
1981-82 30.50 09/03	
1982-83 27.50 22/10	
1983-84 34.60 18/03	
1984-85 39.00 08/12	
1985-86 59.50 17/04	

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA 58.82421  
DESVIACION TIPICA 46.28543

## PRECIPITACIONES MAXIMAS EN 24H. 082 CULATA RISCO BLANCO

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	70.44
5 A#OS	122.45
10 A#OS	155.89
15 A#OS	176.31
20 A#OS	189.91
25 A#OS	200.39
30 A#OS	208.92
50 A#OS	232.67
100 A#OS	264.71
500 A#OS	338.74
1000 A#OS	370.57

PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	68.30
1952-53	89.40
1954-55	100.50
1955-56	253.80
1963-64	42.50
1964-65	110.00
1965-66	76.90
1966-67	30.00
1967-68	133.70
1968-69	81.80
1969-70	60.70
1970-71	155.50
1971-72	88.50
1972-73	80.40
1973-74	48.30
1974-75	29.60
1975-76	33.40
1976-77	15.50
1977-78	37.00
1978-79	125.00
1979-80	58.80
1980-81	31.30
1981-82	90.30
1982-83	28.30
1983-84	72.00
1984-85	117.00
1985-86	50.00

VALOR INTERPOLADO

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	78.09251
DESVIACION TIPICA	50.49210

## PRECIPITACIONES MAXIMAS EN 24H. 093 FATAGA

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	16.60	26/01		
1952-53	58.20	19/11		
1953-54	79.30	17/12		
1954-55	77.70	23/11		
1955-56	88.90	23/11		
1956-57	45.00	28/11		
1957-58	119.00	30/10		
1958-59	37.20	02/12		
1959-60	48.70	21/03		
1960-61	11.00	19/12	2 A#OS	58.30
1961-62	73.00	31/12	5 A#OS	95.31
1962-63	65.50	28/12	10 A#OS	119.81
1963-64	43.30	04/01	15 A#OS	133.63
1964-65	47.70	30/01	20 A#OS	143.31
1965-66	48.60	25/10	25 A#OS	150.77
1966-67	21.50	16/02	30 A#OS	156.83
1967-68	121.20	22/11	50 A#OS	173.73
1968-69	108.30	24/11	100 A#OS	196.53
1969-70	80.60	02/01	500 A#OS	249.21
1970-71	194.20	12/02	1000 A#OS	271.86
1971-72	120.00	05/02		
1972-73	70.00	17/12		
1973-74	46.50	26/02		
1974-75	52.50	01/01		
1975-76	32.00	27/09		
1976-77	27.60	11/04		
1977-78	58.00	06/01		
1978-79	72.00	24/01		
1979-80	60.00	14/03		
1980-81	23.00	08/04		
1981-82	65.00	07/02		
1982-83	34.00	16/02		
1983-84	62.00	VALOR INTERPOLADO		
1984-85	95.00	08/12		
1985-86	36.00	27/01		

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	63.97426
DESVIACION TIPICA	36.84577

## PRECIPITACIONES MAXIMAS EN 24H. 084 LA BARRERA

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

			PERIODO DE RECURRENCIA	VALOR PROBABLE
1967-68	71.00	22/11		
1968-69	76.00	24/11		
1969-70	74.00	24/11		
1970-71	88.00	12/02		
1971-72	38.00	05/02		
1972-73	81.30	17/12		
1973-74	38.50	08/04		
1974-75	13.40	17/11		
1975-76	23.00	27/09		
1976-77	75.40	11/04	2 A#OS	52.44
1977-78	123.00	06/01	5 A#OS	84.19
1978-79	80.00	16/01	10 A#OS	105.21
1979-80	38.50	15/03	15 A#OS	117.07
1980-81	24.50	08/04	20 A#OS	125.37
1981-82	54.00	07/02	25 A#OS	131.76
1982-83	21.00	15/02	30 A#OS	136.97
1983-84	68.00	VALOR INTERPOLADO	50 A#OS	151.46
1984-85	70.00	VALOR INTERPOLADO	100 A#OS	171.02
1985-86	20.60	02/03	500 A#OS	216.21
			1000 A#OS	235.64

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA 56.74735  
 DESVIACION TIPICA 29.53202

## PRECIPITACIONES MAXIMAS EN 24H. 100 TAIDIA

VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	32.50	18/12		
1952-53	61.00	19/11		
1953-54	116.50	16/12		
1954-55	122.50	05/11		
1955-56	272.60	14/02		
1956-57	30.50	16/01		
1957-58	100.50	29/10		
1958-59	44.50	01/12		
1959-60	41.50	22/03		
1960-61	15.50	16/12	2 A#OS	75.09
1961-62	130.50	31/12	5 A#OS	131.86
1962-63	130.50	29/12	10 A#OS	169.44
1963-64	73.20	05/01	15 A#OS	190.65
1964-65	89.30	31/01	20 A#OS	205.49
1965-66	76.20	26/10	25 A#OS	216.93
1966-67	45.80	12/02	30 A#OS	226.23
1967-68	125.70	22/11	50 A#OS	252.15
1968-69	100.70	23/11	100 A#OS	287.12
1969-70	75.30	01/01	500 A#OS	367.93
1970-71	205.80	12/02	1000 A#OS	402.67
1971-72	105.40	23/02		
1972-73	105.50	19/12		
1973-74	56.50	26/02		
1974-75	43.50	01/01		
1975-76	30.30	27/09		
1976-77	24.80	11/04		
1977-78	62.50	05/01		
1978-79	190.60	16/01		
1979-80	70.50	15/03		
1980-81	23.50	08/04		
1981-82	105.20	28/03		
1982-83	30.50	16/02		
1983-84	64.50	09/01		
1984-85	105.60	08/12		
1985-86	23.40	28/12		

PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	83.79704
DESVIACION TIPICA	56.51752

## PRECIPITACIONES MAXIMAS EN 24H. 105 CORRALILLOS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

1951-52	24.40	05/12		
1952-53	54.00	20/11		
1953-54	55.30	17/12		
1954-55	130.30	23/11		
1955-56	143.00	24/10		
1956-57	40.00	16/01		
1957-58	110.00	04/12		
1958-59	24.30	04/03		
1959-60	22.00	22/09		
1960-61	20.20	22/12		
1961-62	24.00	31/12		
1962-63	128.40	18/11		
1963-64	20.10	04/01		
1964-65	22.00	11/12		
1967-68	52.70	22/11		
1968-69	50.70	31/12		
1969-70	21.50	15/02		
1970-71	119.30	11/02		
1971-72	39.70	21/02		
1972-73	76.30	17/12		
1973-74	40.50	28/02		
1974-75	31.20	24/10		
1975-76	33.90	27/09		
1976-77	123.30	11/04		
1977-78	60.30	06/01		
1978-79	33.70	23/01		
1979-80	73.30	25/01		
1980-81	20.80	11/02		
1981-82	28.10	08/02		
1982-83	19.50	VALOR INTERPOLADO		
1983-84	36.00	18/03		
1984-85	46.80	08/12		
1985-86	39.30	17/04		
			PERIODO DE RECURRENCIA	VALOR PROBABLE
			2 A#OS	47.67
			5 A#OS	85.91
			10 A#OS	111.24
			15 A#OS	125.53
			20 A#OS	135.53
			25 A#OS	143.24
			30 A#OS	149.51
			50 A#OS	166.97
			100 A#OS	190.54
			500 A#OS	244.98
			1000 A#OS	268.39

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	53.48174
DESVIACION TIPICA	37.88289

## PRECIPITACIONES MAXIMAS EN 24H. 116 EL MORENO

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1967-68	61.20	15/11		
1968-69	135.50	24/11		
1969-70	75.30	24/11		
1970-71	165.00	12/02		
1971-72	56.00	05/02		
1972-73	91.20	18/12		
1973-74	37.20	08/04		
1974-75	74.60	24/10		
1975-76	34.40	26/09		
1976-77	24.20	09/11	2 A#OS	71.13
1977-78	76.00	05/01	5 A#OS	112.95
1978-79	156.20	16/01	10 A#OS	140.64
1979-80	55.30	15/03	15 A#OS	156.27
1980-81	42.20	11/01	20 A#OS	167.20
1981-82	73.20	28/03	25 A#OS	175.63
1982-83	70.50	22/10	30 A#OS	182.48
1983-84	53.40	18/03	50 A#OS	201.58
1984-85	97.30	08/12	100 A#OS	227.35
1985-86	80.50	VALOR INTERPOLADO	500 A#OS	286.88
			1000 A#OS	312.48

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	76.79994
DESVIACION TIPICA	38.90635

## PRECIPITACIONES MAXIMAS EN 24H. 117 HOYA DE LA PERRA

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	55.50	19/12		
1952-53	83.40	29/01		
1953-54	82.50	22/12		
1954-55	70.80	05/11		
1955-56	165.00	15/02		
1956-57	43.30	17/01		
1957-58	127.00	06/12		
1958-59	96.00	04/03		
1959-60	95.00	23/03		
1960-61	59.00	16/12	2 A#OS	65.73
1961-62	50.20	31/12	5 A#OS	105.14
1962-63	153.20	18/11	10 A#OS	131.24
1963-64	29.10	04/01	15 A#OS	145.96
1964-65	52.20	29/01	20 A#OS	156.27
1965-66	47.60	02/11	25 A#OS	164.21
1966-67	32.30	10/10	30 A#OS	170.66
1967-68	50.20	25/03	50 A#OS	188.66
1968-69	102.50	24/11	100 A#OS	212.94
1969-70	63.60	14/02	500 A#OS	269.05
1970-71	160.10	12/02	1000 A#OS	293.17
1971-72	43.20	05/02		
1972-73	85.50	19/12		
1973-74	19.50	26/02		
1974-75	65.20	01/01		
1975-76	28.10	27/01		
1976-77	35.50	09/11		
1977-78	65.30	22/11		
1978-79	155.60	16/01		
1979-80	40.10	20/12		
1980-81	40.30	11/01		
1981-82	74.30	09/03		
1982-83	43.20	22/10		
1983-84	79.20	09/01		
1984-85	56.20	08/12		
1985-86	62.30	17/04		

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	71.77132
DESVIACION TIPICA	39.24079



## PRECIPITACIONES MAXIMAS EN 24H. 121 CORTIJO PAJONALES

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1964-65	56.00	31/01		
1965-66	61.20	22/11		
1966-67	21.70	10/02		
1967-68	36.90	22/11		
1968-69	51.40	23/11		
1969-70	41.00	24/11		
1970-71	113.00	12/02		
1971-72	65.50	21/02		
1972-73	53.00	18/12		
1973-74	42.50	26/02		
1974-75	51.00	24/10	2 A#OS	50.76
1975-76	23.00	27/09	5 A#OS	78.09
1977-78	125.00	05/01	10 A#OS	96.18
1978-79	53.00	16/01	15 A#OS	106.39
1979-80	31.00	25/01	20 A#OS	113.54
1980-81	46.00	11/02	25 A#OS	119.05
1981-82	50.00	09/03	30 A#OS	123.52
1982-83	39.00	22/10	50 A#OS	136.00
1983-84	42.00	VALOR INTERPOLADO	100 A#OS	152.84
1984-85	58.90	08/12	500 A#OS	191.74
1985-86	85.30	17/04	1000 A#OS	208.46

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	54.59045
DESVIACION TIPICA	25.78779

## PRECIPITACIONES MAXIMAS EN 24H 126 BAILADERO VIVERO

VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

VALORES OBSERVADOS DE LA VARIABLE	VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA
1951-52 19.30 26/01	
1952-53 84.40 29/01	
1953-54 78.70 22/12	
1954-55 97.80 25/11	
1955-56 140.60 24/10	
1956-57 48.30 28/11	
1957-58 69.30 04/12	
1958-59 28.30 01/12	
1959-60 68.30 23/03	
1960-61 9.30 16/12	2 A#OS 61.48
1961-62 58.60 31/12	5 A#OS 93.86
1962-63 96.30 28/12	10 A#OS 115.30
1963-64 67.20 04/01	15 A#OS 127.40
1964-65 76.30 30/01	20 A#OS 135.87
1965-66 53.50 26/10	25 A#OS 142.39
1966-67 19.20 10/02	30 A#OS 147.70
1967-68 109.20 22/11	50 A#OS 162.48
1968-69 90.50 24/11	100 A#OS 182.43
1969-70 86.30 02/01	500 A#OS 228.53
1970-71 90.20 12/02	1000 A#OS 248.34
1971-72 78.40 20/02	
1972-73 76.30 07/02	
1973-74 56.30 26/02	
1974-75 26.00 01/01	
1975-76 40.60 27/09	
1976-77 35.60 12/04	
1977-78 50.40 06/01	
1978-79 143.20 16/01	
1979-80 55.30 15/03	
1980-81 51.80 14/02	
1981-82 70.10 08/02	
1982-83 30.00 07/11	
1983-84 60.00 VALOR INTERPOLADO	
1984-85 115.00 VALOR INTERPOLADO	
1985-86 45.00 VALOR INTERPOLADO	

PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	66.44563
DESVIACION TIPICA	32.24009

## PRECIPITACIONES MAXIMAS EN 24H. 132 BARRANCO LAS PALMAS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	34.54
5 A#OS	59.89
10 A#OS	76.68
15 A#OS	86.15
20 A#OS	92.78
25 A#OS	97.89
30 A#OS	102.04
50 A#OS	113.62
100 A#OS	129.24
500 A#OS	165.32
1000 A#OS	180.84

ANO	VALOR	FECHA
1951-52	14.40	21/02
1952-53	45.80	19/11
1953-54	47.50	16/12
1954-55	100.00	22/11
1955-56	75.40	22/10
1956-57	31.40	21/01
1957-58	25.40	05/12
1958-59	12.10	19/03
1959-60	12.00	20/03
1960-61	10.00	22/12
1961-62	28.00	18/11
1962-63	39.50	04/12
1963-64	20.20	04/01
1964-65	35.30	08/02
1965-66	30.20	26/10
1966-67	21.70	27/09
1967-68	36.00	23/10
1968-69	73.00	24/11
1969-70	56.00	24/11
1970-71	105.00	12/02
1971-72	41.00	23/11
1972-73	56.40	17/12
1973-74	32.20	07/04
1974-75	21.40	16/12
1975-76	17.50	27/09
1976-77	12.20	08/04
1977-78	59.70	06/01
1978-79	31.40	19/01
1979-80	56.70	25/01
1980-81	18.60	12/02
1981-82	26.50	08/02
1982-83	19.70	22/10
1983-84	33.70	18/03
1984-85	87.30	08/12
1985-86	11.70	VALOR INTERPOLADO

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	38.42567
DESVIACION TIPICA	25.24205

## PRECIPITACIONES MAXIMAS EN 24H. 133 SORRUEDA PRESA

## VALORES OBSERVADOS DE LA VARIABLE

1967-68	64.70	22/11
1968-69	80.00	25/11
1969-70	36.40	25/11
1970-71	111.50	12/02
1971-72	71.00	05/02
1972-73	72.00	17/12
1973-74	40.00	07/04
1974-75	36.00	01/01
1975-76	22.30	27/09
1976-77	20.50	11/04
1977-78	96.60	05/01
1978-79	74.20	16/01
1979-80	41.20	15/03
1980-81	26.00	08/04

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	52.51
5 A#OS	84.79
10 A#OS	106.16
15 A#OS	118.22
20 A#OS	126.66
25 A#OS	133.17
30 A#OS	138.46
50 A#OS	153.20
100 A#OS	173.08
500 A#OS	219.03
1000 A#OS	238.79

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	56.59998
DESVIACION TIPICA	28.74643

ESTUDIO HIDROGEOLOGICO PARA RECARGA ARTIFICIAL  
EN LAS ISLAS CANARIAS

(SUBSISTEMA ACUIFERO ARINAGA-TIRAJANA)

ANEXO 3. - ESTUDIO HIDROLOGICO DE AVENIDAS EN  
LOS BARRANCOS DEL SECTOR ARINAGA -  
TIRAJANA

"Convenio para la Realización de  
Estudios Hidrogeológicos de apo  
yo a la Gestión Hídrica en Astu  
rias, Cantabria, Murcia, Casti  
lla-La Mancha, Andalucía, Extre  
madura y Canarias"

## PRECIPITACIONES MAXIMAS EN 24H. 137 TEMISAS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

			PERIODO DE RECURRENCIA	VALOR PROBABLE
1951-52	30.10	19/12		
1952-53	64.00	16/01		
1953-54	60.00	09/10		
1954-55	97.00	23/11		
1955-56	375.30	23/10		
1956-57	30.00	17/01		
1957-58	120.00	04/12		
1958-59	42.50	01/12		
1959-60	31.20	21/03		
1960-61	22.10	03/12	2 A#OS	61.16
1961-62	98.00	31/12	5 A#OS	122.66
1962-63	135.00	18/11	10 A#OS	163.39
1963-64	55.00	04/01	15 A#OS	186.36
1964-65	85.00	28/01	20 A#OS	202.45
1965-66	39.00	26/10	25 A#OS	214.84
1966-67	80.30	27/09	30 A#OS	224.92
1967-68	64.30	22/11	50 A#OS	253.00
1968-69	70.00	25/11	100 A#OS	290.89
1969-70	43.00	01/01	500 A#OS	378.44
1970-71	110.20	12/02	1000 A#OS	416.08
1971-72	67.60	22/02		
1972-73	80.30	17/12		
1973-74	46.10	08/04		
1974-75	25.60	21/01		
1975-76	26.00	27/09		
1976-77	30.00	11/04		
1977-78	107.00	07/01		
1978-79	93.70	15/01		
1979-80	45.00	15/03		
1980-81	40.00	11/02		
1981-82	78.00	08/02		
1982-83	24.50	22/10		
1983-84	53.50	18/03		
1984-85	78.00	08/12		
1985-86	23.50	17/04		

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	70.59424
DESVIACION TIPICA	61.23518

## PRECIPITACIONES MAXIMAS EN 24H. 138 SEQUERO ALTO

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

1951-52	48.80	19/12		
1967-68	97.80	22/11		
1968-69	93.00	19/02		
1969-70	90.00	01/01		
1970-71	106.10	12/02		
1971-72	105.00	05/02		
1972-73	76.00	17/12		
1973-74	50.50	26/02		
1974-75	36.00	28/03		
1975-76	36.50	27/09		
1976-77	19.20	10/04		
1977-78	38.50	18/10		
1978-79	133.60	17/01		
1979-80	67.10	15/03		
1980-81	37.00	14/02		
1981-82	103.50	28/03		
1982-83	42.00	16/02		
1983-84	54.00	09/01		
1984-85	135.00	08/12		
1985-86	44.30	27/02		
			PERIODO DE	VALOR
			RECURRENCIA	PROBABLE
			2 A#OS	65.54
			5 A#OS	102.74
			10 A#OS	127.38
			15 A#OS	141.28
			20 A#OS	151.01
			25 A#OS	158.51
			30 A#OS	164.60
			50 A#OS	181.60
			100 A#OS	204.52
			500 A#OS	257.48
			1000 A#OS	280.25

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	70.69498
DESVIACION TIPICA	34.88881

## PRECIPITACIONES MAXIMAS EN 24H. 142 HORNOS PRESA

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	94.01
5 A#OS	145.91
10 A#OS	180.27
15 A#OS	199.66
20 A#OS	213.23
25 A#OS	223.68
30 A#OS	232.19
50 A#OS	255.89
100 A#OS	287.86
500 A#OS	361.73
1000 A#OS	393.50

PERIODO DE RECURRENCIA	VALOR PROBABLE
28/03	
28/01	
21/12	
04/11	
15/02	
21/01	
29/10	
03/03	
22/03	
15/12	
31/12	
27/12	
04/01	
29/01	
24/10	
05/11	
22/11	
24/11	
01/01	
12/02	
05/02	
19/12	
26/02	
21/01	
27/09	
17/01	
13/12	
VALOR INTERPOLADO	
15/03	
06/02	
VALOR INTERPOLADO	
VALOR INTERPOLADO	
VALOR INTERPOLADO	
08/12	
27/01	

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	101.96852
DESVIACION TIPICA	51.67094



## PRECIPITACIONES MAXIMAS EN 24H. 152 OVEJERO EXPLOSIVOS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

1968-69	40.00	31/12		
1969-70	20.00	01/03		
1970-71	82.00	13/12		
1971-72	36.00	24/11		
1972-73	57.20	18/12		
1973-74	22.60	07/04		
1974-75	11.70	24/10		
1975-76	15.20	27/03		
1976-77	130.50	11/04		
1977-78	42.20	05/01		
1978-79	32.30	16/01		
1979-80	49.00	25/01		
1981-82	35.50	22/10		
1982-83	19.00	21/12		
1983-84	24.40	09/01		
1984-85	49.20	VALOR INTERPOLADO		
1985-86	43.20	27/01		
			2 A#OS	37.58
			5 A#OS	68.98
			10 A#OS	89.78
			15 A#OS	101.51
			20 A#OS	109.72
			25 A#OS	116.05
			30 A#OS	121.20
			50 A#OS	135.54
			100 A#OS	154.89
			500 A#OS	199.59
			1000 A#OS	218.81

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	41.76467
DESVIACION TIPICA	28.80590

## PRECIPITACIONES MAXIMAS EN 24H. 175 LOMO MORALES

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

1951-52	19.00	06/11
1952-53	48.30	19/11
1953-54	85.20	08/10
1955-56	166.00	24/10
1956-57	27.50	03/03
1957-58	52.30	28/10
1958-59	40.30	01/12
1959-60	30.10	22/03
1960-61	7.20	18/12
1961-62	61.40	30/12
1962-63	59.20	04/12
1967-68	107.40	22/11
1968-69	121.00	24/11
1969-70	65.00	24/11
1970-71	90.00	12/02
1971-72	71.20	05/02
1972-73	68.50	17/12
1973-74	28.80	26/02
1974-75	44.20	01/01
1975-76	35.80	27/09
1976-77	27.70	11/04
1977-78	75.80	06/01
1978-79	100.50	20/01
1979-80	55.60	15/03
1980-81	27.30	08/04
1981-82	82.60	28/03
1982-83	31.00	16/02
1983-84	62.20	18/03
1984-85	74.50	08/12
1985-86	37.80	01/03

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	54.90
5 A#OS	89.71
10 A#OS	112.77
15 A#OS	125.77
20 A#OS	134.88
25 A#OS	141.89
30 A#OS	147.60
50 A#OS	163.49
100 A#OS	184.94
500 A#OS	234.50
1000 A#OS	255.81

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	60.11327
DESVIACION TIPICA	34.16863

## PRECIPITACIONES MAXIMAS EN 24H. 208 CORTIJO HUERTAS

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

VALORES OBSERVADOS DE LA VARIABLE	VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA
1957-58 83.50 03/12	
1958-59 96.20 04/03	
1959-60 122.00 23/03	
1960-61 45.20 16/12	
1961-62 162.30 31/12	
1963-64 52.10 04/01	
1964-65 212.10 31/01	
1965-66 78.90 27/10	
1966-67 38.50 06/11	
1967-68 132.10 15/11	2 A#OS 89.22
1968-69 145.60 23/11	5 A#OS 143.63
1969-70 71.30 01/01	10 A#OS 179.66
1970-71 221.60 12/02	15 A#OS 199.99
1971-72 121.50 05/02	20 A#OS 214.22
1972-73 117.50 19/12	25 A#OS 225.19
1973-74 75.00 26/02	30 A#OS 234.11
1974-75 46.50 21/01	50 A#OS 258.96
1975-76 36.00 27/01	100 A#OS 292.48
1976-77 24.20 09/11	500 A#OS 369.94
1977-78 51.30 13/12	1000 A#OS 403.25
1979-80 100.00 15/03	
1983-84 115.00 VALOR INTERPOLADO	
1984-85 105.20 VALOR INTERPOLADO	
1985-86 75.50 27/01	

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	97.04578
DESVIACION TIPICA	52.16001

## PRECIPITACIONES MAXIMAS EN 24H. 213 CANDELILLAS

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1963-64	60.50	04/01		
1964-65	160.00	29/01		
1967-68	100.90	22/11		
1968-69	190.00	23/11		
1969-70	83.20	15/12		
1970-71	121.40	11/02		
1971-72	125.80	20/11		
1972-73	85.30	17/12		
1973-74	45.10	26/02		
1974-75	21.30	28/03	2 A#OS	73.55
1975-76	37.70	27/09	5 A#OS	123.61
1976-77	22.60	11/04	10 A#OS	156.75
1977-78	66.70	13/12	15 A#OS	175.45
1978-79	105.30	16/01	20 A#OS	188.54
1979-80	67.10	15/03	25 A#OS	198.63
1980-81	31.40	13/02	30 A#OS	206.83
1981-82	95.60	09/03	50 A#OS	229.69
1982-83	24.90	16/02	100 A#OS	260.53
1984-85	116.50	VALOR INTERPOLADO	500 A#OS	331.78
1985-86	48.50	VALOR INTERPOLADO	1000 A#OS	362.42

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	80.48993
DESVIACION TIPICA	46.93738

## PRECIPITACIONES MAXIMAS EN 24H. 221 ADEJE

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1961-62	17.70	01/01		
1962-63	55.30	18/11		
1963-64	11.20	04/01		
1964-65	20.00	12/12		
1965-66	22.00	09/03		
1966-67	35.00	09/02		
1967-68	23.30	22/11		
1968-69	28.20	31/12		
1969-70	16.50	24/11		
1970-71	77.00	12/02	2 A#OS	32.08
1971-72	34.00	24/11	5 A#OS	55.61
1972-73	65.60	17/12	10 A#OS	71.19
1973-74	23.00	07/04	15 A#OS	79.98
1974-75	25.00	24/10	20 A#OS	86.13
1975-76	28.00	27/03	25 A#OS	90.88
1976-77	92.00	11/04	30 A#OS	94.73
1977-78	40.00	05/01	50 A#OS	105.48
1978-79	34.00	23/01	100 A#OS	119.97
1981-82	22.40	09/03	500 A#OS	153.46
			1000 A#OS	167.86

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	35.27367
DESVIACION TIPICA	21.88848

## PRECIPITACIONES MAXIMAS EN 24H. 236 CARBONERAS-CIEL

VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
PERIODO	VALOR	FECHA	PERIODO DE RECURRENCIA	VALOR PROBABLE
1967-68	32.00	22/11		
1968-69	34.00	24/11		
1969-70	24.00	01/03		
1970-71	67.50	12/02		
1971-72	33.30	05/02		
1972-73	59.90	17/12		
1973-74	31.50	07/04		
1974-75	10.20	21/01		
1975-76	14.60	27/09		
1976-77	12.50	20/11	2 A#OS	29.51
1977-78	40.70	05/01	5 A#OS	51.31
1978-79	40.50	23/01	10 A#OS	65.75
1979-80	32.90	25/01	15 A#OS	73.89
1980-81	12.20	11/02	20 A#OS	79.60
1981-82	29.00	08/02	25 A#OS	83.99
1982-83	9.00	22/10	30 A#OS	87.56
1983-84	41.00	18/03	50 A#OS	97.52
1984-85	82.00	VALOR INTERPOLADO	100 A#OS	110.96
1985-86	10.00	VALOR INTERPOLADO	500 A#OS	141.99
			1000 A#OS	155.34

PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	32.46313
DESVIACION TIPICA	20.28489

## PRECIPITACIONES MAXIMAS EN 24H. 248 ALCAUCIL

## VALORES OBSERVADOS DE LA VARIABLE

VALORES PROBABLES EN FUNCION  
DEL PERIODO DE RECURRENCIA

1969-70	27.80	01/03
1970-71	86.50	12/02
1971-72	54.50	22/02
1972-73	57.60	19/12
1973-74	50.10	26/02
1974-75	36.20	24/10
1975-76	22.00	27/09
1976-77	197.50	11/04
1977-78	80.10	06/01
1978-79	56.10	23/01
1979-80	47.00	25/01
1980-81	35.00	11/02
1981-82	44.00	08/02
1982-83	36.00	22/10
1983-84	42.10	18/03
1984-85	51.00	08/12
1985-86	34.00	17/04

PERIODO DE RECURRENCIA	VALOR PROBABLE
2 A#OS	50.50
5 A#OS	94.18
10 A#OS	123.10
15 A#OS	139.42
20 A#OS	150.84
25 A#OS	159.64
30 A#OS	166.80
50 A#OS	186.75
100 A#OS	213.66
500 A#OS	275.84
1000 A#OS	302.57

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	56.32351
DESVIACION TIPICA	40.06452

## PRECIPITACIONES MAXIMAS EN 24H. 249 CORTIJO LORIAN

VALORES OBSERVADOS DE LA VARIABLE			VALORES PROBABLES EN FUNCION DEL PERIODO DE RECURRENCIA	
			PERIODO DE RECURRENCIA	VALOR PROBABLE
1969-70	72.30	01/01		
1970-71	175.40	12/02		
1971-72	132.50	05/02		
1972-73	116.40	19/12		
1973-74	60.50	26/02		
1974-75	63.20	21/01		
1975-76	45.60	27/09		
1976-77	40.20	09/11		
1977-78	77.50	22/11		
1978-79	183.30	16/01	2 A#OS	84.24
1979-80	71.20	15/03	5 A#OS	133.34
1980-81	47.50	11/01	10 A#OS	165.84
1981-82	106.50	28/03	15 A#OS	184.18
1982-83	46.30	22/10	20 A#OS	197.02
1983-84	106.00	09/01	25 A#OS	206.91
1984-85	136.00	08/12	30 A#OS	214.96
1985-86	63.00	28/01	50 A#OS	237.38
			100 A#OS	267.62
			500 A#OS	337.51
			1000 A#OS	367.55

## PARAMETROS ESTADISTICOS DE LA SERIE DATO

MEDIA	90.78819
DESVIACION TIPICA	45.02972



3. RESUMEN DE LAS AVENIDAS UNIFORMES

3.1 Avenida uniforme de 1 hora de duración

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 20 A#OS									
3	ID	DURACION DEL AGUACERO 1 HORA - TORMENTA UNIFORME									
4	IT	10	1JUN87	000	70						
5	IO	1	2								
6	IM										
7	KK	T-2									
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2)									
9	BA	43.18									
10	PB	49.40									
11	PI	1	1	1	1	1	1				
12	LS	20.7	71								
13	UC	3.0	2.2								
14	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
15	UA	39.40	41.93	43.18							
16	KK	R2T01									
17	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
18	RM	3	0.7	0.25							
19	KK	T-1									
20	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1)									
21	BA	19.55									
22	PB	40.54									
23	PI	1	1	1	1	1	1				
24	LS	17.8	74								
25	UC	2.5	2.4								
26	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
27	UA	19.55									
28	KK	T-SUMA									
29	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2									
30	HC	2									
31	KK	L-1									
32	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1)									
33	BA	1.53									
34	PB	46.33									
35	PI	1	1	1	1	1	1				
36	LS	17.8	74								
37	UC	0.5	0.3								
38	UA	0.0	0.70	1.53							
39	KK	B-2									
40	KM	BARRANCO DE BALOS (SUBCUENCA B-2)									
41	BA	7.28									
42	PB	48.29									
43	PI	1	1	1	1	1	1				
44	LS	17.8	74								
45	UC	1.0	1.0								
46	UA	0.0	2.00	4.11	6.03	7.28					

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10	
47	KK	B-3										
48	KM	BARRANCO DE BALOS (SUBCUENCA B-3)										
49	BA	2.08										
50	PB	49.66										
51	PI	1		1	1	1	1					
52	LS	17.8	74									
53	UC	0.5	0.4									
54	UA	0.0	0.93	2.08								
55	KK	B2+B3										
56	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3										
57	HC	2										
58	KK	R23T01										
59	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1										
60	RM	1	0.2	0.25								
61	KK	B-4										
62	KM	BARRANCO DE BALOS (SUBCUENCA B-4)										
63	BA	10.73										
64	PB	60.76										
65	PI	1		1	1	1	1					
66	LS	17.8	74									
67	UC	1.5	1.0									
68	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73				
69	KK	R4T01										
70	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1										
71	RM	1	0.3	0.25								
72	KK	B-1										
73	KM	BARRANCO DE BALOS (SUBCUENCA B-1)										
74	BA	2.18										
75	PB	44.79										
76	PI	1		1	1	1	1					
77	LS	17.8	74									
78	UC	0.75	0.5									
79	UA	0.0	0.75	1.75	2.18							
80	KK	B-SUMA										
81	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4										
82	HC	3										
83	KK	C-1										
84	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1)										
85	BA	10.45										
86	PB	44.99										
87	PI	1		1	1	1	1					
88	LS	19.8	72									
89	UC	1.5	1.1									
90	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45				

HEC-1 INPUT

LINE	ID.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10	
91	KK	G-1										
92	KM	BARRANCO DE GUAYADEQUE (SUBCUENCA G-1)										
93	BA	19.45										
94	PB	51.13										
95	PI	1	1	1	1	1						
96	LS	19.8	72									
97	UC	2.0	1.8									
98	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45		
99	ZZ											

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR		
HYDROGRAPH AT	T-2	19.19	3.33	10.93	6.38	6.38	43.18	
ROUTED TO	R2T01	18.72	4.00	10.87	6.34	6.34	43.18	
HYDROGRAPH AT	T-1	6.11	2.50	3.65	2.14	2.14	19.55	
2 COMBINED AT	T-SUMA	23.43	3.83	14.36	8.48	8.48	62.73	
HYDROGRAPH AT	L-1	3.66	1.33	0.49	0.25	0.25	1.53	
HYDROGRAPH AT	B-2	8.95	1.67	2.60	1.36	1.36	7.28	
HYDROGRAPH AT	B-3	5.42	1.33	0.80	0.42	0.42	2.08	
2 COMBINED AT	B2+B3	12.82	1.50	3.40	1.78	1.78	9.36	
ROUTED TO	R23T01	12.41	1.67	3.40	1.78	1.78	9.36	
HYDROGRAPH AT	B-4	22.24	2.17	6.88	3.60	3.60	10.73	
ROUTED TO	R4T01	20.88	2.50	6.87	3.60	3.60	10.73	
HYDROGRAPH AT	B-1	3.52	1.33	0.63	0.33	0.33	2.18	
3 COMBINED AT	B-SUMA	29.00	2.33	10.90	5.71	5.71	22.27	
HYDROGRAPH AT	C-1	7.02	2.00	2.45	1.29	1.29	10.45	
HYDROGRAPH AT	G-1	12.35	2.67	6.37	3.53	3.53	19.45	

\*\*\* NORMAL END OF HEC-1 \*\*\*

3.2 Avenida uniforme de 2 horas de duración

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10	
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE										
2	ID	PERIODO DE RECURRENCIA 20 A#OS										
3	ID	DURACION DEL AGUACERO 2 HORAS - TORMENTA UNIFORME										
4	IT	10	1JUN87	000	70							
5	ID	1	2									
6	IM											
7	KK	T-2										
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2)										
9	BA	43.18										
10	PB	73.28										
11	PI	1	1	1	1	1	1	1	1	1		
12	PI	1	1									
13	LS	20.7	71									
14	UC	3.0	2.2									
15	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27	
16	UA	39.40	41.93	43.18								
17	KK	R2T01										
18	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1										
19	RM	3	0.7	0.25								
20	KK	T-1										
21	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1)										
22	BA	19.55										
23	PB	58.63										
24	PI	1	1	1	1	1	1	1	1	1		
25	PI	1	1									
26	LS	17.8	74									
27	UC	2.5	2.4									
28	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02	
29	UA	19.55										
30	KK	T-SUMA										
31	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2										
32	HC	2										
33	KK	L-1										
34	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1)										
35	BA	1.53										
36	PB	65.61										
37	PI	1	1	1	1	1	1	1	1	1		
38	PI	1	1									
39	LS	17.8	74									
40	UC	0.5	0.3									
41	UA	0.0	0.70	1.53								
42	KK	B-2										
43	KM	BARRANCO DE BALOS (SUBCUENCA B-2)										
44	BA	7.28										
45	PB	68.79										
46	PI	1	1	1	1	1	1	1	1	1		
47	PI	1	1									
48	LS	17.8	74									
49	UC	1.0	1.0									



HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
50	UA	0.0	2.00	4.11	6.03	7.28					
51	KK	B-3									
52	KM	BARRANCO DE BALOS (SUBCUENCA B-3)									
53	BA	2.08									
54	PB	70.23									
55	PI	1	1	1	1	1	1	1	1	1	
56	PI	1	1								
57	LS	17.8	74								
58	UC	0.5	0.4								
59	UA	0.0	0.93	2.08							
60	KK	B2+B3									
61	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3									
62	HC	2									
63	KK	R23T01									
64	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1									
65	RM	1	0.2	0.25							
66	KK	B-4									
67	KM	BARRANCO DE BALOS (SUBCUENCA B-4)									
68	BA	10.73									
69	PB	86.99									
70	PI	1	1	1	1	1	1	1	1	1	
71	PI	1	1								
72	LS	17.8	74								
73	UC	1.5	1.0								
74	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73			
75	KK	R4T01									
76	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
77	RM	1	0.3	0.25							
78	KK	B-1									
79	KM	BARRANCO DE BALOS (SUBCUENCA B-1)									
80	BA	2.18									
81	PB	63.36									
82	PI	1	1	1	1	1	1	1	1	1	
83	PI	1	1								
84	LS	17.8	74								
85	UC	0.75	0.5								
86	UA	0.0	0.75	1.75	2.18						
87	KK	B-SUMA									
88	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4									
89	HC	3									
90	KK	C-1									
91	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1)									
92	BA	10.45									
93	PB	64.37									
94	PI	1	1	1	1	1	1	1	1	1	
95	PI	1	1								
96	LS	19.8	72								

HEC-1 INPUT

LINE	ID.	1	2	3	4	5	6	7	8	9	10
97	UC	1.5	1.1								
98	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
99	KK	G-1									
100	KM										
101	BA	19.45	BARRANCO DE GUAYADEQUE (SUBCUENCA G-1)								
102	PB	73.97									
103	PI	1	1	1	1	1	1	1	1	1	1
104	PI	1	1								
105	LS	19.8	72								
106	UC	2.0	1.8								
107	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
108	ZZ										

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR		
HYDROGRAPH AT	T-2	53.01	4.00	30.84	18.04	18.04	43.18	
ROUTED TO	R2T01	51.52	4.67	30.69	17.88	17.88	43.18	
HYDROGRAPH AT	T-1	16.73	3.50	10.04	5.90	5.90	19.55	
2 COMBINED AT	T-SUMA	64.66	4.50	40.29	23.78	23.78	62.73	
HYDROGRAPH AT	L-1	6.02	2.17	1.18	0.61	0.61	1.53	
HYDROGRAPH AT	B-2	18.49	2.50	6.19	3.24	3.24	7.28	
HYDROGRAPH AT	B-3	8.82	2.17	1.86	0.97	0.97	2.08	
2 COMBINED AT	B2+B3	26.19	2.33	8.05	4.22	4.22	9.36	
ROUTED TO	R23T01	25.50	2.50	8.05	4.22	4.22	9.36	
HYDROGRAPH AT	B-4	40.78	3.00	14.83	7.80	7.80	10.73	
ROUTED TO	R4T01	39.48	3.17	14.81	7.80	7.80	10.73	
HYDROGRAPH AT	B-1	6.70	2.17	1.55	0.81	0.81	2.18	
3 COMBINED AT	B-SUMA	60.34	2.83	24.37	12.82	12.82	22.27	
HYDROGRAPH AT	C-1	17.35	2.83	6.60	3.48	3.48	10.45	
HYDROGRAPH AT	G-1	30.09	3.17	16.01	8.95	8.95	19.45	

\*\*\* NORMAL END OF HEC-1 \*\*\*

3.3 Avenida uniforme de 3 horas de duración

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 20 A#OS									
3	ID	DURACION DEL AGUACERO 3 HORAS - TORMENTA UNIFORME									
4	IT	15	1JUN87	000	70						
5	IO	1	2								
6	IM										
7	KK	T-2									
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2)									
9	BA	43.18									
10	PB	90.50									
11	PI	1	1	1	1	1	1	1	1	1	1
12	PI	1	1								
13	LS	20.7	71								
14	UC	3.0	2.2								
15	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
16	UA	39.40	41.93	43.18							
17	KK	R2T01									
18	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
19	RM	2	0.7	0.25							
20	KK	T-1									
21	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1)									
22	BA	19.55									
23	PB	71.66									
24	PI	1	1	1	1	1	1	1	1	1	1
25	PI	1	1								
26	LS	17.8	74								
27	UC	2.5	2.4								
28	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
29	UA	19.55									
30	KK	T-SUMA									
31	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2									
32	HC	2									
33	KK	L-1									
34	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1)									
35	BA	1.53									
36	PB	79.40									
37	PI	1	1	1	1	1	1	1	1	1	1
38	PI	1	1								
39	LS	17.8	74								
40	UC	0.5	0.3								
41	UA	0.0	0.70	1.53							
42	KK	B-2									
43	KM	BARRANCO DE BALOS (SUBCUENCA B-2)									
44	BA	7.28									
45	PB	83.55									
46	PI	1	1	1	1	1	1	1	1	1	1
47	PI	1	1								
48	LS	17.8	74								
49	UC	1.0	1.0								

HEC-1 INPUT

LINE	ID.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10
50	UA	0.0	2.00	4.11	6.03	7.28					
51	KK	B-3									
52	KM	BARRANCO DE BALOS (SUBCUENCA B-3)									
53	BA	2.08									
54	PB	85.02									
55	PI	1	1	1	1	1	1	1	1	1	1
56	PI	1	1								
57	LS	17.8	74								
58	UC	0.5	0.4								
59	UA	0.0	0.93	2.08							
60	KK	B2+B3									
61	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3									
62	HC	2									
63	KK	R23T01									
64	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1									
65	RM	1	0.2	0.25							
66	KK	B-4									
67	KM	BARRANCO DE BALOS (SUBCUENCA B-4)									
68	BA	10.73									
69	PB	105.72									
70	PI	1	1	1	1	1	1	1	1	1	1
71	PI	1	1								
72	LS	17.8	74								
73	UC	1.5	1.0								
74	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73			
75	KK	R4T01									
76	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
77	RM	1	0.3	0.25							
78	KK	B-1									
79	KM	BARRANCO DE BALOS (SUBCUENCA B-1)									
80	BA	2.18									
81	PB	76.65									
82	PI	1	1	1	1	1	1	1	1	1	1
83	PI	1	1								
84	LS	17.8	74								
85	UC	0.75	0.5								
86	UA	0.0	0.75	1.75	2.18						
87	KK	B-SUMA									
88	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4									
89	HC	3									
90	KK	C-1									
91	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1)									
92	BA	10.45									
93	PB	78.32									
94	PI	1	1	1	1	1	1	1	1	1	1
95	PI	1	1								
96	LS	19.8	72								

HEC-1 INPUT

LINE	ID.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10
97	UC	1.5	1.1								
98	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
99	KK	G-1									
100	KM										
101	BA	19.45									
102	PB	90.37									
103	PI	1	1	1	1	1	1	1	1	1	1
104	PI	1	1								
105	LS	19.8	72								
106	UC	2.0	1.8								
107	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
108	ZZ										

BARRANCO DE GUAYADEQUE (SUBCUENCA G-1)

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR		
HYDROGRAPH AT	T-2	79.16	4.75	48.25	19.43	19.43	43.18	
ROUTED TO	R2T01	76.57	5.50	47.94	19.43	19.43	43.18	
HYDROGRAPH AT	T-1	25.49	4.25	15.60	6.35	6.35	19.55	
2 COMBINED AT	T-SUMA	96.92	5.25	62.95	25.78	25.78	62.73	
HYDROGRAPH AT	L-1	6.33	3.00	1.78	0.62	0.62	1.53	
HYDROGRAPH AT	B-2	23.47	3.25	9.26	3.26	3.26	7.28	
HYDROGRAPH AT	B-3	9.31	3.00	2.77	0.96	0.96	2.08	
2 COMBINED AT	B2+B3	32.26	3.25	12.02	4.22	4.22	9.36	
ROUTED TO	R23T01	31.22	3.50	12.01	4.22	4.22	9.36	
HYDROGRAPH AT	B-4	49.41	3.75	21.26	7.50	7.50	10.73	
ROUTED TO	R4T01	48.34	4.00	21.23	7.50	7.50	10.73	
HYDROGRAPH AT	B-1	7.59	3.25	2.35	0.82	0.82	2.18	
3 COMBINED AT	B-SUMA	79.92	3.50	35.51	12.54	12.54	22.27	
HYDROGRAPH AT	C-1	24.00	3.50	10.30	3.65	3.65	10.45	
HYDROGRAPH AT	G-1	43.29	3.75	24.14	9.16	9.16	19.45	

\*\*\* NORMAL END OF HEC-1 \*\*\*



3.4 Avenida uniforme de 6 horas de duración

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 20 A#OS									
3	ID	DURACION DEL AGUACERO 6 HORAS - TORMENTA UNIFORME									
4	IT	15	1JUN87	000	70						
5	IO	1	2								
6	IM										
7	KK	T-2									
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2)									
9	BA	43.18									
10	PB	122.40									
11	PI	1	1	1	1	1	1	1	1	1	1
12	PI	1	1	1	1	1	1	1	1	1	1
13	PI	1	1	1	1						
14	LS	20.7	71								
15	UC	3.0	2.2								
16	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
17	UA	39.40	41.93	43.18							
18	KK	R2T01									
19	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
20	RM	2	0.7	0.25							
21	KK	T-1									
22	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1)									
23	BA	19.55									
24	PB	95.58									
25	PI	1	1	1	1	1	1	1	1	1	1
26	PI	1	1	1	1	1	1	1	1	1	1
27	PI	1	1	1	1						
28	LS	17.8	74								
29	UC	2.5	2.4								
30	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
31	UA	19.55									
32	KK	T-SUMA									
33	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2									
34	HC	2									
35	KK	L-1									
36	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1)									
37	BA	1.53									
38	PB	104.69									
39	PI	1	1	1	1	1	1	1	1	1	1
40	PI	1	1	1	1	1	1	1	1	1	1
41	PI	1	1	1	1						
42	LS	17.8	74								
43	UC	0.5	0.3								
44	UA	0.0	0.70	1.53							

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10	
45	KK	B-2										
46	KM	BARRANCO DE BALOS (SUBCUENCA B-2)										
47	BA	7.28										
48	PB	110.62										
49	PI	1	1	1	1	1	1	1	1	1	1	
50	PI	1	1	1	1	1	1	1	1	1	1	
51	PI	1	1	1	1							
52	LS	17.8	74									
53	UC	1.0	1.0									
54	UA	0.0	2.00	4.11	6.03	7.28						
55	KK	B-3										
56	KM	BARRANCO DE BALOS (SUBCUENCA B-3)										
57	BA	2.08										
58	PB	112.11										
59	PI	1	1	1	1	1	1	1	1	1	1	
60	PI	1	1	1	1	1	1	1	1	1	1	
61	PI	1	1	1	1							
62	LS	17.8	74									
63	UC	0.5	0.4									
64	UA	0.0	0.93	2.08								
65	KK	B2+B3										
66	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3										
67	HC	2										
68	KK	R23T01										
69	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1										
70	RM	1	0.2	0.25								
71	KK	B-4										
72	KM	BARRANCO DE BALOS (SUBCUENCA B-4)										
73	BA	10.73										
74	PB	140.36										
75	PI	1	1	1	1	1	1	1	1	1	1	
76	PI	1	1	1	1	1	1	1	1	1	1	
77	PI	1	1	1	1							
78	LS	17.8	74									
79	UC	1.5	1.0									
80	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73				
81	KK	R4T01										
82	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1										
83	RM	1	0.3	0.25								
84	KK	B-1										
85	KM	BARRANCO DE BALOS (SUBCUENCA B-1)										
86	BA	2.18										
87	PB	101.14										
88	PI	1	1	1	1	1	1	1	1	1	1	
89	PI	1	1	1	1	1	1	1	1	1	1	
90	PI	1	1	1	1							
91	LS	17.8	74									

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
93	UA	0.0	0.75	1.75	2.18						
94	KK	B-SUMA									
95	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4									
96	HC	3									
97	KK	C-1									
98	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1)									
99	BA	10.45									
100	PB	103.87									
101	PI	1	1	1	1	1	1	1	1	1	1
102	PI	1	1	1	1	1	1	1	1	1	1
103	PI	1	1	1	1						
104	LS	19.8	72								
105	UC	1.5	1.1								
106	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
107	KK	G-1									
108	KM	BARRANCO DE GUAYADEQUE (SUBCUENCA G-1)									
109	BA	19.45									
110	PB	120.68									
111	PI	1	1	1	1	1	1	1	1	1	1
112	PI	1	1	1	1	1	1	1	1	1	1
113	PI	1	1	1	1						
114	LS	19.8	72								
115	UC	2.0	1.8								
116	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
117	ZZ										

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR		
HYDROGRAPH AT	T-2	111.70	7.25	80.35	34.77	34.77	43.18	
ROUTED TO	R2T01	109.80	8.00	79.86	34.70	34.70	43.18	
HYDROGRAPH AT	T-1	36.83	6.75	25.83	11.31	11.31	19.55	
2 COMBINED AT	T-SUMA	141.71	7.50	104.93	46.01	46.01	62.73	
HYDROGRAPH AT	L-1	5.26	6.00	3.02	1.05	1.05	1.53	
HYDROGRAPH AT	B-2	24.27	6.00	14.99	5.53	5.53	7.28	
HYDROGRAPH AT	B-3	7.82	6.00	4.62	1.62	1.62	2.08	
2 COMBINED AT	B2+B3	32.09	6.00	19.46	7.14	7.14	9.36	
ROUTED TO	R23T01	31.78	6.25	19.44	7.14	7.14	9.36	
HYDROGRAPH AT	B-4	49.25	6.25	32.72	12.19	12.19	10.73	
ROUTED TO	R4T01	48.84	6.50	32.62	12.19	12.19	10.73	
HYDROGRAPH AT	B-1	6.91	6.00	4.00	1.41	1.41	2.18	
3 COMBINED AT	B-SUMA	86.26	6.25	55.63	20.74	20.74	22.27	
HYDROGRAPH AT	C-1	28.47	6.25	17.41	6.48	6.48	10.45	
HYDROGRAPH AT	G-1	57.51	6.50	38.79	15.88	15.88	19.45	

\*\*\* NORMAL END OF HEC-1 \*\*\*

3.5 Avenida uniforme de 12 horas de duración

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 20 A#OS									
3	ID	DURACION DEL AGUACERO 12 HORAS - TORMENTA UNIFORME									
4	IT	30	1JUN87	000	70						
5	IO	1	2								
6	IM										
7	KK	T-2									
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2)									
9	BA	43.18									
10	PB	150.94									
11	PI	1	1	1	1	1	1	1	1	1	1
12	PI	1	1	1	1	1	1	1	1	1	1
13	PI	1	1	1	1						
14	LS	20.7	71								
15	UC	3.0	2.2								
16	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
17	UA	39.40	41.93	43.18							
18	KK	R2T01									
19	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
20	RM	1	0.7	0.25							
21	KK	T-1									
22	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1)									
23	BA	19.55									
24	PB	116.52									
25	PI	1	1	1	1	1	1	1	1	1	1
26	PI	1	1	1	1	1	1	1	1	1	1
27	PI	1	1	1	1						
28	LS	17.8	74								
29	UC	2.5	2.4								
30	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
31	UA	19.55									
32	KK	T-SUMA									
33	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2									
34	HC	2									
35	KK	L-1									
36	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1)									
37	BA	1.53									
38	PB	126.14									
39	PI	1	1	1	1	1	1	1	1	1	1
40	PI	1	1	1	1	1	1	1	1	1	1
41	PI	1	1	1	1						
42	LS	17.8	74								
43	UC	0.5	0.3								
44	UA	0.0	0.70	1.53							

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10	
45	KK	B-2										
46	KM	BARRANCO DE BALOS (SUBCUENCA B-2)										
47	BA	7.28										
48	PB	133.86										
49	PI	1	1	1	1	1	1	1	1	1	1	
50	PI	1	1	1	1	1	1	1	1	1	1	
51	PI	1	1	1	1							
52	LS	17.8	74									
53	UC	1.0	1.0									
54	UA	0.0	2.00	4.11	6.03	7.28						
55	KK	B-3										
56	KM	BARRANCO DE BALOS (SUBCUENCA B-3)										
57	BA	2.08										
58	PB	135.18										
59	PI	1	1	1	1	1	1	1	1	1	1	
60	PI	1	1	1	1	1	1	1	1	1	1	
61	PI	1	1	1	1							
62	LS	17.8	74									
63	UC	0.5	0.4									
64	UA	0.0	0.93	2.08								
65	KK	B2+B3										
66	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3										
67	HC	2										
68	KK	R23T01										
69	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1										
70	RM	1	0.2	0.25								
71	KK	B-4										
72	KM	BARRANCO DE BALOS (SUBCUENCA B-4)										
73	BA	10.73										
74	PB	170.21										
75	PI	1	1	1	1	1	1	1	1	1	1	
76	PI	1	1	1	1	1	1	1	1	1	1	
77	PI	1	1	1	1							
78	LS	17.8	74									
79	UC	1.5	1.0									
80	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73				
81	KK	R4T01										
82	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1										
83	RM	1	0.3	0.25								
84	KK	B-1										
85	KM	BARRANCO DE BALOS (SUBCUENCA B-1)										
86	BA	2.18										
87	PB	122.01										
88	PI	1	1	1	1	1	1	1	1	1	1	
89	PI	1	1	1	1	1	1	1	1	1	1	
90	PI	1	1	1	1							
91	LS	17.8	74									



HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
93	UA	0.0	0.75	1.75	2.18						
94	KK	B-SUMA									
95	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4									
96	HC	3									
97	KK	C-1									
98	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1)									
99	BA	10.45									
100	PB	126.00									
101	PI	1	1	1	1	1	1	1	1	1	1
102	PI	1	1	1	1	1	1	1	1	1	1
103	PI	1	1	1	1						
104	LS	19.8	72								
105	UC	1.5	1.1								
106	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
107	KK	G-1									
108	KM	BARRANCO DE GUAYADEQUE (SUBCUENCA G-1)									
109	BA	19.45									
110	PB	147.05									
111	PI	1	1	1	1	1	1	1	1	1	1
112	PI	1	1	1	1	1	1	1	1	1	1
113	PI	1	1	1	1						
114	LS	19.8	72								
115	UC	2.0	1.8								
116	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
117	ZZ										

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR		
HYDROGRAPH AT	T-2	102.54	12.50	89.49	36.07	25.09	43.18	
ROUTED TO	R2T01	101.17	13.00	88.64	36.07	25.09	43.18	
HYDROGRAPH AT	T-1	34.07	12.50	29.03	11.68	8.12	19.55	
2 COMBINED AT	T-SUMA	133.95	13.00	117.16	47.74	33.21	62.73	
HYDROGRAPH AT	L-1	3.48	12.00	3.04	1.05	0.73	1.53	
HYDROGRAPH AT	B-2	17.41	12.00	15.19	5.51	3.83	7.28	
HYDROGRAPH AT	B-3	5.19	12.00	4.57	1.60	1.11	2.08	
2 COMBINED AT	B2+B3	22.61	12.00	19.63	7.11	4.95	9.36	
ROUTED TO	R23T01	22.45	12.00	19.66	7.11	4.95	9.36	
HYDROGRAPH AT	B-4	34.77	12.00	31.38	11.90	8.28	10.73	
ROUTED TO	R4T01	34.50	12.50	31.36	11.90	8.28	10.73	
HYDROGRAPH AT	B-1	4.70	12.00	4.08	1.41	0.98	2.18	
3 COMBINED AT	B-SUMA	61.62	12.00	54.70	20.42	14.20	22.27	
HYDROGRAPH AT	C-1	21.73	12.00	18.54	6.62	4.61	10.45	
HYDROGRAPH AT	G-1	47.91	12.00	41.30	16.05	11.16	19.45	

\*\*\* NORMAL END OF HEC-1 \*\*\*

4. HIDROGRAMAS DE AVENIDA ADOPTADOS

4.1 Avenida de 2 años de periodo de recurrencia

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 2 A#OS									
3	ID	TORMENTAS NO UNIFORMES									
4	IT	15	1JUN87	000	70						
5	IO	1	2								
6	IM										
7	KK	T-2									
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION									
9	BA	43.18									
10	PH	50.0		7.3	11.9	22.5	31.8	38.4	50.6		
11	LS	20.7	71								
12	UC	3.0	2.2								
13	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
14	UA	39.40	41.93	43.18							
15	KK	R2T01									
16	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
17	RM	2	0.7	0.25							
18	KK	T-1									
19	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION									
20	BA	19.55									
21	PH	50.0		5.5	8.9	16.9	23.8	28.8	37.9		
22	LS	17.8	74								
23	UC	2.5	2.4								
24	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
25	UA	19.55									
26	KK	T-SUMA									
27	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2									
28	HC	2									
29	KK	L-1									
30	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION									
31	BA	1.53									
32	PH	50.0		4.7	7.7	14.5	20.4	24.7			
33	LS	17.8	74								
34	UC	0.5	0.3								
35	UA	0.0	0.70	1.53							
36	KK	B-2									
37	KM	BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION									
38	BA	7.28									
39	PH	50.0		5.3	8.7	16.5	23.2	28.1	37.0		
40	LS	17.8	74								
41	UC	1.0	1.0								
42	UA	0.0	2.00	4.11	6.03	7.28					
43	KK	B-3									
44	KM	BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION									
45	BA	2.08									
46	PH	50.0		5.3	8.7	16.3	23.1	27.9			
47	LS	17.8	74								
48	UC	0.5	0.4								

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
49	UA	0.0	0.93	2.08							
50	KK	B2+B3									
51	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3									
52	HC	2									
53	KK	R23T01									
54	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1									
55	RM	1	0.2	0.25							
56	KK	B-4									
57	KM	BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION									
58	BA	10.73									
59	PH	50.0		6.4	10.5	19.9	28.1	33.9			
60	LS	17.8		74							
61	UC	1.5	1.0								
62	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73			
63	KK	R4T01									
64	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
65	RM	1	0.3	0.25							
66	KK	B-1									
67	KM	BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION									
68	BA	2.18									
69	PH	50.0		4.7	7.7	14.6	20.6	24.9			
70	LS	17.8		74							
71	UC	0.75	0.5								
72	UA	0.0	0.75	1.75	2.18						
73	KK	B-SUMA									
74	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4									
75	HC	3									
76	KK	C-1									
77	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS									
78	BA	10.45									
79	PH	50.0		5.5	9.0	17.1	24.1	29.1	38.3		
80	LS	19.8		72							
81	UC	1.5	1.1								
82	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
83	KK	G-1									
84	KM	BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS									
85	BA	19.45									
86	PH	50.0		7.7	12.5	23.7	33.4	40.4	53.2		
87	LS	19.8		72							
88	UC	2.0	1.8								
89	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
90	ZZ										

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*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* FEBRUARY 1981 *
* REVISED 14 JUN 85 *
* RUN DATE TIME *
*****

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*****
* U. S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 440-3285 OR (FTS) 448- *
*****

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CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE  
 PERIODO DE RECURRENCIA 2 A#OS  
 TORMENTAS NO UNIFORMES

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5 IO OUTPUT CONTROL VARIABLES
      IPRNT 1 PRINT CONTROL
      IPLOT 2 PLOT CONTROL
      GSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
      NMIN 15 MINUTES IN COMPUTATION INTERVAL
      IDATE 1JUN87 STARTING DATE
      ITIME 0000 STARTING TIME
      NQ 70 NUMBER OF HYDROGRAPH ORDINATES
      NDDATE 1JUN87 ENDING DATE
      NDTIME 1715 ENDING TIME

      COMPUTATION INTERVAL 0.25 HOURS
      TOTAL TIME BASE 17.25 HOURS

METRIC UNITS
DRAINAGE AREA SQUARE KILOMETERS
PRECIPITATION DEPTH MILLIMETERS
LENGTH, ELEVATION METERS
FLOW CUBIC METERS PER SECOND
STORAGE VOLUME CUBIC METERS
SURFACE AREA SQUARE METERS
TEMPERATURE DEGREES CELSIUS

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\*\*\*\*\*

7 KK

\*\*\*\*\*  
\* T-2 \*  
\* \* \*  
\*\*\*\*\*

BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

9 BA

SUBBASIN CHARACTERISTICS  
TAREA 43.18 SUBBASIN AREA

PRECIPITATION DATA

10 PH

HYDRO-35			DEPIHS FOR 50-PERCENT HYPOTHETICAL STORM							TP-49		
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY	
7.30	11.90	22.50	31.80	38.40	50.60	0.00	0.00	0.00	0.00	0.00	0.00	

STORM AREA = 43.18

11 LS

SCS LOSS RATE  
 STRL 20.70 INITIAL ABSTRACTION  
 CRVNR 71.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

12 UC

CLARK UNITGRAPH  
 TC 3.00 TIME OF CONCENTRATION  
 R 2.20 STORAGE COEFFICIENT

13 UA

ACCUMULATED-AREA VS. TIME, 13 ORDINATES	0.0	2.0	4.9	8.6	10.9	15.6	20.8	26.1	32.4	36.3
	39.4	41.9	43.2							

\*\*\*

UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 3.00 HR, R= 2.20 HR  
 SNYDER TP= 2.56 HR, CP= 0.65

UNIT HYDROGRAPH  
54 END-OF-PERIOD ORDINATES

0.	0.	1.	1.	1.	2.	2.	2.	2.	3.	3.
3.	3.	3.	2.	2.	2.	2.	2.	2.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.



HYDROGRAPH AT STATION T-2

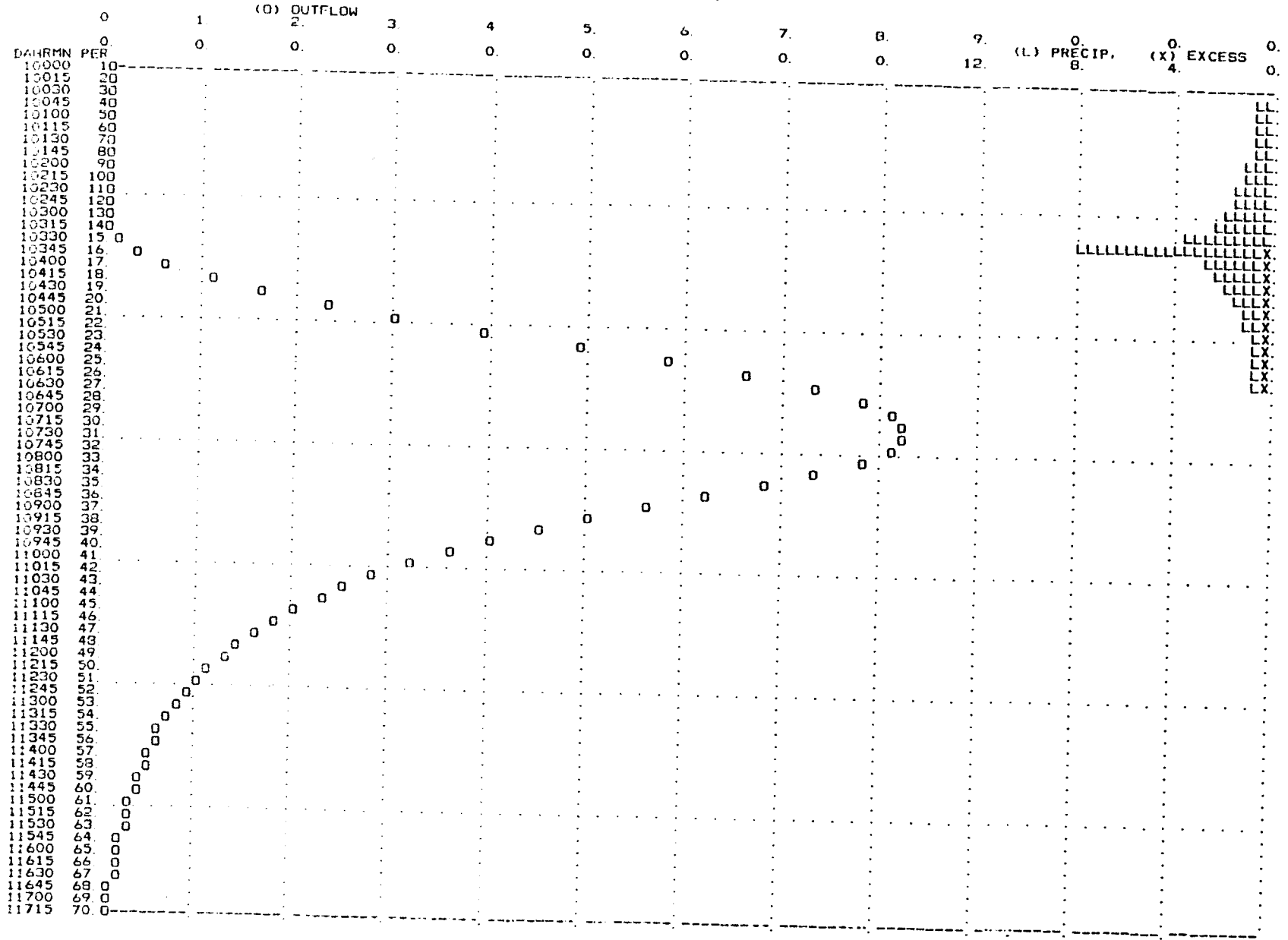
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	6.
1	JUN	0015	2	0.75	0.75	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	5.
1	JUN	0030	3	0.79	0.79	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	4.
1	JUN	0045	4	0.84	0.84	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	4.
1	JUN	0100	5	0.89	0.89	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	4.
1	JUN	0115	6	0.95	0.95	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	3.
1	JUN	0130	7	1.03	1.03	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	3.
1	JUN	0145	8	1.34	1.34	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	3.
1	JUN	0200	9	1.47	1.47	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	2.
1	JUN	0215	10	1.80	1.80	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	2.
1	JUN	0230	11	2.05	2.05	0.00	0.	*	1	JUN	1115	46	0.00	0.00	0.00	2.
1	JUN	0245	12	2.24	2.24	0.00	0.	*	1	JUN	1130	47	0.00	0.00	0.00	2.
1	JUN	0300	13	3.52	3.52	0.00	0.	*	1	JUN	1145	48	0.00	0.00	0.00	1.
1	JUN	0315	14	8.08	7.84	0.23	0.	*	1	JUN	1200	49	0.00	0.00	0.00	1.
1	JUN	0330	15	2.65	2.36	0.30	0.	*	1	JUN	1215	50	0.00	0.00	0.00	1.
1	JUN	0345	16	2.24	1.90	0.34	0.	*	1	JUN	1230	51	0.00	0.00	0.00	1.
1	JUN	0400	17	1.91	1.57	0.35	1.	*	1	JUN	1245	52	0.00	0.00	0.00	1.
1	JUN	0415	18	1.55	1.23	0.32	1.	*	1	JUN	1300	53	0.00	0.00	0.00	1.
1	JUN	0430	19	1.40	1.08	0.31	2.	*	1	JUN	1315	54	0.00	0.00	0.00	1.
1	JUN	0445	20	1.07	0.82	0.26	2.	*	1	JUN	1330	55	0.00	0.00	0.00	1.
1	JUN	0500	21	0.99	0.74	0.25	3.	*	1	JUN	1345	56	0.00	0.00	0.00	1.
1	JUN	0515	22	0.92	0.67	0.24	4.	*	1	JUN	1400	57	0.00	0.00	0.00	1.
1	JUN	0530	23	0.86	0.62	0.24	5.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.81	0.58	0.23	6.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.77	0.54	0.23	7.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	7.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	8.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	8.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	8.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	8.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	8.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	8.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	7.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	7.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	6.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 40.92, TOTAL LOSS = 37.62, TOTAL EXCESS = 3.30

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	24-HR (MM)	MAXIMUM AVERAGE FLOW 72-HR (MM)	17.25-HR (MM)
8.	7.00	6.	2.781	3.276	2.
		(1000 CU M)	120.	141.	3.276
				141.	141.

CUMULATIVE AREA = 43.18 SQ KM

STATION T-2



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15 KK  
 \*\*\*\*\*  
 \* R2T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

17 RM MUSKINGUM ROUTING  
 NSTPS 2 NUMBER OF SUBREACHES  
 AMEKK 0.70 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R2T01

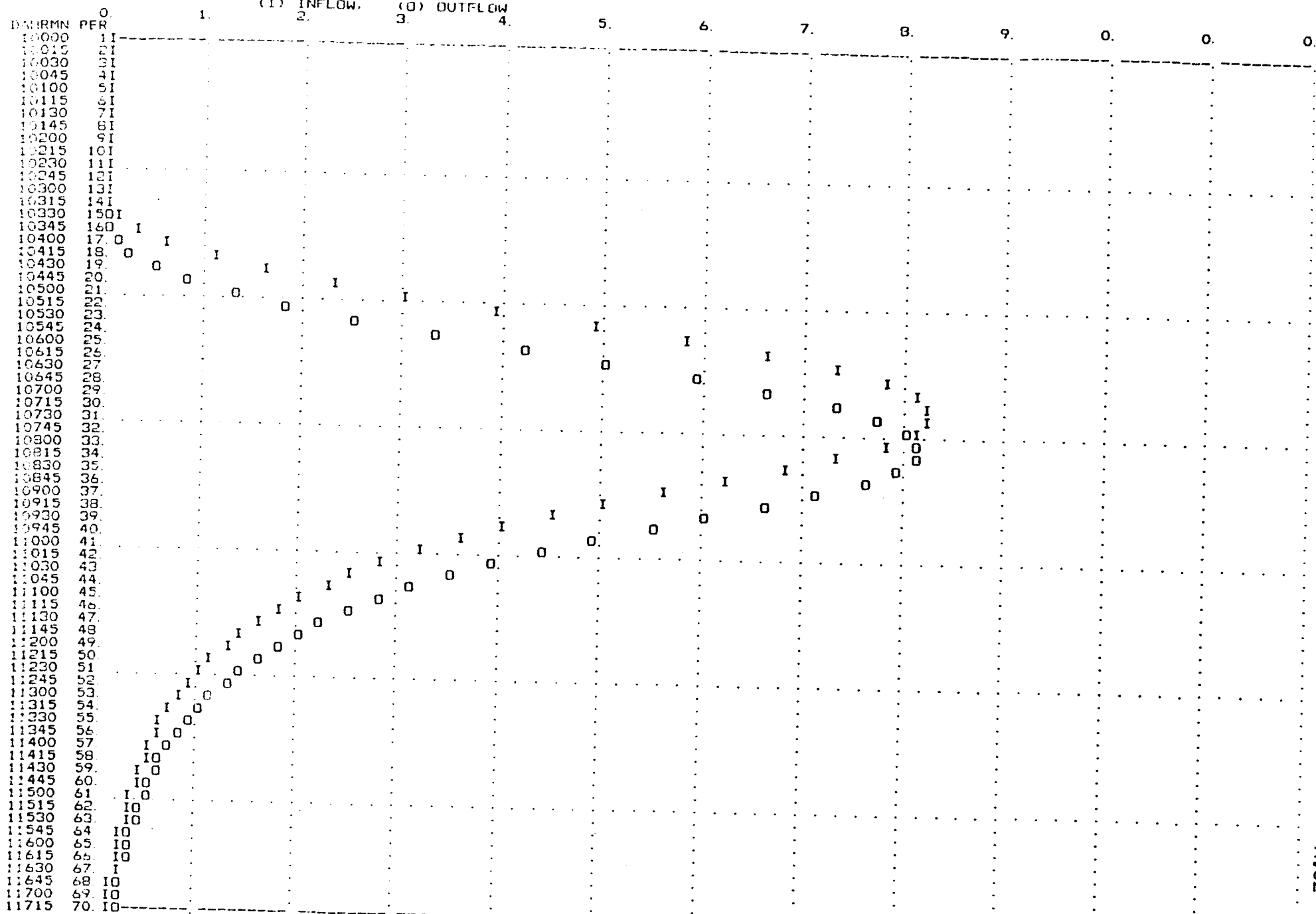
DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	0.	*	1	JUN	0900	37	7.	*	1	JUN	1330	55	1.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	1.	*	1	JUN	0915	38	6.	*	1	JUN	1345	56	1.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	1.	*	1	JUN	0930	39	5.	*	1	JUN	1400	57	1.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	2.	*	1	JUN	0945	40	5.	*	1	JUN	1415	58	1.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	3.	*	1	JUN	1000	41	4.	*	1	JUN	1430	59	1.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	4.	*	1	JUN	1015	42	4.	*	1	JUN	1445	60	1.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	5.	*	1	JUN	1030	43	4.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	5.	*	1	JUN	1045	44	3.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	6.	*	1	JUN	1100	45	3.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	7.	*	1	JUN	1115	46	3.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	7.	*	1	JUN	1130	47	2.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	8.	*	1	JUN	1145	48	2.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	8.	*	1	JUN	1200	49	2.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	8.	*	1	JUN	1215	50	2.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	0.	*	1	JUN	0800	33	8.	*	1	JUN	1230	51	1.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	0.	*	1	JUN	0815	34	8.	*	1	JUN	1245	52	1.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	0.	*	1	JUN	0830	35	8.	*	1	JUN	1300	53	1.	*							
1	JUN	0415	18	0.	*	1	JUN	0845	36	7.	*	1	JUN	1315	54	1.	*							

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PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S) (MM)	24-HR (1000 CU M)	MAXIMUM AVERAGE FLOW 72-HR	17.25-HR
8.	7.75	2.781	119.	3.268	2.
		141.		141.	141.

CUMULATIVE AREA = 43 18 SQ KM

STATION R2T01



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18 KK \*\*\*\*\*  
 \* T-1 \*  
 \* \*\*\*\*\*

BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

20 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.55 SUBBASIN AREA

PRECIPITATION DATA

21 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40				TP-49				
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
5.50	8.70	16.90	23.30	28.80	37.90	0.00	0.00	0.00	0.00	0.00	0.00

STORM AREA = 19.55

22 LS SCS LOSS RATE

STRFL	17.80	INITIAL ABSTRACTION
CRVNR	74.00	CURVE NUMBER
RTIMP	0.00	PERCENT IMPERVIOUS AREA

23 UC CLARK UNITGRAPH

TC	2.50	TIME OF CONCENTRATION
R	2.40	STORAGE COEFFICIENT

24 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES

0.0	1.2	3.2	5.8	9.2	12.3	14.9	16.0	17.1	18.0
19.5									

\*\*\*

UNIT HYDROGRAPH PARAMETERS

CLARK TC=	2.50 HR.	R=	2.40 HR
SNYDER TP=	1.75 HR.	CP=	0.42

UNIT HYDROGRAPH  
 56 END-OF-PERIOD ORDINATES

0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
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.	0.	0.	0.	0.

HYDROGRAPH AT STATION T-1

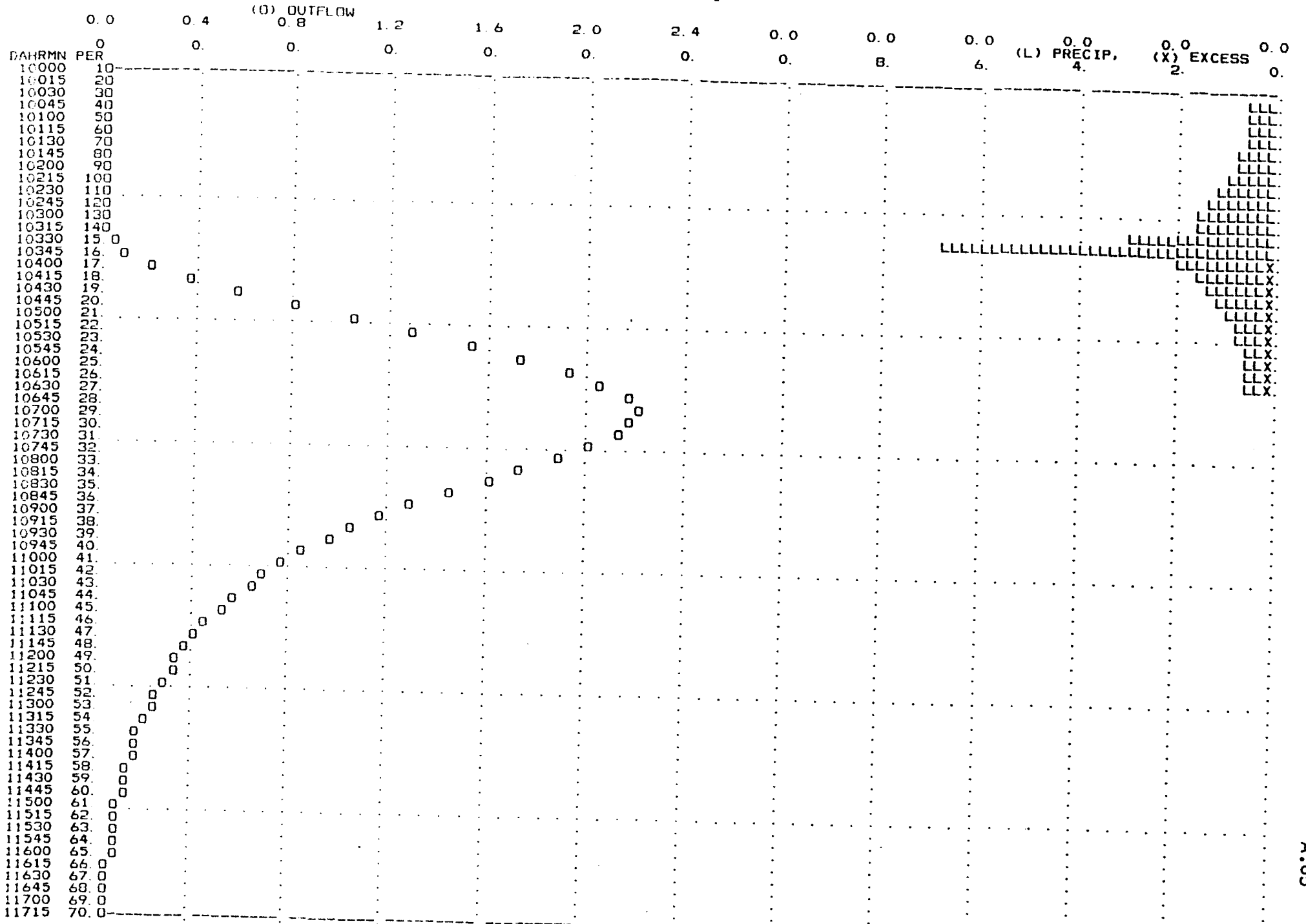
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	1	JUN	0845	36	0.00	0.00	0.00	1.
1	JUN	0015	2	0.56	0.56	0.00	0.	1	JUN	0900	37	0.00	0.00	0.00	1.
1	JUN	0030	3	0.59	0.59	0.00	0.	1	JUN	0915	38	0.00	0.00	0.00	1.
1	JUN	0045	4	0.62	0.62	0.00	0.	1	JUN	0930	39	0.00	0.00	0.00	1.
1	JUN	0100	5	0.66	0.66	0.00	0.	1	JUN	0945	40	0.00	0.00	0.00	1.
1	JUN	0115	6	0.71	0.71	0.00	0.	1	JUN	1000	41	0.00	0.00	0.00	1.
1	JUN	0130	7	0.77	0.77	0.00	0.	1	JUN	1015	42	0.00	0.00	0.00	1.
1	JUN	0145	8	1.01	1.01	0.00	0.	1	JUN	1030	43	0.00	0.00	0.00	1.
1	JUN	0200	9	1.12	1.12	0.00	0.	1	JUN	1045	44	0.00	0.00	0.00	1.
1	JUN	0215	10	1.33	1.33	0.00	0.	1	JUN	1100	45	0.00	0.00	0.00	1.
1	JUN	0230	11	1.54	1.54	0.00	0.	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	1.65	1.65	0.00	0.	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	3.03	3.03	0.00	0.	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	6.88	6.80	0.08	0.	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	1.99	1.84	0.15	0.	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	1.70	1.51	0.19	0.	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	1.43	1.23	0.20	0.	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	1.18	0.99	0.17	0.	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	1.06	0.87	0.19	1.	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.81	0.65	0.16	1.	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.74	0.59	0.16	1.	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.69	0.53	0.15	1.	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.64	0.49	0.15	1.	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.61	0.46	0.15	1.	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.57	0.43	0.14	1.	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	1.	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	1.	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	1.	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	1.	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	1.	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	1.	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	1.	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	1.	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	1.	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	1.	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 31.91, TOTAL LOSS = 29.98, TOTAL EXCESS = 1.93

PEAK FLOW (CU M/S)	TIME (HR)		6-HR	MAXIMUM AVERAGE FLOW	17.25-HR
2.	6.75	(CU M/S)	1.	24-HR	1.
		(MM)	1.607	72-HR	1.910
		(1000 CU M)	31.		37.

CUMULATIVE AREA = 19.55 SQ KM

STATION T-1



26 KK

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\* T-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2

28 HC

HYDROGRAPH COMBINATION  
ICOMP

2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION T-SUMA  
SUM OF 2 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	1.	*	1	JUN	0900	37	8.	*	1	JUN	1330	55	1.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	2.	*	1	JUN	0915	38	7.	*	1	JUN	1345	56	1.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	2.	*	1	JUN	0930	39	6.	*	1	JUN	1400	57	1.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	3.	*	1	JUN	0945	40	6.	*	1	JUN	1415	58	1.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	4.	*	1	JUN	1000	41	5.	*	1	JUN	1430	59	1.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	5.	*	1	JUN	1015	42	5.	*	1	JUN	1445	60	1.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	6.	*	1	JUN	1030	43	4.	*	1	JUN	1500	61	1.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	7.	*	1	JUN	1045	44	4.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	8.	*	1	JUN	1100	45	3.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	9.	*	1	JUN	1115	46	3.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	9.	*	1	JUN	1130	47	3.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	10.	*	1	JUN	1145	48	2.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	10.	*	1	JUN	1200	49	2.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	10.	*	1	JUN	1215	50	2.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	0.	*	1	JUN	0800	33	10.	*	1	JUN	1230	51	2.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	0.	*	1	JUN	0815	34	9.	*	1	JUN	1245	52	2.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	0.	*	1	JUN	0830	35	9.	*	1	JUN	1300	53	1.	*							*
1	JUN	0415	18	1.	*	1	JUN	0845	36	8.	*	1	JUN	1315	54	1.	*							*

PEAK FLOW  
(CU M/S)  
10.

TIME  
(HR)  
7.50

(CU M/S)  
(MM)  
(1000 CU M)

6-HR  
7.  
2.382  
149.

MAXIMUM AVERAGE FLOW  
24-HR  
3.  
2.845  
178.

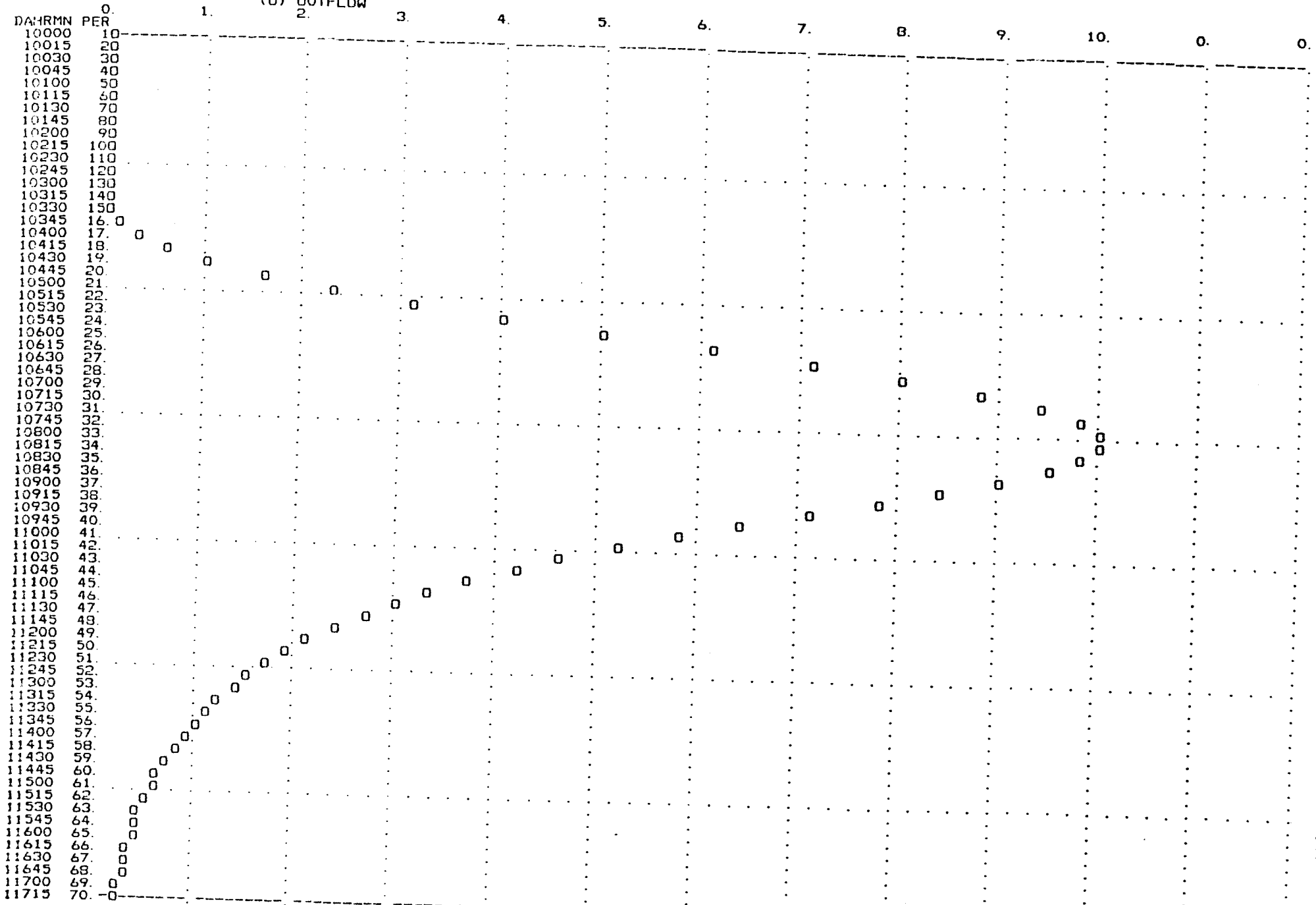
72-HR  
3.  
2.845  
178.

CUMULATIVE AREA = 62.73 SQ KM



STATION T-SUMA

(O) OUTFLOW



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29 KK  
\*\*\*\*\*  
\* L-1 \*  
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BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

31 BA SUBBASIN CHARACTERISTICS  
TAREA 1.53 SUBBASIN AREA

PRECIPITATION DATA

32 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
4.70 7.70 14.50 20.40 24.70 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 1.53

33 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNBR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

34 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.30 STORAGE COEFFICIENT

35 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.7 1.5

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.30 HR  
SNYDER TP= 0.43 HR, CP= 0.66

UNIT HYDROGRAPH  
8 END-OF-PERIOD ORDINATES

0. 1. 1. 0. 0. 0. 0.

HYDROGRAPH AT STATION L-1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	0.87	0.87	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	0.97	0.97	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	1.14	1.14	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	1.34	1.34	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	1.37	1.37	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	2.90	2.90	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	6.70	6.70	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	1.68	1.68	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	1.48	1.47	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	1.23	1.19	0.03	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	1.02	0.97	0.05	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	0.92	0.85	0.07	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	0.00	0.00	0.00	0.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	0.00	0.00	0.00	0.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	0.00	0.00	0.00	0.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	0.00	0.00	0.00	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 21.63, TOTAL LOSS = 21.47, TOTAL EXCESS = 0.16

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	24-HR (MM)	72-HR (1000 CU M)	17.25-HR (MM)
0.	3.25	0.	0.157	0.	0.
		0.	0.	0.157	0.157
		0.	0.	0.	0.

CUMULATIVE AREA = 1.53 SQ KM

STATION L-1

	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.00	0.00	0.00	0.00
DAHRMN PER	(0) OUTFLOW	(L) PRECIP,	(X) EXCESS										
10000	10								8.	6.	4.	2.	0.
10015	20												
10030	30												
10045	40												LLLLL
10100	50												LLLLL
10115	60												LLLLL
10130	70												LLLLL
10145	80												LLLLL
10200	90												LLLLL
10215	10.0												LLLLL
10230	11.	0.											LLLLL
10245	12.												LLLLL
10300	13.				0.								LLLLL
10315	14.							0.					LLLLL
10330	15.					0.			0.				LLLLL
10345	16.									0.			LLLLL
10400	17.												LLLLL
10415	18.	0.	0.										LLLLL
10430	19.	0.											LLLLL
10445	200												LLLLL
10500	210												LLLLL
10515	220												LLLLL
10530	230												LLLLL
10545	240												LLLLL
10600	250												LLLLL
10615	260												LLLLL
10630	270												LLLLL
10645	280												LLLLL
10700	290												LLLLL
10715	300												LLLLL
10730	310												LLLLL
10745	320												LLLLL
10800	330												LLLLL
10815	340												LLLLL
10830	350												LLLLL
10845	360												LLLLL
10900	370												LLLLL
10915	380												LLLLL
10930	390												LLLLL
10945	400												LLLLL
11000	410												LLLLL
11015	420												LLLLL
11030	430												LLLLL
11045	440												LLLLL
11100	450												LLLLL
11115	460												LLLLL
11130	470												LLLLL
11145	480												LLLLL
11200	490												LLLLL
11215	500												LLLLL
11230	510												LLLLL
11245	520												LLLLL
11300	530												LLLLL
11315	540												LLLLL
11330	550												LLLLL
11345	560												LLLLL
11400	570												LLLLL
11415	580												LLLLL
11430	590												LLLLL
11445	600												LLLLL
11500	610												LLLLL
11515	620												LLLLL
11530	630												LLLLL
11545	640												LLLLL
11600	650												LLLLL
11615	660												LLLLL
11630	670												LLLLL
11645	680												LLLLL
11700	690												LLLLL
11715	700												LLLLL

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36 KK \*\*\*\*\*  
\* B-2 \*  
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BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

38 BA SUBBASIN CHARACTERISTICS  
TAREA 7.28 SUBBASIN AREA

PRECIPITATION DATA

39 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
5.30 8.70 16.50 23.20 28.10 37.00 0.00 0.00 0.00 0.00 0.00 0.00  
STORM AREA = 7.28

40 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNB 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

41 UC CLARK UNITGRAPH  
TC 1.00 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

42 UA ACCUMULATED-AREA VS. TIME, 5 ORDINATES  
0.0 2.0 4.1 6.0 7.3

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.00 HR. R= 1.00 HR  
SNYDER TP= 0.89 HR. CP= 0.54

UNIT HYDROGRAPH  
24 END-OF-PERIOD ORDINATES

0. 1. 1. 1. 1. 1. 1. 1. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-2

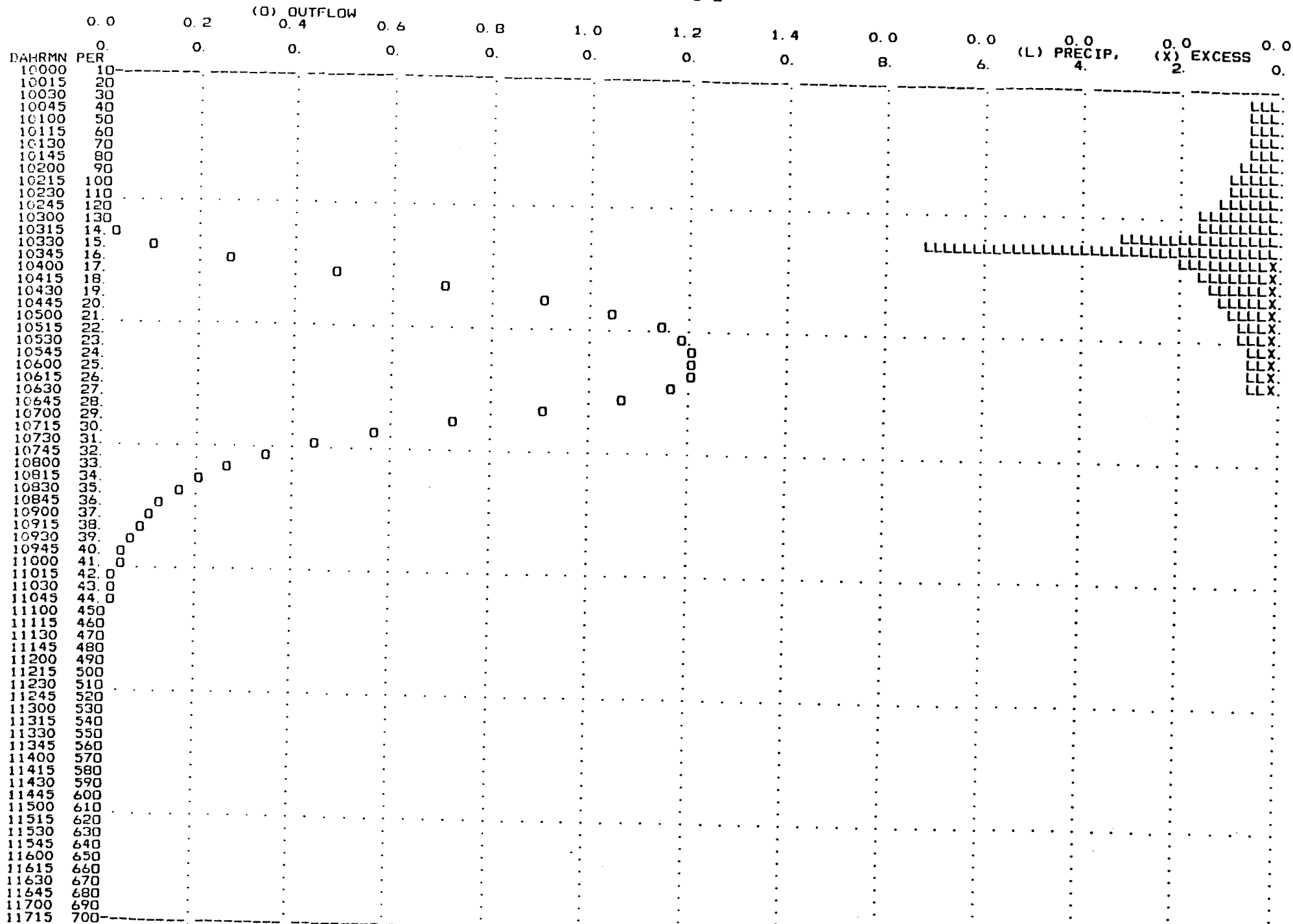
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	0.55	0.55	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	0.58	0.58	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	0.61	0.61	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	0.65	0.65	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	0.70	0.70	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	0.76	0.76	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	1.00	1.00	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	1.10	1.10	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	1.30	1.30	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	1.51	1.51	0.00	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	1.59	1.59	0.00	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	3.20	3.20	0.00	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	7.28	7.18	0.10	0.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	1.94	1.77	0.16	0.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	1.67	1.47	0.20	0.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	1.39	1.19	0.20	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	1.16	0.97	0.20	1.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	1.04	0.85	0.19	1.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.80	0.64	0.16	1.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.73	0.57	0.16	1.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.67	0.52	0.15	1.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.63	0.48	0.15	1.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.59	0.45	0.14	1.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.56	0.42	0.14	1.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	1.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	1.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	1.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	1.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	1.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 31.99, TOTAL LOSS = 30.04, TOTAL EXCESS = 1.95

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	17.25-HR MAXIMUM AVERAGE FLOW
1.	5.75	1.	0.	0.	0.
		(MM)	1.908	1.938	1.938
		(1000 CU M)	14.	14.	14.

CUMULATIVE AREA = 7.28 SQ KM

STATION B-2



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43 KK \*\*\*\*\*  
\* B-3 \*  
\* \*  
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BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

45 BA SUBBASIN CHARACTERISTICS  
TAREA 2.08 SUBBASIN AREA

PRECIPITATION DATA

46 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
5.30 8.70 16.30 23.10 27.90 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.08

47 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIDOUS AREA

48 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.40 STORAGE COEFFICIENT

49 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.9 2.1

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR. R= 0.40 HR  
SNYDER TP= 0.45 HR. CP= 0.58

UNIT HYDROGRAPH  
10 END-OF-PERIOD ORDINATES

0. 1. 1. 0. 0. 0. 0. 0. 0.



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 HYDROGRAPH AT STATION B-3  
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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.	*
1	JUN	0015	2	0.97	0.97	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.	*
1	JUN	0030	3	1.08	1.08	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.	*
1	JUN	0045	4	1.32	1.32	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.	*
1	JUN	0100	5	1.54	1.54	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.	*
1	JUN	0115	6	1.53	1.53	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.	*
1	JUN	0130	7	3.23	3.23	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.	*
1	JUN	0145	8	7.54	7.54	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.	*
1	JUN	0200	9	1.88	1.87	0.02	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.	*
1	JUN	0215	10	1.70	1.62	0.08	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.	*
1	JUN	0230	11	1.42	1.31	0.11	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.	*
1	JUN	0245	12	1.14	1.03	0.12	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.	*
1	JUN	0300	13	1.02	0.90	0.13	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.	*
1	JUN	0315	14	0.00	0.00	0.00	0.	*	1	JUN	1200	49	0.00	0.00	0.00	0.	*
1	JUN	0330	15	0.00	0.00	0.00	0.	*	1	JUN	1215	50	0.00	0.00	0.00	0.	*
1	JUN	0345	16	0.00	0.00	0.00	0.	*	1	JUN	1230	51	0.00	0.00	0.00	0.	*
1	JUN	0400	17	0.00	0.00	0.00	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.	*
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.	*
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.	*
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.	*
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.	*
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.	*
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.	*
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.	*
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.	*
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.	*
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.	*
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.	*
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.	*
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.	*
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.	*
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.	*
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.	*
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.	*
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.	*

TOTAL RAINFALL = 24.39, TOTAL LOSS = 23.93, TOTAL EXCESS = 0.45

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	24-HR (MM)	72-HR (MM)	17.25-HR (MM)
0.	3.25	0.	0.451	0.451	0.451
		1.	1.	1.	1.

CUMULATIVE AREA = 2.08 SQ KM

STATION B-3

DAHRMN PER	0.00	0.04	0.08	0.12	0.16	0.20	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			(O) OUTFLOW									(L) PRECIP,	0.00	0.00	
												4.	2.	EXCESS	
														0.	
10000	10														
10015	20														
10030	30														
10045	40														LLLLL
10100	50														LLLLL
10115	60														LLLLLLL
10130	70														LLLLLLL
10145	80														LLLLLLL
10200	9.0														LLLLLLL
10215	10.														LLLLLLL
10230	11.														LLLLLLL
10245	12.														LLLLLLL
10300	13.														LLLLLLL
10315	14.														LLLLLLX
10330	15.														LLLLLLX
10345	16.														LLLLLX
10400	17.														LLLLLX
10415	18.														
10430	19.														
10445	20.0														
10500	21.0														
10515	220														
10530	230														
10545	240														
10600	250														
10615	260														
10630	270														
10645	280														
10700	290														
10715	300														
10730	310														
10745	320														
10800	330														
10815	340														
10830	350														
10845	360														
10900	370														
10915	380														
10930	390														
10945	400														
11000	410														
11015	420														
11030	430														
11045	440														
11100	450														
11115	460														
11130	470														
11145	480														
11200	490														
11215	500														
11230	510														
11245	520														
11300	530														
11315	540														
11330	550														
11345	560														
11400	570														
11415	580														
11430	590														
11445	600														
11500	610														
11515	620														
11530	630														
11545	640														
11600	650														
11615	660														
11630	670														
11645	680														
11700	690														
11715	700														

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50 KK  
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 \* B2+B3 \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3

52 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B2+B3  
 SUM OF 2 HYDROGRAPHS

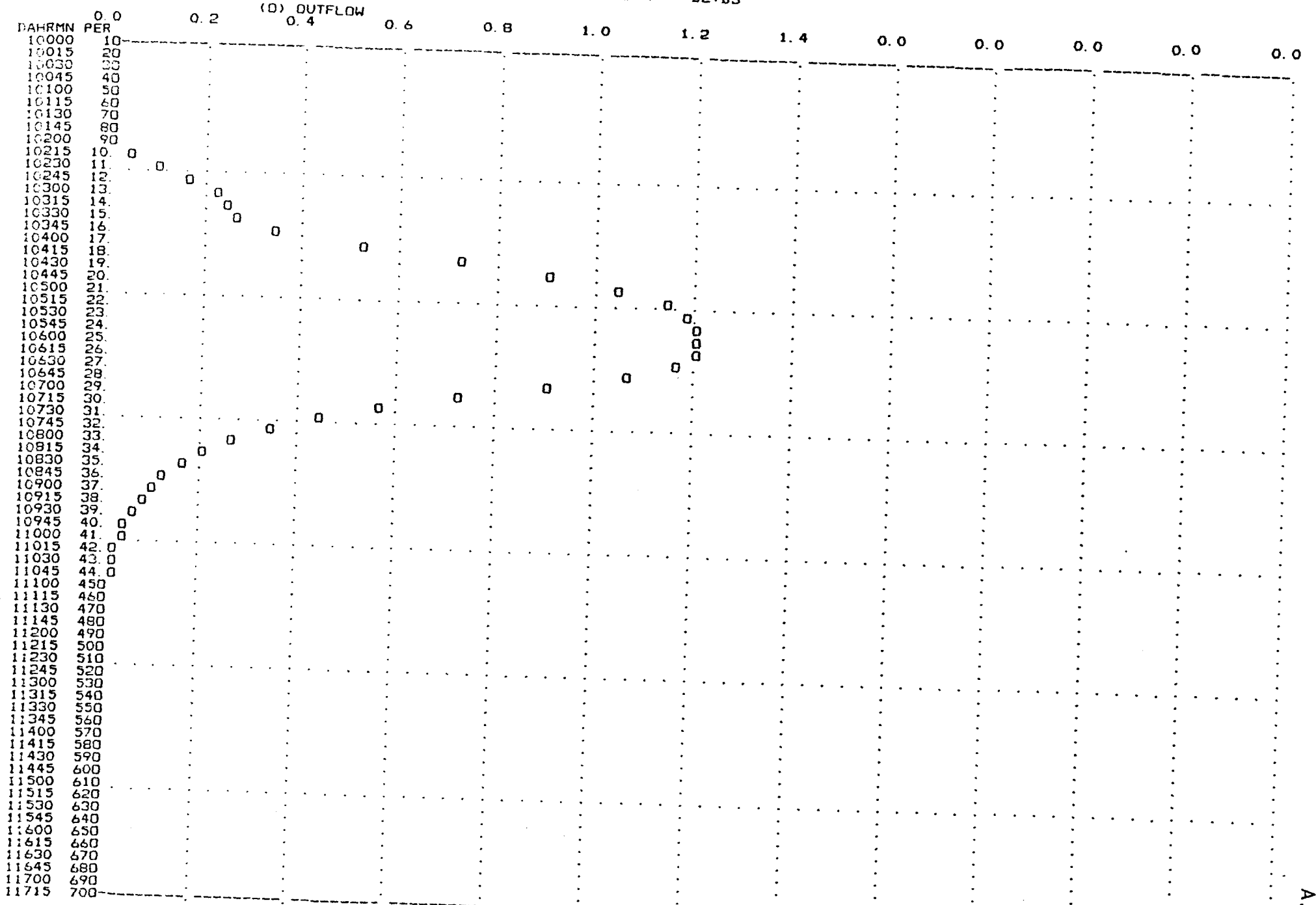
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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	1.	*	1	JUN	0900	37	0.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	1.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	1.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	1.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	1.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	1.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	1.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	1.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	1.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	1.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	1.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	1.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	0.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	0.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	0.	*	1	JUN	0800	33	0.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	0.	*	1	JUN	0815	34	0.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	1.	*	1	JUN	0830	35	0.	*	1	JUN	1300	53	0.	*							*
1	JUN	0415	18	1.	*	1	JUN	0845	36	0.	*	1	JUN	1315	54	0.	*							*

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PEAK FLOW (CU M/S)	TIME (HR)		6-HR	MAXIMUM AVERAGE FLOW		17.25-HR
1.	5.75	(CU M/S)	1.	24-HR	72-HR	0.
		(MM)	1.546	1.608	1.608	1.608
		(1000 CU M)	14.	15.	15.	15.
CUMULATIVE AREA =			9.36 SQ KM			

STATION B2+B3



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53 KK \*\*\*\*\*  
 \* R23T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1

HYDROGRAPH ROUTING DATA

55 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.20 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R23T01

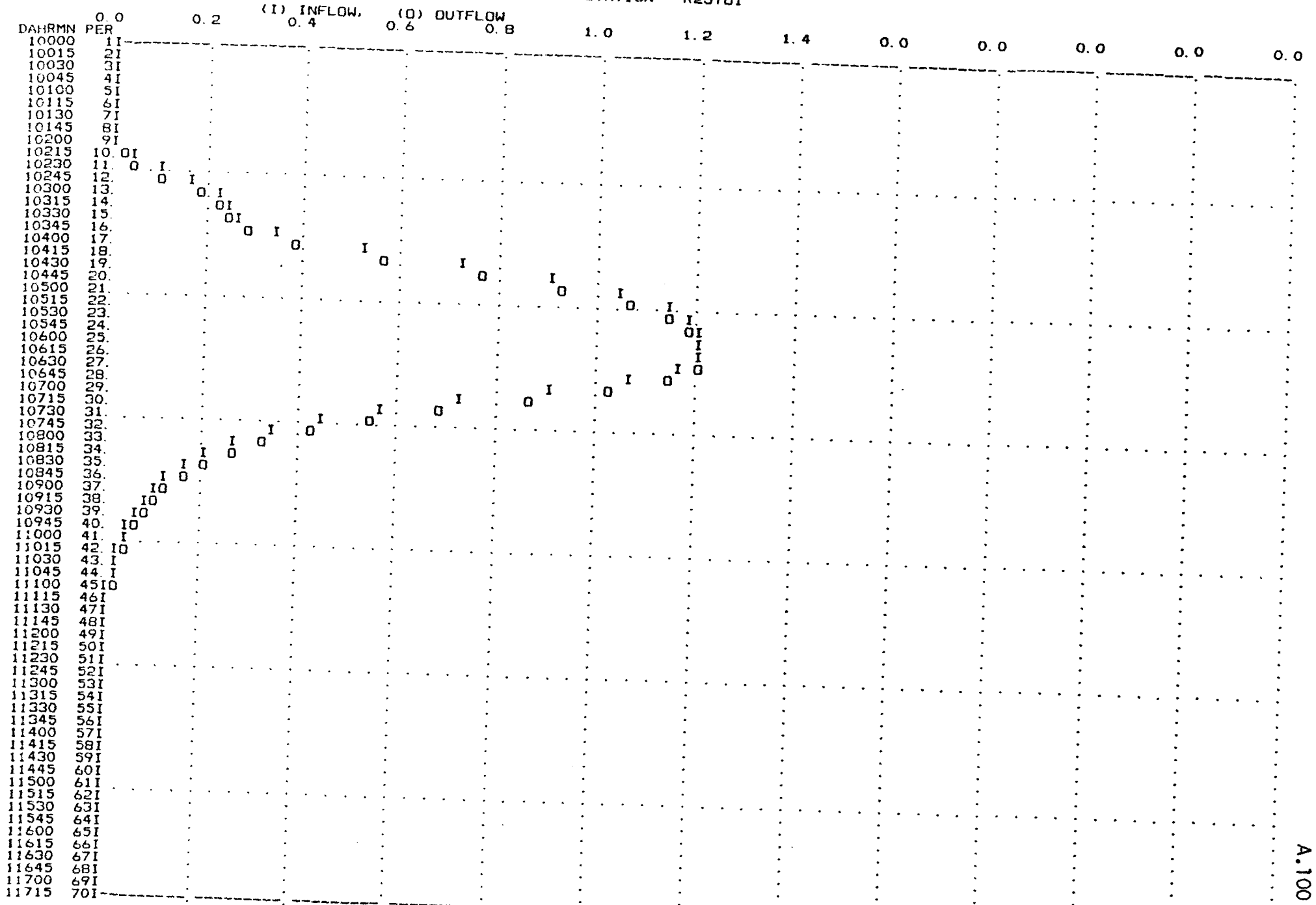
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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	1.	*	1	JUN	0900	37	0.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	1.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	1.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	1.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	1.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	1.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	1.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	1.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	1.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	1.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	1.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	1.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	1.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	0.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	0.	*	1	JUN	0800	33	0.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	0.	*	1	JUN	0815	34	0.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	0.	*	1	JUN	0830	35	0.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	1.	*	1	JUN	0845	36	0.	*	1	JUN	1315	54	0.	*							

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PEAK FLOW (CU M/S)	TIME (HR)		6-HR	MAXIMUM AVERAGE FLOW		17.25-HR
1.	6.00	(CU M/S)	1.	24-HR	72-HR	0.
		(MM)	1.544	1.608	1.608	1.608
		(1000 CU M)	14.	15.	15.	15.
CUMULATIVE AREA =			9.36 SQ KM			

STATION R23T01



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56 KK \*\*\*\*\*  
 \* B-4 \*  
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BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

58 BA SUBBASIN CHARACTERISTICS  
 TAREA 10.73 SUBBASIN AREA

PRECIPITATION DATA

59 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 6.40 10.50 19.90 28.10 33.90 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 10.73

60 LS SCS LOSS RATE  
 STRL 17.80 INITIAL ABSTRACTION  
 CRVNR 74.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

61 UC CLARK UNITGRAPH  
 TC 1.50 TIME OF CONCENTRATION  
 R 1.00 STORAGE COEFFICIENT

62 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
 0.0 0.9 1.8 3.4 6.1 9.0 10.7

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 1.50 HR, R= 1.00 HR  
 SNYDER TP= 1.42 HR, CP= 0.80

UNIT HYDROGRAPH  
 25 END-OF-PERIOD ORDINATES  
 0. 0. 1. 1. 1. 2. 2. 1. 1. 1.  
 1. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-4

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	1.18	1.18	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	1.30	1.30	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	1.59	1.59	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	1.84	1.84	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	1.92	1.92	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	3.76	3.76	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	8.58	8.52	0.06	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	2.34	2.16	0.17	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	2.03	1.80	0.24	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	1.70	1.45	0.26	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	1.38	1.13	0.24	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	1.23	0.99	0.24	1.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	0.00	0.00	0.00	1.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	0.00	0.00	0.00	1.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	0.00	0.00	0.00	2.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	0.00	0.00	0.00	2.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	0.00	0.00	0.00	1.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	0.00	0.00	0.00	1.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.00	0.00	0.00	1.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.00	0.00	0.00	1.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.00	0.00	0.00	1.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

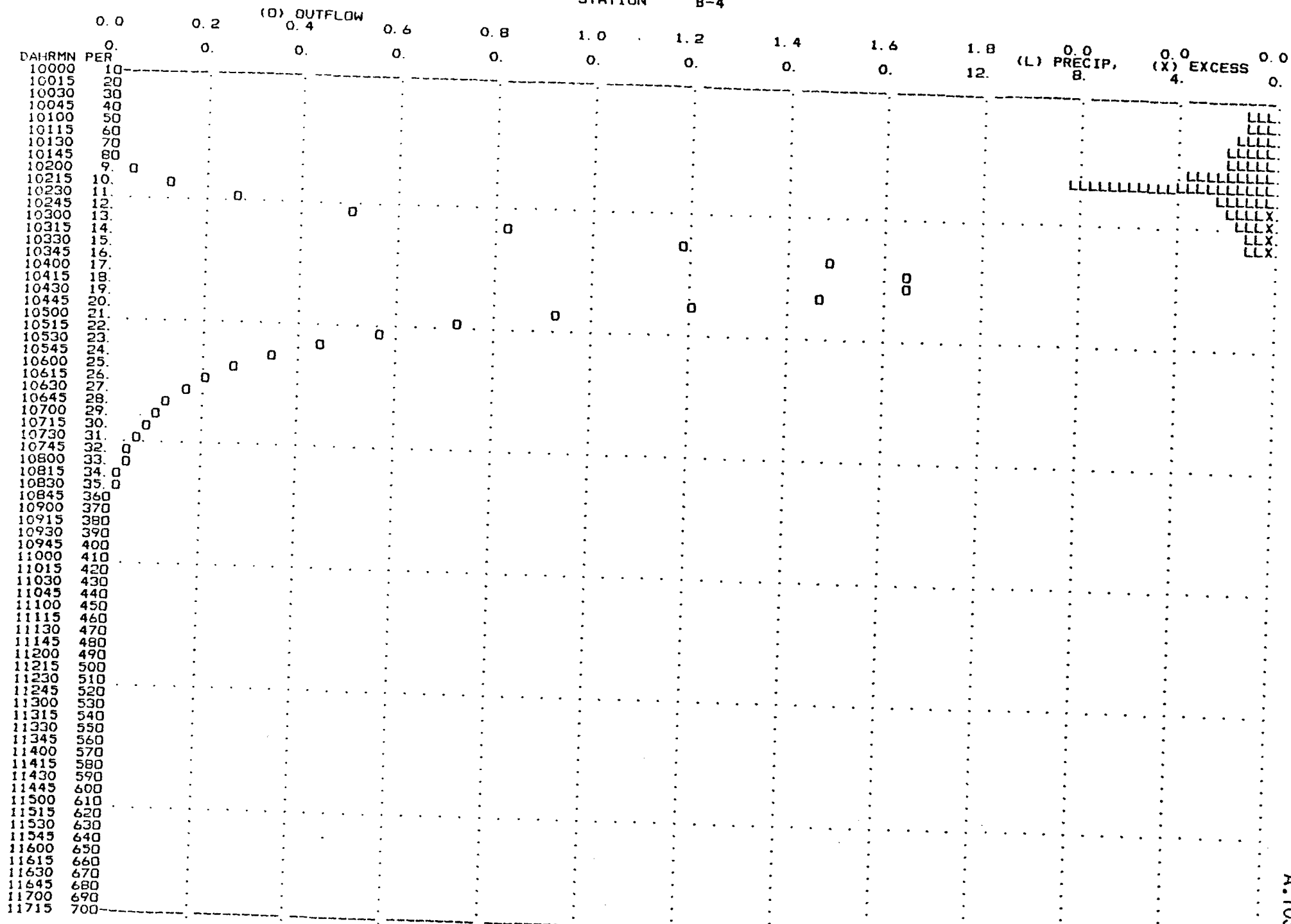
TOTAL RAINFALL = 28.86, TOTAL LOSS = 27.64, TOTAL EXCESS = 1.22

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CU M/S)	(HR)		24-HR	72-HR
2.	3.75	(CU M/S)	1.	0.
		(MM)	1.205	1.213
		(1000 CU M)	13.	13.

CUMULATIVE AREA = 10.73 SQ KM



STATION B-4



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63 KK \*\*\*\*\*  
 \* R4T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

65 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.30 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R4T01

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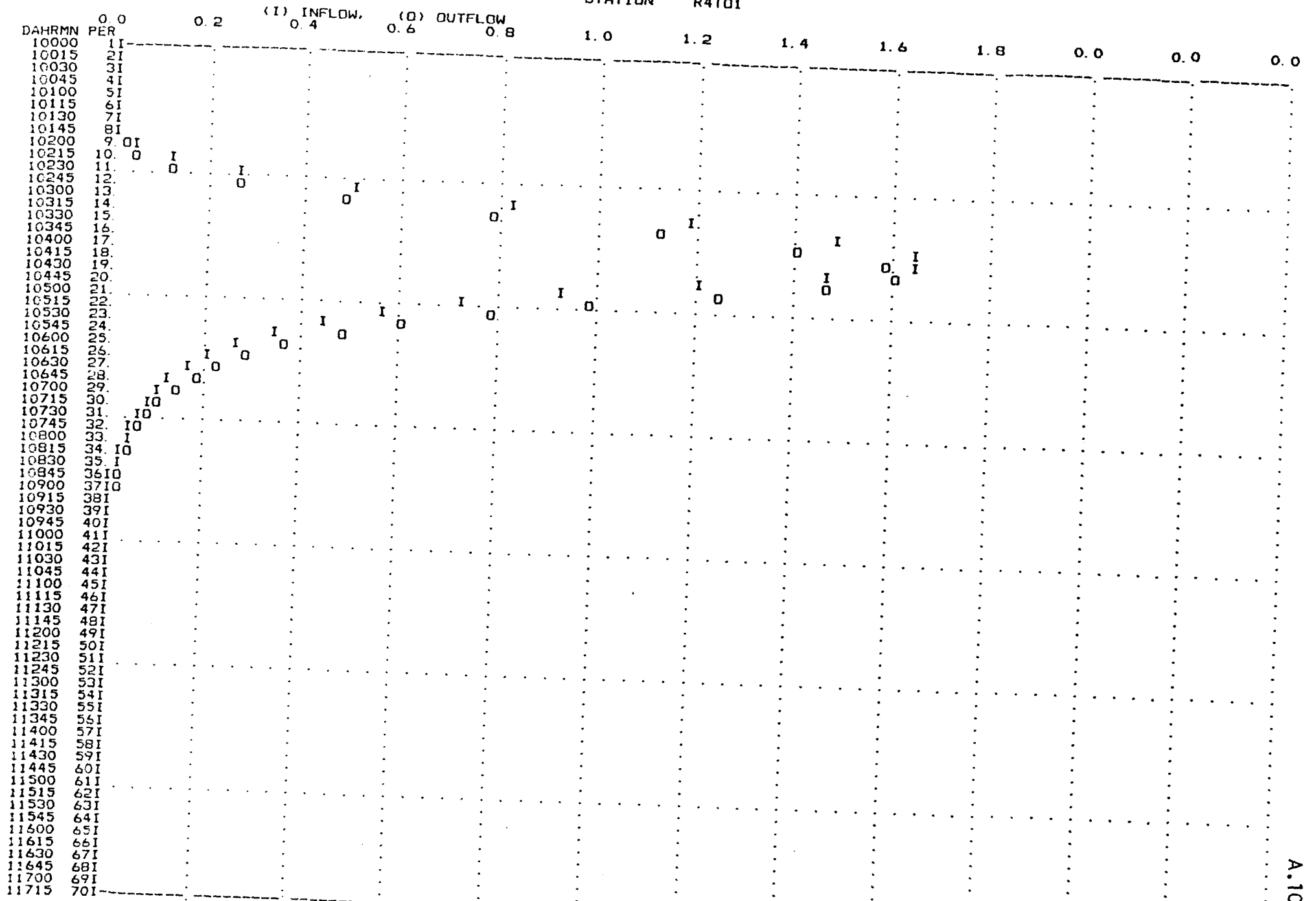
DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	1.	*	1	JUN	0900	37	0.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	1.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	1.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	1.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	1.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	0.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	0.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	0.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	0.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	0.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	0.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	0.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	0.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	1.	*	1	JUN	0745	32	0.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	1.	*	1	JUN	0800	33	0.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	1.	*	1	JUN	0815	34	0.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	2.	*	1	JUN	0830	35	0.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	2.	*	1	JUN	0845	36	0.	*	1	JUN	1315	54	0.	*							

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PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	17.25-HR
2.	4.25	1.	0.	0.	0.
	(CU M/S)	1.203	1.213	1.213	1.213
	(MM)	13.	13.	13.	13.
	(1000 CU M)				

CUMULATIVE AREA = 10.73 SQ KM

STATION R4T01



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66 KK \*\*\*\*\*  
\* B-1 \*  
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BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

68 BA SUBBASIN CHARACTERISTICS  
TAREA 2.18 SUBBASIN AREA

PRECIPITATION DATA

69 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
4.70 7.70 14.60 20.60 24.90 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.18

70 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

71 UC CLARK UNITGRAPH  
TC 0.75 TIME OF CONCENTRATION  
R 0.50 STORAGE COEFFICIENT

72 UA ACCUMULATED-AREA VS. TIME, 4 ORDINATES  
0.0 0.8 1.8 2.2

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.75 HR, R= 0.50 HR  
SNYDER TP= 0.57 HR, CP= 0.61

UNIT HYDROGRAPH  
12 END-OF-PERIOD ORDINATES  
0. 0. 1. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	0.87	0.87	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	0.97	0.97	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	1.16	1.16	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	1.36	1.36	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	1.39	1.39	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	2.93	2.93	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	6.67	6.67	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	1.71	1.71	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	1.50	1.50	0.01	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	1.25	1.21	0.04	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	1.03	0.97	0.06	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	0.92	0.85	0.07	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	0.00	0.00	0.00	0.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	0.00	0.00	0.00	0.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	0.00	0.00	0.00	0.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	0.00	0.00	0.00	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 21.76, TOTAL LOSS = 21.59, TOTAL EXCESS = 0.17

PEAK FLOW (CU M/S)	TIME (HR)		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	17.25-HR
0.	3.25	(CU M/S)	0.	0.	0.	0.
		(MM)	0.167	0.167	0.167	0.167
		(1000 CU M)	0.	0.	0.	0.

CUMULATIVE AREA = 2.18 SQ KM

STATION B-1

DAHRMN PER	0.00	0.01	(O) 0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.00 (L) PRECIP, 4.	0.00 (X) EXCESS 2.	0.00
10000	10												
10015	20												
10030	30												
10045	40												
10100	50												
10115	60												LLLL
10130	70												LLLLL
10145	80												LLLLLL
10200	90												LLLLLLL
10215	10.0												LLLLLLL
10230	11.												LLLLLLL
10245	12.	0											LLLLLLL
10300	13.			0									LLLLLLL
10315	14.												LLLLLLL
10330	15.							0					LLLLLLL
10345	16.												LLLLLL
10400	17.								0				LLLLLL
10415	18.			0		0							LLLLLL
10430	19.												LLLLLL
10445	20.		0										LLLLLL
10500	21.	0											LLLLLL
10515	22.	0											LLLLLL
10530	23.	0											LLLLLL
10545	24.	0											LLLLLL
10600	250												LLLLLL
10615	260												LLLLLL
10630	270												LLLLLL
10645	280												LLLLLL
10700	290												LLLLLL
10715	300												LLLLLL
10730	310												LLLLLL
10745	320												LLLLLL
10800	330												LLLLLL
10815	340												LLLLLL
10830	350												LLLLLL
10845	360												LLLLLL
10900	370												LLLLLL
10915	380												LLLLLL
10930	390												LLLLLL
10945	400												LLLLLL
11000	410												LLLLLL
11015	420												LLLLLL
11030	430												LLLLLL
11045	440												LLLLLL
11100	450												LLLLLL
11115	460												LLLLLL
11130	470												LLLLLL
11145	480												LLLLLL
11200	490												LLLLLL
11215	500												LLLLLL
11230	510												LLLLLL
11245	520												LLLLLL
11300	530												LLLLLL
11315	540												LLLLLL
11330	550												LLLLLL
11345	560												LLLLLL
11400	570												LLLLLL
11415	580												LLLLLL
11430	590												LLLLLL
11445	600												LLLLLL
11500	610												LLLLLL
11515	620												LLLLLL
11530	630												LLLLLL
11545	640												LLLLLL
11600	650												LLLLLL
11615	660												LLLLLL
11630	670												LLLLLL
11645	680												LLLLLL
11700	690												LLLLLL
11715	700												LLLLLL

\*\*\*\*\*

73 KK  
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 \* B-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS R-1, B-2, B-3 Y B-4

75 HC HYDROGRAPH COMBINATION  
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B-SUMA  
 SUM OF 3 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*
1	JUN	0000	1	0.	*	1	JUN	0430	19	2.	*	1	JUN	0900	37	0.	*	1	JUN	1330	55	0.	*
1	JUN	0015	2	0.	*	1	JUN	0445	20	2.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*
1	JUN	0030	3	0.	*	1	JUN	0500	21	2.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*
1	JUN	0045	4	0.	*	1	JUN	0515	22	2.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*
1	JUN	0100	5	0.	*	1	JUN	0530	23	2.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*
1	JUN	0115	6	0.	*	1	JUN	0545	24	2.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*
1	JUN	0130	7	0.	*	1	JUN	0600	25	2.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*
1	JUN	0145	8	0.	*	1	JUN	0615	26	1.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*
1	JUN	0200	9	0.	*	1	JUN	0630	27	1.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*
1	JUN	0215	10	0.	*	1	JUN	0645	28	1.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*
1	JUN	0230	11	0.	*	1	JUN	0700	29	1.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*
1	JUN	0245	12	0.	*	1	JUN	0715	30	1.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*
1	JUN	0300	13	1.	*	1	JUN	0730	31	1.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*
1	JUN	0315	14	1.	*	1	JUN	0745	32	0.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*
1	JUN	0330	15	1.	*	1	JUN	0800	33	0.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*
1	JUN	0345	16	2.	*	1	JUN	0815	34	0.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*
1	JUN	0400	17	2.	*	1	JUN	0830	35	0.	*	1	JUN	1300	53	0.	*						*
1	JUN	0415	18	2.	*	1	JUN	0845	36	0.	*	1	JUN	1315	54	0.	*						*

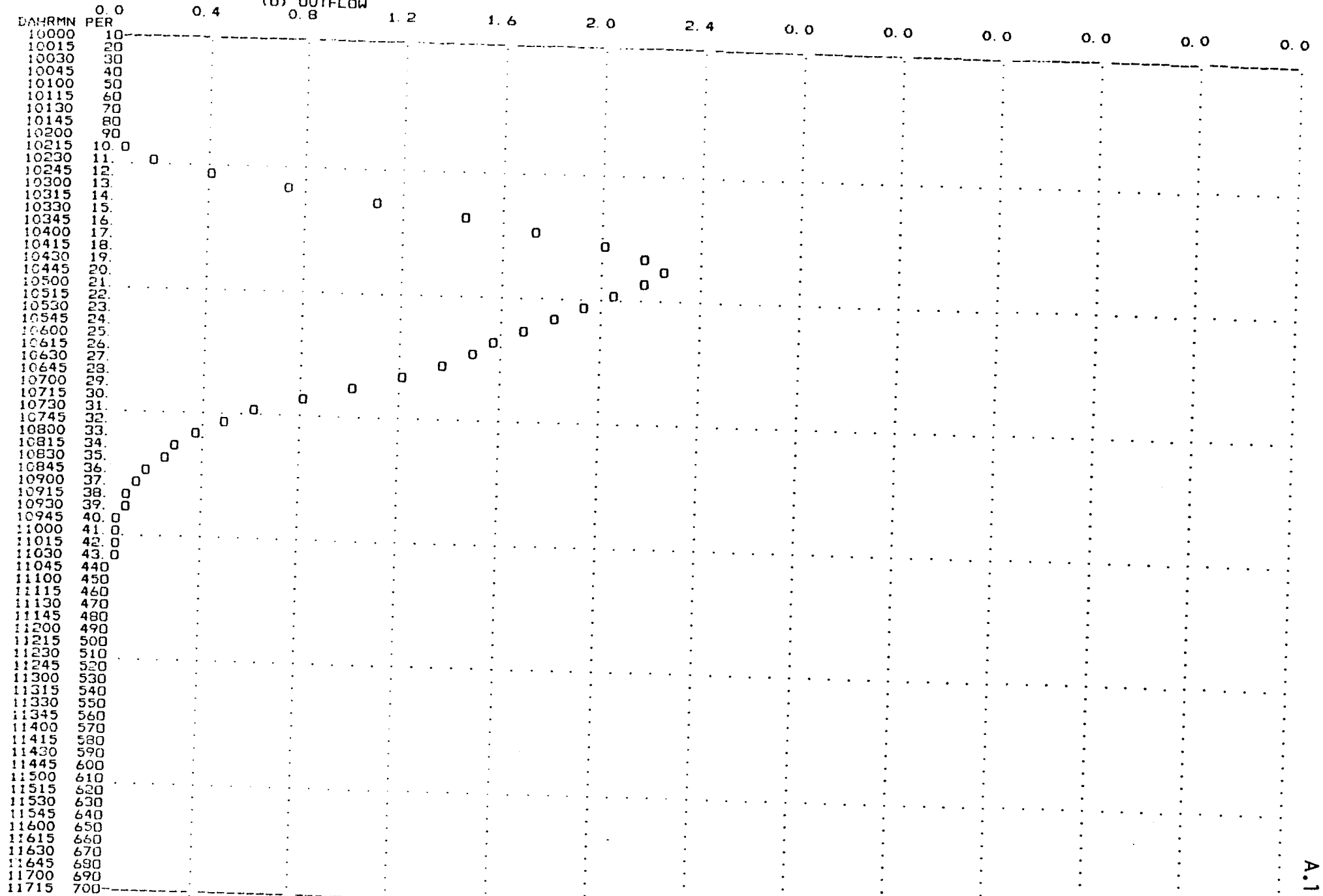
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PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW	6-HR	24-HR	72-HR	17.25-HR
2.	4.50	(CU M/S)	1.	0.	0.	0.
		(MM)	1.239	1.276	1.276	1.276
		(1000 CU M)	28.	28.	28.	28.

CUMULATIVE AREA = 22.27 SQ KM

STATION B-SUMA

(D) OUTFLOW





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76 KK  
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 \* C-1 \*  
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BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

78 BA SUBBASIN CHARACTERISTICS  
 TAREA 10.45 SUBBASIN AREA

PRECIPITATION DATA

79 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 5.50 9.00 17.10 24.10 29.10 38.30 0.00 0.00 0.00 0.00 0.00 0.00  
 STORM AREA = 10.45

80 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

81 UC CLARK UNITGRAPH  
 TC 1.50 TIME OF CONCENTRATION  
 R 1.10 STORAGE COEFFICIENT

82 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
 0.0 2.1 4.0 5.8 8.1 9.5 10.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 1.50 HR. R= 1.10 HR  
 SNYDER TP= 1.23 HR. CP= 0.59

UNIT HYDROGRAPH  
 27 END-OF-PERIOD ORDINATES

0. 1. 1. 1. 1. 1. 1. 1. 1.  
 0. 0. 0. 0. 0. 0. 0. 0. 0.  
 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION C-1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*		1	JUN	0845	36	0.00	0.00	0.00	0.	*
1	JUN	0015	2	0.56	0.56	0.00	0.	*		1	JUN	0900	37	0.00	0.00	0.00	0.	*
1	JUN	0030	3	0.60	0.60	0.00	0.	*		1	JUN	0915	38	0.00	0.00	0.00	0.	*
1	JUN	0045	4	0.63	0.63	0.00	0.	*		1	JUN	0930	39	0.00	0.00	0.00	0.	*
1	JUN	0100	5	0.67	0.67	0.00	0.	*		1	JUN	0945	40	0.00	0.00	0.00	0.	*
1	JUN	0115	6	0.72	0.72	0.00	0.	*		1	JUN	1000	41	0.00	0.00	0.00	0.	*
1	JUN	0130	7	0.78	0.78	0.00	0.	*		1	JUN	1015	42	0.00	0.00	0.00	0.	*
1	JUN	0145	8	1.01	1.01	0.00	0.	*		1	JUN	1030	43	0.00	0.00	0.00	0.	*
1	JUN	0200	9	1.12	1.12	0.00	0.	*		1	JUN	1045	44	0.00	0.00	0.00	0.	*
1	JUN	0215	10	1.35	1.35	0.00	0.	*		1	JUN	1100	45	0.00	0.00	0.00	0.	*
1	JUN	0230	11	1.58	1.58	0.00	0.	*		1	JUN	1115	46	0.00	0.00	0.00	0.	*
1	JUN	0245	12	1.65	1.65	0.00	0.	*		1	JUN	1130	47	0.00	0.00	0.00	0.	*
1	JUN	0300	13	3.25	3.25	0.00	0.	*		1	JUN	1145	48	0.00	0.00	0.00	0.	*
1	JUN	0315	14	7.37	7.35	0.02	0.	*		1	JUN	1200	49	0.00	0.00	0.00	0.	*
1	JUN	0330	15	2.01	1.91	0.10	0.	*		1	JUN	1215	50	0.00	0.00	0.00	0.	*
1	JUN	0345	16	1.74	1.59	0.14	0.	*		1	JUN	1230	51	0.00	0.00	0.00	0.	*
1	JUN	0400	17	1.45	1.29	0.16	0.	*		1	JUN	1245	52	0.00	0.00	0.00	0.	*
1	JUN	0415	18	1.19	1.03	0.16	0.	*		1	JUN	1300	53	0.00	0.00	0.00	0.	*
1	JUN	0430	19	1.06	0.90	0.16	1.	*		1	JUN	1315	54	0.00	0.00	0.00	0.	*
1	JUN	0445	20	0.82	0.68	0.14	1.	*		1	JUN	1330	55	0.00	0.00	0.00	0.	*
1	JUN	0500	21	0.75	0.62	0.13	1.	*		1	JUN	1345	56	0.00	0.00	0.00	0.	*
1	JUN	0515	22	0.70	0.57	0.13	1.	*		1	JUN	1400	57	0.00	0.00	0.00	0.	*
1	JUN	0530	23	0.65	0.52	0.13	1.	*		1	JUN	1415	58	0.00	0.00	0.00	0.	*
1	JUN	0545	24	0.61	0.49	0.13	1.	*		1	JUN	1430	59	0.00	0.00	0.00	0.	*
1	JUN	0600	25	0.58	0.45	0.13	1.	*		1	JUN	1445	60	0.00	0.00	0.00	0.	*
1	JUN	0615	26	0.00	0.00	0.00	1.	*		1	JUN	1500	61	0.00	0.00	0.00	0.	*
1	JUN	0630	27	0.00	0.00	0.00	1.	*		1	JUN	1515	62	0.00	0.00	0.00	0.	*
1	JUN	0645	28	0.00	0.00	0.00	1.	*		1	JUN	1530	63	0.00	0.00	0.00	0.	*
1	JUN	0700	29	0.00	0.00	0.00	1.	*		1	JUN	1545	64	0.00	0.00	0.00	0.	*
1	JUN	0715	30	0.00	0.00	0.00	1.	*		1	JUN	1600	65	0.00	0.00	0.00	0.	*
1	JUN	0730	31	0.00	0.00	0.00	1.	*		1	JUN	1615	66	0.00	0.00	0.00	0.	*
1	JUN	0745	32	0.00	0.00	0.00	1.	*		1	JUN	1630	67	0.00	0.00	0.00	0.	*
1	JUN	0800	33	0.00	0.00	0.00	0.	*		1	JUN	1645	68	0.00	0.00	0.00	0.	*
1	JUN	0815	34	0.00	0.00	0.00	0.	*		1	JUN	1700	69	0.00	0.00	0.00	0.	*
1	JUN	0830	35	0.00	0.00	0.00	0.	*		1	JUN	1715	70	0.00	0.00	0.00	0.	*

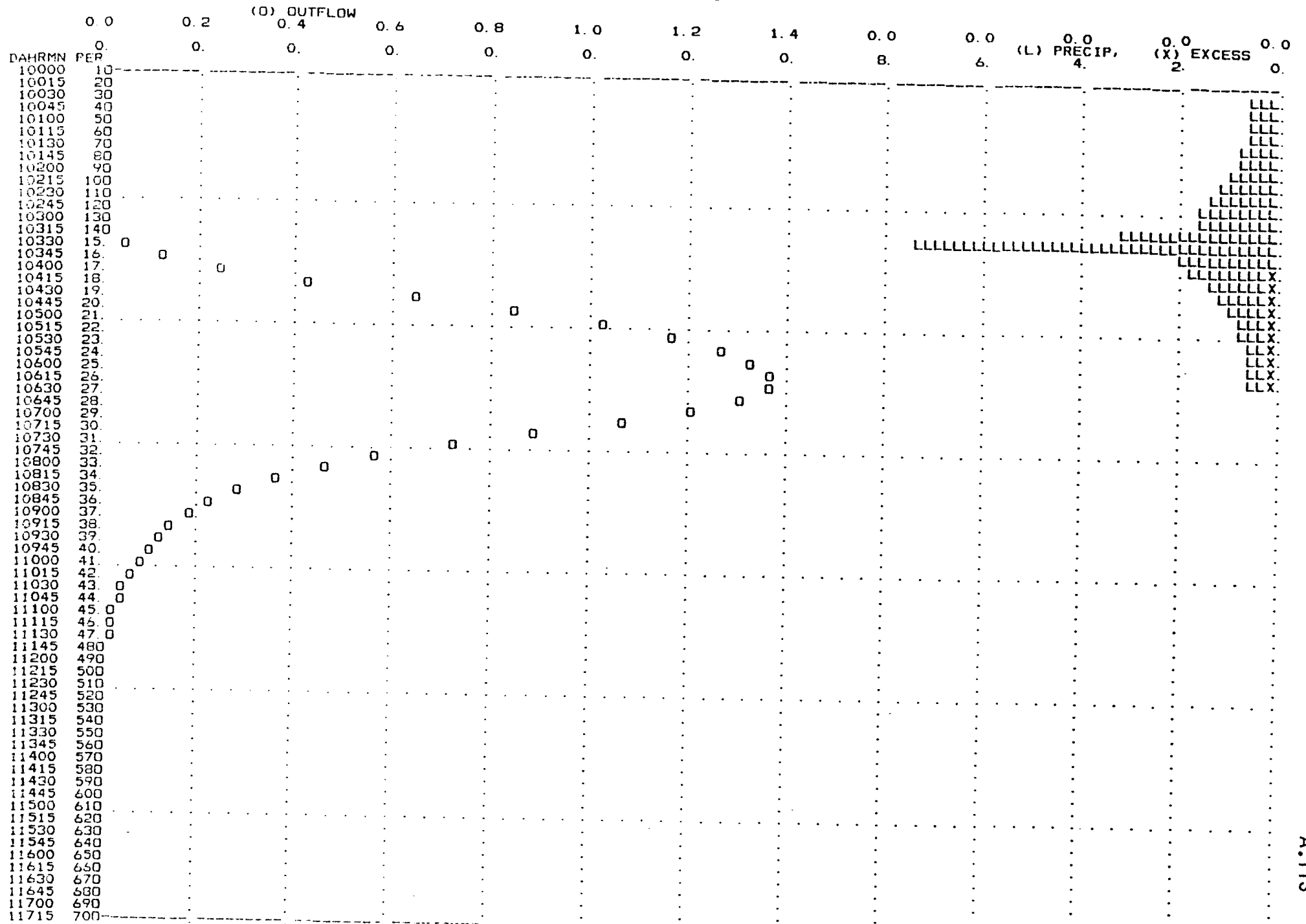
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TOTAL RAINFALL = 32.87, TOTAL LOSS = 31.34, TOTAL EXCESS = 1.53

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	MAXIMUM AVERAGE FLOW 24-HR	72-HR	17.25-HR
1.	6.00	1.	0.	0.	0.
	(CU M/S)	1.484	1.522	1.522	1.522
	(MM)	16.	16.	16.	16.

CUMULATIVE AREA = 10.45 SQ KM

STATION C-1



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83 KK \*\*\*\*\*  
 \* G-1 \*  
 \* \*  
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BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

85 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.45 SUBBASIN AREA

PRECIPITATION DATA

86 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 7.70 12.50 23.70 33.40 40.40 53.20 0.00 0.00 0.00 0.00 0.00 0.00  
 STORM AREA = 19.45

87 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

88 UC CLARK UNITGRAPH  
 TC 2.00 TIME OF CONCENTRATION  
 R 1.80 STORAGE COEFFICIENT

89 UA ACCUMULATED-AREA VS. TIME, 9 ORDINATES  
 0.0 2.3 6.4 9.3 12.0 14.1 15.7 17.6 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.00 HR, R= 1.80 HR  
 SNYDER TP= 1.87 HR, CP= 0.57

UNIT HYDROGRAPH  
 42 END-OF-PERIOD ORDINATES

0.	1.	1.	1.	1.	1.	2.	2.	2.	2.	1.
1.	1.	1.	1.	1.	1.	1.	1.	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.

HYDROGRAPH AT STATION G-1

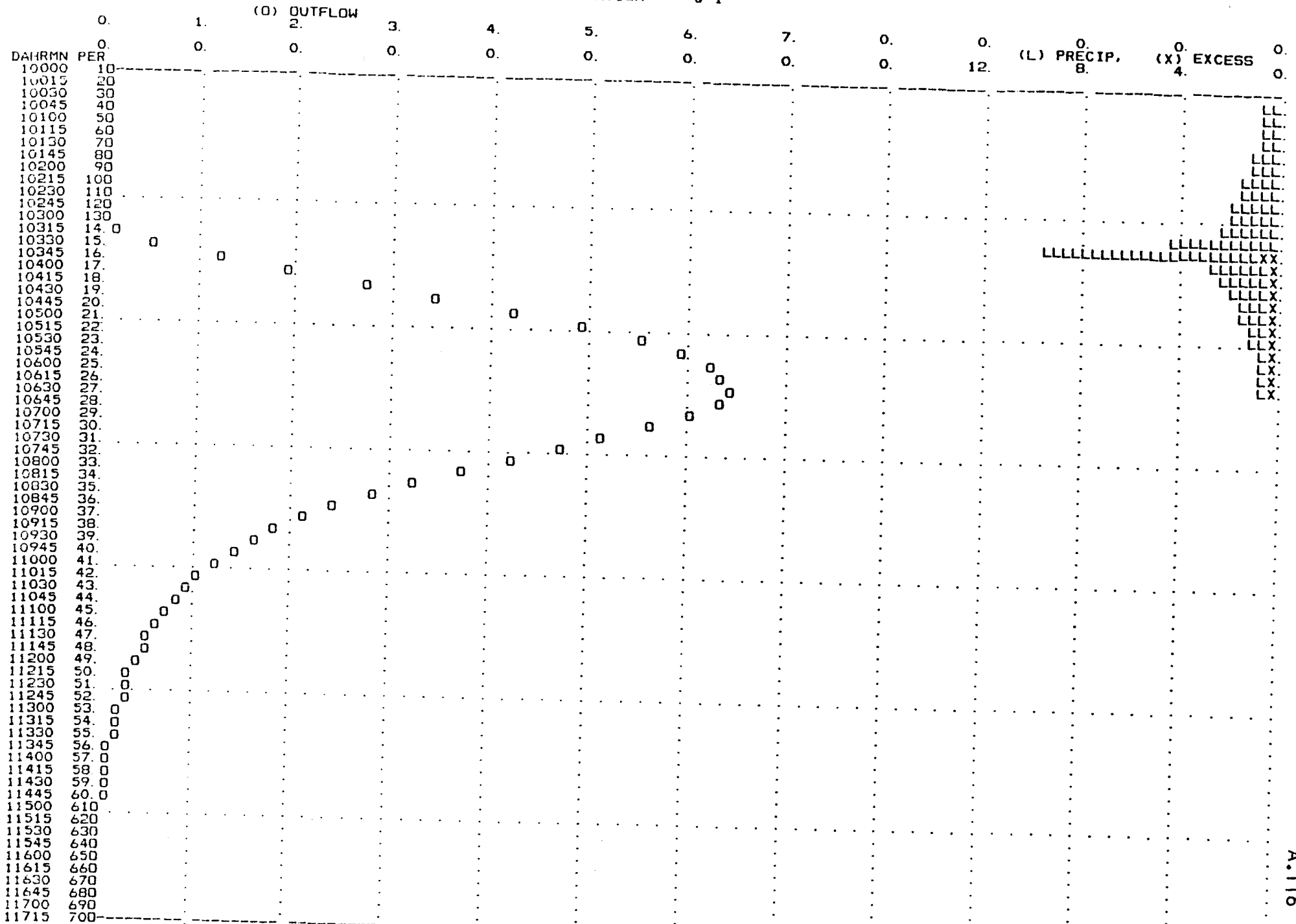
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	2.	*
1	JUN	0015	2	0.79	0.79	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	2.	*
1	JUN	0030	3	0.83	0.83	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	2.	*
1	JUN	0045	4	0.88	0.88	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	2.	*
1	JUN	0100	5	0.93	0.93	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	1.	*
1	JUN	0115	6	1.00	1.00	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	1.	*
1	JUN	0130	7	1.09	1.09	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	1.	*
1	JUN	0145	8	1.42	1.42	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	1.	*
1	JUN	0200	9	1.56	1.56	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	1.	*
1	JUN	0215	10	1.88	1.88	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	1.	*
1	JUN	0230	11	2.17	2.17	0.00	0.	*	1	JUN	1115	46	0.00	0.00	0.00	1.	*
1	JUN	0245	12	2.31	2.31	0.00	0.	*	1	JUN	1130	47	0.00	0.00	0.00	1.	*
1	JUN	0300	13	4.24	4.24	0.00	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.	*
1	JUN	0315	14	9.66	8.92	0.75	0.	*	1	JUN	1200	49	0.00	0.00	0.00	0.	*
1	JUN	0330	15	2.79	2.29	0.50	1.	*	1	JUN	1215	50	0.00	0.00	0.00	0.	*
1	JUN	0345	16	2.39	1.87	0.52	1.	*	1	JUN	1230	51	0.00	0.00	0.00	0.	*
1	JUN	0400	17	2.01	1.51	0.50	2.	*	1	JUN	1245	52	0.00	0.00	0.00	0.	*
1	JUN	0415	18	1.65	1.20	0.45	3.	*	1	JUN	1300	53	0.00	0.00	0.00	0.	*
1	JUN	0430	19	1.49	1.05	0.43	3.	*	1	JUN	1315	54	0.00	0.00	0.00	0.	*
1	JUN	0445	20	1.14	0.79	0.35	4.	*	1	JUN	1330	55	0.00	0.00	0.00	0.	*
1	JUN	0500	21	1.04	0.71	0.33	5.	*	1	JUN	1345	56	0.00	0.00	0.00	0.	*
1	JUN	0515	22	0.97	0.65	0.32	5.	*	1	JUN	1400	57	0.00	0.00	0.00	0.	*
1	JUN	0530	23	0.90	0.60	0.31	6.	*	1	JUN	1415	58	0.00	0.00	0.00	0.	*
1	JUN	0545	24	0.85	0.55	0.30	6.	*	1	JUN	1430	59	0.00	0.00	0.00	0.	*
1	JUN	0600	25	0.81	0.52	0.29	6.	*	1	JUN	1445	60	0.00	0.00	0.00	0.	*
1	JUN	0615	26	0.00	0.00	0.00	6.	*	1	JUN	1500	61	0.00	0.00	0.00	0.	*
1	JUN	0630	27	0.00	0.00	0.00	6.	*	1	JUN	1515	62	0.00	0.00	0.00	0.	*
1	JUN	0645	28	0.00	0.00	0.00	6.	*	1	JUN	1530	63	0.00	0.00	0.00	0.	*
1	JUN	0700	29	0.00	0.00	0.00	6.	*	1	JUN	1545	64	0.00	0.00	0.00	0.	*
1	JUN	0715	30	0.00	0.00	0.00	5.	*	1	JUN	1600	65	0.00	0.00	0.00	0.	*
1	JUN	0730	31	0.00	0.00	0.00	5.	*	1	JUN	1615	66	0.00	0.00	0.00	0.	*
1	JUN	0745	32	0.00	0.00	0.00	4.	*	1	JUN	1630	67	0.00	0.00	0.00	0.	*
1	JUN	0800	33	0.00	0.00	0.00	4.	*	1	JUN	1645	68	0.00	0.00	0.00	0.	*
1	JUN	0815	34	0.00	0.00	0.00	3.	*	1	JUN	1700	69	0.00	0.00	0.00	0.	*
1	JUN	0830	35	0.00	0.00	0.00	3.	*	1	JUN	1715	70	0.00	0.00	0.00	0.	*

TOTAL RAINFALL = 44.80, TOTAL LOSS = 39.75, TOTAL EXCESS = 5.05

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	MAXIMUM AVERAGE FLOW 24-HR	72-HR	17.25-HR
6.	6.25	4.	2.	2.	2.
	(CU M/S)	(MM)	5.025	5.025	5.025
	(1000 CU M)	88.	98.	98.	98.

CUMULATIVE AREA = 19.45 SQ KM

STATION G-1



RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
 AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	T-2	8.25	7.00	5.56	2.28	2.28	43.18		
ROUTED TO	R2T01	8.10	7.75	5.52	2.27	2.27	43.18		
HYDROGRAPH AT	T-1	2.19	6.75	1.45	0.60	0.60	19.55		
2 COMBINED AT	T-SUMA	9.98	7.50	6.92	2.87	2.87	62.73		
HYDROGRAPH AT	L-1	0.07	3.25	0.01	0.00	0.00	1.53		
HYDROGRAPH AT	B-2	1.21	5.75	0.64	0.23	0.23	7.28		
HYDROGRAPH AT	B-3	0.22	3.25	0.04	0.02	0.02	2.08		
2 COMBINED AT	B2+B3	1.21	5.75	0.67	0.24	0.24	9.36		
ROUTED TO	R23T01	1.20	6.00	0.67	0.24	0.24	9.36		
HYDROGRAPH AT	B-4	1.64	3.75	0.60	0.21	0.21	10.73		
ROUTED TO	R4T01	1.60	4.25	0.60	0.21	0.21	10.73		
HYDROGRAPH AT	B-1	0.09	3.25	0.02	0.01	0.01	2.18		
3 COMBINED AT	B-SUMA	2.23	4.50	1.28	0.46	0.46	22.27		
HYDROGRAPH AT	C-1	1.37	6.00	0.72	0.26	0.26	10.45		
HYDROGRAPH AT	G-1	6.39	6.25	4.08	1.57	1.57	19.45		

\*\*\* NORMAL END OF HEC-1 \*\*\*

4.2 Avenida de 5 años de periodo de recurrencia



HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 5 AÑOS									
3	ID	TORMENTAS NO UNIFORMES									
4	IT	15	1JUN87	000	70						
5	IO	1									
6	IM		2								
7	KK	T-2	BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION								
8	KM										
9	BA	43.18									
10	PH	20.0		12.5	20.4	38.5	54.4	65.7	86.5		
11	LS	20.7	71								
12	UC	3.0	2.2								
13	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
14	UA	39.40	41.93	43.18							
15	KK	R2TD1	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1								
16	KM										
17	RM	2	0.7	0.25							
18	KK	T-1	BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION								
19	KM										
20	BA	19.55									
21	PH	20.0		9.3	15.3	28.9	40.8	49.3	64.9		
22	LS	17.8	74								
23	UC	2.5	2.4								
24	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
25	UA	19.55									
26	KK	T-SUMA	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2								
27	KM										
28	HC	2									
29	KK	L-1	BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION								
30	KM										
31	BA	1.53									
32	PH	20.0		9.2	15.1	28.5	40.3	48.7			
33	LS	17.8	74								
34	UC	0.5	0.3								
35	UA	0.0	0.70	1.53							
36	KK	B-2	BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION								
37	KM										
38	BA	7.23									
39	PH	20.0		10.1	16.5	31.1	43.9	53.1	69.9		
40	LS	17.8	74								
41	UC	1.0	1.0								
42	UA	0.0	2.00	4.11	6.03	7.28					
43	KK	B-3	BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION								
44	KM										
45	BA	2.08									
46	PH	20.0		10.1	16.4	31.1	43.9	53.0			
47	LS	17.8	74								
48	UC	0.5	0.4								

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
49	UA	0.0	0.93	2.08							
50	KK	B2+B3									
51	KM		COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3								
52	HC	2									
53	KK	R23T01									
54	KM		TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1								
55	RM	1	0.2	0.25							
56	KK	B-4									
57	KM		BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION								
58	BA	10.73									
59	PH	20.0		12.7	20.7	39.1	55.3	66.8			
60	LS	17.8	74								
61	UC	1.5	1.0								
62	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73			
63	KK	R4T01									
64	KM		TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1								
65	RM	1	0.3	0.25							
66	KK	B-1									
67	KM		BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION								
68	BA	2.18									
69	PH	20.0		9.0	14.8	28.0	39.5	47.7			
70	LS	17.8	74								
71	UC	0.75	0.5								
72	UA	0.0	0.75	1.75	2.18						
73	KK	B-SUMA									
74	KM		COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4								
75	HC	3									
76	KK	C-1									
77	KM		BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS								
78	BA	10.45									
79	PH	20.0		9.8	16.0	30.3	42.7	51.6	68.0		
80	LS	19.8	72								
81	UC	1.5	1.1								
82	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
83	KK	G-1									
84	KM		BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS								
85	BA	19.45									
86	PH	20.0		12.2	20.0	37.8	53.3	64.5	84.9		
87	LS	19.8	72								
88	UC	2.0	1.8								
89	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
90	ZZ										

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*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* FEBRUARY 1981 *
* REVISED 14 JUN 85 *
* RUN DATE TIME *
*****

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*****
* U. S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 440-3285 OR (FTS) 448- *
*****

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CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE  
 PERIODO DE RECURRENCIA 5 A#OS  
 TORMENTAS NO UNIFORMES

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5 IO OUTPUT CONTROL VARIABLES
      IPRNT      1 PRINT CONTROL
      IPLOT      2 PLOT CONTROL
      GSCAL      0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
      NMIN      15 MINUTES IN COMPUTATION INTERVAL
      IDATE     1JUN87 STARTING DATE
      ITIME     0000 STARTING TIME
      NQ        70 NUMBER OF HYDROGRAPH ORDINATES
      NDDATE    1JUN87 ENDING DATE
      NDTIME    1715 ENDING TIME

      COMPUTATION INTERVAL 0.25 HOURS
      TOTAL TIME BASE 17.25 HOURS

```

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METRIC UNITS
DRAINAGE AREA SQUARE KILOMETERS
PRECIPITATION DEPTH MILLIMETERS
LENGTH, ELEVATION METERS
FLOW CUBIC METERS PER SECOND
STORAGE VOLUME CUBIC METERS
SURFACE AREA SQUARE METERS
TEMPERATURE DEGREES CELSIUS

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\*\*\*\*\*

7 KK

\*\*\*\*\*  
\* T-2 \*  
\*\*\*\*\*

BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

9 BA

SUBBASIN CHARACTERISTICS  
TAREA 43.18 SUBBASIN AREA

PRECIPITATION DATA

10 PH

HYDRO-35			DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM						TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY	
12.50	20.40	38.50	54.40	65.70	86.50	0.00	0.00	0.00	0.00	0.00	0.00	

STORM AREA = 43.18

11 LS

SCS LOSS RATE  
 STRTL 20.70 INITIAL ABSTRACTION  
 CRVNR 71.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

12 UC

CLARK UNITGRAPH  
 TC 3.00 TIME OF CONCENTRATION  
 R 2.20 STORAGE COEFFICIENT

13 UA

ACCUMULATED-AREA VS. TIME,	13	ORDINATES								
0.0	2.0	4.9	8.6	10.9	15.6	20.8	26.1	32.4	36.3	
39.4	41.9	43.2								

\*\*\*

UNIT HYDROGRAPH PARAMETERS  
 CLARK IC= 3.00 HR, R= 2.20 HR  
 SNYDER TP= 2.56 HR, CP= 0.65

UNIT HYDROGRAPH  
54 END-OF-PERIOD ORDINATES

0.	0.	1.	1.	1.	2.	2.	3.	3.	3.
3.	3.	3.	2.	2.	2.	2.	2.	1.	1.
1.	1.	1.	1.	1.	1.	1.	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.	0.	0.	0.	0.	0.	0.	0.

HYDROGRAPH AT STATION T-2

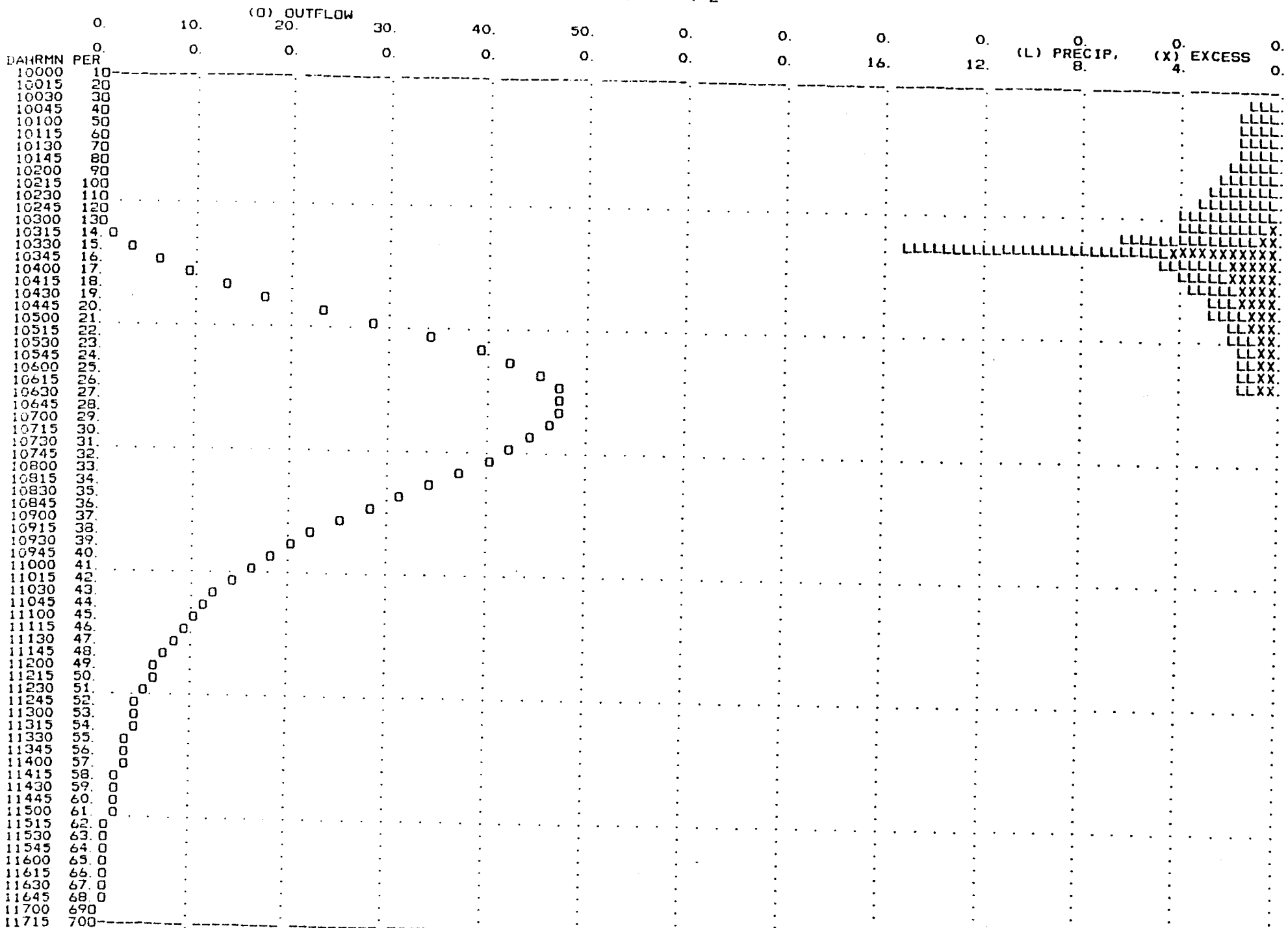
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	28.
1	JUN	0015	2	1.40	1.40	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	25.
1	JUN	0030	3	1.47	1.47	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	22.
1	JUN	0045	4	1.55	1.55	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	20.
1	JUN	0100	5	1.65	1.65	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	18.
1	JUN	0115	6	1.77	1.77	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	16.
1	JUN	0130	7	1.91	1.91	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	14.
1	JUN	0145	8	2.50	2.50	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	12.
1	JUN	0200	9	2.74	2.74	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	11.
1	JUN	0215	10	3.35	3.35	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	10.
1	JUN	0230	11	3.83	3.81	0.02	0.	*	1	JUN	1115	46	0.00	0.00	0.00	9.
1	JUN	0245	12	4.18	3.91	0.27	0.	*	1	JUN	1130	47	0.00	0.00	0.00	8.
1	JUN	0300	13	6.57	5.57	1.00	0.	*	1	JUN	1145	48	0.00	0.00	0.00	7.
1	JUN	0315	14	15.10	10.69	4.41	1.	*	1	JUN	1200	49	0.00	0.00	0.00	6.
1	JUN	0330	15	4.95	2.99	1.96	3.	*	1	JUN	1215	50	0.00	0.00	0.00	6.
1	JUN	0345	16	4.18	2.36	1.82	6.	*	1	JUN	1230	51	0.00	0.00	0.00	5.
1	JUN	0400	17	3.57	1.90	1.66	9.	*	1	JUN	1245	52	0.00	0.00	0.00	4.
1	JUN	0415	18	2.89	1.47	1.41	13.	*	1	JUN	1300	53	0.00	0.00	0.00	4.
1	JUN	0430	19	2.61	1.28	1.33	17.	*	1	JUN	1315	54	0.00	0.00	0.00	4.
1	JUN	0445	20	2.00	0.95	1.05	23.	*	1	JUN	1330	55	0.00	0.00	0.00	3.
1	JUN	0500	21	1.84	0.85	0.98	28.	*	1	JUN	1345	56	0.00	0.00	0.00	3.
1	JUN	0515	22	1.71	0.78	0.93	34.	*	1	JUN	1400	57	0.00	0.00	0.00	3.
1	JUN	0530	23	1.60	0.71	0.89	39.	*	1	JUN	1415	58	0.00	0.00	0.00	2.
1	JUN	0545	24	1.51	0.66	0.85	42.	*	1	JUN	1430	59	0.00	0.00	0.00	2.
1	JUN	0600	25	1.43	0.61	0.82	45.	*	1	JUN	1445	60	0.00	0.00	0.00	2.
1	JUN	0615	26	0.00	0.00	0.00	47.	*	1	JUN	1500	61	0.00	0.00	0.00	2.
1	JUN	0630	27	0.00	0.00	0.00	47.	*	1	JUN	1515	62	0.00	0.00	0.00	1.
1	JUN	0645	28	0.00	0.00	0.00	47.	*	1	JUN	1530	63	0.00	0.00	0.00	1.
1	JUN	0700	29	0.00	0.00	0.00	46.	*	1	JUN	1545	64	0.00	0.00	0.00	1.
1	JUN	0715	30	0.00	0.00	0.00	44.	*	1	JUN	1600	65	0.00	0.00	0.00	1.
1	JUN	0730	31	0.00	0.00	0.00	42.	*	1	JUN	1615	66	0.00	0.00	0.00	1.
1	JUN	0745	32	0.00	0.00	0.00	40.	*	1	JUN	1630	67	0.00	0.00	0.00	1.
1	JUN	0800	33	0.00	0.00	0.00	37.	*	1	JUN	1645	68	0.00	0.00	0.00	1.
1	JUN	0815	34	0.00	0.00	0.00	34.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	31.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 76.31, TOTAL LOSS = 56.90, TOTAL EXCESS = 19.41

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	24-HR (MM)	MAXIMUM AVERAGE FLOW 72-HR (MM)	17.25-HR (MM)
47.	6.50	33.	16.311	13.	13.
		(1000 CU M)	704.	833.	833.

CUMULATIVE AREA = 43.18 SQ KM

STATION T-2



\*\*\*\*\*

15 KK  
 \*\*\*\*\*  
 \* R2T01 \*  
 \*\*\*\*\*

TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

17 RM MUSKINGUM ROUTING  
 NSTPS 2 NUMBER OF SUBREACHES  
 AMSKK 0.70 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R2T01

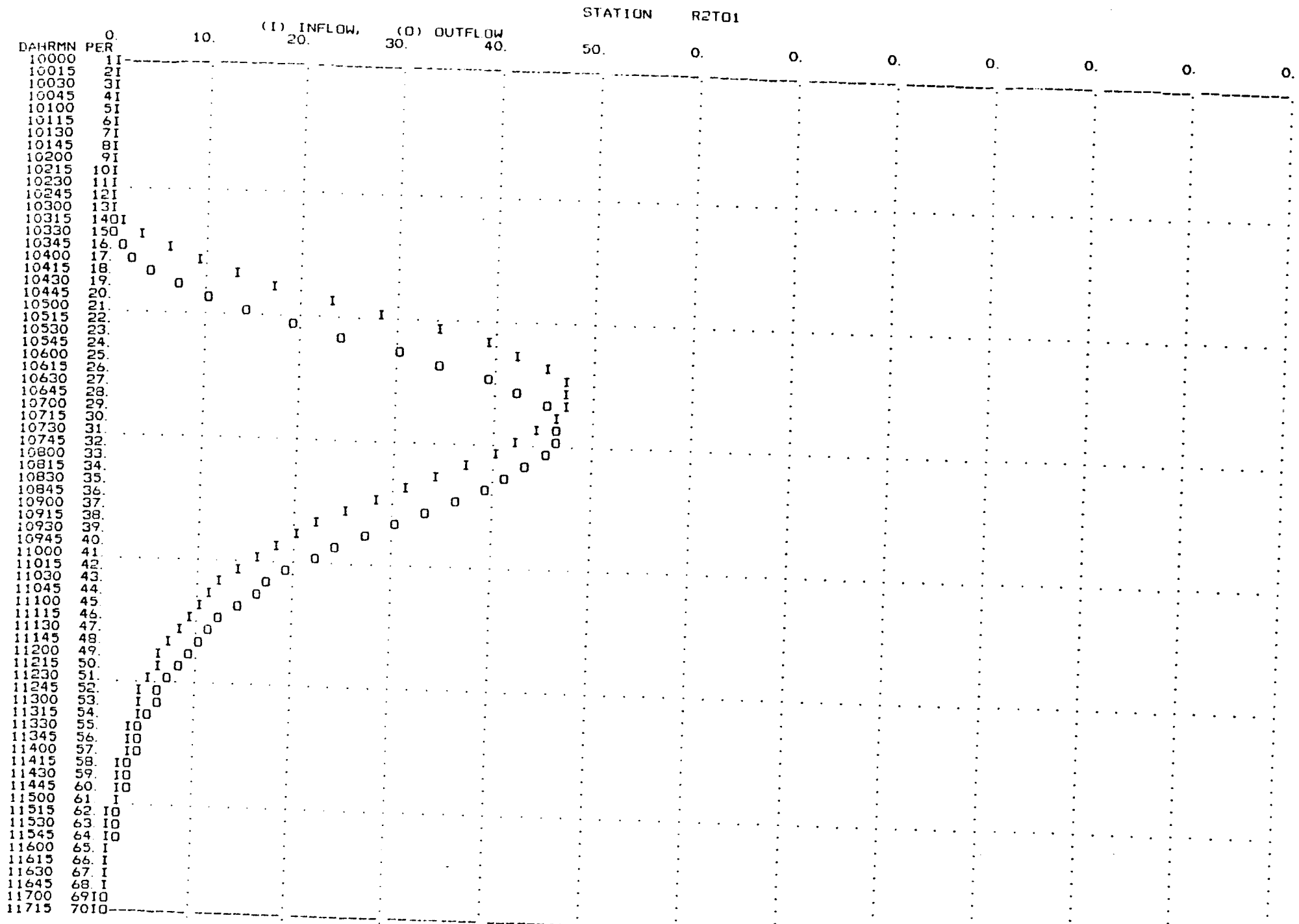
\*\*\*\*\*

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	7.	*	1	JUN	0900	37	33.	*	1	JUN	1330	55	4.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	10.	*	1	JUN	0915	38	30.	*	1	JUN	1345	56	4.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	14.	*	1	JUN	0930	39	27.	*	1	JUN	1400	57	4.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	19.	*	1	JUN	0945	40	24.	*	1	JUN	1415	58	3.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	24.	*	1	JUN	1000	41	22.	*	1	JUN	1430	59	3.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	30.	*	1	JUN	1015	42	19.	*	1	JUN	1445	60	3.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	34.	*	1	JUN	1030	43	17.	*	1	JUN	1500	61	2.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	39.	*	1	JUN	1045	44	16.	*	1	JUN	1515	62	2.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	42.	*	1	JUN	1100	45	14.	*	1	JUN	1530	63	2.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	45.	*	1	JUN	1115	46	12.	*	1	JUN	1545	64	2.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	46.	*	1	JUN	1130	47	11.	*	1	JUN	1600	65	1.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	46.	*	1	JUN	1145	48	10.	*	1	JUN	1615	66	1.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	46.	*	1	JUN	1200	49	9.	*	1	JUN	1630	67	1.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	45.	*	1	JUN	1215	50	8.	*	1	JUN	1645	68	1.	*	
1	JUN	0330	15	0.	*	1	JUN	0800	33	43.	*	1	JUN	1230	51	7.	*	1	JUN	1700	69	1.	*	
1	JUN	0345	16	1.	*	1	JUN	0815	34	41.	*	1	JUN	1245	52	6.	*	1	JUN	1715	70	1.	*	
1	JUN	0400	17	2.	*	1	JUN	0830	35	39.	*	1	JUN	1300	53	6.	*							
1	JUN	0415	18	4.	*	1	JUN	0845	36	36.	*	1	JUN	1315	54	5.	*							

\*\*\*\*\*

PEAK FLOW (CU M/S)	TIME (HR)	6-HR 32.	24-HR 13.	72-HR 13.	17.25-HR 13.
46.	7.25	16.199	19.256	19.256	19.256
	(CU M/S)	699.	831.	831.	831.
	(MM)				
	(1000 CU M)				

CUMULATIVE AREA = 43.18 SQ KM





\*\*\*\*\*

18 KK \*\*\*\*\*  
 \* T-1 \*  
 \* \*\*\*\*\*

BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

20 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.55 SUBBASIN AREA

PRECIPITATION DATA

21 PH DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 9.30 15.30 28.90 40.80 47.30 64.90 0.00 0.00 0.00 0.00 0.00 0.00  
 STORM AREA = 19.55

22 LS SCS LOSS RATE  
 STRTL 17.80 INITIAL ABSTRACTION  
 CRVNER 74.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

23 UC CLARK UNITGRAPH  
 TC 2.50 TIME OF CONCENTRATION  
 R 2.40 STORAGE COEFFICIENT

24 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES  
 0.0 1.2 3.2 5.8 9.2 12.3 14.9 16.0 17.1 18.0  
 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.50 HR, R= 2.40 HR  
 SNYDER TP= 1.75 HR, CP= 0.42

UNIT HYDROGRAPH  
 56 END-OF-PERIOD ORDINATES

0	0	0	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	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	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

HYDROGRAPH AT STATION T-1

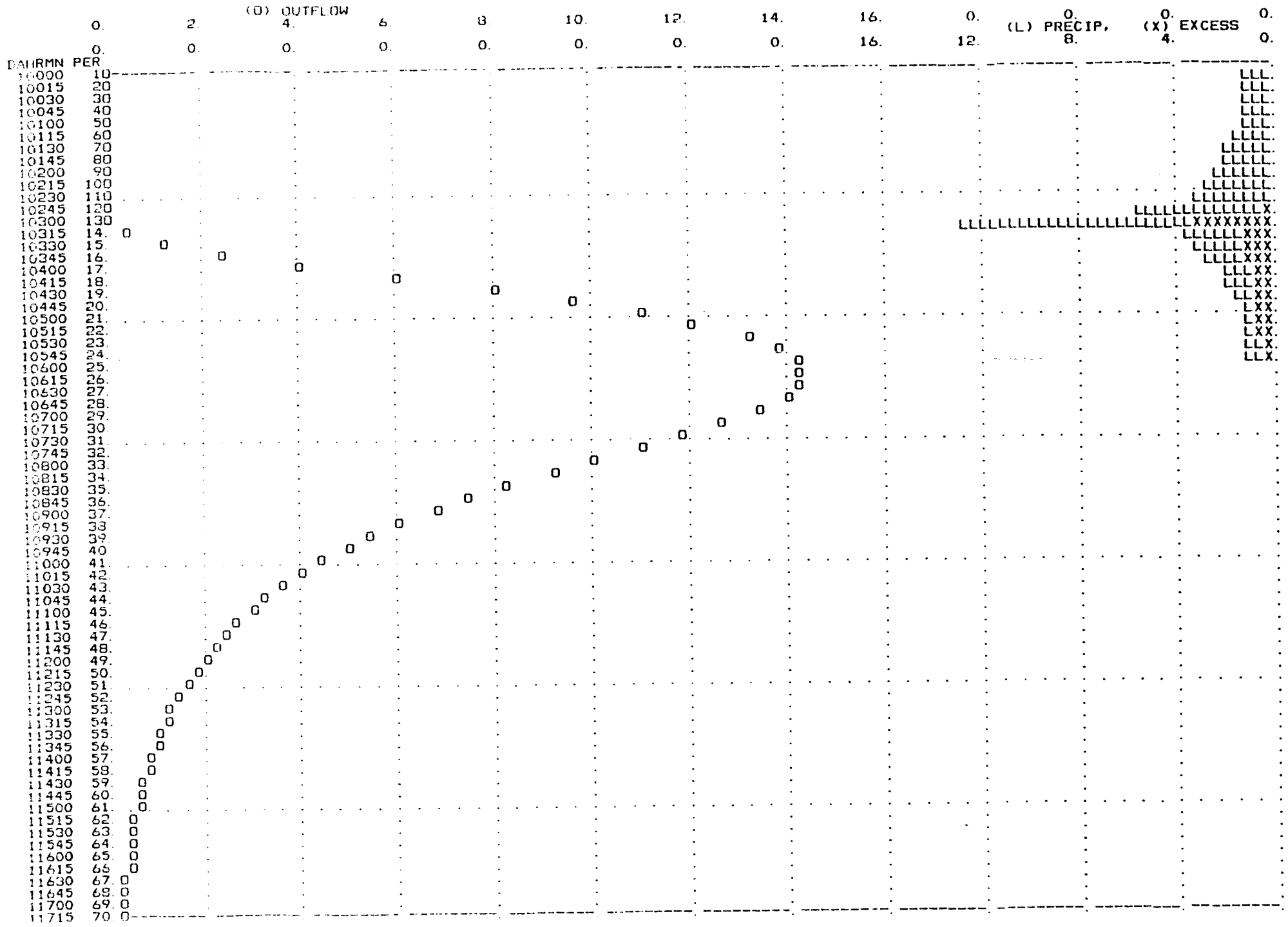
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	7.
1	JUN	0015	2	1.05	1.05	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	7.
1	JUN	0030	3	1.10	1.10	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	6.
1	JUN	0045	4	1.17	1.17	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	5.
1	JUN	0100	5	1.24	1.24	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	5.
1	JUN	0115	6	1.33	1.33	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	4.
1	JUN	0130	7	1.45	1.45	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	4.
1	JUN	0145	8	1.83	1.83	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	4.
1	JUN	0200	9	2.07	2.07	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	3.
1	JUN	0215	10	2.51	2.51	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	3.
1	JUN	0230	11	2.90	2.90	0.00	0.	*	1	JUN	1115	46	0.00	0.00	0.00	3.
1	JUN	0245	12	3.06	3.02	0.04	0.	*	1	JUN	1130	47	0.00	0.00	0.00	2.
1	JUN	0300	13	5.62	5.07	0.55	0.	*	1	JUN	1145	48	0.00	0.00	0.00	2.
1	JUN	0315	14	9.60	9.57	3.23	0.	*	1	JUN	1200	49	0.00	0.00	0.00	2.
1	JUN	0330	15	3.70	2.37	1.33	1.	*	1	JUN	1215	50	0.00	0.00	0.00	2.
1	JUN	0345	16	3.19	1.92	1.27	2.	*	1	JUN	1230	51	0.00	0.00	0.00	2.
1	JUN	0400	17	2.69	1.54	1.15	4.	*	1	JUN	1245	52	0.00	0.00	0.00	1.
1	JUN	0415	18	2.19	1.20	0.99	6.	*	1	JUN	1300	53	0.00	0.00	0.00	1.
1	JUN	0430	19	1.97	1.05	0.92	8.	*	1	JUN	1315	54	0.00	0.00	0.00	1.
1	JUN	0445	20	1.51	0.78	0.73	10.	*	1	JUN	1330	55	0.00	0.00	0.00	1.
1	JUN	0500	21	1.37	0.70	0.69	11.	*	1	JUN	1345	56	0.00	0.00	0.00	1.
1	JUN	0515	22	1.37	0.63	0.65	12.	*	1	JUN	1400	57	0.00	0.00	0.00	1.
1	JUN	0530	23	1.20	0.58	0.62	13.	*	1	JUN	1415	58	0.00	0.00	0.00	1.
1	JUN	0545	24	1.13	0.54	0.59	14.	*	1	JUN	1430	59	0.00	0.00	0.00	1.
1	JUN	0600	25	1.07	0.50	0.57	14.	*	1	JUN	1445	60	0.00	0.00	0.00	1.
1	JUN	0615	26	0.00	0.00	0.00	14.	*	1	JUN	1500	61	0.00	0.00	0.00	1.
1	JUN	0630	27	0.00	0.00	0.00	14.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	14.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	13.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	13.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	12.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	11.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	10.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	9.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	8.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 59.61, TOTAL LOSS = 46.27, TOTAL EXCESS = 13.34

PEAK FLOW (CU M/S)	TIME (HR)	6-HR 10	MAXIMUM AVERAGE FLOW 24-HR 4	72-HR 4	17.25-HR 4
14.	6.25	(CU M/S)	13.243	13.243	13.243
		(MM)	259.	259.	259.
		(1000 CU M)			

CUMULATIVE AREA = 19.55 SQ KM

STATION T-1



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25 KK

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*           *
*   T-SUMA   *
*           *
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2

29 HC

HYDROGRAPH COMBINATION  
ICOMP

2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION T-SUMA  
SUM OF 2 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	15.	*	1	JUN	0900	37	40.	*	1	JUN	1330	55	5.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	20.	*	1	JUN	0915	38	36.	*	1	JUN	1345	56	5.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	25.	*	1	JUN	0930	39	33.	*	1	JUN	1400	57	4.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	31.	*	1	JUN	0945	40	29.	*	1	JUN	1415	58	4.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	37.	*	1	JUN	1000	41	26.	*	1	JUN	1430	59	3.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	43.	*	1	JUN	1015	42	23.	*	1	JUN	1445	60	3.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	49.	*	1	JUN	1030	43	21.	*	1	JUN	1500	61	3.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	53.	*	1	JUN	1045	44	19.	*	1	JUN	1515	62	3.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	56.	*	1	JUN	1100	45	17.	*	1	JUN	1530	63	2.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	58.	*	1	JUN	1115	46	15.	*	1	JUN	1545	64	2.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	59.	*	1	JUN	1130	47	13.	*	1	JUN	1600	65	2.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	59.	*	1	JUN	1145	48	12.	*	1	JUN	1615	66	2.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	58.	*	1	JUN	1200	49	11.	*	1	JUN	1630	67	1.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	56.	*	1	JUN	1215	50	10.	*	1	JUN	1645	68	1.	*	
1	JUN	0330	15	1.	*	1	JUN	0800	33	53.	*	1	JUN	1230	51	9.	*	1	JUN	1700	69	1.	*	
1	JUN	0345	16	3.	*	1	JUN	0815	34	50.	*	1	JUN	1245	52	8.	*	1	JUN	1715	70	1.	*	
1	JUN	0400	17	6.	*	1	JUN	0830	35	47.	*	1	JUN	1300	53	7.	*							
1	JUN	0415	18	10.	*	1	JUN	0845	36	43.	*	1	JUN	1315	54	6.	*							

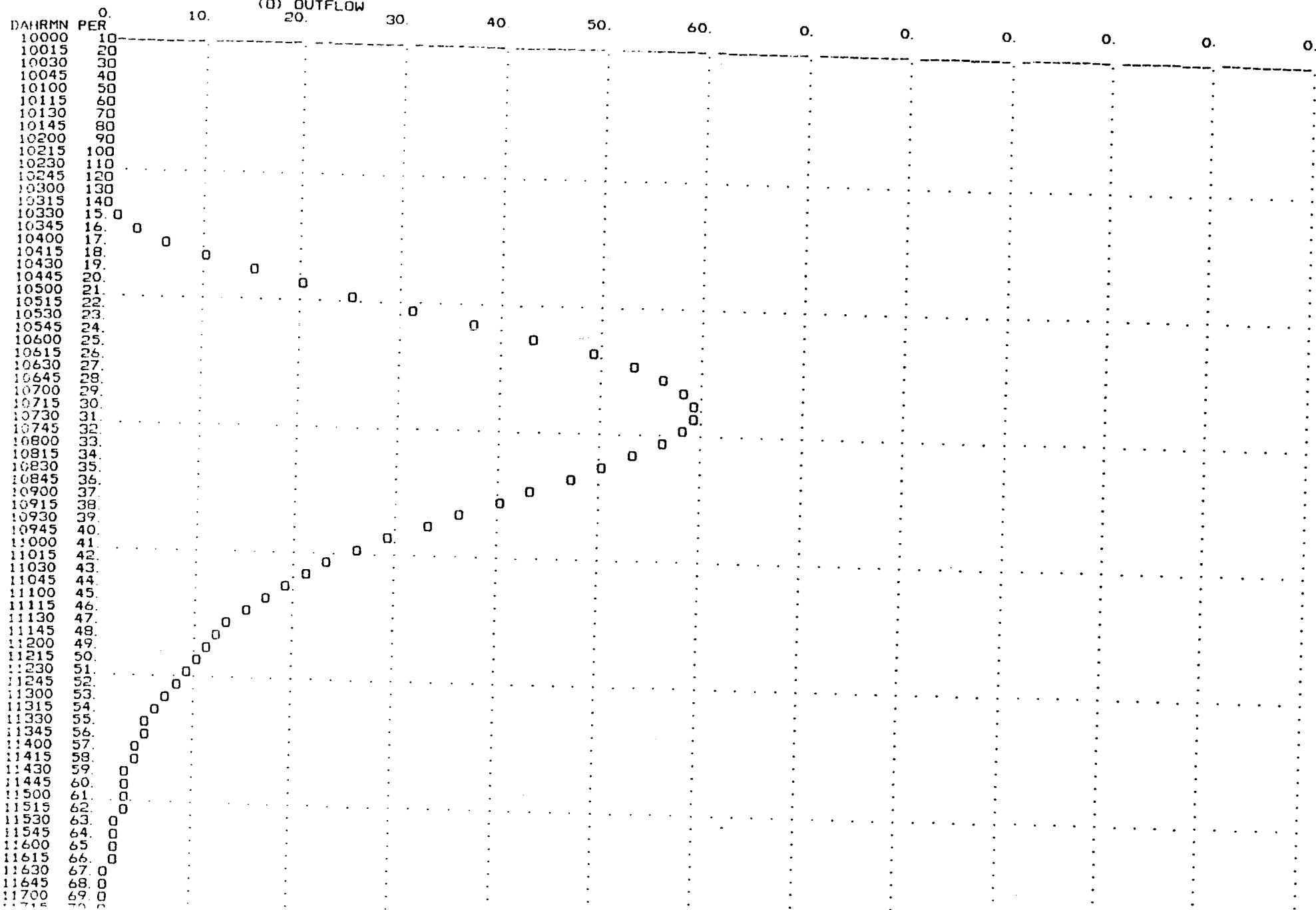
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PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW	17.25-HR
59.	7.00	62.73 SQ KM	
(CU M/S)		42.	18.
(MM)		14.442	17.382
(1000 CU M)		906.	1090.

CUMULATIVE AREA = 62.73 SQ KM

STATION T-SUMA

(O) OUTFLOW



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29 KK

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\* L-1 \*  
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BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

31 BA

SUBBASIN CHARACTERISTICS  
TAREA 1.53 SUBBASIN AREA

PRECIPITATION DATA

32 PH

HYDRO-35			DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM								
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
9.20	15.10	28.50	40.30	48.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STORM AREA = 1.53

33 LS

SCS LOSS RATE

STRTL	17.80	INITIAL ABSTRACTION
CRVNR	74.00	CURVE NUMBER
RTIMP	0.00	PERCENT IMPERVIOUS AREA

34 UC

CLARK UNITGRAPH

TC	0.50	TIME OF CONCENTRATION
R	0.30	STORAGE COEFFICIENT

35 UA

ACCUMULATED-AREA VS. TIME, 3 ORDINATES

0.0	0.7	1.5
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UNIT HYDROGRAPH PARAMETERS

CLARK	TC= 0.50 HR,	R= 0.30 HR
SNYDER	TP= 0.43 HR,	CP= 0.66

UNIT HYDROGRAPH  
8 END-OF-PERIOD ORDINATES

0. 1. 1. 0. 0. 0. 0.

HYDROGRAPH AT STATION L-1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	1.86	1.86	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	2.06	2.06	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	2.50	2.50	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	2.91	2.91	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	2.95	2.95	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	6.23	6.23	0.01	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	14.34	12.17	2.17	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	3.62	2.56	1.06	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	2.22	2.14	1.08	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	2.68	1.69	0.99	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	2.19	1.32	0.87	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	1.95	1.14	0.82	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	0.00	0.00	0.00	1.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	0.00	0.00	0.00	1.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	0.00	0.00	0.00	0.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	0.00	0.00	0.00	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 46.52, TOTAL LOSS = 39.53, TOTAL EXCESS = 6.99

PEAK FLOW (CU M/S)	TIME (HR)	(CU M/S)	6-HR	MAXIMUM AVERAGE FLOW	24-HR	72-HR	17.25-HR
2.	2.25	0.	0.	0.	0.	0.	0.
		(MM)	6.974	6.974	6.974	6.974	6.974
		(1000 CU M)	11.	11.	11.	11.	11.

CUMULATIVE AREA = 1.53 SQ KM

STATION L-1

DAHRMN PER	(O) OUTFLOW										(L) PRECIP, 8.	(X) EXCESS 4.	0.0	
	0.0	0.4	0.8	1.2	1.6	2.0	0.0	0.0	0.0	0.0				
10000	10										16.	12.		
10015	20													
10030	30													
10045	40													LLLLL.
10100	50													LLLLL.
10115	60													LLLLL.
10130	70													LLLLL.
10145	8.		0											LLLLL.
10200	9.													LLLLL.
10215	10.					0								LLLLL.
10230	11.						0							LLLLL.
10245	12.							0						LLLLL.
10300	13.								0					LLLLL.
10315	14.													LLLLL.
10330	15.					0								LLLLL.
10345	16.						0							LLLLL.
10400	17.		0											LLLLL.
10415	18.	0												LLLLL.
10430	190													LLLLL.
10445	200													LLLLL.
10500	210													LLLLL.
10515	220													LLLLL.
10530	230													LLLLL.
10545	240													LLLLL.
10600	250													LLLLL.
10615	260													LLLLL.
10630	270													LLLLL.
10645	280													LLLLL.
10700	290													LLLLL.
10715	300													LLLLL.
10730	310													LLLLL.
10745	320													LLLLL.
10800	330													LLLLL.
10815	340													LLLLL.
10830	350													LLLLL.
10845	360													LLLLL.
10900	370													LLLLL.
10915	380													LLLLL.
10930	390													LLLLL.
10945	400													LLLLL.
11000	410													LLLLL.
11015	420													LLLLL.
11030	430													LLLLL.
11045	440													LLLLL.
11100	450													LLLLL.
11115	460													LLLLL.
11130	470													LLLLL.
11145	480													LLLLL.
11200	490													LLLLL.
11215	500													LLLLL.
11230	510													LLLLL.
11245	520													LLLLL.
11300	530													LLLLL.
11315	540													LLLLL.
11330	550													LLLLL.
11345	560													LLLLL.
11400	570													LLLLL.
11415	580													LLLLL.
11430	590													LLLLL.
11445	600													LLLLL.
11500	610													LLLLL.
11515	620													LLLLL.
11530	630													LLLLL.
11545	640													LLLLL.
11600	650													LLLLL.
11615	660													LLLLL.
11630	670													LLLLL.
11645	680													LLLLL.
11700	690													LLLLL.
11715	700													LLLLL.



\*\*\* \*\*

36 KK

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\* B-2 \*  
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BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

38 BA

SUBBASIN CHARACTERISTICS  
TAREA 7.28 SUBBASIN AREA

PRECIPITATION DATA

39 PH

HYDRO-35			DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM							TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY		
10.10	16.50	31.10	43.90	53.10	69.90	0.00	0.00	0.00	0.00	0.00	0.00		

STORM AREA = 7.28

40 LS

SCS LOSS RATE			
SRTL	17.80	INITIAL ABSTRACTION	
CRVNGR	74.00	CURVE NUMBER	
RTIMP	0.00	PERCENT IMPERVIOUS AREA	

41 UC

CLARK UNITGRAPH		
TC	1.00	TIME OF CONCENTRATION
R	1.00	STORAGE COEFFICIENT

42 UA

ACCUMULATED-AREA VS. TIME, 5 ORDINATES					
0.0	2.0	4.1	6.0	7.3	

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UNIT HYDROGRAPH PARAMETERS		
CLARK	TC= 1.00 HR,	R= 1.00 HR
SNYDER	TP= 0.89 HR,	CP= 0.54

UNIT HYDROGRAPH 24 END-OF-PERIOD ORDINATES

0.	1.	1.	1.	1.	1.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

HYDROGRAPH AT STATION B-2

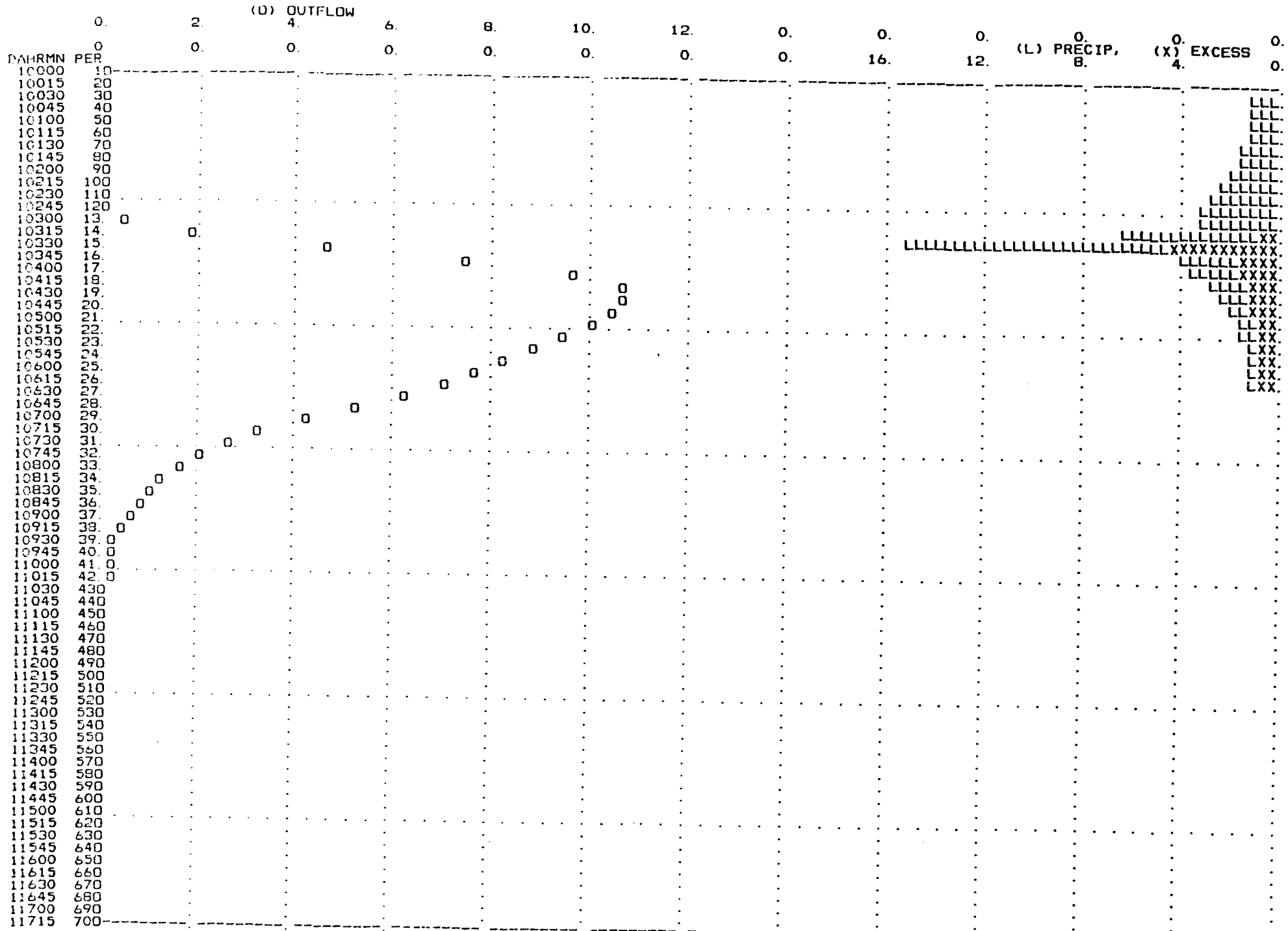
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	1.
1	JUN	0015	2	1.12	1.12	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	1.
1	JUN	0030	3	1.19	1.19	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	1.26	1.26	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	1.34	1.34	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	1.44	1.44	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	1.56	1.56	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	2.04	2.04	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	2.25	2.25	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	2.70	2.70	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	3.15	3.15	0.00	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	3.24	3.11	0.13	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	6.53	5.65	0.88	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	15.05	10.57	4.49	2.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	3.96	2.33	1.63	5.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	3.48	1.92	1.55	7.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	2.90	1.52	1.38	10.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	2.39	1.20	1.19	11.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	2.14	1.04	1.10	11.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	1.64	0.77	0.87	10.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	1.50	0.69	0.81	10.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	1.39	0.63	0.76	9.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	1.30	0.57	0.72	9.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	1.22	0.53	0.69	8.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	1.15	0.49	0.66	8.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	7.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	6.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	5.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	4.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	3.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	3.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	2.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	2.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	1.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	1.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 65.92, TOTAL LOSS = 49.06, TOTAL EXCESS = 16.86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CU M/S)	(HR)	6-HR	24-HR	72-HR
11.	4.50	6.	2.	17.25
	(CU M/S)	16.562	2.	2.
	(MM)	121.	16.792	16.792
	(1000 CU M)	121.	122.	122.

CUMULATIVE AREA = 7.28 SQ KM

STATION B-2



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43 KK \*\*\*\*\*  
\* B-3 \*  
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BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

45 BA SUBBASIN CHARACTERISTICS  
TAREA 2.08 SUBBASIN AREA

PRECIPITATION DATA

46 PH DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
10.10 16.40 31.10 43.90 53.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.08

47 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

48 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.40 STORAGE COEFFICIENT

49 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.9 2.1

\*\*\*

UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.40 HR  
SNYDER TP= 0.45 HR, CP= 0.58

UNIT HYDROGRAPH  
10 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-3

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.	*
1	JUN	0015	2	2.02	2.02	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.	*
1	JUN	0030	3	2.23	2.23	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.	*
1	JUN	0045	4	2.71	2.71	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.	*
1	JUN	0100	5	3.16	3.16	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.	*
1	JUN	0115	6	3.24	3.24	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.	*
1	JUN	0130	7	6.81	6.75	0.06	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.	*
1	JUN	0145	8	15.51	12.59	2.92	1.	*	1	JUN	1030	43	0.00	0.00	0.00	0.	*
1	JUN	0200	9	3.97	2.66	1.31	3.	*	1	JUN	1045	44	0.00	0.00	0.00	0.	*
1	JUN	0215	10	3.50	2.19	1.31	3.	*	1	JUN	1100	45	0.00	0.00	0.00	0.	*
1	JUN	0230	11	2.91	1.72	1.19	3.	*	1	JUN	1115	46	0.00	0.00	0.00	0.	*
1	JUN	0245	12	2.37	1.34	1.03	3.	*	1	JUN	1130	47	0.00	0.00	0.00	0.	*
1	JUN	0300	13	2.12	1.15	0.96	3.	*	1	JUN	1145	48	0.00	0.00	0.00	0.	*
1	JUN	0315	14	0.00	0.00	0.00	2.	*	1	JUN	1200	49	0.00	0.00	0.00	0.	*
1	JUN	0330	15	0.00	0.00	0.00	1.	*	1	JUN	1215	50	0.00	0.00	0.00	0.	*
1	JUN	0345	16	0.00	0.00	0.00	1.	*	1	JUN	1230	51	0.00	0.00	0.00	0.	*
1	JUN	0400	17	0.00	0.00	0.00	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.	*
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.	*
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.	*
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.	*
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.	*
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.	*
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.	*
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.	*
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.	*
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.	*
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.	*
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.	*
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.	*
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.	*
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.	*
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.	*
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.	*
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.	*
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.	*

TOTAL RAINFALL = 50.54, TOTAL LOSS = 41.75, TOTAL EXCESS = 8.79

PEAK FLOW (CU M/S)	TIME (HR)	6-HR	24-HR	72-HR	17.25-HR
3.	2.25	1.	0.	0.	0.
	(CU M/S)	8.756	8.756	8.756	8.756
	(MM)	18.	18.	18.	18.
	(1000 CU M)				

CUMULATIVE AREA = 2.08 SQ KM

STATION B-3

DAHRMN PER	(O) OUTFLOW										0.0 (L) PRECIP.		0.0 (X) EXCESS	
	0.0	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	0.0	0.0	0.0	0.0	
10000	10								16.	12.				
10015	20												LLLLL.	
10030	30												LLLLLL.	
10045	40												LLLLLLL.	
10100	50												LLLLLLL.	
10115	60												LLLLLLL.	
10130	70												LLLLLLL.	
10145	8.												LLLLLLL.	
10200	9.		0.										LLLLLLL.	
10215	10.						0.						LLLLLLL.	
10230	11.												LLLLLLL.	
10245	12.								0.				LLLLLLL.	
10300	13.								0.				LLLLLLL.	
10315	14.								0.				LLLLLLL.	
10330	15.					0.		0.	0.				LLLLLLL.	
10345	16.		0.		0.								LLLLLLL.	
10400	17.												LLLLLLL.	
10415	18.	0	0										LLLLLLL.	
10430	19.	0	0										LLLLLLL.	
10445	20.	0											LLLLLLL.	
10500	21.	0											LLLLLLL.	
10515	220												LLLLLLL.	
10530	230												LLLLLLL.	
10545	240												LLLLLLL.	
10600	250												LLLLLLL.	
10615	260												LLLLLLL.	
10630	270												LLLLLLL.	
10645	280												LLLLLLL.	
10700	290												LLLLLLL.	
10715	300												LLLLLLL.	
10730	310												LLLLLLL.	
10745	320												LLLLLLL.	
10800	330												LLLLLLL.	
10815	340												LLLLLLL.	
10830	350												LLLLLLL.	
10845	360												LLLLLLL.	
10900	370												LLLLLLL.	
10915	380												LLLLLLL.	
10930	390												LLLLLLL.	
10945	400												LLLLLLL.	
11000	410												LLLLLLL.	
11015	420												LLLLLLL.	
11030	430												LLLLLLL.	
11045	440												LLLLLLL.	
11100	450												LLLLLLL.	
11115	460												LLLLLLL.	
11130	470												LLLLLLL.	
11145	480												LLLLLLL.	
11200	490												LLLLLLL.	
11215	500												LLLLLLL.	
11230	510												LLLLLLL.	
11245	520												LLLLLLL.	
11300	530												LLLLLLL.	
11315	540												LLLLLLL.	
11330	550												LLLLLLL.	
11345	560												LLLLLLL.	
11400	570												LLLLLLL.	
11415	580												LLLLLLL.	
11430	590												LLLLLLL.	
11445	600												LLLLLLL.	
11500	610												LLLLLLL.	
11515	620												LLLLLLL.	
11530	630												LLLLLLL.	
11545	640												LLLLLLL.	
11600	650												LLLLLLL.	
11615	660												LLLLLLL.	
11630	670												LLLLLLL.	
11645	680												LLLLLLL.	
11700	690												LLLLLLL.	
11715	700												LLLLLLL.	

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50 KK  
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 \* B2+B3 \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3

52 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B2+B3  
 SUM OF 2 HYDROGRAPHS

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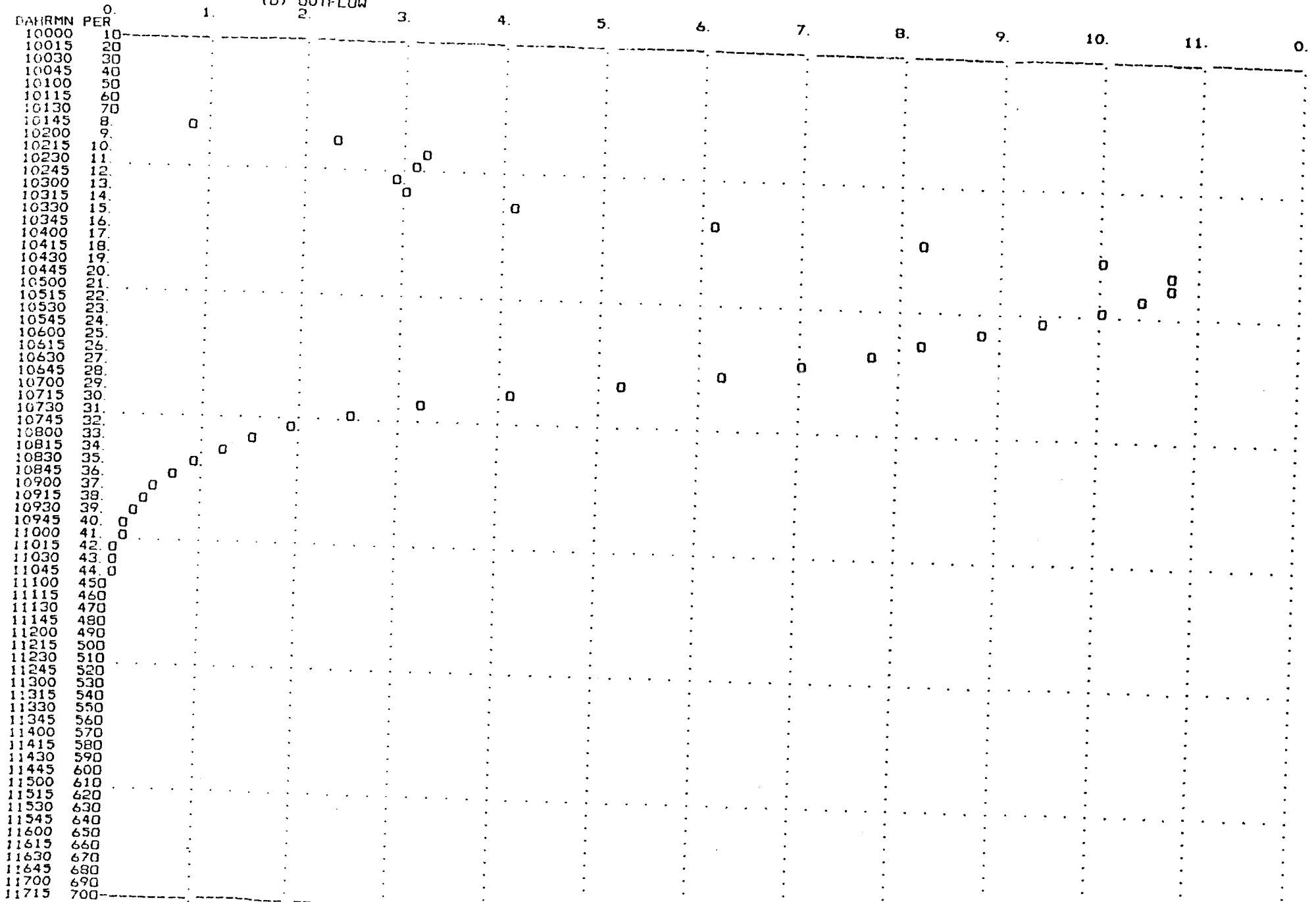
DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	11.	*	1	JUN	0900	37	1.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	10.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	10.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	9.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	9.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	8.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	8.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	1.	*	1	JUN	0615	26	7.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	2.	*	1	JUN	0630	27	6.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	3.	*	1	JUN	0645	28	5.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	3.	*	1	JUN	0700	29	4.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	3.	*	1	JUN	0715	30	3.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	3.	*	1	JUN	0730	31	3.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	4.	*	1	JUN	0745	32	2.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	6.	*	1	JUN	0800	33	2.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	8.	*	1	JUN	0815	34	1.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	10.	*	1	JUN	0830	35	1.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	11.	*	1	JUN	0845	36	1.	*	1	JUN	1315	54	0.	*							

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PEAK FLOW (CU M/S)	TIME (HR)		6-HR	MAXIMUM AVERAGE FLOW		17.25-HR
11.	4.25	(CU M/S)	6.	24-HR	72-HR	2.
		(MM)	14.289	15.006	15.006	15.006
		(1000 CU M)	134.	140.	140.	140.
CUMULATIVE AREA =			9.36 SQ KM			

STATION B2+03

(D) OUTFLOW





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53 KK

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*           *
*   R23T01   *
*           *
*****
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1

HYDROGRAPH ROUTING DATA

55 RM

MUSKINGUM ROUTING

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NSTPS      1 NUMBER OF SUBREACHES
AMSKK      0.20 MUSKINGUM K
X          0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R23T01

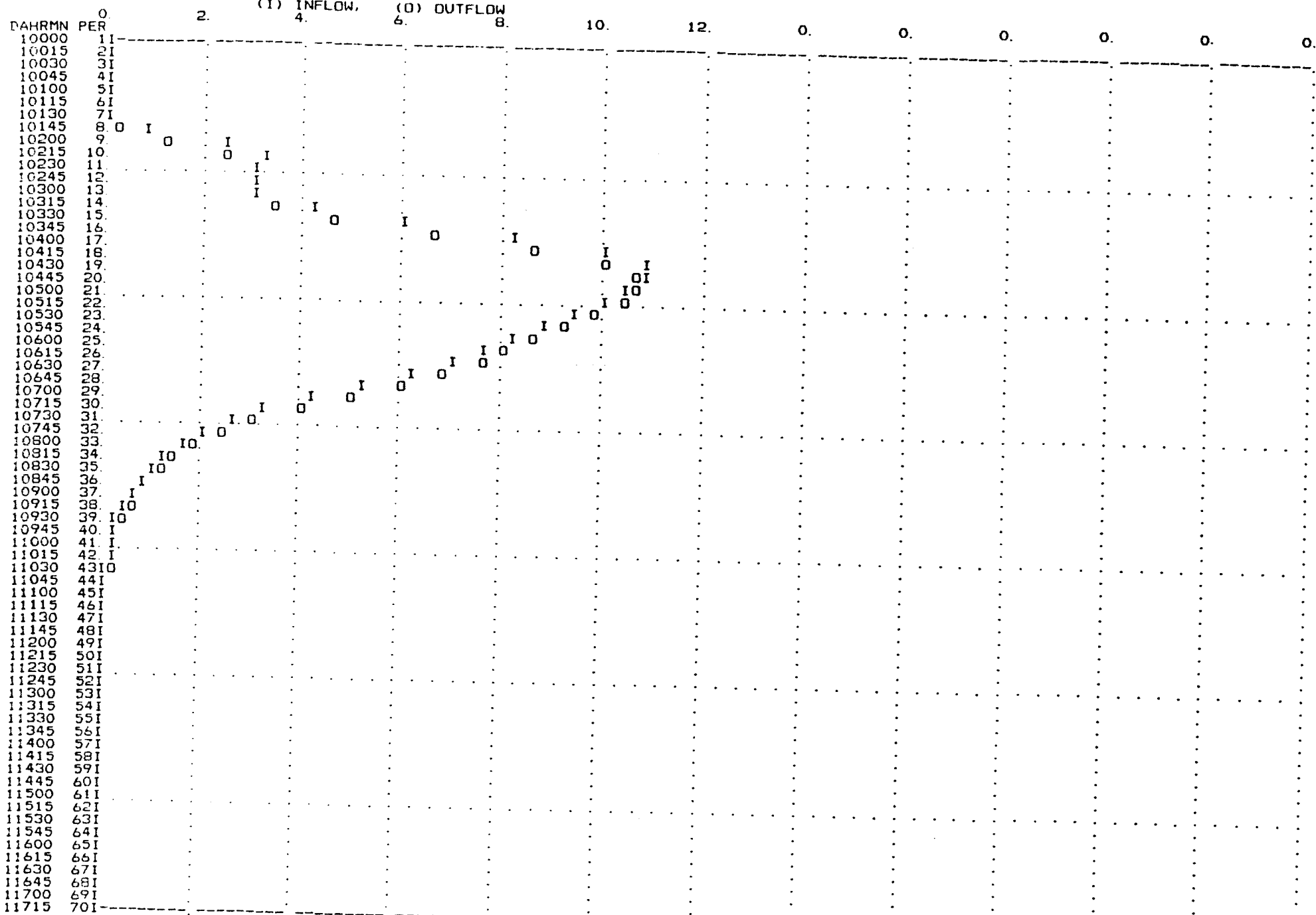
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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	11.	*	1	JUN	0900	37	1.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	11.	*	1	JUN	0915	38	1.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	10.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	10.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	9.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	9.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	8.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	8.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	1.	*	1	JUN	0630	27	7.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	2.	*	1	JUN	0645	28	6.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	3.	*	1	JUN	0700	29	5.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	3.	*	1	JUN	0715	30	4.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	3.	*	1	JUN	0730	31	3.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	3.	*	1	JUN	0745	32	2.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	5.	*	1	JUN	0800	33	2.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	7.	*	1	JUN	0815	34	1.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	9.	*	1	JUN	0830	35	1.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	10.	*	1	JUN	0845	36	1.	*	1	JUN	1315	54	0.	*							

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PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW	17. 25-HR
11.	4.50	6-HR 5.	2.
	(CU M/S)	24-HR 14.263	15.006
	(MM)	72-HR 15.006	15.006
	(1000 CU M)	140.	140.
CUMULATIVE AREA =		9.36 SQ KM	

STATION R23T01



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56 KK \*\*\*\*\*  
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\* B-4 \*  
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BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

58 BA SUBBASIN CHARACTERISTICS  
TAREA 10.73 SUBBASIN AREA

PRECIPITATION DATA

59 PH DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
12.70 20.70 39.10 55.30 66.80 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 10.73

60 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

61 UC CLARK UNITGRAPH  
TC 1.50 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

62 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
0.0 0.9 1.8 3.4 6.1 9.0 10.7

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.50 HR, R= 1.00 HR  
SNYDER TP= 1.42 HR, CP= 0.80

UNIT HYDROGRAPH  
25 END-OF-PERIOD ORDINATES  
0. 0. 1. 1. 1. 2. 2. 1. 1. 1.  
1. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-4

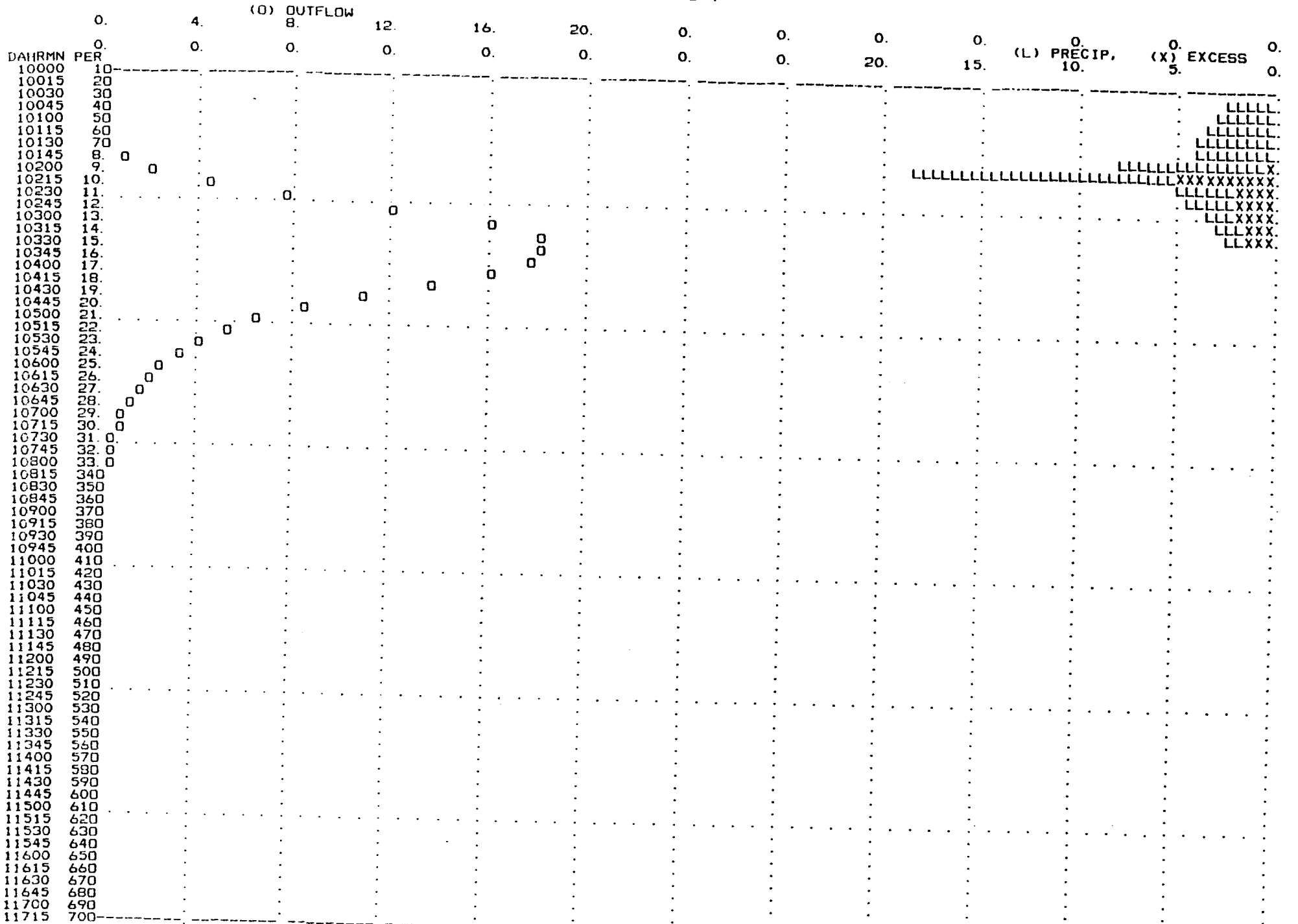
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.	*
1	JUN	0015	2	2.55	2.55	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.	*
1	JUN	0030	3	2.81	2.81	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.	*
1	JUN	0045	4	3.42	3.42	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.	*
1	JUN	0100	5	3.97	3.97	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.	*
1	JUN	0115	6	4.10	4.10	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.	*
1	JUN	0130	7	8.04	7.52	0.52	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.	*
1	JUN	0145	8	18.45	13.29	5.16	1.	*	1	JUN	1030	43	0.00	0.00	0.00	0.	*
1	JUN	0200	9	4.99	2.89	2.10	2.	*	1	JUN	1045	44	0.00	0.00	0.00	0.	*
1	JUN	0215	10	4.38	2.34	2.03	4.	*	1	JUN	1100	45	0.00	0.00	0.00	0.	*
1	JUN	0230	11	3.67	1.84	1.83	8.	*	1	JUN	1115	46	0.00	0.00	0.00	0.	*
1	JUN	0245	12	2.98	1.42	1.56	12.	*	1	JUN	1130	47	0.00	0.00	0.00	0.	*
1	JUN	0300	13	2.67	1.22	1.45	16.	*	1	JUN	1145	48	0.00	0.00	0.00	0.	*
1	JUN	0315	14	0.00	0.00	0.00	18.	*	1	JUN	1200	49	0.00	0.00	0.00	0.	*
1	JUN	0330	15	0.00	0.00	0.00	18.	*	1	JUN	1215	50	0.00	0.00	0.00	0.	*
1	JUN	0345	16	0.00	0.00	0.00	17.	*	1	JUN	1230	51	0.00	0.00	0.00	0.	*
1	JUN	0400	17	0.00	0.00	0.00	16.	*	1	JUN	1245	52	0.00	0.00	0.00	0.	*
1	JUN	0415	18	0.00	0.00	0.00	13.	*	1	JUN	1300	53	0.00	0.00	0.00	0.	*
1	JUN	0430	19	0.00	0.00	0.00	11.	*	1	JUN	1315	54	0.00	0.00	0.00	0.	*
1	JUN	0445	20	0.00	0.00	0.00	8.	*	1	JUN	1330	55	0.00	0.00	0.00	0.	*
1	JUN	0500	21	0.00	0.00	0.00	7.	*	1	JUN	1345	56	0.00	0.00	0.00	0.	*
1	JUN	0515	22	0.00	0.00	0.00	5.	*	1	JUN	1400	57	0.00	0.00	0.00	0.	*
1	JUN	0530	23	0.00	0.00	0.00	4.	*	1	JUN	1415	58	0.00	0.00	0.00	0.	*
1	JUN	0545	24	0.00	0.00	0.00	3.	*	1	JUN	1430	59	0.00	0.00	0.00	0.	*
1	JUN	0600	25	0.00	0.00	0.00	2.	*	1	JUN	1445	60	0.00	0.00	0.00	0.	*
1	JUN	0615	26	0.00	0.00	0.00	2.	*	1	JUN	1500	61	0.00	0.00	0.00	0.	*
1	JUN	0630	27	0.00	0.00	0.00	1.	*	1	JUN	1515	62	0.00	0.00	0.00	0.	*
1	JUN	0645	28	0.00	0.00	0.00	1.	*	1	JUN	1530	63	0.00	0.00	0.00	0.	*
1	JUN	0700	29	0.00	0.00	0.00	1.	*	1	JUN	1545	64	0.00	0.00	0.00	0.	*
1	JUN	0715	30	0.00	0.00	0.00	1.	*	1	JUN	1600	65	0.00	0.00	0.00	0.	*
1	JUN	0730	31	0.00	0.00	0.00	1.	*	1	JUN	1615	66	0.00	0.00	0.00	0.	*
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.	*
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.	*
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.	*
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.	*

TOTAL RAINFALL = 62.03, TOTAL LOSS = 47.37, TOTAL EXCESS = 14.66

PEAK FLOW (CU M/S)	TIME (HR)	6-HR 7.	24-HR 3.	72-HR 3.	17.25-HR 3.
18.	3.50	(CU M/S)	14.482	14.586	14.586
		(MM)	155.	157.	157.
		(1000 CU M)			

CUMULATIVE AREA = 10.73 SQ KM

STATION B-4



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63 KK \*\*\*\*\*  
 \* R4T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

65 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.30 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R4T01

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	14.	*	1	JUN	0900	37	0.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	11.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	9.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	7.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	5.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	4.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	3.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	3.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	1.	*	1	JUN	0630	27	2.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	2.	*	1	JUN	0645	28	2.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	4.	*	1	JUN	0700	29	1.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	7.	*	1	JUN	0715	30	1.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	11.	*	1	JUN	0730	31	1.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	15.	*	1	JUN	0745	32	1.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	17.	*	1	JUN	0800	33	0.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	18.	*	1	JUN	0815	34	0.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	17.	*	1	JUN	0830	35	0.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	16.	*	1	JUN	0845	36	0.	*	1	JUN	1315	54	0.	*							

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PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW	17.25-HR
18.	3.75	6-HR 7. 14.461	3. 3. 14.586
		(CU M/S) (MM) (1000 CU M)	3. 3. 157.
		155.	157.

CUMULATIVE AREA = 10.73 SQ KM

STATION R4T01

(I) INFLOW, (O) OUTFLOW

DAHRMN PER	0.	4.	8.	12.	16.	20.	0.	0.	0.	0.	0.	0.
10000	1I											
10015	2I											
10030	3I											
10045	4I											
10100	5I											
10115	6I											
10130	7I											
10145	8O	I										
10200	9.	O	I									
10215	10.		O	I								
10230	11.			O	I							
10245	12.				O	I						
10300	13.					O	I					
10315	14.						O	I				
10330	15.							O	I			
10345	16.								O	I		
10400	17.									O	I	
10415	18.										O	I
10430	19.											O
10445	20.											
10500	21.											
10515	22.											
10530	23.											
10545	24.											
10600	25.											
10615	26.											
10630	27.											
10645	28.											
10700	29.											
10715	30.											
10730	31.											
10745	32.											
10800	33.											
10815	34.											
10830	35.											
10845	36.											
10900	37.											
10915	38.											
10930	39.											
10945	40.											
11000	41.											
11015	42.											
11030	43.											
11045	44.											
11100	45.											
11115	46.											
11130	47.											
11145	48.											
11200	49.											
11215	50.											
11230	51.											
11245	52.											
11300	53.											
11315	54.											
11330	55.											
11345	56.											
11400	57.											
11415	58.											
11430	59.											
11445	60.											
11500	61.											
11515	62.											
11530	63.											
11545	64.											
11600	65.											
11615	66.											
11630	67.											
11645	68.											
11700	69.											
11715	70.											

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66 KK \*\*\*\*\*  
\* B-1 \*  
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BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

68 BA SUBBASIN CHARACTERISTICS  
TAREA 2.18 SUBBASIN AREA

PRECIPITATION DATA

69 PH DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
9.00 14.80 28.00 39.50 47.70 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.18

70 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNBR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

71 UC CLARK UNITGRAPH  
TC 0.75 TIME OF CONCENTRATION  
R 0.50 STORAGE COEFFICIENT

72 UA ACCUMULATED-AREA VS. TIME, 4 ORDINATES  
0.0 0.8 1.8 2.2

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.75 HR, R= 0.50 HR  
SNYDER TP= 0.57 HR, CP= 0.61

UNIT HYDROGRAPH  
12 END-OF-PERIOD ORDINATES  
0. 0. 1. 0. 0. 0. 0. 0. 0. 0.

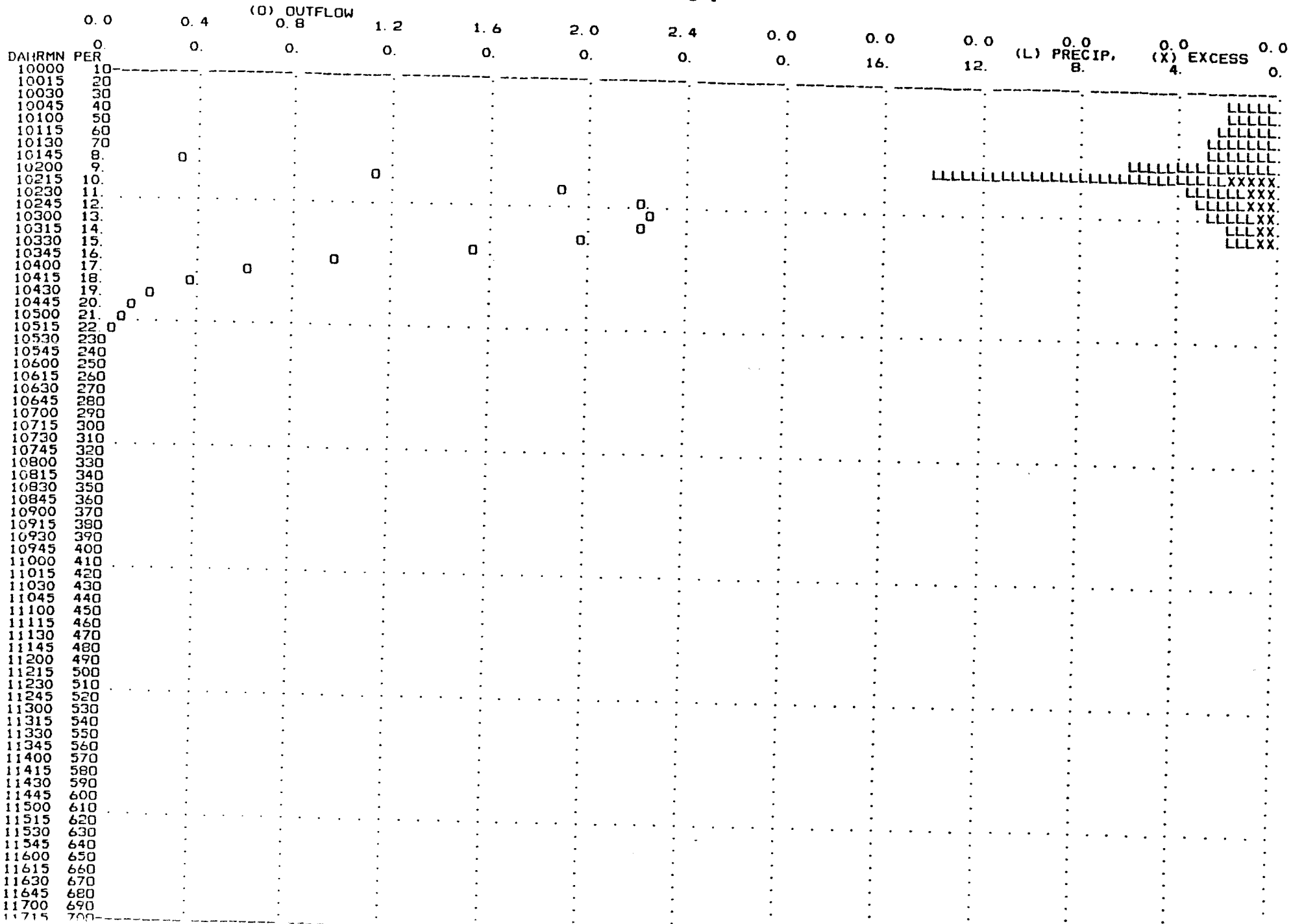


HYDROGRAPH AT STATION B-1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.		*	1	JUN	0845	36	0.00	0.00	0.00	0.	
1	JUN	0015	2	1.82	1.82	0.00	0.		*	1	JUN	0900	37	0.00	0.00	0.00	0.	
1	JUN	0030	3	2.01	2.01	0.00	0.		*	1	JUN	0915	38	0.00	0.00	0.00	0.	
1	JUN	0045	4	2.43	2.43	0.00	0.		*	1	JUN	0930	39	0.00	0.00	0.00	0.	
1	JUN	0100	5	2.84	2.84	0.00	0.		*	1	JUN	0945	40	0.00	0.00	0.00	0.	
1	JUN	0115	6	2.91	2.91	0.00	0.		*	1	JUN	1000	41	0.00	0.00	0.00	0.	
1	JUN	0130	7	6.11	6.11	0.00	0.		*	1	JUN	1015	42	0.00	0.00	0.00	0.	
1	JUN	0145	8	13.99	12.01	1.98	0.		*	1	JUN	1030	43	0.00	0.00	0.00	0.	
1	JUN	0200	9	3.57	2.56	1.01	1.		*	1	JUN	1045	44	0.00	0.00	0.00	0.	
1	JUN	0215	10	3.14	2.12	1.02	2.		*	1	JUN	1100	45	0.00	0.00	0.00	0.	
1	JUN	0230	11	2.61	1.67	0.94	2.		*	1	JUN	1115	46	0.00	0.00	0.00	0.	
1	JUN	0245	12	2.13	1.31	0.82	2.		*	1	JUN	1130	47	0.00	0.00	0.00	0.	
1	JUN	0300	13	1.91	1.13	0.78	2.		*	1	JUN	1145	48	0.00	0.00	0.00	0.	
1	JUN	0315	14	0.00	0.00	0.00	2.		*	1	JUN	1200	49	0.00	0.00	0.00	0.	
1	JUN	0330	15	0.00	0.00	0.00	2.		*	1	JUN	1215	50	0.00	0.00	0.00	0.	
1	JUN	0345	16	0.00	0.00	0.00	1.		*	1	JUN	1230	51	0.00	0.00	0.00	0.	
1	JUN	0400	17	0.00	0.00	0.00	1.		*	1	JUN	1245	52	0.00	0.00	0.00	0.	
1	JUN	0415	18	0.00	0.00	0.00	0.		*	1	JUN	1300	53	0.00	0.00	0.00	0.	
1	JUN	0430	19	0.00	0.00	0.00	0.		*	1	JUN	1315	54	0.00	0.00	0.00	0.	
1	JUN	0445	20	0.00	0.00	0.00	0.		*	1	JUN	1330	55	0.00	0.00	0.00	0.	
1	JUN	0500	21	0.00	0.00	0.00	0.		*	1	JUN	1345	56	0.00	0.00	0.00	0.	
1	JUN	0515	22	0.00	0.00	0.00	0.		*	1	JUN	1400	57	0.00	0.00	0.00	0.	
1	JUN	0530	23	0.00	0.00	0.00	0.		*	1	JUN	1415	58	0.00	0.00	0.00	0.	
1	JUN	0545	24	0.00	0.00	0.00	0.		*	1	JUN	1430	59	0.00	0.00	0.00	0.	
1	JUN	0600	25	0.00	0.00	0.00	0.		*	1	JUN	1445	60	0.00	0.00	0.00	0.	
1	JUN	0615	26	0.00	0.00	0.00	0.		*	1	JUN	1500	61	0.00	0.00	0.00	0.	
1	JUN	0630	27	0.00	0.00	0.00	0.		*	1	JUN	1515	62	0.00	0.00	0.00	0.	
1	JUN	0645	28	0.00	0.00	0.00	0.		*	1	JUN	1530	63	0.00	0.00	0.00	0.	
1	JUN	0700	29	0.00	0.00	0.00	0.		*	1	JUN	1545	64	0.00	0.00	0.00	0.	
1	JUN	0715	30	0.00	0.00	0.00	0.		*	1	JUN	1600	65	0.00	0.00	0.00	0.	
1	JUN	0730	31	0.00	0.00	0.00	0.		*	1	JUN	1615	66	0.00	0.00	0.00	0.	
1	JUN	0745	32	0.00	0.00	0.00	0.		*	1	JUN	1630	67	0.00	0.00	0.00	0.	
1	JUN	0800	33	0.00	0.00	0.00	0.		*	1	JUN	1645	68	0.00	0.00	0.00	0.	
1	JUN	0815	34	0.00	0.00	0.00	0.		*	1	JUN	1700	69	0.00	0.00	0.00	0.	
1	JUN	0830	35	0.00	0.00	0.00	0.		*	1	JUN	1715	70	0.00	0.00	0.00	0.	

TOTAL RAINFALL = 45.47, TOTAL LOSS = 38.92, TOTAL EXCESS = 6.55  
 PEAK FLOW (CU M/S) 2. TIME (HR) 2.75  
 (CU M/S) 1. 6-HR 6.516  
 (MM) 14. 24-HR 0. 72-HR 6.516  
 (1000 CU M) 14. 17.25-HR 0. 6.516  
 CUMULATIVE AREA = 2.18 SQ KM

STATION B-1



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73 KK \*\*\*\*\*  
 \* B-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4

75 HC HYDROGRAPH COMBINATION  
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B-SUMA  
 SUM OF 3 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	25.	*	1	JUN	0900	37	1.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	22.	*	1	JUN	0915	38	1.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	19.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	17.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	15.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	13.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	11.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	1.	*	1	JUN	0615	26	10.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	3.	*	1	JUN	0630	27	9.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	6.	*	1	JUN	0645	28	8.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	9.	*	1	JUN	0700	29	6.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	13.	*	1	JUN	0715	30	5.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	17.	*	1	JUN	0730	31	4.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	20.	*	1	JUN	0745	32	3.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	23.	*	1	JUN	0800	33	2.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	25.	*	1	JUN	0815	34	2.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	26.	*	1	JUN	0830	35	1.	*	1	JUN	1300	53	0.	*							*
1	JUN	0415	18	26.	*	1	JUN	0845	36	1.	*	1	JUN	1315	54	0.	*							*

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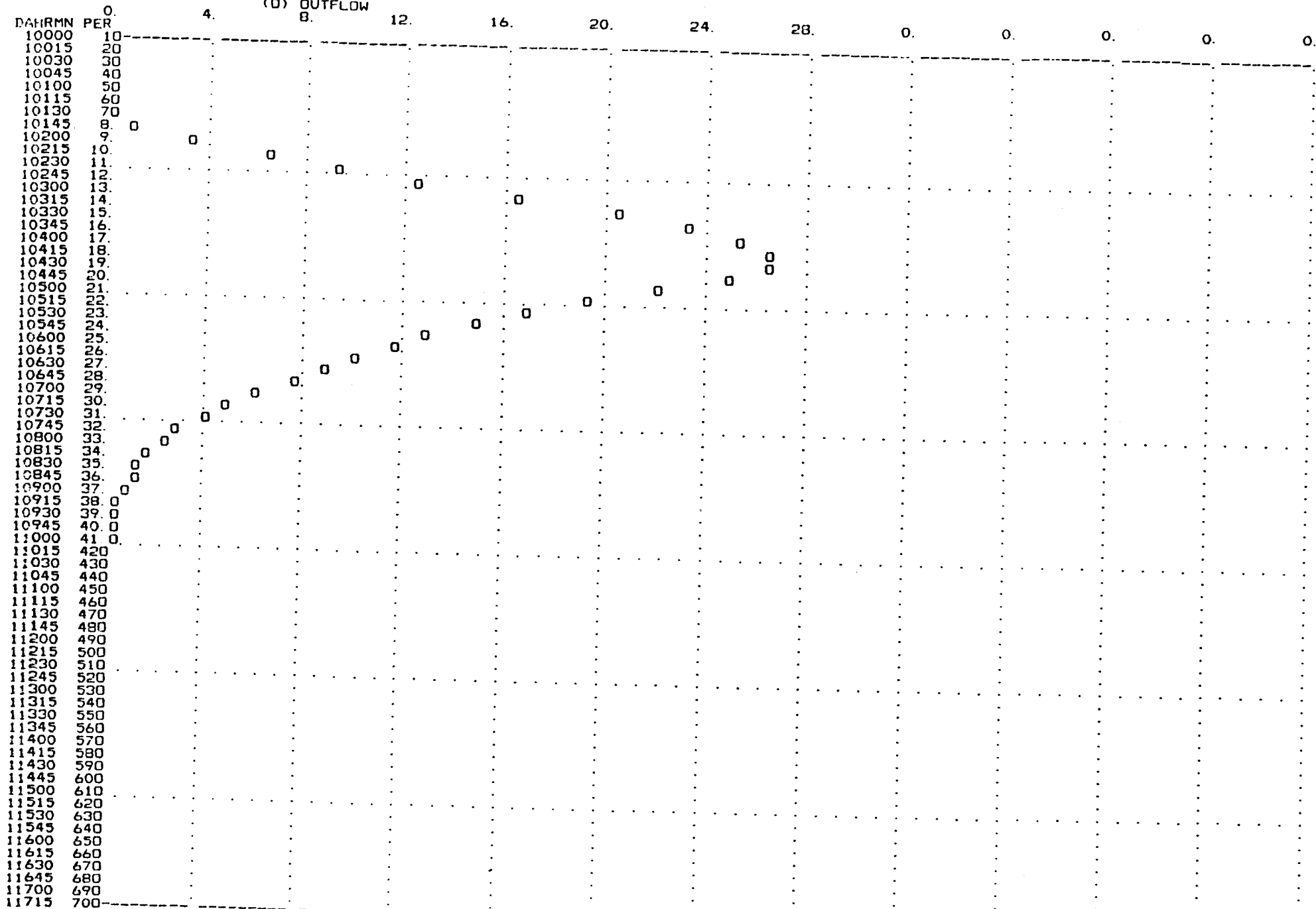
PEAK FLOW (CU M/S) 26. TIME (HR) 4.00  
 (CU M/S) (MM) 13.564  
 (1000 CU M) 302.  
 CUMULATIVE AREA = 22.27 SQ KM

MAXIMUM AVERAGE FLOW  
 6-HR 14. 24-HR 5. 72-HR 5.  
 13.973 13.973 13.973  
 311. 311. 311.

17.25-HR 5.  
 13.973 311.

STATION B-SUMA

(D) OUTFLOW



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76 KK \*\*\*\*\*  
\* C-1 \*  
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BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

78 BA SUBBASIN CHARACTERISTICS  
TAREA 10.45 SUBBASIN AREA

PRECIPITATION DATA

79 PH DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
9.80 16.00 30.30 42.70 51.60 68.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 10.45

80 LS SCS LOSS RATE  
STRTL 19.80 INITIAL ABSTRACTION  
CRVNR 72.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

81 UC CLARK UNITGRAPH  
TC 1.50 TIME OF CONCENTRATION  
R 1.10 STORAGE COEFFICIENT

82 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
0.0 2.1 4.0 5.8 8.1 9.5 10.5

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.50 HR. R= 1.10 HR  
SNYDER TP= 1.23 HR. CP= 0.59

UNIT HYDROGRAPH  
27 END-OF-PERIOD ORDINATES  
0. 1. 1. 1. 1. 1. 1. 1. 1.  
0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION C-1

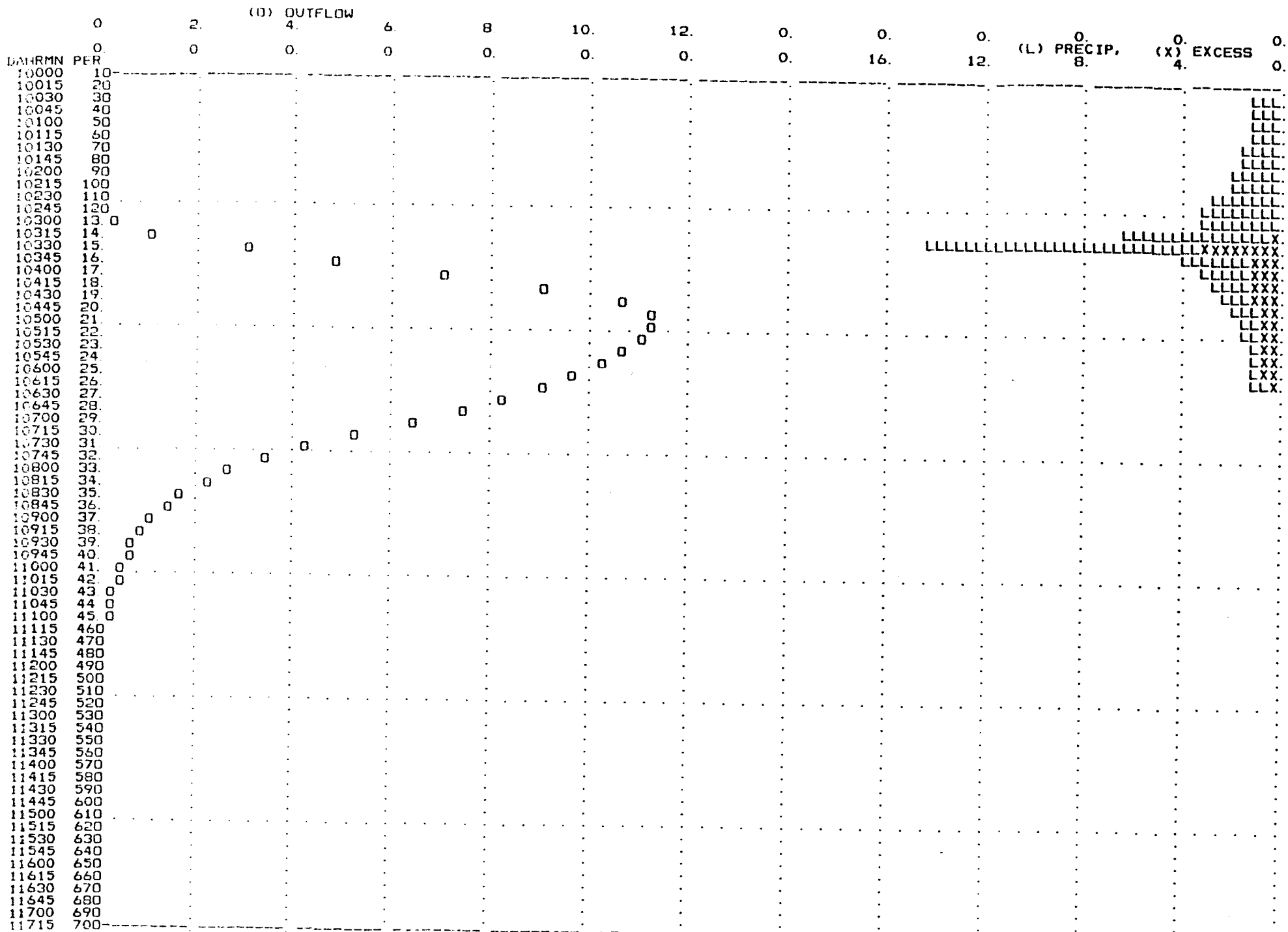
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	1.
1	JUN	0015	2	1.10	1.10	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	1.
1	JUN	0030	3	1.16	1.16	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	1.
1	JUN	0045	4	1.23	1.23	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	1.
1	JUN	0100	5	1.31	1.31	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	1.
1	JUN	0115	6	1.41	1.41	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	1.52	1.52	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	1.97	1.97	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	2.18	2.18	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	2.62	2.62	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	3.04	3.04	0.00	0.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	3.19	3.18	0.01	0.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	6.26	5.78	0.48	0.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	14.99	10.94	3.35	1.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	3.88	2.53	1.34	3.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	3.36	2.07	1.29	5.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	2.81	1.65	1.16	7.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	2.30	1.30	1.00	9.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	2.07	1.13	0.94	11.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	1.60	0.85	0.75	11.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	1.46	0.76	0.70	11.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	1.35	0.69	0.66	11.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	1.27	0.63	0.63	11.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	1.19	0.59	0.61	10.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	1.13	0.54	0.58	10.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	9.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	8.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	7.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	6.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	5.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	4.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	3.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	3.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	2.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	2.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 63.67, TOTAL LOSS = 50.18, TOTAL EXCESS = 13.49

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CU M/S)	(HR)		6-HR	17.25-HR
11.	5.00	(CU M/S)	24-HR	2.
		(MM)	72-HR	2.
		(1000 CU M)	13.435	13.435
			140.	140.

CUMULATIVE AREA = 10.45 SQ KM

STATION C-1



\*\*\* \*\*

83 KK \*\*\*\*\*  
 \* \*  
 \* G-1 \*  
 \* \*  
 \*\*\*\*\*

BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

85 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.45 SUBBASIN AREA

PRECIPITATION DATA

86 PH DEPTHS FOR 20-PERCENT HYPOTHETICAL STORM

	HYDRO-35		TP-40				TP-49					
	5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
	12.20	20.00	37.90	53.30	64.50	84.90	0.00	0.00	0.00	0.00	0.00	0.00

STORM AREA = 19.45

87 LS SCS LOSS RATE  
 STRL 19.80 INITIAL ABSTRACTION  
 CRVNR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

88 UC CLARK UNITGRAPH  
 TC 2.00 TIME OF CONCENTRATION  
 R 1.80 STORAGE COEFFICIENT

89 UA ACCUMULATED-AREA VS. TIME, 9 ORDINATES

0.0	2.3	6.4	9.3	12.0	14.1	15.7	17.6	19.5
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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.00 HR, R= 1.80 HR  
 SNYDER TP= 1.87 HR, CP= 0.57

UNIT HYDROGRAPH  
 42 END-OF-PERIOD ORDINATES

0.	1.	1.	1.	1.	2.	2.	2.	2.	1.
1.	1.	1.	1.	1.	1.	1.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.



HYDROGRAPH AT STATION G-1

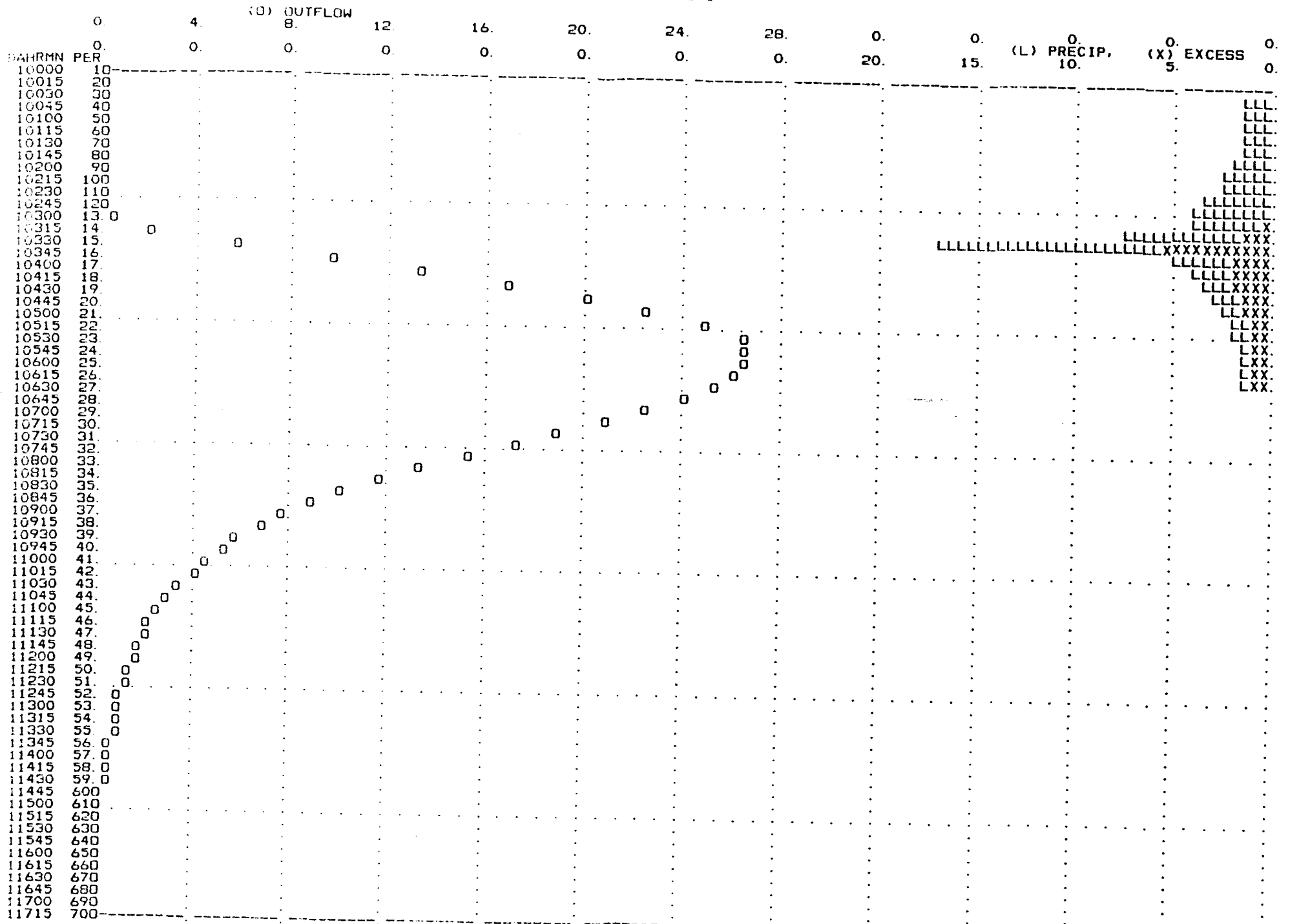
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	9.
1	JUN	0015	2	1.37	1.37	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	8.
1	JUN	0030	3	1.44	1.44	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	7.
1	JUN	0045	4	1.53	1.53	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	6.
1	JUN	0100	5	1.62	1.62	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	5.
1	JUN	0115	6	1.74	1.74	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	4.
1	JUN	0130	7	1.89	1.89	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	4.
1	JUN	0145	8	2.48	2.48	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	3.
1	JUN	0200	9	2.73	2.73	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	3.
1	JUN	0215	10	3.27	3.27	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	3.
1	JUN	0230	11	3.78	3.74	0.04	0.	*	1	JUN	1115	46	0.00	0.00	0.00	2.
1	JUN	0245	12	4.01	3.70	0.31	0.	*	1	JUN	1130	47	0.00	0.00	0.00	2.
1	JUN	0300	13	7.36	6.10	1.25	0.	*	1	JUN	1145	48	0.00	0.00	0.00	2.
1	JUN	0315	14	16.87	11.37	5.50	2.	*	1	JUN	1200	49	0.00	0.00	0.00	1.
1	JUN	0330	15	4.84	2.73	2.11	5.	*	1	JUN	1215	50	0.00	0.00	0.00	1.
1	JUN	0345	16	4.16	2.20	1.96	9.	*	1	JUN	1230	51	0.00	0.00	0.00	1.
1	JUN	0400	17	3.50	1.75	1.75	13.	*	1	JUN	1245	52	0.00	0.00	0.00	1.
1	JUN	0415	18	2.89	1.38	1.51	17.	*	1	JUN	1300	53	0.00	0.00	0.00	1.
1	JUN	0430	19	2.59	1.19	1.40	20.	*	1	JUN	1315	54	0.00	0.00	0.00	1.
1	JUN	0445	20	1.98	0.88	1.10	23.	*	1	JUN	1330	55	0.00	0.00	0.00	1.
1	JUN	0500	21	1.91	0.79	1.03	25.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	1.68	0.71	0.97	26.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	1.57	0.65	0.92	27.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	1.48	0.60	0.88	26.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	1.40	0.56	0.84	26.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	25.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	24.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	23.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	21.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	19.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	17.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	15.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	13.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	12.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	10.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 78.00, TOTAL LOSS = 56.42, TOTAL EXCESS = 21.58

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CU M/S)	(HR)		24-HR	72-HR
27.	5.50	(CU M/S)	7.	7.
		(MM)	19.408	21.469
		(1000 CU M)	377.	418.

CUMULATIVE AREA = 19.45 SQ KM

STATION G-1



RUNOFF SUMMARY. AVERAGE FLOW IN CUBIC METERS PER SECOND  
AREA IN SQUARE KILOMETERS

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	T-2	47.15	6.50	32.61	13.41	13.41	43.18		
ROUTED TO	R2T01	46.25	7.25	32.38	13.39	13.39	43.18		
HYDROGRAPH AT	T-1	14.30	5.25	10.05	4.17	4.17	19.55		
2 COMBINED AT	T-SUMA	59.25	7.00	41.94	17.56	17.56	62.73		
HYDROGRAPH AT	L-1	2.00	2.25	0.49	0.17	0.17	1.53		
HYDROGRAPH AT	B-2	10.62	4.50	5.58	1.97	1.97	7.28		
HYDROGRAPH AT	B-3	3.16	2.25	0.84	0.29	0.29	2.08		
2 COMBINED AT	B2+B3	10.75	4.25	6.19	2.26	2.26	9.36		
ROUTED TO	R23T01	10.68	4.50	6.18	2.26	2.26	9.36		
HYDROGRAPH AT	B-4	18.15	3.50	7.19	2.52	2.52	10.73		
ROUTED TO	R4T01	17.77	3.75	7.18	2.52	2.52	10.73		
HYDROGRAPH AT	B-1	2.24	2.75	0.66	0.23	0.23	2.18		
3 COMBINED AT	B-SUMA	26.40	4.00	13.98	5.01	5.01	22.27		
HYDROGRAPH AT	C-1	11.23	5.00	6.34	2.26	2.26	10.45		
HYDROGRAPH AT	G-1	26.52	5.50	17.48	6.72	6.72	19.45		

\*\*\* NORMAL END OF HEC-1 \*\*\*

#### 4.3 Avenida de 10 años de periodo de recurrencia

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE									
2	ID	PERIODO DE RECURRENCIA 10 AÑOS									
3	ID	TORMENTAS NO UNIFORMES									
4	IT	15	1JUN87	000	70						
5	IO	1	2								
6	IM										
7	KK	T-2									
8	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION									
9	BA	43.18									
10	PH	10.0		15.9	26.0	49.1	69.3	83.8	110.3		
11	LS	20.7	71								
12	UC	3.0	2.2								
13	UA	0.0	2.03	4.93	8.63	10.93	15.62	20.81	26.10	32.42	36.27
14	UA	39.40	41.93	43.18							
15	KK	R2TD1									
16	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
17	RM	2	0.7	0.25							
18	KK	T-1									
19	KM	BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION									
20	BA	19.55									
21	PH	10.0		11.9	19.5	36.8	52.0	62.8	82.8		
22	LS	17.8	74								
23	UC	2.5	2.4								
24	UA	0.0	1.23	3.23	5.78	9.16	12.34	14.94	16.02	17.12	18.02
25	UA	19.55									
26	KK	T-SUMA									
27	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2									
28	HC	2									
29	KK	L-1									
30	KM	BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION									
31	BA	1.53									
32	PH	10.0		12.2	20.0	37.8	53.4	64.5			
33	LS	17.8	74								
34	UC	0.5	0.3								
35	UA	0.0	0.70	1.53							
36	KK	B-2									
37	KM	BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION									
38	BA	7.28									
39	PH	10.0		13.2	21.6	40.8	57.6	69.6	91.7		
40	LS	17.8	74								
41	UC	1.0	1.0								
42	UA	0.0	2.00	4.11	6.03	7.28					
43	KK	B-3									
44	KM	BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION									
45	BA	2.08									
46	PH	10.0		13.2	21.6	40.8	57.6	69.6			
47	LS	17.8	74								
48	UC	0.5	0.4								

HEC-1 INPUT

LINE	ID.	1	2	3	4	5	6	7	8	9	10
49	UA	0.0	0.93	2.08							
50	KK	B2+B3									
51	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3									
52	HC	2									
53	KK	R23TD1									
54	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1									
55	RM	1	0.2	0.25							
56	KK	B-4									
57	KM	BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION									
58	BA	10.73									
59	PH	10.0		16.8	27.5	51.9	73.2	88.5			
60	LS	17.8	74								
61	UC	1.5	1.0								
62	UA	0.0	0.94	1.83	3.42	6.11	9.00	10.73			
63	KK	R4TD1									
64	KM	TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1									
65	RM	1	0.3	0.25							
66	KK	B-1									
67	KM	BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION									
68	BA	2.18									
69	PH	10.0		11.9	19.5	36.8	51.9	62.7			
70	LS	17.8	74								
71	UC	0.75	0.5								
72	UA	0.0	0.75	1.75	2.18						
73	KK	B-SUMA									
74	KM	COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4									
75	HC	3									
76	KK	C-1									
77	KM	BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS									
78	BA	10.45									
79	PH	10.0		12.6	20.7	39.0	55.1	66.5	87.7		
80	LS	19.8	72								
81	UC	1.5	1.1								
82	UA	0.0	2.05	4.02	5.82	8.09	9.55	10.45			
83	KK	G-1									
84	KM	BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS									
85	BA	19.45									
86	PH	10.0		15.2	25.0	47.1	66.5	80.4	105.9		
87	LS	19.8	72								
88	UC	2.0	1.8								
89	UA	0.0	2.28	6.42	9.26	12.05	14.13	15.71	17.57	19.45	
90	ZZ										

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*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* FEBRUARY 1981 *
* REVISED 14 JUN 85 *
* RUN DATE TIME *
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*****
* U. S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 440-3285 OR (FTS) 448- *
*****

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CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE  
 PERIODO DE RECURRENCIA 10 AÑOS  
 TORMENTAS NO UNIFORMES

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5 IO      OUTPUT CONTROL VARIABLES
          IPRNT      1  PRINT CONTROL
          IPLOT      2  PLOT CONTROL
          GSCAL      0.  HYDROGRAPH PLOT SCALE

1T        HYDROGRAPH TIME DATA
          NMIN      15  MINUTES IN COMPUTATION INTERVAL
          IDATE     1JUN87  STARTING DATE
          ITIME     0000  STARTING TIME
          NQ        70  NUMBER OF HYDROGRAPH ORDINATES
          NDDATE    1JUN87  ENDING DATE
          NDTIME    1715  ENDING TIME

          COMPUTATION INTERVAL 0.25 HOURS
          TOTAL TIME BASE     17.25 HOURS

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METRIC UNITS
DRAINAGE AREA      SQUARE KILOMETERS
PRECIPITATION DEPTH MILLIMETERS
LENGTH, ELEVATION METERS
FLOW               CUBIC METERS PER SECOND
STORAGE VOLUME    CUBIC METERS
SURFACE AREA      SQUARE METERS
TEMPERATURE       DEGREES CELSIUS

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\*\*\*\*\*

7 KK \*\*\*\*\*  
 \* T-2 \*  
 \* \*  
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BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

9 BA SUBBASIN CHARACTERISTICS  
 TAREA 43.18 SUBBASIN AREA

PRECIPITATION DATA

10 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM

HYDRD-35			TP-40				TP-49				
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
15.90	26.00	49.10	69.30	83.80	110.30	0.00	0.00	0.00	0.00	0.00	0.00

STORM AREA = 43.18

11 LS SCS LOSS RATE

STRTL	20.70	INITIAL ABSTRACTION
CRVNBR	71.00	CURVE NUMBER
RTIMP	0.00	PERCENT IMPERVIOUS AREA

12 UC CLARK UNITGRAPH

TC	3.00	TIME OF CONCENTRATION
R	2.20	STORAGE COEFFICIENT

13 UA ACCUMULATED-AREA VS. TIME, 13 ORDINATES

0.0	2.0	4.9	8.6	10.9	15.6	20.8	26.1	32.4	36.3
39.4	41.9	43.2							

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UNIT HYDROGRAPH PARAMETERS

CLARK	TC= 3.00 HR,	R= 2.20 HR
SNYDER	TP= 2.56 HR,	CP= 0.65

UNIT HYDROGRAPH  
 54 END-OF-PERIOD ORDINATES

0.	0.	1.	1.	1.	2.	2.	3.	3.	3.
3.	3.	3.	2.	2.	2.	2.	2.	1.	1.
1.	1.	1.	1.	1.	1.	1.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.



HYDROGRAPH AT STATION T-2

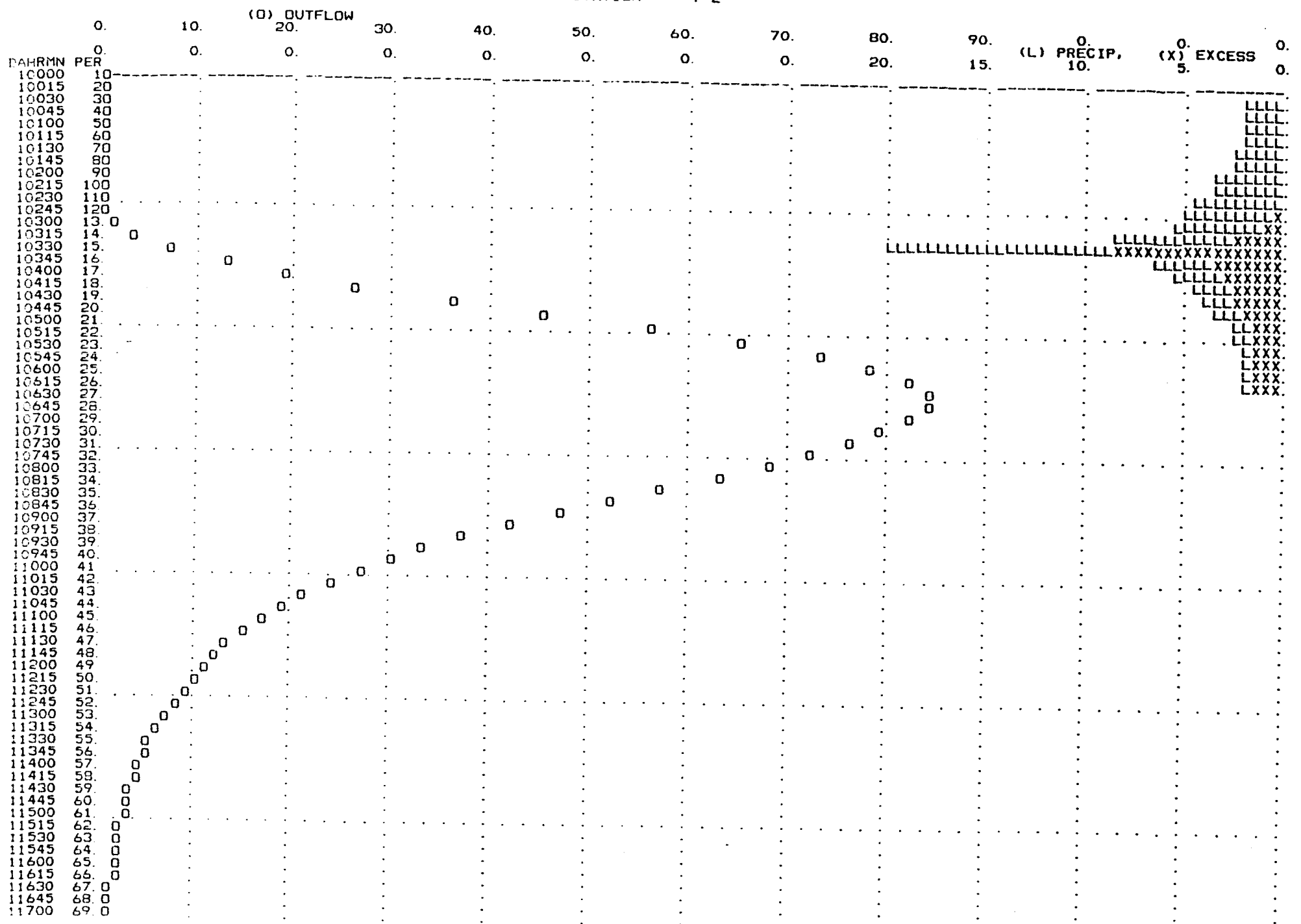
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	47.
1	JUN	0015	2	1.84	1.84	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	42.
1	JUN	0030	3	1.93	1.93	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	37.
1	JUN	0045	4	2.04	2.04	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	33.
1	JUN	0100	5	2.17	2.17	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	30.
1	JUN	0115	6	2.33	2.33	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	27.
1	JUN	0130	7	2.52	2.52	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	24.
1	JUN	0145	8	3.30	3.30	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	21.
1	JUN	0200	9	3.62	3.62	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	19.
1	JUN	0215	10	4.39	4.28	0.11	0.	*	1	JUN	1100	45	0.00	0.00	0.00	17.
1	JUN	0230	11	5.02	4.50	0.53	0.	*	1	JUN	1115	46	0.00	0.00	0.00	15.
1	JUN	0245	12	5.50	4.48	1.02	0.	*	1	JUN	1130	47	0.00	0.00	0.00	13.
1	JUN	0300	13	6.64	6.25	2.39	1.	*	1	JUN	1145	48	0.00	0.00	0.00	12.
1	JUN	0315	14	19.85	11.57	8.28	3.	*	1	JUN	1200	49	0.00	0.00	0.00	11.
1	JUN	0330	15	6.51	3.14	3.37	7.	*	1	JUN	1215	50	0.00	0.00	0.00	10.
1	JUN	0345	16	5.48	2.44	3.04	13.	*	1	JUN	1230	51	0.00	0.00	0.00	9.
1	JUN	0400	17	4.67	1.95	2.72	19.	*	1	JUN	1245	52	0.00	0.00	0.00	8.
1	JUN	0415	18	3.82	1.51	2.30	26.	*	1	JUN	1300	53	0.00	0.00	0.00	7.
1	JUN	0430	19	3.45	1.31	2.14	36.	*	1	JUN	1315	54	0.00	0.00	0.00	6.
1	JUN	0445	20	2.63	0.96	1.67	45.	*	1	JUN	1330	55	0.00	0.00	0.00	5.
1	JUN	0500	21	2.42	0.86	1.56	56.	*	1	JUN	1345	56	0.00	0.00	0.00	5.
1	JUN	0515	22	2.25	0.78	1.47	65.	*	1	JUN	1400	57	0.00	0.00	0.00	4.
1	JUN	0530	23	2.10	0.71	1.39	73.	*	1	JUN	1415	58	0.00	0.00	0.00	4.
1	JUN	0545	24	1.99	0.66	1.33	78.	*	1	JUN	1430	59	0.00	0.00	0.00	3.
1	JUN	0600	25	1.88	0.61	1.27	82.	*	1	JUN	1445	60	0.00	0.00	0.00	3.
1	JUN	0615	26	0.00	0.00	0.00	84.	*	1	JUN	1500	61	0.00	0.00	0.00	3.
1	JUN	0630	27	0.00	0.00	0.00	84.	*	1	JUN	1515	62	0.00	0.00	0.00	3.
1	JUN	0645	28	0.00	0.00	0.00	82.	*	1	JUN	1530	63	0.00	0.00	0.00	2.
1	JUN	0700	29	0.00	0.00	0.00	79.	*	1	JUN	1545	64	0.00	0.00	0.00	2.
1	JUN	0715	30	0.00	0.00	0.00	76.	*	1	JUN	1600	65	0.00	0.00	0.00	2.
1	JUN	0730	31	0.00	0.00	0.00	72.	*	1	JUN	1615	66	0.00	0.00	0.00	2.
1	JUN	0745	32	0.00	0.00	0.00	68.	*	1	JUN	1630	67	0.00	0.00	0.00	1.
1	JUN	0800	33	0.00	0.00	0.00	63.	*	1	JUN	1645	68	0.00	0.00	0.00	1.
1	JUN	0815	34	0.00	0.00	0.00	57.	*	1	JUN	1700	69	0.00	0.00	0.00	1.
1	JUN	0830	35	0.00	0.00	0.00	52.	*	1	JUN	1715	70	0.00	0.00	0.00	1.

TOTAL RAINFALL = 100.35, TOTAL LOSS = 65.76, TOTAL EXCESS = 34.59

PEAK FLOW (CU M/S)	TIME (HR)	6-HR	24-HR	72-HR	17.25-HR
84.	6.25	58.	24.	24.	24.
	(CU M/S)	29.033	34.391	34.391	34.391
	(MM)	1254.	1485.	1485.	1485.
	(1000 CU M)				

CUMULATIVE AREA = 43.18 SQ KM

STATION T-2



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15 KK  
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 \* R2T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

17 RM MUSKINGUM ROUTING  
 NSTPS 2 NUMBER OF SUBREACHES  
 AMSKK 0.70 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R2T01

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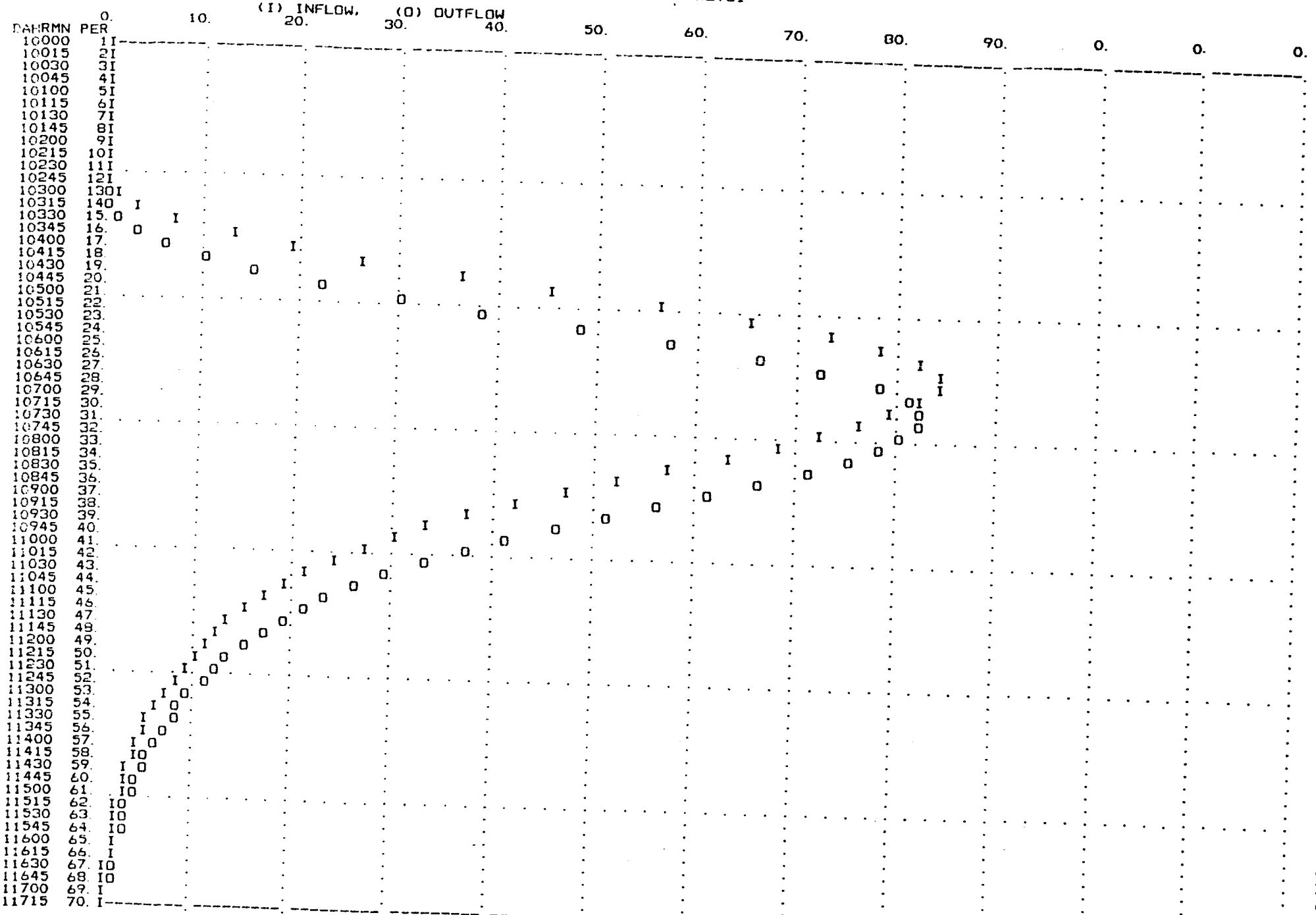
DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	15.	*	1	JUN	0900	37	56.	*	1	JUN	1330	55	8.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	22.	*	1	JUN	0915	38	51.	*	1	JUN	1345	56	7.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	30.	*	1	JUN	0930	39	46.	*	1	JUN	1400	57	6.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	38.	*	1	JUN	0945	40	41.	*	1	JUN	1415	58	5.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	48.	*	1	JUN	1000	41	37.	*	1	JUN	1430	59	4.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	57.	*	1	JUN	1015	42	33.	*	1	JUN	1445	60	3.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	66.	*	1	JUN	1030	43	29.	*	1	JUN	1500	61	2.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	72.	*	1	JUN	1045	44	26.	*	1	JUN	1515	62	1.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	78.	*	1	JUN	1100	45	23.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	81.	*	1	JUN	1115	46	21.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	82.	*	1	JUN	1130	47	19.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	82.	*	1	JUN	1145	48	17.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	80.	*	1	JUN	1200	49	15.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	0.	*	1	JUN	0745	32	78.	*	1	JUN	1215	50	13.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	1.	*	1	JUN	0800	33	75.	*	1	JUN	1230	51	12.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	3.	*	1	JUN	0815	34	71.	*	1	JUN	1245	52	11.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	6.	*	1	JUN	0830	35	66.	*	1	JUN	1300	53	9.	*							
1	JUN	0415	18	10.	*	1	JUN	0845	36	61.	*	1	JUN	1315	54	8.	*							

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PEAK FLOW (CU M/S)	TIME (HR)	6-HR AVERAGE FLOW (CU M/S)	24-HR AVERAGE FLOW (CU M/S)	72-HR AVERAGE FLOW (CU M/S)	17.25-HR AVERAGE FLOW (CU M/S)
82.	7.00	59.	28.815	34.335	34.335
		(MM)	1244.	1483.	1483.

CUMULATIVE AREA = 43.18 SQ KM

STATION R2T01



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 \* T-1 \*  
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18 KK

BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

20 BA

SUBBASIN CHARACTERISTICS  
 TAREA 19.55 SUBBASIN AREA

PRECIPITATION DATA

21 PH

DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40				TP-49				
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
11.90	19.50	36.80	52.00	62.80	82.80	0.00	0.00	0.00	0.00	0.00	0.00

STORM AREA = 19.55

22 LS

SCS LOSS RATE  
 STRTL 17.80 INITIAL ABSTRACTION  
 CRVNBR 74.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

23 UC

CLARK UNITGRAPH  
 TC 2.50 TIME OF CONCENTRATION  
 R 2.40 STORAGE COEFFICIENT

24 UA

ACCUMULATED-AREA VS. TIME, 11 ORDINATES

0.0	1.2	3.2	5.8	9.2	12.3	14.9	16.0	17.1	18.0
19.5									

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.50 HR, R= 2.40 HR  
 SNYDER TP= 1.75 HR, CP= 0.42

UNIT HYDROGRAPH  
 56 END-OF-PERIOD ORDINATES

0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
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.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

HYDROGRAPH AT STATION T-1

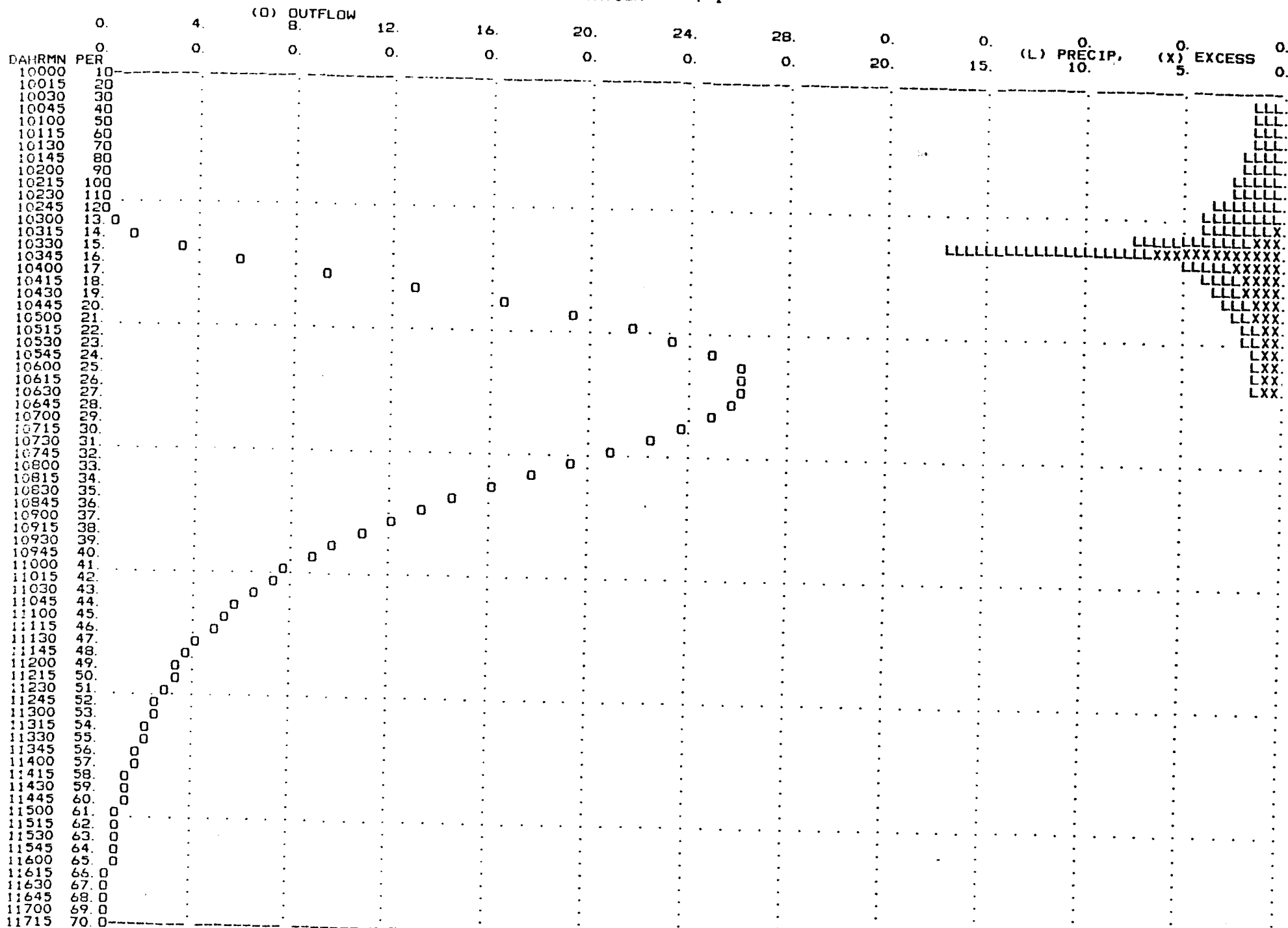
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	13.
1	JUN	0015	2	1.38	1.38	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	12.
1	JUN	0030	3	1.46	1.46	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	11.
1	JUN	0045	4	1.54	1.54	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	10.
1	JUN	0100	5	1.64	1.64	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	9.
1	JUN	0115	6	1.76	1.76	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	8.
1	JUN	0130	7	1.91	1.91	0.00	0.	*	1	JUN	1015	42	0.00	0.00	0.00	7.
1	JUN	0145	8	2.46	2.46	0.00	0.	*	1	JUN	1030	43	0.00	0.00	0.00	6.
1	JUN	0200	9	2.71	2.71	0.00	0.	*	1	JUN	1045	44	0.00	0.00	0.00	5.
1	JUN	0215	10	3.31	3.31	0.00	0.	*	1	JUN	1100	45	0.00	0.00	0.00	4.
1	JUN	0230	11	3.82	3.64	0.19	0.	*	1	JUN	1115	46	0.00	0.00	0.00	3.
1	JUN	0245	12	4.02	3.51	0.51	0.	*	1	JUN	1130	47	0.00	0.00	0.00	2.
1	JUN	0300	13	7.37	5.74	1.63	0.	*	1	JUN	1145	48	0.00	0.00	0.00	1.
1	JUN	0315	14	16.95	10.57	6.38	1.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	4.85	2.51	2.35	3.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	4.20	2.02	2.18	6.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	3.54	1.60	1.94	9.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	2.87	1.24	1.63	13.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	2.58	1.07	1.51	16.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	2.00	0.80	1.20	19.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	1.83	0.72	1.12	22.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	1.70	0.63	1.05	23.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	1.59	0.59	1.00	25.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	1.50	0.55	0.95	26.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	1.42	0.51	0.91	26.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	26.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	26.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	25.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	24.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	22.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	21.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	19.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	18.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	16.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	15.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 78.43, TOTAL LOSS = 53.90, TOTAL EXCESS = 24.53

PEAK FLOW (CU M/S)	TIME (HR)	6-HR 18.	24-HR 8.	72-HR 8.	17.25-HR 8.
26.	6.00	20.409	24.357	24.357	24.357
	(CU M/S)	399.	476.	476.	476.
	(MM)				
	(1000 CU M)				

CUMULATIVE AREA = 19.55 SQ KM

STATION T-1



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26 KK \*\*\*\*\*  
 \* T-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2

28 HC HYDROGRAPH COMBINATION  
 ICDMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION T-SUMA  
 SUM OF 2 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	32.	*	1	JUN	0900	37	68.	*	1	JUN	1330	55	9.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	41.	*	1	JUN	0915	38	62.	*	1	JUN	1345	56	8.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	51.	*	1	JUN	0930	39	56.	*	1	JUN	1400	57	7.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	62.	*	1	JUN	0945	40	50.	*	1	JUN	1415	58	7.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	73.	*	1	JUN	1000	41	45.	*	1	JUN	1430	59	6.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	83.	*	1	JUN	1015	42	40.	*	1	JUN	1445	60	5.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	92.	*	1	JUN	1030	43	36.	*	1	JUN	1500	61	5.	*	
1	JUN	0145	8	0.	*	1	JUN	0615	26	98.	*	1	JUN	1045	44	32.	*	1	JUN	1515	62	4.	*	
1	JUN	0200	9	0.	*	1	JUN	0630	27	103.	*	1	JUN	1100	45	29.	*	1	JUN	1530	63	4.	*	
1	JUN	0215	10	0.	*	1	JUN	0645	28	106.	*	1	JUN	1115	46	26.	*	1	JUN	1545	64	3.	*	
1	JUN	0230	11	0.	*	1	JUN	0700	29	106.	*	1	JUN	1130	47	23.	*	1	JUN	1600	65	3.	*	
1	JUN	0245	12	0.	*	1	JUN	0715	30	104.	*	1	JUN	1145	48	20.	*	1	JUN	1615	66	3.	*	
1	JUN	0300	13	0.	*	1	JUN	0730	31	101.	*	1	JUN	1200	49	18.	*	1	JUN	1630	67	2.	*	
1	JUN	0315	14	2.	*	1	JUN	0745	32	97.	*	1	JUN	1215	50	16.	*	1	JUN	1645	68	2.	*	
1	JUN	0330	15	4.	*	1	JUN	0800	33	92.	*	1	JUN	1230	51	15.	*	1	JUN	1700	69	2.	*	
1	JUN	0345	16	8.	*	1	JUN	0815	34	87.	*	1	JUN	1245	52	13.	*	1	JUN	1715	70	1.	*	
1	JUN	0400	17	15.	*	1	JUN	0830	35	81.	*	1	JUN	1300	53	12.	*							*
1	JUN	0415	18	23.	*	1	JUN	0845	36	74.	*	1	JUN	1315	54	10.	*							*

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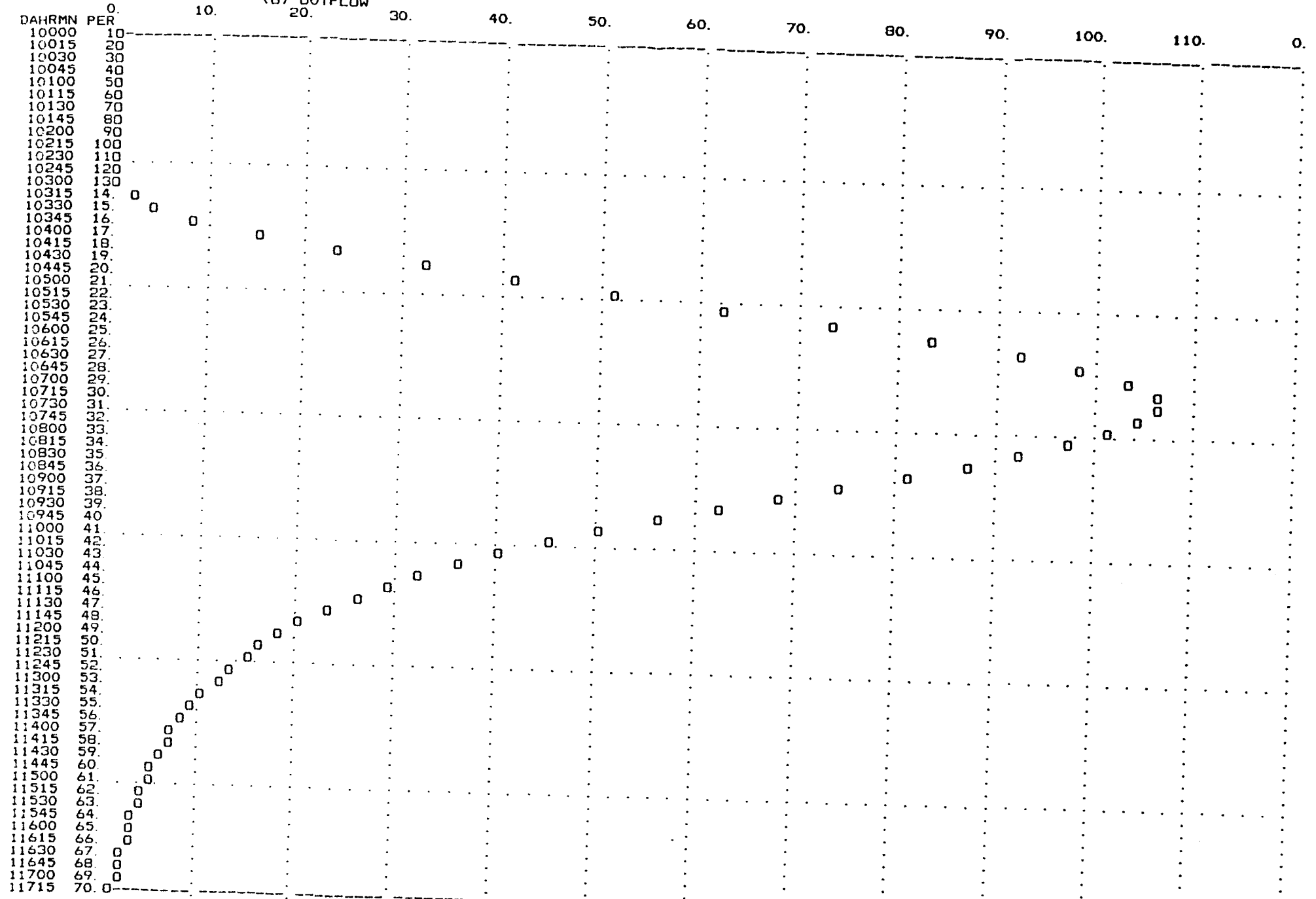
PEAK FLOW (CU M/S)	TIME (HR)	6-HR 75.	24-HR 32.	72-HR 32.	17. 25-HR 32.
106.	7.00	25.893	31.225	31.225	31.225
	(CU M/S)	(MM)	(1000 CU M)	1624.	1959.

CUMULATIVE AREA = 62.73 SQ KM



STATION T-SUMA

(O) OUTFLOW



\*\*\*\*\*

29 KK \*\*\*\*\*  
\* L-1 \*  
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BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

31 BA SUBBASIN CHARACTERISTICS  
TAREA 1.53 SUBBASIN AREA

PRECIPITATION DATA

32 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
12.20 20.00 37.80 53.40 64.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 1.53

33 LS SCS LOSS RATE  
STRFL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

34 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.30 STORAGE COEFFICIENT

35 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.7 1.5

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.30 HR  
SNYDER TP= 0.43 HR, CP= 0.66

UNIT HYDROGRAPH  
8 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0.

HYDROGRAPH AT STATION L-1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	2.54	2.54	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	2.81	2.81	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	3.40	3.40	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	3.97	3.97	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	4.04	4.04	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	8.54	7.96	0.58	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	19.58	13.86	5.73	2.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	4.96	2.80	2.16	4.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	4.39	2.30	2.10	5.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	3.66	1.79	1.86	4.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	2.98	1.39	1.59	4.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	2.66	1.19	1.47	3.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	0.00	0.00	0.00	2.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	0.00	0.00	0.00	1.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	0.00	0.00	0.00	1.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	0.00	0.00	0.00	0.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 63.54, TOTAL LOSS = 48.04, TOTAL EXCESS = 15.50

PEAK FLOW (CU M/S)	TIME (HR)		6-HR	MAXIMUM AVERAGE FLOW		17.25-HR
5.	2.25	(CU M/S)	1.	24-HR	0.	0.
		(MM)	15.458	72-HR	0.	15.458
		(1000 CU M)	24.		24.	24.

CUMULATIVE AREA = 1.53 SQ KM

STATION L-1

DAHRMN PER	(O) OUTFLOW					0.	0.	0.	0.	0.	(L) PRECIP, 10.	(X) EXCESS 5.	0.
	0.	1.	2.	3.	4.								
10000	10												
10015	20												
10030	30												
10045	40												
10100	50												LLLLL.
10115	60												LLLLLL.
10130	7. 0												LLLLLLL.
10145	8.												LLLLLLL.
10200	9.		0										LLLLLLL.
10215	10.				0								LLLLLLL.
10230	11.					0							LLLLLLL.
10245	12.				0								LLLLLLL.
10300	13.												LLLLLLL.
10315	14.												LLLLLLL.
10330	15.		0										LLLLLLL.
10345	16.			0									LLLLLLL.
10400	17. 0												LLLLLLL.
10415	18. 0												LLLLLLL.
10430	190												LLLLLLL.
10445	200												LLLLLLL.
10500	210												LLLLLLL.
10515	220												LLLLLLL.
10530	230												LLLLLLL.
10545	240												LLLLLLL.
10600	250												LLLLLLL.
10615	260												LLLLLLL.
10630	270												LLLLLLL.
10645	280												LLLLLLL.
10700	290												LLLLLLL.
10715	300												LLLLLLL.
10730	310												LLLLLLL.
10745	320												LLLLLLL.
10800	330												LLLLLLL.
10815	340												LLLLLLL.
10830	350												LLLLLLL.
10845	360												LLLLLLL.
10900	370												LLLLLLL.
10915	380												LLLLLLL.
10930	390												LLLLLLL.
10945	400												LLLLLLL.
11000	410												LLLLLLL.
11015	420												LLLLLLL.
11030	430												LLLLLLL.
11045	440												LLLLLLL.
11100	450												LLLLLLL.
11115	460												LLLLLLL.
11130	470												LLLLLLL.
11145	480												LLLLLLL.
11200	490												LLLLLLL.
11215	500												LLLLLLL.
11230	510												LLLLLLL.
11245	520												LLLLLLL.
11300	530												LLLLLLL.
11315	540												LLLLLLL.
11330	550												LLLLLLL.
11345	560												LLLLLLL.
11400	570												LLLLLLL.
11415	580												LLLLLLL.
11430	590												LLLLLLL.
11445	600												LLLLLLL.
11500	610												LLLLLLL.
11515	620												LLLLLLL.
11530	630												LLLLLLL.
11545	640												LLLLLLL.
11600	650												LLLLLLL.
11615	660												LLLLLLL.
11630	670												LLLLLLL.
11645	680												LLLLLLL.
11700	690												LLLLLLL.
11715	700												LLLLLLL.

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\* B-2 \*  
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36 KK

BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

38 BA

SUBBASIN CHARACTERISTICS  
TAREA 7.28 SUBBASIN AREA

PRECIPITATION DATA

39 PH

DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
13.20 21.60 40.80 57.60 69.60 91.70 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 7.28

40 LS

SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

41 UC

CLARK UNITGRAPH  
TC 1.00 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

42 UA

ACCUMULATED-AREA VS. TIME, 5 ORDINATES  
0.0 2.0 4.1 6.0 7.3

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.00 HR, R= 1.00 HR  
SNYDER TP= 0.89 HR, CP= 0.54

UNIT HYDROGRAPH  
24 END-OF-PERIOD ORDINATES

0. 1. 1. 1. 1. 1. 1. 1. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-2

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.
1	JUN	0015	2	1.53	1.53	0.00	0.
1	JUN	0030	3	1.61	1.61	0.00	0.
1	JUN	0045	4	1.70	1.70	0.00	0.
1	JUN	0100	5	1.82	1.82	0.00	0.
1	JUN	0115	6	1.95	1.95	0.00	0.
1	JUN	0130	7	2.12	2.12	0.00	0.
1	JUN	0145	8	2.74	2.74	0.00	0.
1	JUN	0200	9	3.03	3.03	0.00	0.
1	JUN	0215	10	3.66	3.60	0.06	0.
1	JUN	0230	11	4.26	3.87	0.40	0.
1	JUN	0245	12	4.39	3.64	0.75	1.
1	JUN	0300	13	8.85	6.44	2.41	2.
1	JUN	0315	14	20.32	11.46	8.86	5.
1	JUN	0330	15	5.36	2.45	2.91	11.
1	JUN	0345	16	4.70	1.99	2.71	16.
1	JUN	0400	17	3.93	1.56	2.36	20.
1	JUN	0415	18	3.21	1.22	1.99	21.
1	JUN	0430	19	2.87	1.04	1.83	20.
1	JUN	0445	20	2.22	0.78	1.44	19.
1	JUN	0500	21	2.03	0.69	1.34	18.
1	JUN	0515	22	1.88	0.63	1.26	17.
1	JUN	0530	23	1.76	0.57	1.19	16.
1	JUN	0545	24	1.65	0.53	1.13	14.
1	JUN	0600	25	1.57	0.49	1.08	13.
1	JUN	0615	26	0.00	0.00	0.00	12.
1	JUN	0630	27	0.00	0.00	0.00	11.
1	JUN	0645	28	0.00	0.00	0.00	9.
1	JUN	0700	29	0.00	0.00	0.00	7.
1	JUN	0715	30	0.00	0.00	0.00	5.
1	JUN	0730	31	0.00	0.00	0.00	4.
1	JUN	0745	32	0.00	0.00	0.00	3.
1	JUN	0800	33	0.00	0.00	0.00	3.
1	JUN	0815	34	0.00	0.00	0.00	2.
1	JUN	0830	35	0.00	0.00	0.00	2.

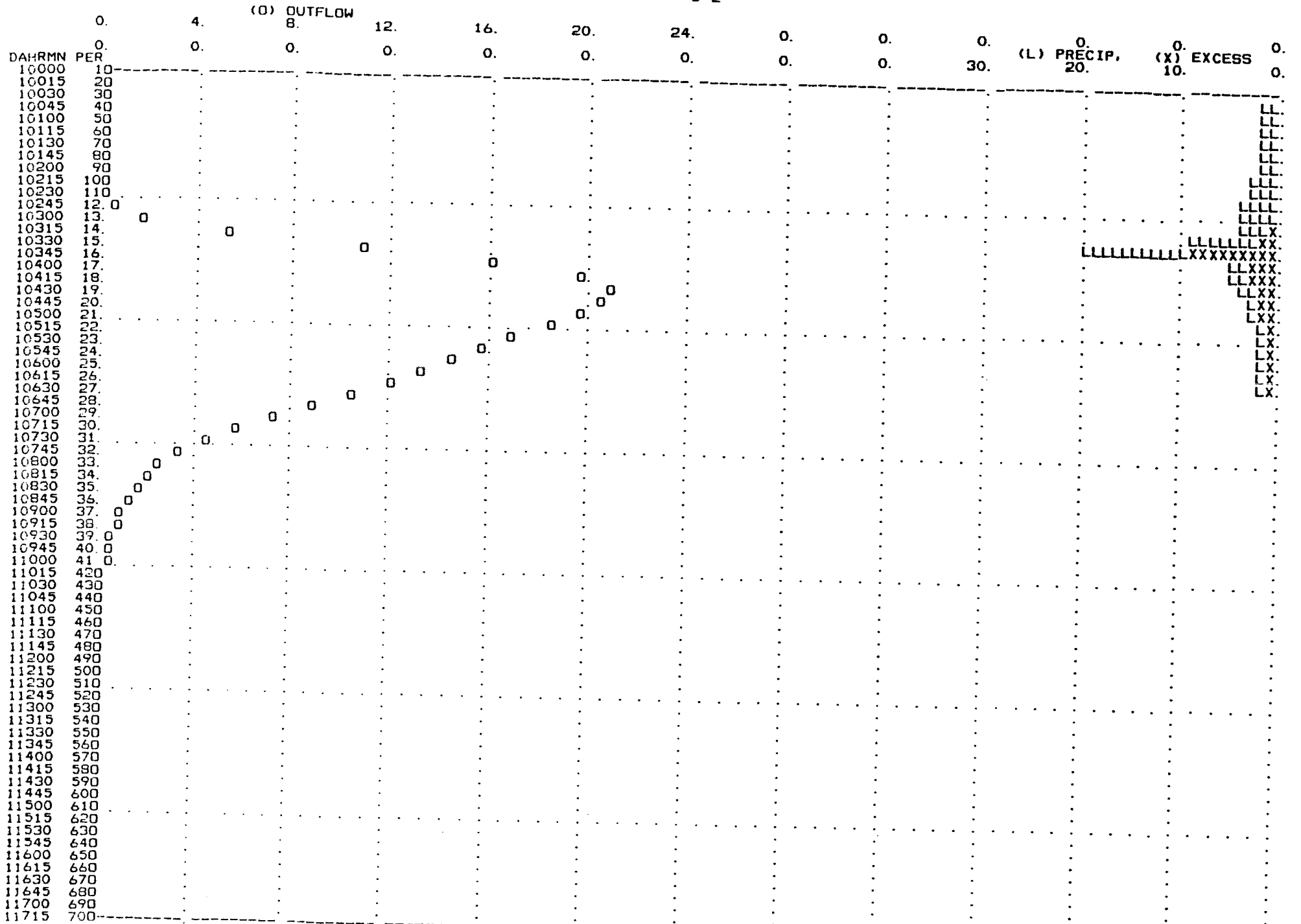
DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0845	36	0.00	0.00	0.00	1.
1	JUN	0900	37	0.00	0.00	0.00	1.
1	JUN	0915	38	0.00	0.00	0.00	1.
1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	1715	70	0.00	0.00	0.00	0.

TOTAL RAINFALL = 89.19, TOTAL LOSS = 57.46, TOTAL EXCESS = 31.73

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CU M/S)	(HR)		24-HR	72-HR
21.	4.25	(CU M/S)	4.	4.
		(MM)	31.599	31.599
		(1000 CU M)	230.	230.

CUMULATIVE AREA = 7.28 SQ KM

STATION B-2



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43 KK \*\*\*\*\*  
\* B-3 \*  
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BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

45 BA SUBBASIN CHARACTERISTICS  
TAREA 2.08 SUBBASIN AREA

PRECIPITATION DATA

46 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
13.20 21.60 40.80 57.60 69.60 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.08

47 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNBR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

48 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.40 STORAGE COEFFICIENT

49 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.9 2.1

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.40 HR  
SNYDER TP= 0.45 HR, CP= 0.58

UNIT HYDROGRAPH  
10 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0. 0. 0.



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 HYDROGRAPH AT STATION B-3  
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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.	*
1	JUN	0015	2	2.74	2.74	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.	*
1	JUN	0030	3	3.03	3.03	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.	*
1	JUN	0045	4	3.66	3.66	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.	*
1	JUN	0100	5	4.28	4.28	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.	*
1	JUN	0115	6	4.36	4.36	0.00	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.	*
1	JUN	0130	7	9.18	8.27	0.91	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.	*
1	JUN	0145	8	21.07	14.19	6.87	2.	*	1	JUN	1030	43	0.00	0.00	0.00	0.	*
1	JUN	0200	9	5.35	2.84	2.51	6.	*	1	JUN	1045	44	0.00	0.00	0.00	0.	*
1	JUN	0215	10	4.73	2.32	2.41	7.	*	1	JUN	1100	45	0.00	0.00	0.00	0.	*
1	JUN	0230	11	3.94	1.80	2.13	6.	*	1	JUN	1115	46	0.00	0.00	0.00	0.	*
1	JUN	0245	12	3.22	1.40	1.82	6.	*	1	JUN	1130	47	0.00	0.00	0.00	0.	*
1	JUN	0300	13	2.88	1.20	1.68	5.	*	1	JUN	1145	48	0.00	0.00	0.00	0.	*
1	JUN	0315	14	0.00	0.00	0.00	4.	*	1	JUN	1200	49	0.00	0.00	0.00	0.	*
1	JUN	0330	15	0.00	0.00	0.00	3.	*	1	JUN	1215	50	0.00	0.00	0.00	0.	*
1	JUN	0345	16	0.00	0.00	0.00	1.	*	1	JUN	1230	51	0.00	0.00	0.00	0.	*
1	JUN	0400	17	0.00	0.00	0.00	1.	*	1	JUN	1245	52	0.00	0.00	0.00	0.	*
1	JUN	0415	18	0.00	0.00	0.00	0.	*	1	JUN	1300	53	0.00	0.00	0.00	0.	*
1	JUN	0430	19	0.00	0.00	0.00	0.	*	1	JUN	1315	54	0.00	0.00	0.00	0.	*
1	JUN	0445	20	0.00	0.00	0.00	0.	*	1	JUN	1330	55	0.00	0.00	0.00	0.	*
1	JUN	0500	21	0.00	0.00	0.00	0.	*	1	JUN	1345	56	0.00	0.00	0.00	0.	*
1	JUN	0515	22	0.00	0.00	0.00	0.	*	1	JUN	1400	57	0.00	0.00	0.00	0.	*
1	JUN	0530	23	0.00	0.00	0.00	0.	*	1	JUN	1415	58	0.00	0.00	0.00	0.	*
1	JUN	0545	24	0.00	0.00	0.00	0.	*	1	JUN	1430	59	0.00	0.00	0.00	0.	*
1	JUN	0600	25	0.00	0.00	0.00	0.	*	1	JUN	1445	60	0.00	0.00	0.00	0.	*
1	JUN	0615	26	0.00	0.00	0.00	0.	*	1	JUN	1500	61	0.00	0.00	0.00	0.	*
1	JUN	0630	27	0.00	0.00	0.00	0.	*	1	JUN	1515	62	0.00	0.00	0.00	0.	*
1	JUN	0645	28	0.00	0.00	0.00	0.	*	1	JUN	1530	63	0.00	0.00	0.00	0.	*
1	JUN	0700	29	0.00	0.00	0.00	0.	*	1	JUN	1545	64	0.00	0.00	0.00	0.	*
1	JUN	0715	30	0.00	0.00	0.00	0.	*	1	JUN	1600	65	0.00	0.00	0.00	0.	*
1	JUN	0730	31	0.00	0.00	0.00	0.	*	1	JUN	1615	66	0.00	0.00	0.00	0.	*
1	JUN	0745	32	0.00	0.00	0.00	0.	*	1	JUN	1630	67	0.00	0.00	0.00	0.	*
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.	*
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.	*
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.	*

TOTAL RAINFALL = 68.44, TOTAL LOSS = 50.11, TOTAL EXCESS = 18.33

PEAK FLOW (CU M/S)	TIME (HR)	6-HR (CU M/S)	24-HR (MM)	72-HR (MM)	17.25-HR (MM)
7.	2.25	2.	18.269	18.269	18.269
		38.	38.	38.	38.

CUMULATIVE AREA = 2.08 SQ KM

STATION B-3

DAHRMN	PER	(O) OUTFLOW										(L) PRECIP,	(X) EXCESS
		0.	1.	2.	3.	4.	5.	6.	7.	8.	0.		
10000	10											30.	
10015	20												
10030	30												
10045	40												
10100	50												LLL.
10115	60												LLL.
10130	7.	0											LLLL.
10145	8.			0									LLLL.
10200	9.												LLLL.
10215	10.							0.					LLLLLLLX.
10230	11.								0	0			LLLLLLLX.
10245	12.												LLXXX.
10300	13.							0	0				LLXXX.
10315	14.						0						LLXX.
10330	15.					0							LXX.
10345	16.				0								LXX.
10400	17.		0										
10415	18.		0										
10430	19.	0											
10445	20.	0											
10500	210												
10515	220												
10530	230												
10545	240												
10600	250												
10615	260												
10630	270												
10645	280												
10700	290												
10715	300												
10730	310												
10745	320												
10800	330												
10815	340												
10830	350												
10845	360												
10900	370												
10915	380												
10930	390												
10945	400												
11000	410												
11015	420												
11030	430												
11045	440												
11100	450												
11115	460												
11130	470												
11145	480												
11200	490												
11215	500												
11230	510												
11245	520												
11300	530												
11315	540												
11330	550												
11345	560												
11400	570												
11415	580												
11430	590												
11445	600												
11500	610												
11515	620												
11530	630												
11545	640												
11600	650												
11615	660												
11630	670												
11645	680												
11700	690												
11715	700												

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50 KK \*\*\*\*\*  
 \* B2+B3 \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3

52 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B2+B3  
 SUM OF 2 HYDROGRAPHS

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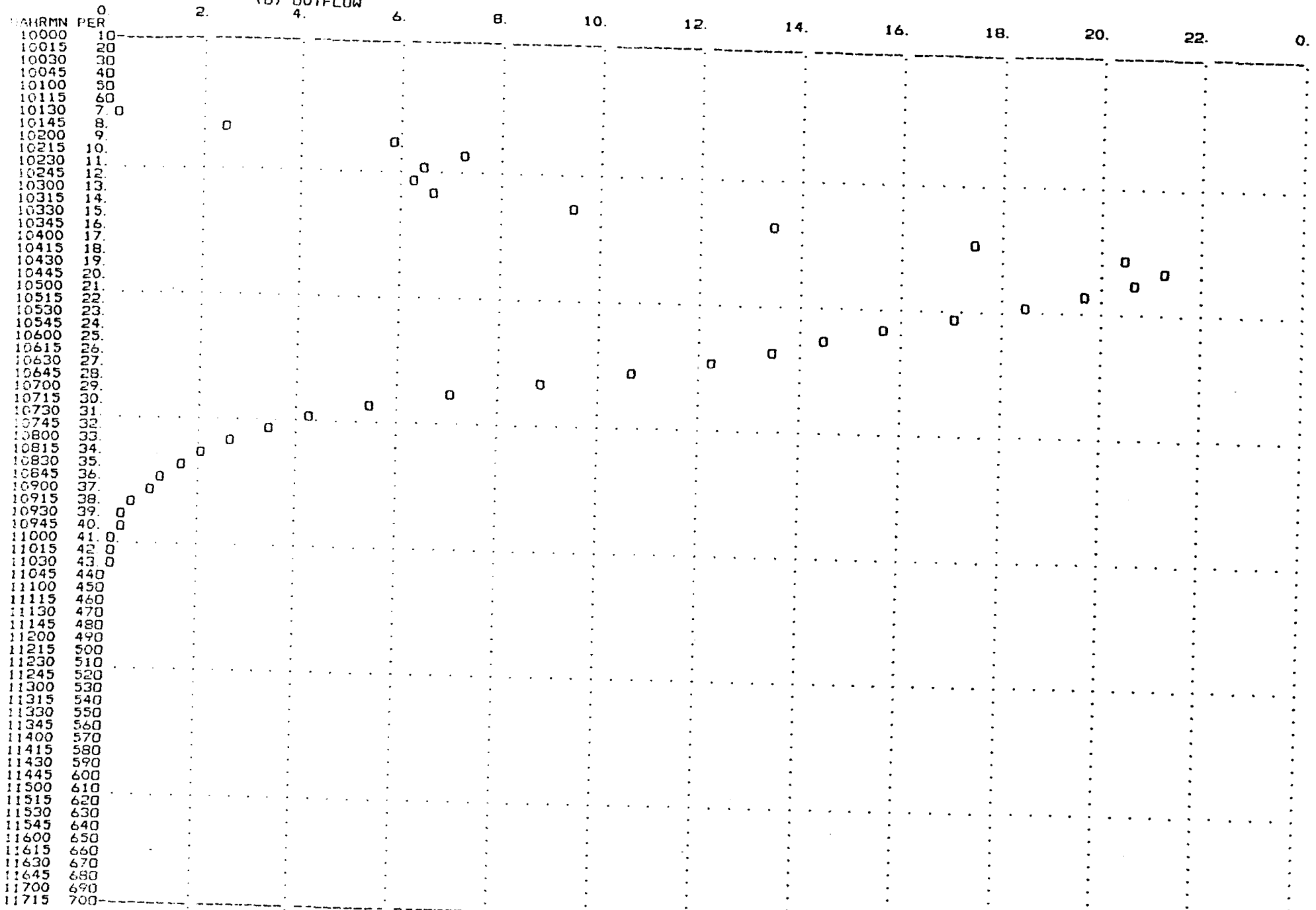
DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1	JUN	0000	1	0.	*	1	JUN	0430	19	21.	*	1	JUN	0900	37	1.	*	1	JUN	1330	55	0.
1	JUN	0015	2	0.	*	1	JUN	0445	20	20.	*	1	JUN	0915	38	1.	*	1	JUN	1345	56	0.
1	JUN	0030	3	0.	*	1	JUN	0500	21	18.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.
1	JUN	0045	4	0.	*	1	JUN	0515	22	17.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.
1	JUN	0100	5	0.	*	1	JUN	0530	23	16.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.
1	JUN	0115	6	0.	*	1	JUN	0545	24	14.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.
1	JUN	0130	7	0.	*	1	JUN	0600	25	13.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.
1	JUN	0145	8	2.	*	1	JUN	0615	26	12.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.
1	JUN	0200	9	6.	*	1	JUN	0630	27	11.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.
1	JUN	0215	10	7.	*	1	JUN	0645	28	9.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.
1	JUN	0230	11	6.	*	1	JUN	0700	29	7.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.
1	JUN	0245	12	6.	*	1	JUN	0715	30	5.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.
1	JUN	0300	13	7.	*	1	JUN	0730	31	4.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.
1	JUN	0315	14	9.	*	1	JUN	0745	32	3.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.
1	JUN	0330	15	13.	*	1	JUN	0800	33	3.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.
1	JUN	0345	16	17.	*	1	JUN	0815	34	2.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.
1	JUN	0400	17	20.	*	1	JUN	0830	35	2.	*	1	JUN	1300	53	0.	*					
1	JUN	0415	18	21.	*	1	JUN	0845	36	1.	*	1	JUN	1315	54	0.	*					

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PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR 24-HR 72-HR	17.25-HR
21.	4.25	12. 27.328 256.	4. 28.637 268.
	(CU M/S) (MM) (1000 CU M)		
CUMULATIVE AREA =		9.36 SQ KM	

STATION B2+B3

(D) OUTFLOW



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53 KK  
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 \* R23T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1

HYDROGRAPH ROUTING DATA

55 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSK 0.20 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R23T01

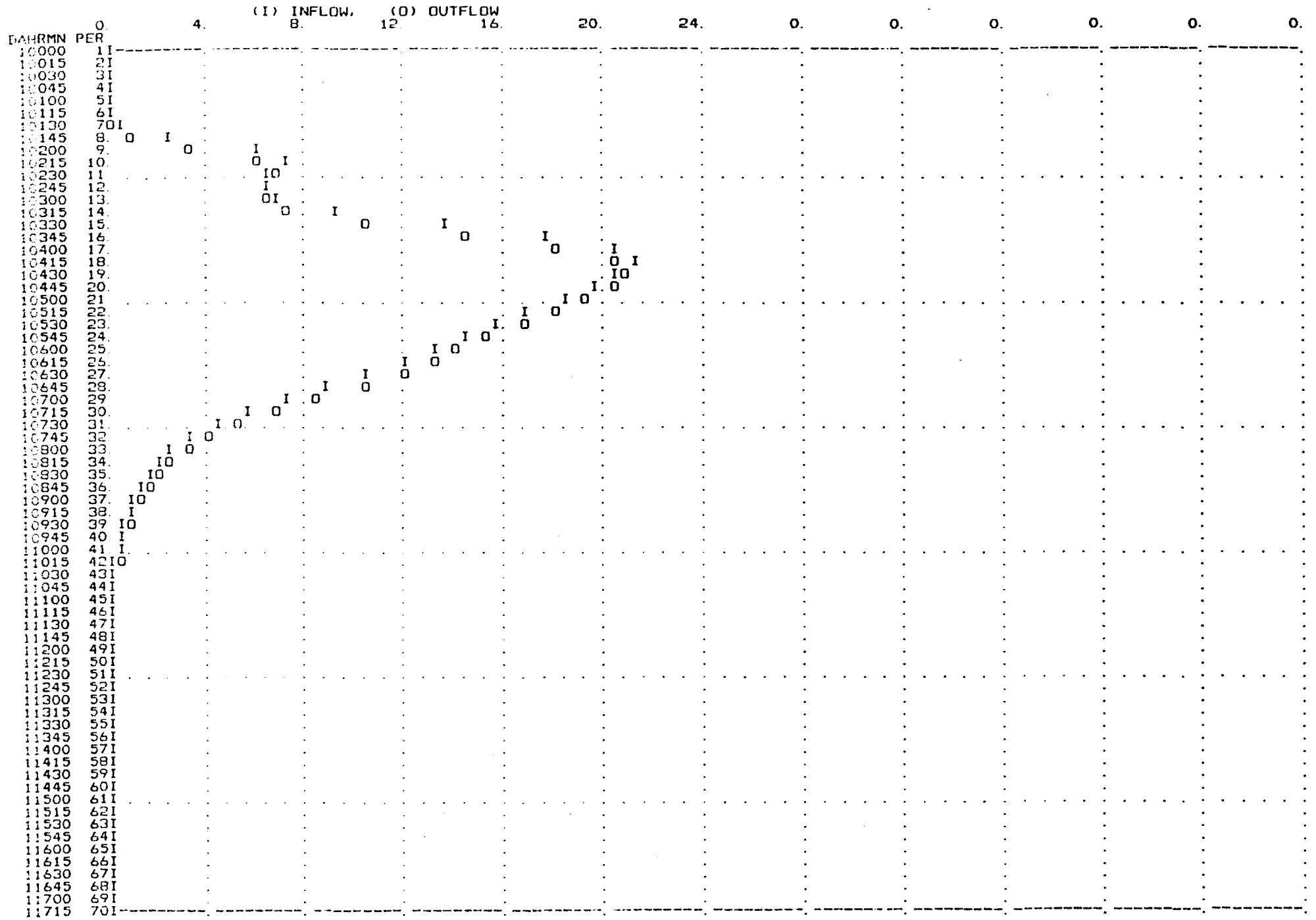
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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	21.	*	1	JUN	0900	37	1.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	20.	*	1	JUN	0915	38	1.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	19.	*	1	JUN	0930	39	1.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	18.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	17.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	15.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	14.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	1.	*	1	JUN	0615	26	13.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	3.	*	1	JUN	0630	27	12.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	6.	*	1	JUN	0645	28	10.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	7.	*	1	JUN	0700	29	8.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	6.	*	1	JUN	0715	30	7.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	6.	*	1	JUN	0730	31	5.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	7.	*	1	JUN	0745	32	4.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	10.	*	1	JUN	0800	33	3.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	14.	*	1	JUN	0815	34	2.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	18.	*	1	JUN	0830	35	2.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	20.	*	1	JUN	0845	36	1.	*	1	JUN	1315	54	0.	*							

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PEAK FLOW (CU M/S)	TIME (HR)	6-HR MAXIMUM AVERAGE FLOW	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	17.25-HR MAXIMUM AVERAGE FLOW
21.	4.50	12. (CU M/S)	4. (CU M/S)	4. (CU M/S)	4. (CU M/S)
		27.279 (1000 CU M)	28.637 (1000 CU M)	28.637 (1000 CU M)	28.637 (1000 CU M)
		255.	268.	268.	268.
CUMULATIVE AREA =		9.36 SQ KM			

STATION R23T01



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56 KK \*\*\*\*\*  
\* B-4 \*  
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BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

58 BA SUBBASIN CHARACTERISTICS  
TAREA 10.73 SUBBASIN AREA

PRECIPITATION DATA

59 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
16.80 27.50 51.90 73.20 83.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 10.73

60 LS SCS LOSS RATE  
SRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

61 UC CLARK UNITGRAPH  
TC 1.50 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

62 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
0.0 0.9 1.8 3.4 6.1 9.0 10.7

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.50 HR, R= 1.00 HR  
SNYDER TP= 1.42 HR, CP= 0.80

UNIT HYDROGRAPH  
25 END-OF-PERIOD ORDINATES  
0. 0. 1. 1. 1. 2. 2. 1. 1. 1.  
1. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-4

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q		DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JUN	0000	1	0.00	0.00	0.00	0.	*	1	JUN	0845	36	0.00	0.00	0.00	0.
1	JUN	0015	2	3.49	3.49	0.00	0.	*	1	JUN	0900	37	0.00	0.00	0.00	0.
1	JUN	0030	3	3.86	3.86	0.00	0.	*	1	JUN	0915	38	0.00	0.00	0.00	0.
1	JUN	0045	4	4.64	4.64	0.00	0.	*	1	JUN	0930	39	0.00	0.00	0.00	0.
1	JUN	0100	5	5.39	5.39	0.00	0.	*	1	JUN	0945	40	0.00	0.00	0.00	0.
1	JUN	0115	6	5.61	5.32	0.29	0.	*	1	JUN	1000	41	0.00	0.00	0.00	0.
1	JUN	0130	7	10.99	8.79	2.20	0.	*	1	JUN	1015	42	0.00	0.00	0.00	0.
1	JUN	0145	8	25.28	14.61	10.67	2.	*	1	JUN	1030	43	0.00	0.00	0.00	0.
1	JUN	0200	9	6.83	3.02	3.80	5.	*	1	JUN	1045	44	0.00	0.00	0.00	0.
1	JUN	0215	10	5.94	2.40	3.55	10.	*	1	JUN	1100	45	0.00	0.00	0.00	0.
1	JUN	0230	11	4.97	1.86	3.11	17.	*	1	JUN	1115	46	0.00	0.00	0.00	0.
1	JUN	0245	12	4.08	1.44	2.65	26.	*	1	JUN	1130	47	0.00	0.00	0.00	0.
1	JUN	0300	13	3.66	1.22	2.44	33.	*	1	JUN	1145	48	0.00	0.00	0.00	0.
1	JUN	0315	14	0.00	0.00	0.00	36.	*	1	JUN	1200	49	0.00	0.00	0.00	0.
1	JUN	0330	15	0.00	0.00	0.00	35.	*	1	JUN	1215	50	0.00	0.00	0.00	0.
1	JUN	0345	16	0.00	0.00	0.00	33.	*	1	JUN	1230	51	0.00	0.00	0.00	0.
1	JUN	0400	17	0.00	0.00	0.00	29.	*	1	JUN	1245	52	0.00	0.00	0.00	0.
1	JUN	0415	18	0.00	0.00	0.00	25.	*	1	JUN	1300	53	0.00	0.00	0.00	0.
1	JUN	0430	19	0.00	0.00	0.00	20.	*	1	JUN	1315	54	0.00	0.00	0.00	0.
1	JUN	0445	20	0.00	0.00	0.00	15.	*	1	JUN	1330	55	0.00	0.00	0.00	0.
1	JUN	0500	21	0.00	0.00	0.00	12.	*	1	JUN	1345	56	0.00	0.00	0.00	0.
1	JUN	0515	22	0.00	0.00	0.00	9.	*	1	JUN	1400	57	0.00	0.00	0.00	0.
1	JUN	0530	23	0.00	0.00	0.00	7.	*	1	JUN	1415	58	0.00	0.00	0.00	0.
1	JUN	0545	24	0.00	0.00	0.00	6.	*	1	JUN	1430	59	0.00	0.00	0.00	0.
1	JUN	0600	25	0.00	0.00	0.00	4.	*	1	JUN	1445	60	0.00	0.00	0.00	0.
1	JUN	0615	26	0.00	0.00	0.00	3.	*	1	JUN	1500	61	0.00	0.00	0.00	0.
1	JUN	0630	27	0.00	0.00	0.00	3.	*	1	JUN	1515	62	0.00	0.00	0.00	0.
1	JUN	0645	28	0.00	0.00	0.00	2.	*	1	JUN	1530	63	0.00	0.00	0.00	0.
1	JUN	0700	29	0.00	0.00	0.00	2.	*	1	JUN	1545	64	0.00	0.00	0.00	0.
1	JUN	0715	30	0.00	0.00	0.00	1.	*	1	JUN	1600	65	0.00	0.00	0.00	0.
1	JUN	0730	31	0.00	0.00	0.00	1.	*	1	JUN	1615	66	0.00	0.00	0.00	0.
1	JUN	0745	32	0.00	0.00	0.00	1.	*	1	JUN	1630	67	0.00	0.00	0.00	0.
1	JUN	0800	33	0.00	0.00	0.00	0.	*	1	JUN	1645	68	0.00	0.00	0.00	0.
1	JUN	0815	34	0.00	0.00	0.00	0.	*	1	JUN	1700	69	0.00	0.00	0.00	0.
1	JUN	0830	35	0.00	0.00	0.00	0.	*	1	JUN	1715	70	0.00	0.00	0.00	0.

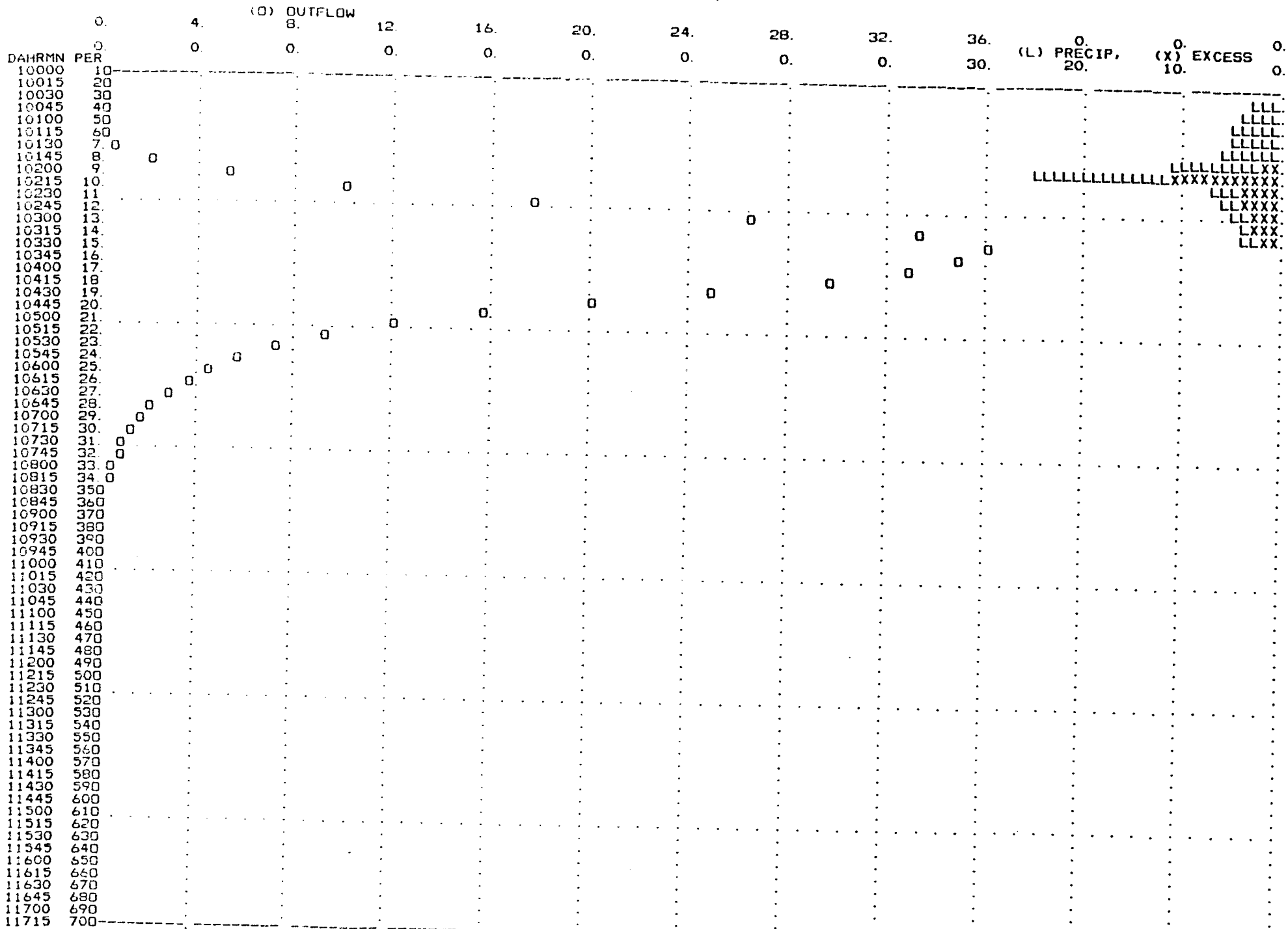
TOTAL RAINFALL = 84.75, TOTAL LOSS = 56.05, TOTAL EXCESS = 28.70

PEAK FLOW (CU M/S)	TIME (HR)	MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR
36.	3.25	14.	5.	5.
	(CU M/S)	28.353	28.557	28.557
	(MM)	304.	306.	306.
	(1000 CU M)			

CUMULATIVE AREA = 10.73 SQ KM



STATION B-4



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63 KK

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*
*   R4T01   *
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

65 RM

MUSKINGUM ROUTING

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NSTPS      1 NUMBER OF SUBREACHES
AMSKK      0.30 MUSKINGUM K
X          0.25 MUSKINGUM X
    
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HYDROGRAPH AT STATION R4T01

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	
1	JUN	0000	1	0.	*	1	JUN	0430	19	26.	*	1	JUN	0900	37	0.	*	1	JUN	1330	55	0.	*	
1	JUN	0015	2	0.	*	1	JUN	0445	20	21.	*	1	JUN	0915	38	0.	*	1	JUN	1345	56	0.	*	
1	JUN	0030	3	0.	*	1	JUN	0500	21	16.	*	1	JUN	0930	39	0.	*	1	JUN	1400	57	0.	*	
1	JUN	0045	4	0.	*	1	JUN	0515	22	13.	*	1	JUN	0945	40	0.	*	1	JUN	1415	58	0.	*	
1	JUN	0100	5	0.	*	1	JUN	0530	23	10.	*	1	JUN	1000	41	0.	*	1	JUN	1430	59	0.	*	
1	JUN	0115	6	0.	*	1	JUN	0545	24	8.	*	1	JUN	1015	42	0.	*	1	JUN	1445	60	0.	*	
1	JUN	0130	7	0.	*	1	JUN	0600	25	6.	*	1	JUN	1030	43	0.	*	1	JUN	1500	61	0.	*	
1	JUN	0145	8	1.	*	1	JUN	0615	26	5.	*	1	JUN	1045	44	0.	*	1	JUN	1515	62	0.	*	
1	JUN	0200	9	2.	*	1	JUN	0630	27	4.	*	1	JUN	1100	45	0.	*	1	JUN	1530	63	0.	*	
1	JUN	0215	10	5.	*	1	JUN	0645	28	3.	*	1	JUN	1115	46	0.	*	1	JUN	1545	64	0.	*	
1	JUN	0230	11	10.	*	1	JUN	0700	29	2.	*	1	JUN	1130	47	0.	*	1	JUN	1600	65	0.	*	
1	JUN	0245	12	16.	*	1	JUN	0715	30	2.	*	1	JUN	1145	48	0.	*	1	JUN	1615	66	0.	*	
1	JUN	0300	13	25.	*	1	JUN	0730	31	1.	*	1	JUN	1200	49	0.	*	1	JUN	1630	67	0.	*	
1	JUN	0315	14	31.	*	1	JUN	0745	32	1.	*	1	JUN	1215	50	0.	*	1	JUN	1645	68	0.	*	
1	JUN	0330	15	34.	*	1	JUN	0800	33	1.	*	1	JUN	1230	51	0.	*	1	JUN	1700	69	0.	*	
1	JUN	0345	16	35.	*	1	JUN	0815	34	1.	*	1	JUN	1245	52	0.	*	1	JUN	1715	70	0.	*	
1	JUN	0400	17	33.	*	1	JUN	0830	35	0.	*	1	JUN	1300	53	0.	*							
1	JUN	0415	18	30.	*	1	JUN	0845	36	0.	*	1	JUN	1315	54	0.	*							

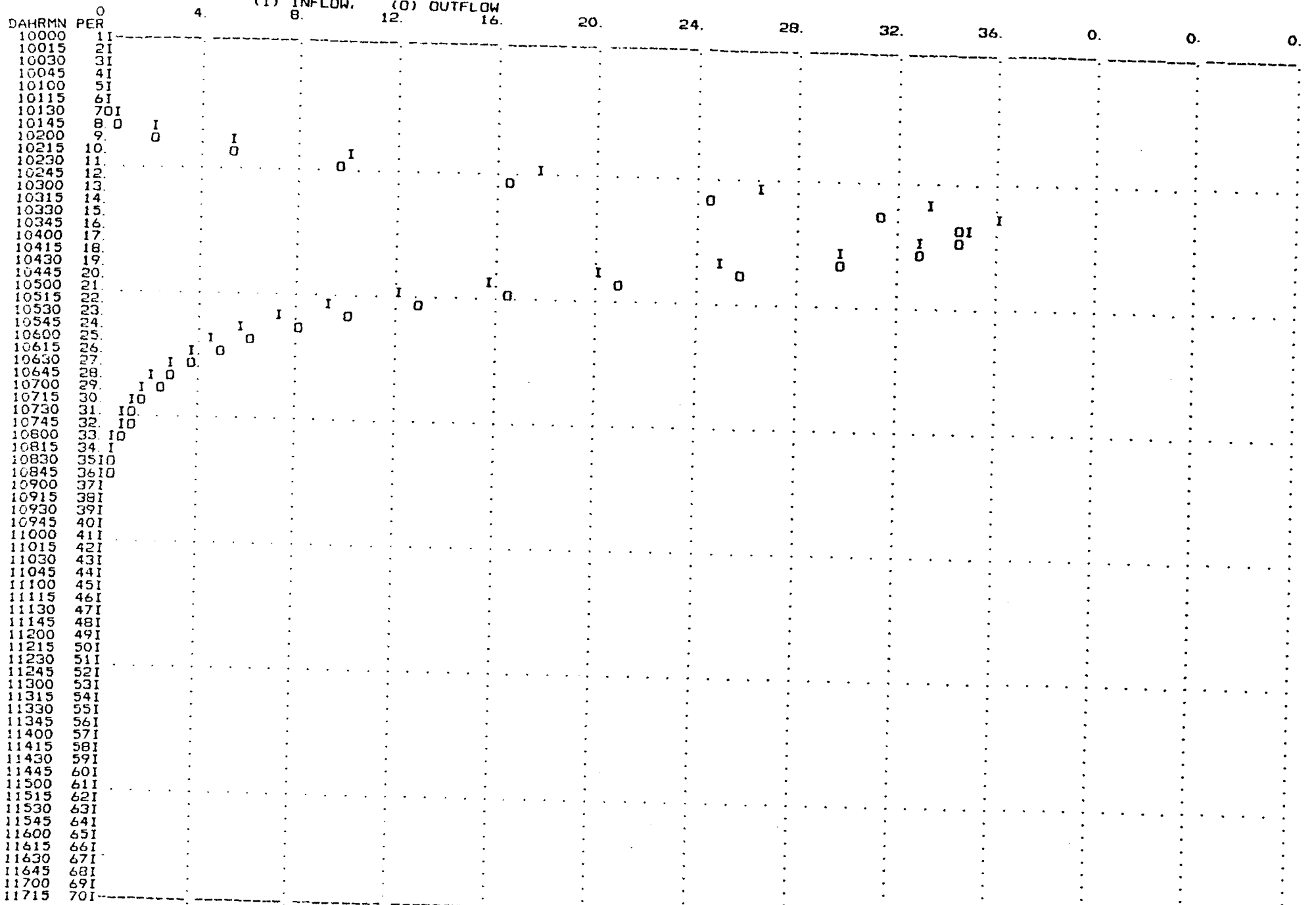
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PEAK FLOW      TIME      MAXIMUM AVERAGE FLOW
(CU M/S)      (HR)
35.           3.75      (CU M/S)      6-HR      24-HR      72-HR      17.25-HR
              (MM)      28.316      14.         5.         5.         5.
              (1000 CU M) 304.        28.557      306.        28.557      306.
    
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CUMULATIVE AREA = 10.73 SQ KM

STATION R4T01



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66 KK \*\*\*\*\*  
\* B-1 \*  
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BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

68 BA SUBBASIN CHARACTERISTICS  
TAREA 2.18 SUBBASIN AREA

PRECIPITATION DATA

69 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
11.90 19.50 36.80 51.90 62.70 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.18

70 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

71 UC CLARK UNITGRAPH  
TC 0.75 TIME OF CONCENTRATION  
R 0.50 STORAGE COEFFICIENT

72 UA ACCUMULATED-AREA VS. TIME, 4 ORDINATES  
0.0 0.8 1.8 2.2

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.75 HR. R= 0.50 HR  
SNYDER TP= 0.57 HR. CP= 0.61

UNIT HYDROGRAPH  
12 END-OF-PERIOD ORDINATES

0. 0. 1. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-1

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0015 | 2   | 2.47  | 2.47  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0030 | 3   | 2.73  | 2.73  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0045 | 4   | 3.29  | 3.29  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0100 | 5   | 3.85  | 3.85  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0115 | 6   | 3.93  | 3.93  | 0.00   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0130 | 7   | 8.26  | 7.79  | 0.47   | 0.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0145 | 8   | 19.01 | 13.72 | 5.29   | 1.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0200 | 9   | 4.82  | 2.79  | 2.03   | 3.   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0215 | 10  | 4.25  | 2.28  | 1.97   | 5.   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0230 | 11  | 3.54  | 1.78  | 1.76   | 5.   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0245 | 12  | 2.90  | 1.39  | 1.51   | 5.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0300 | 13  | 2.59  | 1.19  | 1.40   | 4.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 4.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 3.   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 2.   | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 61.63, TOTAL LOSS = 47.20, TOTAL EXCESS = 14.44

|           |      |             |        |                      |          |
|-----------|------|-------------|--------|----------------------|----------|
| PEAK FLOW | TIME |             | 6-HR   | MAXIMUM AVERAGE FLOW | 17.25-HR |
| (CU M/S)  | (HR) | (CU M/S)    | 24-HR  | 72-HR                |          |
| 5.        | 2.50 | 1.          | 1.     | 1.                   | 1.       |
|           |      | (MM)        | 14.369 | 14.369               | 14.369   |
|           |      | (1000 CU M) | 31.    | 31.                  | 31.      |

CUMULATIVE AREA = 2.18 SQ KM

STATION B-1

| DAHRMN | PER  | 0. | 1. | (O) OUTFLOW | 3. | 4. | 5. | 6. | 0. | 0.  | 0.  | (L) PRECIP, | (X) EXCESS | 0.      |
|--------|------|----|----|-------------|----|----|----|----|----|-----|-----|-------------|------------|---------|
|        |      | 0. | 0. | 0.          | 0. | 0. | 0. | 0. | 0. | 20. | 15. | 0.          | 0.         | 0.      |
| 10000  | 10   |    |    |             |    |    |    |    |    |     |     |             |            |         |
| 10015  | 20   |    |    |             |    |    |    |    |    |     |     |             |            |         |
| 10030  | 30   |    |    |             |    |    |    |    |    |     |     |             |            |         |
| 10045  | 40   |    |    |             |    |    |    |    |    |     |     |             |            |         |
| 10100  | 50   |    |    |             |    |    |    |    |    |     |     |             |            | LLLLL   |
| 10115  | 60   |    |    |             |    |    |    |    |    |     |     |             |            | LLLLL   |
| 10130  | 7.0  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10145  | 8.0  |    | 0  |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10200  | 9.   |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10215  | 10.  |    |    |             | 0  |    |    |    |    |     |     |             |            | LLLLLLL |
| 10230  | 11.  |    |    |             |    |    | 0  |    |    |     |     |             |            | LLLLLLL |
| 10245  | 12.  |    |    |             |    |    | 0  |    |    |     |     |             |            | LLLLLLL |
| 10300  | 13.  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10315  | 14.  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10330  | 15.  |    |    |             | 0  |    |    |    |    |     |     |             |            | LLLLLLL |
| 10345  | 16.  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10400  | 17.  |    | 0  |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10415  | 18.  |    | 0  |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10430  | 19.  |    | 0  |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10445  | 20.  |    | 0  |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10500  | 21.0 |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10515  | 22.0 |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10530  | 230  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10545  | 240  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10600  | 250  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10615  | 260  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10630  | 270  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10645  | 280  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10700  | 290  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10715  | 300  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10730  | 310  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10745  | 320  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10800  | 330  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10815  | 340  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10830  | 350  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10845  | 360  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10900  | 370  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10915  | 380  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10930  | 390  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 10945  | 400  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11000  | 410  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11015  | 420  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11030  | 430  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11045  | 440  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11100  | 450  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11115  | 460  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11130  | 470  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11145  | 480  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11200  | 490  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11215  | 500  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11230  | 510  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11245  | 520  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11300  | 530  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11315  | 540  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11330  | 550  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11345  | 560  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11400  | 570  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11415  | 580  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11430  | 590  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11445  | 600  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11500  | 610  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11515  | 620  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11530  | 630  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11545  | 640  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11600  | 650  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11615  | 660  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11630  | 670  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11645  | 680  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11700  | 690  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |
| 11715  | 700  |    |    |             |    |    |    |    |    |     |     |             |            | LLLLLLL |

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73 KK  
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 \* B-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4

75 HC HYDROGRAPH COMBINATION  
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B-SUMA  
 SUM OF 3 HYDROGRAPHS

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| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |   |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|---|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 47.  | * | 1  | JUN | 0900 | 37  | 1.   | * | 1  | JUN | 1330 | 55  | 0.   | * |   |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 41.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |   |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 36.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |   |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 31.  | * | 1  | JUN | 0945 | 40  | 0.   | * | 1  | JUN | 1415 | 58  | 0.   | * |   |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 27.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |   |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 23.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |   |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 20.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |   |
| 1  | JUN | 0145 | 8   | 2.   | * | 1  | JUN | 0615 | 26  | 18.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |   |
| 1  | JUN | 0200 | 9   | 8.   | * | 1  | JUN | 0630 | 27  | 15.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |   |
| 1  | JUN | 0215 | 10  | 16.  | * | 1  | JUN | 0645 | 28  | 13.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |   |
| 1  | JUN | 0230 | 11  | 22.  | * | 1  | JUN | 0700 | 29  | 11.  | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |   |
| 1  | JUN | 0245 | 12  | 28.  | * | 1  | JUN | 0715 | 30  | 8.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |   |
| 1  | JUN | 0300 | 13  | 35.  | * | 1  | JUN | 0730 | 31  | 7.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |   |
| 1  | JUN | 0315 | 14  | 42.  | * | 1  | JUN | 0745 | 32  | 5.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |   |
| 1  | JUN | 0330 | 15  | 48.  | * | 1  | JUN | 0800 | 33  | 4.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |   |
| 1  | JUN | 0345 | 16  | 51.  | * | 1  | JUN | 0815 | 34  | 3.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |   |
| 1  | JUN | 0400 | 17  | 52.  | * | 1  | JUN | 0830 | 35  | 2.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   | * |
| 1  | JUN | 0415 | 18  | 51.  | * | 1  | JUN | 0845 | 36  | 2.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   | * |

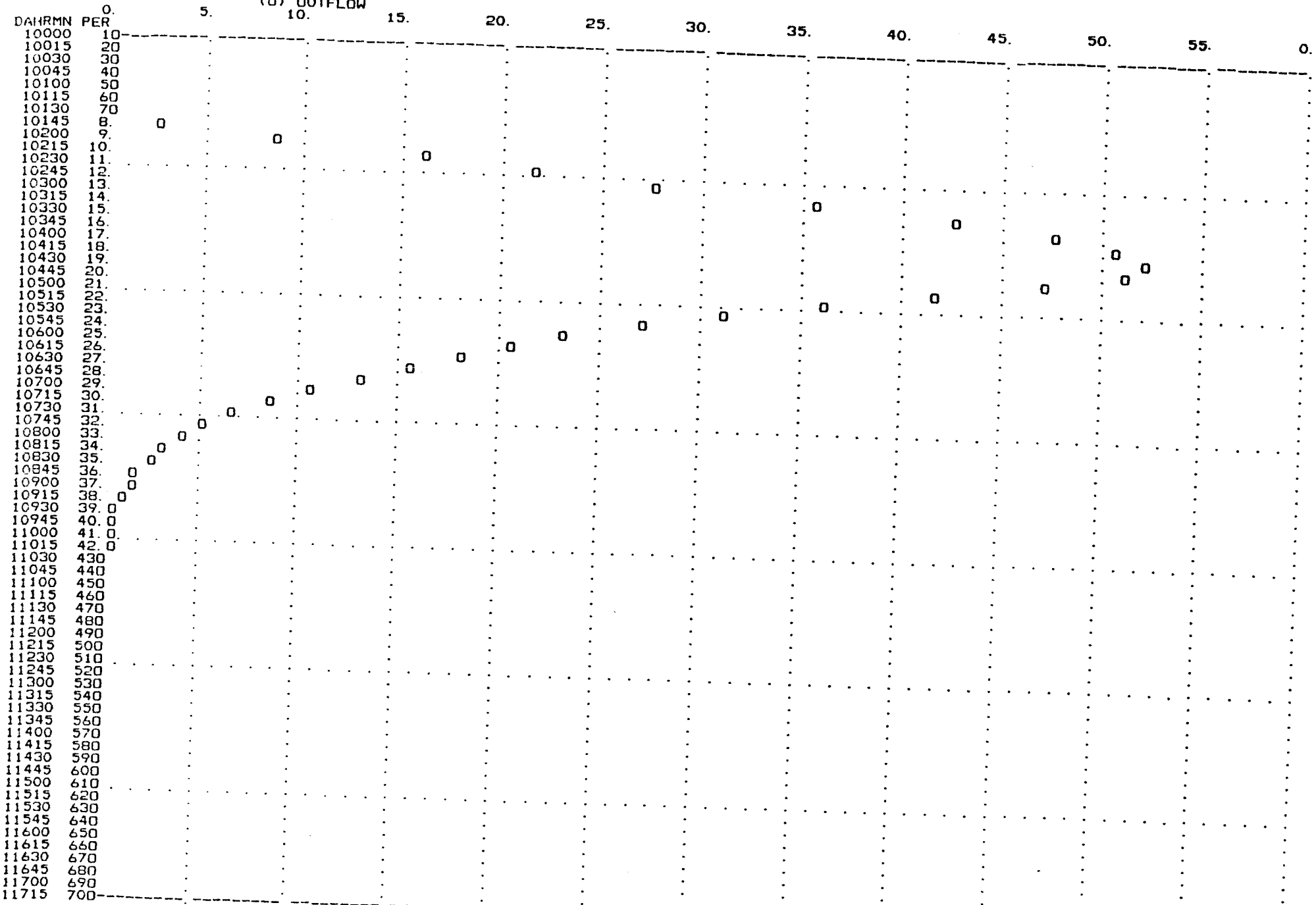
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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>AVERAGE FLOW<br>(CU M/S) | 24-HR<br>AVERAGE FLOW<br>(MM) | 72-HR<br>AVERAGE FLOW<br>(1000 CU M) | 17.25-HR<br>AVERAGE FLOW<br>(1000 CU M) |
|-----------------------|--------------|----------------------------------|-------------------------------|--------------------------------------|---|
| 52.                   | 4.00         | 27.                              | 26.422                        | 27.202                               | 27.202                                  |
|                       |              | (MM)                             | 588.                          | 606.                                 | 606.                                    |

CUMULATIVE AREA = 22.27 SQ KM

STATION B-SUMA

(O) OUTFLOW





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76 KK \*\*\*\*\*  
\* C-1 \*  
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BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

78 BA SUBBASIN CHARACTERISTICS  
TAREA 10.45 SUBBASIN AREA

PRECIPITATION DATA

79 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
12.60 20.70 39.00 55.10 66.50 87.70 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 10.45

80 LS SCS LOSS RATE  
STRIL 19.80 INITIAL ABSTRACTION  
CRVNR 72.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

81 UC CLARK UNITGRAPH  
TC 1.50 TIME OF CONCENTRATION  
R 1.10 STORAGE COEFFICIENT

82 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
0.0 2.1 4.0 5.8 8.1 9.5 10.5

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.50 HR. R= 1.10 HR  
SNYDER TP= 1.23 HR. CP= 0.59

UNIT HYDROGRAPH  
27 END-OF-PERIOD ORDINATES  
0. 1. 1. 1. 1. 1. 1. 1. 1.  
0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION C-1

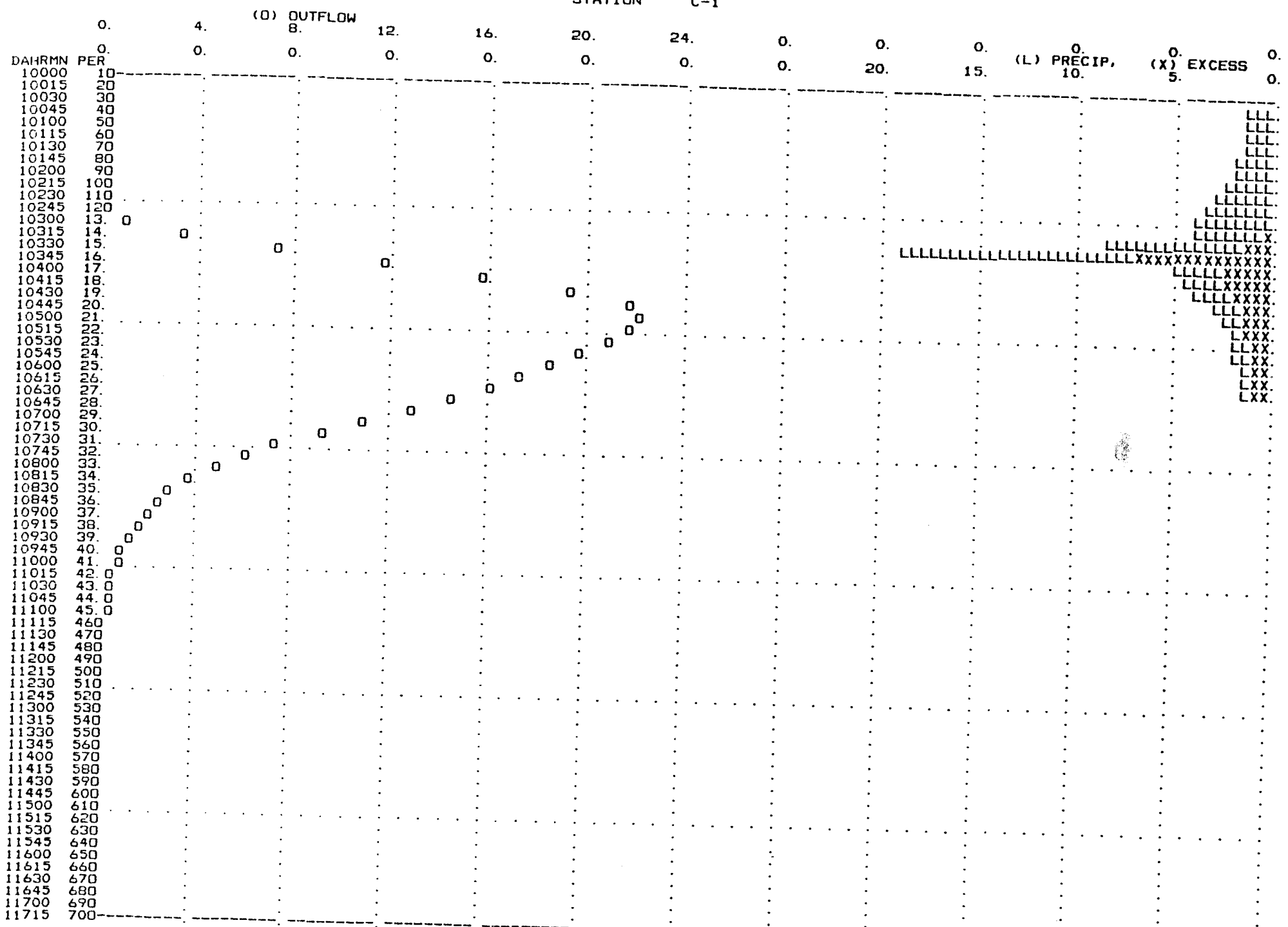
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0015 | 2   | 1.46  | 1.46  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0030 | 3   | 1.54  | 1.54  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0045 | 4   | 1.64  | 1.64  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0100 | 5   | 1.74  | 1.74  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0115 | 6   | 1.87  | 1.87  | 0.00   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0130 | 7   | 2.03  | 2.03  | 0.00   | 0.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0145 | 8   | 2.60  | 2.60  | 0.00   | 0.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0200 | 9   | 2.87  | 2.87  | 0.00   | 0.   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0215 | 10  | 3.51  | 3.51  | 0.00   | 0.   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0230 | 11  | 4.08  | 3.95  | 0.12   | 0.   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0245 | 12  | 4.20  | 3.76  | 0.44   | 0.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0300 | 13  | 8.26  | 6.59  | 1.67   | 1.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0315 | 14  | 19.07 | 12.11 | 6.96   | 3.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0330 | 15  | 5.12  | 2.69  | 2.43   | 7.   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0345 | 16  | 4.49  | 2.20  | 2.29   | 11.  | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0400 | 17  | 3.76  | 1.74  | 2.02   | 16.  | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0415 | 18  | 3.05  | 1.34  | 1.70   | 19.  | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0430 | 19  | 2.73  | 1.16  | 1.57   | 22.  | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0445 | 20  | 2.13  | 0.87  | 1.25   | 22.  | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0500 | 21  | 1.95  | 0.78  | 1.17   | 22.  | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0515 | 22  | 1.80  | 0.71  | 1.10   | 21.  | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0530 | 23  | 1.69  | 0.65  | 1.04   | 20.  | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0545 | 24  | 1.59  | 0.59  | 0.99   | 18.  | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0600 | 25  | 1.50  | 0.55  | 0.95   | 17.  | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 16.  | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 14.  | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 13.  | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 11.  | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 9.   | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 7.   | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 6.   | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 5.   | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 4.   | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 3.   | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 84.68, TOTAL LOSS = 58.96, TOTAL EXCESS = 25.72

|                       |              |                  |               |                                |               |                |
|-----------------------|--------------|------------------|---------------|--------------------------------|---------------|----------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | MAXIMUM AVERAGE FLOW<br>25.614 | 72-HR<br>(MM) | 17.25-HR<br>4. |
| 22.                   | 4.75         | 24.965           | 261.          | 25.614                         | 268.          | 25.614         |
|                       |              | (1000 CU M)      |               |                                |               | 268.           |

CUMULATIVE AREA = 10.45 SQ KM.

STATION C-1



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83 KK \*\*\*\*\*  
 \* G-1 \*  
 \* \*\*\*\*\*

BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

85 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.45 SUBBASIN AREA

PRECIPITATION DATA

86 PH DEPTHS FOR 10-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 15.20 25.00 47.10 66.50 80.40 105.90 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 19.45

87 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

88 UC CLARK UNITGRAPH  
 TC 2.00 TIME OF CONCENTRATION  
 R 1.80 STORAGE COEFFICIENT

89 UA ACCUMULATED-AREA VS. TIME, 9 ORDINATES  
 0.0 2.3 6.4 9.3 12.0 14.1 15.7 17.6 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.00 HR, R= 1.80 HR  
 SNYDER TP= 1.87 HR, CP= 0.57

UNIT HYDROGRAPH  
 42 END-OF-PERIOD ORDINATES  
 0. 1. 1. 1. 1. 2. 2. 2. 1.  
 1. 1. 1. 1. 1. 1. 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. 0. 0. 0. 0.

HYDROGRAPH AT STATION G-1

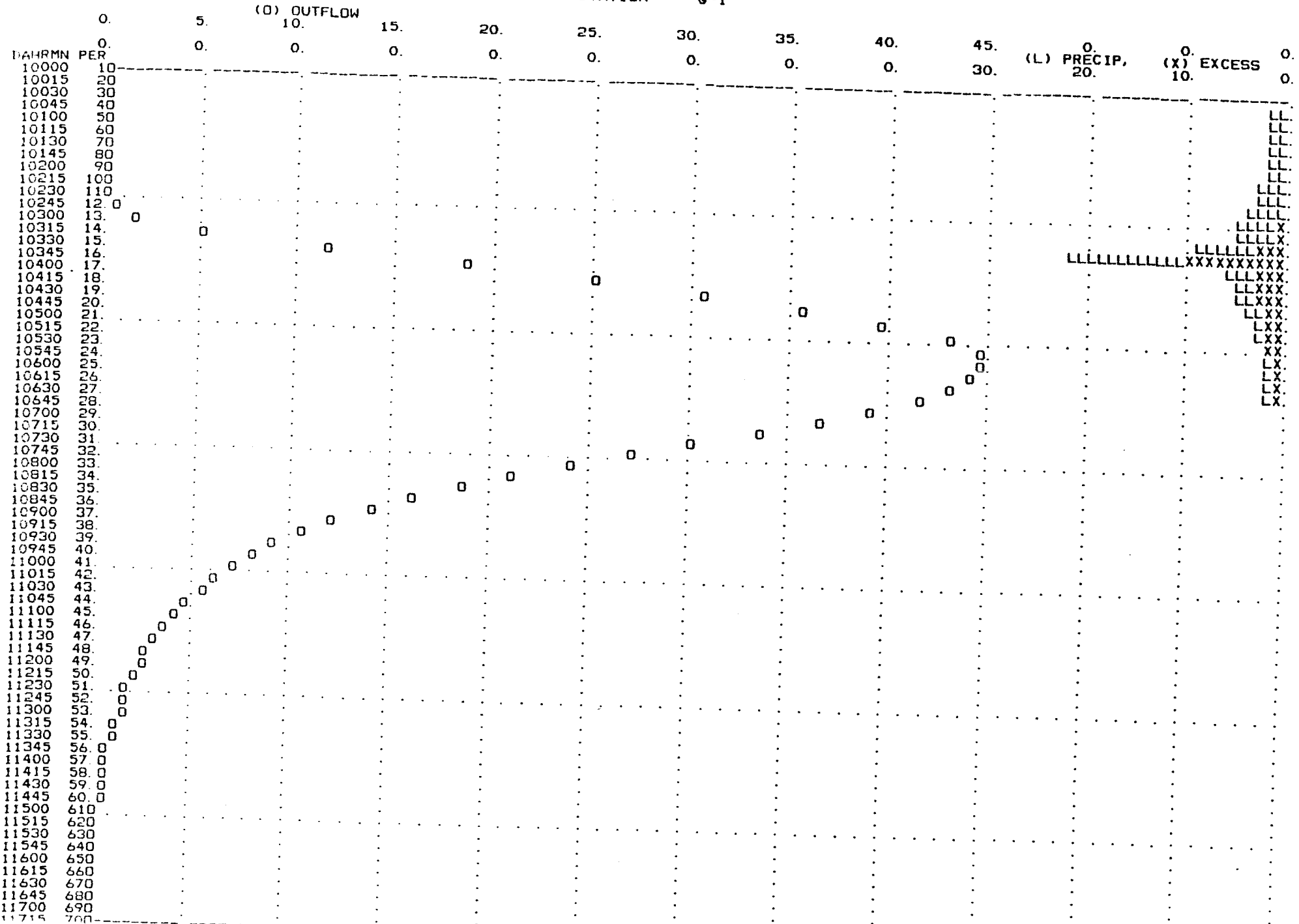
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q | * | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 14.    |
| 1  | JUN | 0015 | 2   | 1.76  | 1.76  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 12.    |
| 1  | JUN | 0030 | 3   | 1.86  | 1.86  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 11.    |
| 1  | JUN | 0045 | 4   | 1.97  | 1.97  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 9.     |
| 1  | JUN | 0100 | 5   | 2.09  | 2.09  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 8.     |
| 1  | JUN | 0115 | 6   | 2.25  | 2.25  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 7.     |
| 1  | JUN | 0130 | 7   | 2.44  | 2.44  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 6.     |
| 1  | JUN | 0145 | 8   | 3.17  | 3.17  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0200 | 9   | 3.49  | 3.49  | 0.00   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0215 | 10  | 4.22  | 4.11  | 0.12   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0230 | 11  | 4.88  | 4.35  | 0.53   | 0.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0245 | 12  | 5.14  | 4.17  | 0.97   | 1.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0300 | 13  | 9.42  | 6.73  | 2.69   | 2.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0315 | 14  | 21.74 | 12.16 | 9.58   | 5.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0330 | 15  | 6.20  | 2.82  | 3.38   | 11.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0345 | 16  | 5.37  | 2.26  | 3.11   | 18.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0400 | 17  | 4.52  | 1.78  | 2.73   | 25.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0415 | 18  | 3.69  | 1.39  | 2.31   | 31.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0430 | 19  | 3.32  | 1.19  | 2.13   | 35.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0445 | 20  | 2.55  | 0.88  | 1.67   | 40.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0500 | 21  | 2.34  | 0.79  | 1.55   | 43.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0515 | 22  | 2.17  | 0.71  | 1.46   | 45.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0530 | 23  | 2.03  | 0.65  | 1.38   | 45.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 1.91  | 0.60  | 1.31   | 44.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 1.81  | 0.55  | 1.25   | 43.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 41.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 39.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 36.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 33.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 30.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 27.    | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 24.    | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 21.    | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 18.    | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 16.    | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 100.33, TOTAL LOSS = 64.16, TOTAL EXCESS = 36.17

| PEAK FLOW (CU M/S) | TIME (HR) | 6-HR (CU M/S)    | 24-HR (CU M/S) | 72-HR (CU M/S) | 17.25-HR (CU M/S) |
|--------------------|-----------|------------------|----------------|----------------|-------------------|
| 45.                | 5.25      | 29.              | 11.            | 11.            | 11.               |
|                    |           | (MM) 32.491      | 35.987         | 35.987         | 35.987            |
|                    |           | (1000 CU M) 632. | 700.           | 700.           | 700.              |

CUMULATIVE AREA = 19.45 SQ KM

STATION G-1



RUNOFF SUMMARY. AVERAGE FLOW IN CUBIC METERS PER SECOND  
 AREA IN SQUARE KILOMETERS

| OPERATION     | STATION | PEAK<br>FLOW | TIME OF<br>PEAK | AVERAGE FLOW FOR MAXIMUM PERIOD |         |         | BASIN<br>AREA | MAXIMUM<br>STAGE | TIME OF<br>MAX STAGE |
|---------------|---------|--------------|-----------------|---------------------------------|---------|---------|---------------|------------------|----------------------|
|               |         |              |                 | 6-HOUR                          | 24-HOUR | 72-HOUR |               |                  |                      |
| HYDROGRAPH AT | T-2     | 83.87        | 6.25            | 58.04                           | 23.91   | 23.91   | 43.18         |                  |                      |
| ROUTED TO     | R2T01   | 82.13        | 7.00            | 57.60                           | 23.87   | 23.87   | 43.18         |                  |                      |
| HYDROGRAPH AT | T-1     | 26.12        | 6.00            | 18.47                           | 7.67    | 7.67    | 19.55         |                  |                      |
| 2 COMBINED AT | T-SUMA  | 105.88       | 7.00            | 75.20                           | 31.54   | 31.54   | 62.73         |                  |                      |
| HYDROGRAPH AT | L-1     | 4.84         | 2.25            | 1.09                            | 0.38    | 0.38    | 1.53          |                  |                      |
| HYDROGRAPH AT | B-2     | 20.88        | 4.25            | 10.47                           | 3.70    | 3.70    | 7.28          |                  |                      |
| HYDROGRAPH AT | B-3     | 7.15         | 2.25            | 1.76                            | 0.61    | 0.61    | 2.08          |                  |                      |
| 2 COMBINED AT | B2+B3   | 21.24        | 4.25            | 11.84                           | 4.32    | 4.32    | 9.36          |                  |                      |
| ROUTED TO     | R23T01  | 20.98        | 4.50            | 11.82                           | 4.32    | 4.32    | 9.36          |                  |                      |
| HYDROGRAPH AT | B-4     | 35.84        | 3.25            | 14.08                           | 4.93    | 4.93    | 10.73         |                  |                      |
| ROUTED TO     | R4T01   | 34.52        | 3.75            | 14.07                           | 4.93    | 4.93    | 10.73         |                  |                      |
| HYDROGRAPH AT | B-1     | 5.08         | 2.50            | 1.45                            | 0.50    | 0.50    | 2.18          |                  |                      |
| 3 COMBINED AT | B-SUMA  | 51.93        | 4.00            | 27.24                           | 9.75    | 9.75    | 22.27         |                  |                      |
| HYDROGRAPH AT | C-1     | 22.13        | 4.75            | 12.08                           | 4.31    | 4.31    | 10.45         |                  |                      |
| HYDROGRAPH AT | G-1     | 44.68        | 5.25            | 29.26                           | 11.27   | 11.27   | 19.45         |                  |                      |

\*\*\* NORMAL END OF HEC-1 \*\*\*

4.4 Avenida de 15 años de periodo de recurrencia



HEC-1 INPUT

| LINE | ID | 1  | 2      | 3     | 4    | 5     | 6     | 7     | 8     | 9     | 10    |
|------|----|--|--------|-------|------|-------|-------|-------|-------|-------|-------|
| 1    | ID | CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEGUE     |        |       |      |       |       |       |       |       |       |
| 2    | ID | PERIODO DE RECURRENCIA 15 AÑOS   |        |       |      |       |       |       |       |       |       |
| 3    | ID | TORMENTAS NO UNIFORMES   |        |       |      |       |       |       |       |       |       |
| 4    | IT | 15   | 1JUN87 | 000   | 70   |       |       |       |       |       |       |
| 5    | IO | 1  | 2      |       |      |       |       |       |       |       |       |
| 6    | IM |  |        |       |      |       |       |       |       |       |       |
| 7    | KK | T-2  |        |       |      |       |       |       |       |       |       |
| 8    | KM | BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION   |        |       |      |       |       |       |       |       |       |
| 9    | BA | 43.18  |        |       |      |       |       |       |       |       |       |
| 10   | PH | 6.7  |        | 17.8  | 29.2 | 55.1  | 77.8  | 94.0  | 123.8 |       |       |
| 11   | LS | 20.7   | 71     |       |      |       |       |       |       |       |       |
| 12   | UC | 3.0  | 2.2    |       |      |       |       |       |       |       |       |
| 13   | UA | 0.0  | 2.03   | 4.93  | 8.63 | 10.93 | 15.62 | 20.81 | 26.10 | 32.42 | 36.27 |
| 14   | UA | 39.40  | 41.93  | 43.18 |      |       |       |       |       |       |       |
| 15   | KK | R2T01  |        |       |      |       |       |       |       |       |       |
| 16   | KM | TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1                         |        |       |      |       |       |       |       |       |       |
| 17   | RM | 2  | 0.7    | 0.25  |      |       |       |       |       |       |       |
| 18   | KK | T-1  |        |       |      |       |       |       |       |       |       |
| 19   | KM | BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION   |        |       |      |       |       |       |       |       |       |
| 20   | BA | 19.55  |        |       |      |       |       |       |       |       |       |
| 21   | PH | 6.7  |        | 13.4  | 21.9 | 41.3  | 58.3  | 70.5  | 92.9  |       |       |
| 22   | LS | 17.8   | 74     |       |      |       |       |       |       |       |       |
| 23   | UC | 2.5  | 2.4    |       |      |       |       |       |       |       |       |
| 24   | UA | 0.0  | 1.23   | 3.23  | 5.78 | 9.16  | 12.34 | 14.94 | 16.02 | 17.12 | 18.02 |
| 25   | UA | 19.55  |        |       |      |       |       |       |       |       |       |
| 26   | KK | T-SUMA   |        |       |      |       |       |       |       |       |       |
| 27   | KM | COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2               |        |       |      |       |       |       |       |       |       |
| 28   | HC | 2  |        |       |      |       |       |       |       |       |       |
| 29   | KK | L-1  |        |       |      |       |       |       |       |       |       |
| 30   | KM | BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION |        |       |      |       |       |       |       |       |       |
| 31   | BA | 1.53   |        |       |      |       |       |       |       |       |       |
| 32   | PH | 6.7  |        | 13.9  | 22.8 | 43.1  | 60.8  | 73.5  |       |       |       |
| 33   | LS | 17.8   | 74     |       |      |       |       |       |       |       |       |
| 34   | UC | 0.5  | 0.3    |       |      |       |       |       |       |       |       |
| 35   | UA | 0.0  | 0.70   | 1.53  |      |       |       |       |       |       |       |
| 36   | KK | B-2  |        |       |      |       |       |       |       |       |       |
| 37   | KM | BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION      |        |       |      |       |       |       |       |       |       |
| 38   | BA | 7.28   |        |       |      |       |       |       |       |       |       |
| 39   | PH | 6.7  |        | 15.0  | 24.5 | 46.3  | 65.3  | 78.9  | 104.0 |       |       |
| 40   | LS | 17.8   | 74     |       |      |       |       |       |       |       |       |
| 41   | UC | 1.0  | 1.0    |       |      |       |       |       |       |       |       |
| 42   | UA | 0.0  | 2.00   | 4.11  | 6.03 | 7.28  |       |       |       |       |       |
| 43   | KK | B-3  |        |       |      |       |       |       |       |       |       |
| 44   | KM | BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION      |        |       |      |       |       |       |       |       |       |
| 45   | BA | 2.08   |        |       |      |       |       |       |       |       |       |
| 46   | PH | 6.7  |        | 15.0  | 24.5 | 46.3  | 65.4  | 79.0  |       |       |       |
| 47   | LS | 17.8   | 74     |       |      |       |       |       |       |       |       |
| 48   | UC | 0.5  | 0.4    |       |      |       |       |       |       |       |       |

HEC-1 INPUT

| LINE | ID | 1  | 2    | 3    | 4    | 5     | 6     | 7     | 8     | 9     | 10 |
|------|----|--|------|------|------|-------|-------|-------|-------|-------|----|
| 49   | UA | 0.0  | 0.93 | 2.08 |      |       |       |       |       |       |    |
| 50   | KK | B2+B3  |      |      |      |       |       |       |       |       |    |
| 51   | KM | COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3           |      |      |      |       |       |       |       |       |    |
| 52   | HC | 2  |      |      |      |       |       |       |       |       |    |
| 53   | KK | R23T01   |      |      |      |       |       |       |       |       |    |
| 54   | KM | TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1                     |      |      |      |       |       |       |       |       |    |
| 55   | RM | 1  | 0.2  | 0.25 |      |       |       |       |       |       |    |
| 56   | KK | B-4  |      |      |      |       |       |       |       |       |    |
| 57   | KM | BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION  |      |      |      |       |       |       |       |       |    |
| 58   | BA | 10.73  |      |      |      |       |       |       |       |       |    |
| 59   | PH | 6.7  |      | 19.1 | 31.3 | 59.1  | 83.4  | 100.8 |       |       |    |
| 60   | LS | 17.8   | 74   |      |      |       |       |       |       |       |    |
| 61   | UC | 1.5  | 1.0  |      |      |       |       |       |       |       |    |
| 62   | UA | 0.0  | 0.94 | 1.83 | 3.42 | 6.11  | 9.00  | 10.73 |       |       |    |
| 63   | KK | R4T01  |      |      |      |       |       |       |       |       |    |
| 64   | KM | TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1                     |      |      |      |       |       |       |       |       |    |
| 65   | RM | 1  | 0.3  | 0.25 |      |       |       |       |       |       |    |
| 66   | KK | B-1  |      |      |      |       |       |       |       |       |    |
| 67   | KM | BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION  |      |      |      |       |       |       |       |       |    |
| 68   | BA | 2.18   |      |      |      |       |       |       |       |       |    |
| 69   | PH | 6.7  |      | 13.5 | 22.1 | 41.8  | 59.0  | 71.3  |       |       |    |
| 70   | LS | 17.8   | 74   |      |      |       |       |       |       |       |    |
| 71   | UC | 0.75   | 0.5  |      |      |       |       |       |       |       |    |
| 72   | UA | 0.0  | 0.75 | 1.75 | 2.18 |       |       |       |       |       |    |
| 73   | KK | B-SUMA   |      |      |      |       |       |       |       |       |    |
| 74   | KM | COMBINACION DE LOS HIDROGRAMAS DE LAS SURCUENCAS B-1, B-2, B-3 Y B-4 |      |      |      |       |       |       |       |       |    |
| 75   | HC | 3  |      |      |      |       |       |       |       |       |    |
| 76   | KK | C-1  |      |      |      |       |       |       |       |       |    |
| 77   | KM | BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS    |      |      |      |       |       |       |       |       |    |
| 78   | BA | 10.45  |      |      |      |       |       |       |       |       |    |
| 79   | PH | 6.7  |      | 14.2 | 23.3 | 43.9  | 62.0  | 75.0  | 98.8  |       |    |
| 80   | LS | 19.8   | 72   |      |      |       |       |       |       |       |    |
| 81   | UC | 1.5  | 1.1  |      |      |       |       |       |       |       |    |
| 82   | UA | 0.0  | 2.05 | 4.02 | 5.82 | 8.09  | 9.55  | 10.45 |       |       |    |
| 83   | KK | G-1  |      |      |      |       |       |       |       |       |    |
| 84   | KM | BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS         |      |      |      |       |       |       |       |       |    |
| 85   | BA | 19.45  |      |      |      |       |       |       |       |       |    |
| 86   | PH | 6.7  |      | 17.0 | 27.8 | 52.4  | 74.0  | 89.4  | 117.8 |       |    |
| 87   | LS | 19.8   | 72   |      |      |       |       |       |       |       |    |
| 88   | UC | 2.0  | 1.8  |      |      |       |       |       |       |       |    |
| 89   | UA | 0.0  | 2.28 | 6.42 | 9.26 | 12.05 | 14.13 | 15.71 | 17.57 | 19.45 |    |
| 90   | ZZ |  |      |      |      |       |       |       |       |       |    |

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*****
FLOOD HYDROGRAPH PACKAGE (HEC-1)
  FEBRUARY 1981
  REVISED 14 JUN 85
RUN DATE      TIME
*****

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*****
U. S. ARMY CORPS OF ENGINEERS
THE HYDROLOGIC ENGINEERING CENTER
  609 SECOND STREET
  DAVIS, CALIFORNIA 95616
(916) 440-3285 OR (FTS) 448-
*****

```

CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE  
 PERIODO DE RECURRENCIA 15 A#OS  
 TORMENTAS NO UNIFORMES

```

5 10  OUTPUT CONTROL VARIABLES
      IPRNT      1  PRINT CONTROL
      IPLOT      2  PLOT CONTROL
      GSCAL      0. HYDROGRAPH PLOT SCALE

IT    HYDROGRAPH TIME DATA
      NMIN      15  MINUTES IN COMPUTATION INTERVAL
      IDATE     1JUN87  STARTING DATE
      ITIME     0000  STARTING TIME
      NQ        70  NUMBER OF HYDROGRAPH ORDINATES
      NDDATE    1JUN87  ENDING DATE
      NDTIME    1715  ENDING TIME

      COMPUTATION INTERVAL  0.25 HOURS
      TOTAL TIME BASE      17.25 HOURS

```

```

METRIC UNITS
DRAINAGE AREA      SQUARE KILOMETERS
PRECIPITATION DEPTH  MILLIMETERS
LENGTH, ELEVATION  METERS
FLOW               CUBIC METERS PER SECOND
STORAGE VOLUME     CUBIC METERS
SURFACE AREA       SQUARE METERS
TEMPERATURE        DEGREES CELSIUS

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\*\*\*\*\*

7 KK \*\*\*\*\*  
 \* T-2 \*  
 \* \*  
 \*\*\*\*\*

BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

9 BA SUBBASIN CHARACTERISTICS  
 TAREA 43.18 SUBBASIN AREA

PRECIPITATION DATA

10 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM

|  | HYDRO-35 |        |        | TP-40 |       |        |       | TP-49 |       |       |       |        |
|--|----------|--------|--------|-------|-------|--------|-------|-------|-------|-------|-------|--------|
|  | 5-MIN    | 15-MIN | 60-MIN | 2-HR  | 3-HR  | 6-HR   | 12-HR | 24-HR | 2-DAY | 4-DAY | 7-DAY | 10-DAY |
|  | 17.80    | 29.20  | 55.10  | 77.80 | 94.00 | 123.80 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00   |

STORM AREA = 43.18

11 LS SCS LOSS RATE  
 STRTL 20.70 INITIAL ABSTRACTION  
 CRVNR 71.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

12 UC CLARK UNITGRAPH  
 TC 3.00 TIME OF CONCENTRATION  
 R 2.20 STORAGE COEFFICIENT

13 UA ACCUMULATED-AREA VS. TIME, 13 ORDINATES

|  |      |      |      |     |      |      |      |      |      |      |
|--|------|------|------|-----|------|------|------|------|------|------|
|  | 0.0  | 2.0  | 4.9  | 8.6 | 10.9 | 15.6 | 20.8 | 26.1 | 32.4 | 36.3 |
|  | 39.4 | 41.9 | 43.2 |     |      |      |      |      |      |      |

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 3.00 HR, R= 2.20 HR  
 SNYDER TP= 2.56 HR, CP= 0.65

UNIT HYDROGRAPH  
 54 END-OF-PERIOD ORDINATES

|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 0. | 0. | 1. | 1. | 1. | 2. | 2. | 3. | 3. | 3. |
| 3. | 3. | 3. | 2. | 2. | 2. | 2. | 2. | 1. | 1. |
| 1. | 1. | 1. | 1. | 1. | 1. | 1. | 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. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |

HYDROGRAPH AT STATION T-2

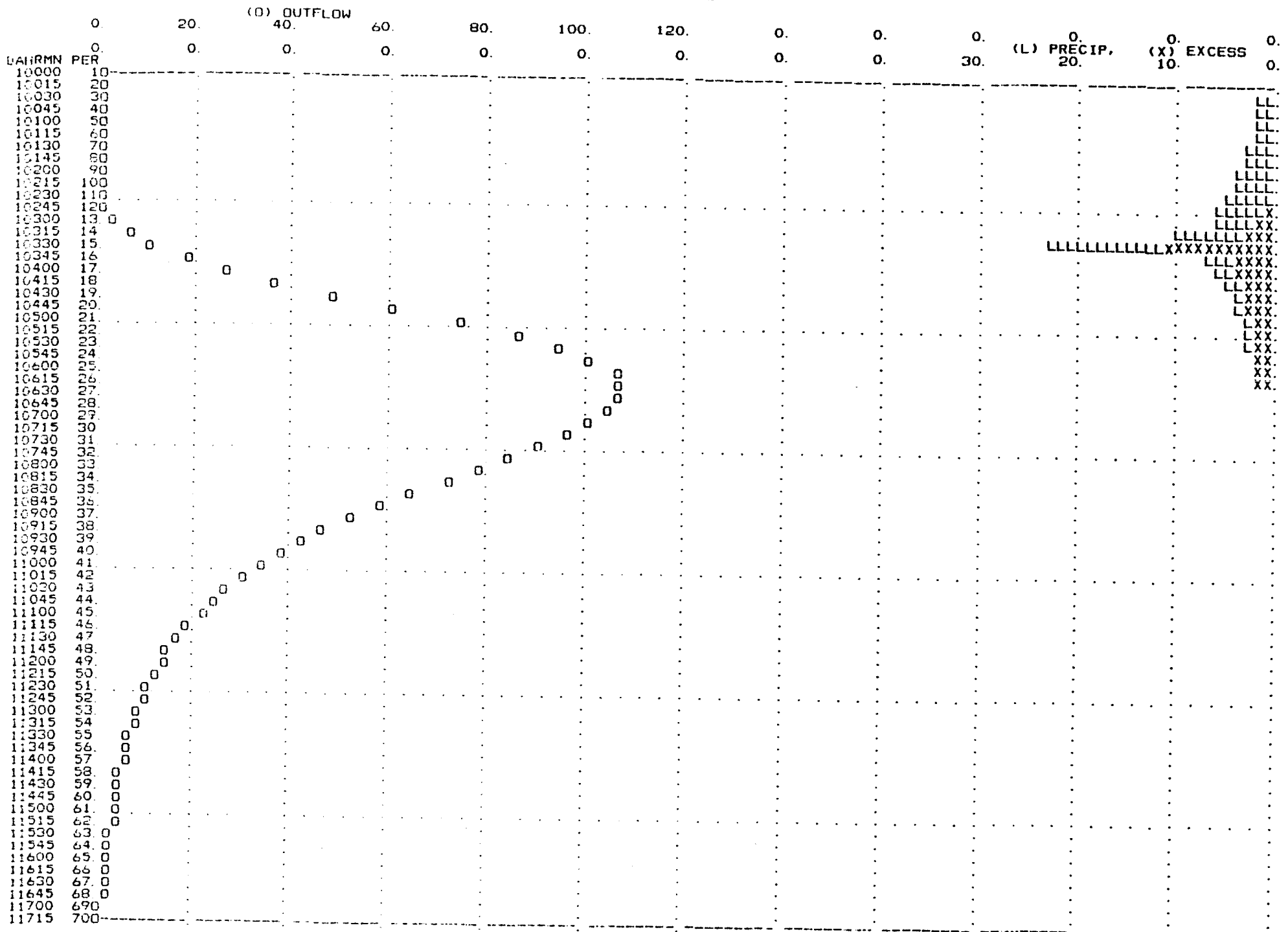
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q |   | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 58.    |
| 1  | JUN | 0015 | 2   | 2.09  | 2.09  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 52.    |
| 1  | JUN | 0030 | 3   | 2.20  | 2.20  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 47.    |
| 1  | JUN | 0045 | 4   | 2.32  | 2.32  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 42.    |
| 1  | JUN | 0100 | 5   | 2.47  | 2.47  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 37.    |
| 1  | JUN | 0115 | 6   | 2.64  | 2.64  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 33.    |
| 1  | JUN | 0130 | 7   | 2.86  | 2.86  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 30.    |
| 1  | JUN | 0145 | 8   | 3.73  | 3.73  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 26.    |
| 1  | JUN | 0200 | 9   | 4.09  | 4.06  | 0.03   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 24.    |
| 1  | JUN | 0215 | 10  | 4.99  | 4.61  | 0.38   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 21.    |
| 1  | JUN | 0230 | 11  | 5.70  | 4.79  | 0.92   | 0.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 19.    |
| 1  | JUN | 0245 | 12  | 6.23  | 4.72  | 1.51   | 1.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 17.    |
| 1  | JUN | 0300 | 13  | 9.79  | 6.52  | 3.27   | 2.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 15.    |
| 1  | JUN | 0315 | 14  | 22.52 | 11.86 | 10.66  | 5.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 13.    |
| 1  | JUN | 0330 | 15  | 7.37  | 3.17  | 4.21   | 11.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 12.    |
| 1  | JUN | 0345 | 16  | 6.22  | 2.46  | 3.76   | 18.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 11.    |
| 1  | JUN | 0400 | 17  | 5.30  | 1.96  | 3.35   | 26.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 9.     |
| 1  | JUN | 0415 | 18  | 4.31  | 1.50  | 2.81   | 36.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 8.     |
| 1  | JUN | 0430 | 19  | 3.90  | 1.30  | 2.60   | 48.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 8.     |
| 1  | JUN | 0445 | 20  | 2.98  | 0.96  | 2.03   | 60.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 7.     |
| 1  | JUN | 0500 | 21  | 2.74  | 0.85  | 1.89   | 73.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 6.     |
| 1  | JUN | 0515 | 22  | 2.55  | 0.77  | 1.78   | 85.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0530 | 23  | 2.39  | 0.70  | 1.69   | 94.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0545 | 24  | 2.26  | 0.65  | 1.61   | 101.   | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0600 | 25  | 2.14  | 0.60  | 1.54   | 105.   | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 107.   | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 106.   | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 103.   | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 100.   | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 96.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 90.    | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 85.    | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 78.    | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 72.    | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 65.    | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 1.     |

TOTAL RAINFALL = 113.77, TOTAL LOSS = 69.76, TOTAL EXCESS = 44.01

|                       |              |             |        |        |        |          |
|-----------------------|--------------|-------------|--------|--------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) |             | 6-HR   | 24-HR  | 72-HR  | 17.25-HR |
| 107.                  | 6.25         | (CU M/S)    | 74.    | 30.    | 30.    | 30.      |
|                       |              | (MM)        | 36.884 | 43.757 | 43.757 | 43.757   |
|                       |              | (1000 CU M) | 1593.  | 1889.  | 1889.  | 1889.    |

CUMULATIVE AREA = 43.18 SQ KM

STATION T-2



\*\*\*\*\*

15 KK      \*\*\*\*\*  
 \*            \*  
 \*        R2T01       \*  
 \*            \*  
 \*\*\*\*\*

TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

17 RM      MUSKINGUM ROUTING  
 NSTPS                    2 NUMBER OF SUBREACHES  
 AMSKK                    0.70 MUSKINGUM K  
 X                         0.25 MUSKINGUM X

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HYDROGRAPH AT STATION      R2T01

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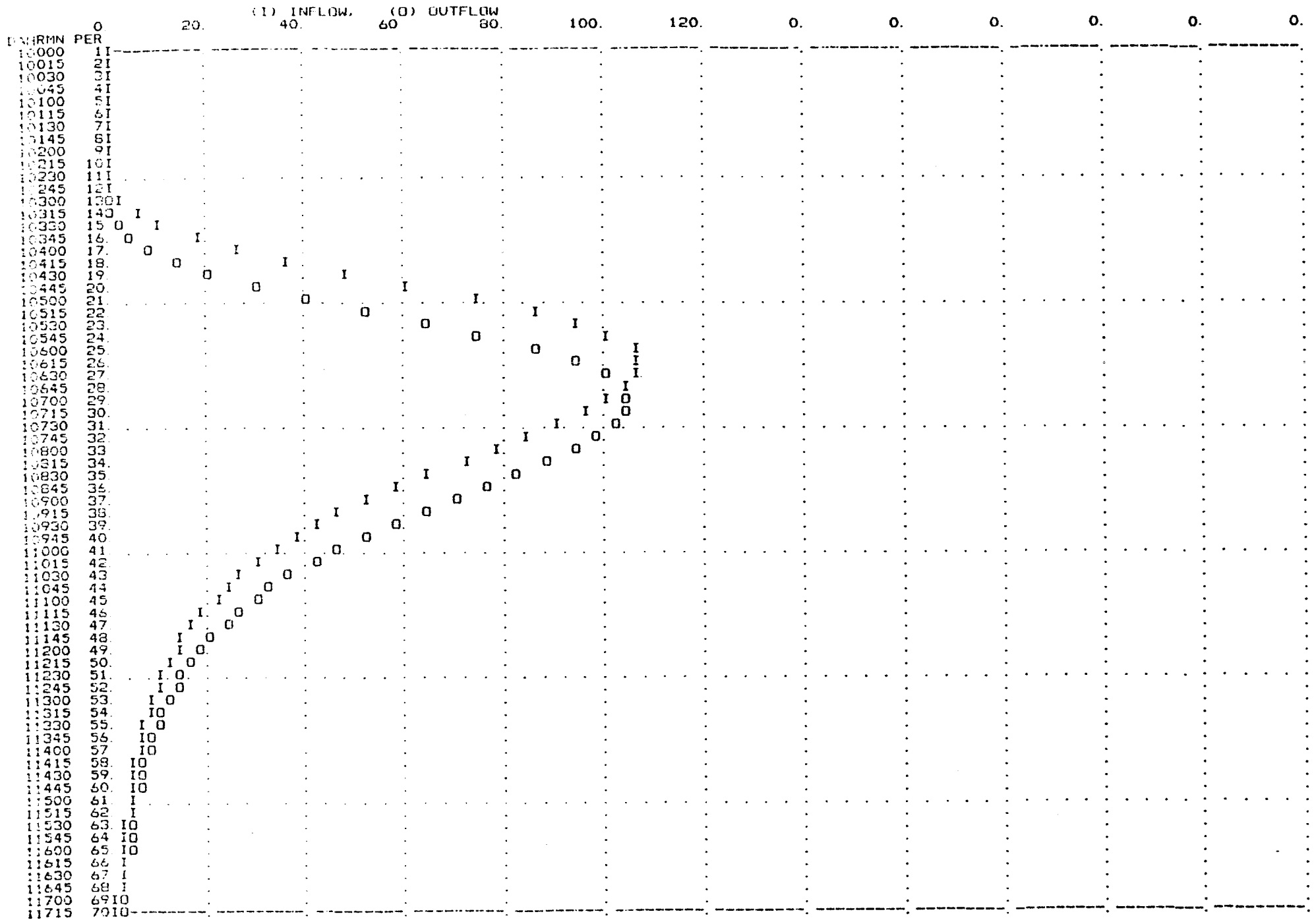
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 21.  | * | 1  | JUN | 0900 | 37  | 70.  | * | 1  | JUN | 1330 | 55  | 9.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 30.  | * | 1  | JUN | 0915 | 38  | 64.  | * | 1  | JUN | 1345 | 56  | 8.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 40.  | * | 1  | JUN | 0930 | 39  | 57.  | * | 1  | JUN | 1400 | 57  | 7.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 51.  | * | 1  | JUN | 0945 | 40  | 51.  | * | 1  | JUN | 1415 | 58  | 7.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 63.  | * | 1  | JUN | 1000 | 41  | 46.  | * | 1  | JUN | 1430 | 59  | 6.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 75.  | * | 1  | JUN | 1015 | 42  | 41.  | * | 1  | JUN | 1445 | 60  | 5.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 85.  | * | 1  | JUN | 1030 | 43  | 37.  | * | 1  | JUN | 1500 | 61  | 5.   | * |  |
| 1  | JUN | 0145 | 8   | 0.   | * | 1  | JUN | 0615 | 26  | 94.  | * | 1  | JUN | 1045 | 44  | 33.  | * | 1  | JUN | 1515 | 62  | 4.   | * |  |
| 1  | JUN | 0200 | 9   | 0.   | * | 1  | JUN | 0630 | 27  | 100. | * | 1  | JUN | 1100 | 45  | 29.  | * | 1  | JUN | 1530 | 63  | 4.   | * |  |
| 1  | JUN | 0215 | 10  | 0.   | * | 1  | JUN | 0645 | 28  | 103. | * | 1  | JUN | 1115 | 46  | 26.  | * | 1  | JUN | 1545 | 64  | 3.   | * |  |
| 1  | JUN | 0230 | 11  | 0.   | * | 1  | JUN | 0700 | 29  | 104. | * | 1  | JUN | 1130 | 47  | 23.  | * | 1  | JUN | 1600 | 65  | 3.   | * |  |
| 1  | JUN | 0245 | 12  | 0.   | * | 1  | JUN | 0715 | 30  | 104. | * | 1  | JUN | 1145 | 48  | 21.  | * | 1  | JUN | 1615 | 66  | 3.   | * |  |
| 1  | JUN | 0260 | 13  | 0.   | * | 1  | JUN | 0730 | 31  | 101. | * | 1  | JUN | 1200 | 49  | 19.  | * | 1  | JUN | 1630 | 67  | 2.   | * |  |
| 1  | JUN | 0215 | 14  | 1.   | * | 1  | JUN | 0745 | 32  | 98.  | * | 1  | JUN | 1215 | 50  | 17.  | * | 1  | JUN | 1645 | 68  | 2.   | * |  |
| 1  | JUN | 0300 | 15  | 2.   | * | 1  | JUN | 0800 | 33  | 94.  | * | 1  | JUN | 1230 | 51  | 15.  | * | 1  | JUN | 1700 | 69  | 2.   | * |  |
| 1  | JUN | 0345 | 16  | 4.   | * | 1  | JUN | 0815 | 34  | 89.  | * | 1  | JUN | 1245 | 52  | 13.  | * | 1  | JUN | 1715 | 70  | 1.   | * |  |
| 1  | JUN | 0400 | 17  | 8.   | * | 1  | JUN | 0830 | 35  | 83.  | * | 1  | JUN | 1300 | 53  | 12.  | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 14.  | * | 1  | JUN | 0845 | 36  | 77.  | * | 1  | JUN | 1315 | 54  | 11.  | * |    |     |      |     |      |   |  |

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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>73<br>(CU M/S) | 24-HR<br>30.<br>(MM) | 72-HR<br>30.<br>(1000 CU M) | 17.25-HR<br>30.<br>43.688<br>1886. |
|-----------------------|--------------|------------------------|----------------------|-----------------------------|------------------------------------|
| 104.                  | 7.00         | 36.648                 | 43.688               | 1886.                       | 1886.                              |

CUMULATIVE AREA = 43.18 SQ KM

STATION R2T01





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18 KK \*\*\*\*\*  
 \* T-1 \*  
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BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

20 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.55 SUBBASIN AREA

PRECIPITATION DATA

21 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 13.40 21.90 41.30 58.30 70.50 92.90 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 19.55

22 LS SCS LOSS RATE  
 STRIL 17.80 INITIAL ABSTRACTION  
 CRVNR 74.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

23 UC CLARK UNITGRAPH  
 TC 2.50 TIME OF CONCENTRATION  
 R 2.40 STORAGE COEFFICIENT

24 UA ACCUMULATED-AREA VS TIME, 11 ORDINATES  
 0.0 1.2 3.2 5.8 9.2 12.3 14.9 16.0 17.1 18.0  
 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.50 HR, R= 2.40 HR  
 SNYDER TP= 1.75 HR, CP= 0.42

UNIT HYDROGRAPH  
 56 END-OF-PERIOD ORDINATES

|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| 0. | 0. | 0. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. |
| 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. |
| 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. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |

HYDROGRAPH AT STATION T-1

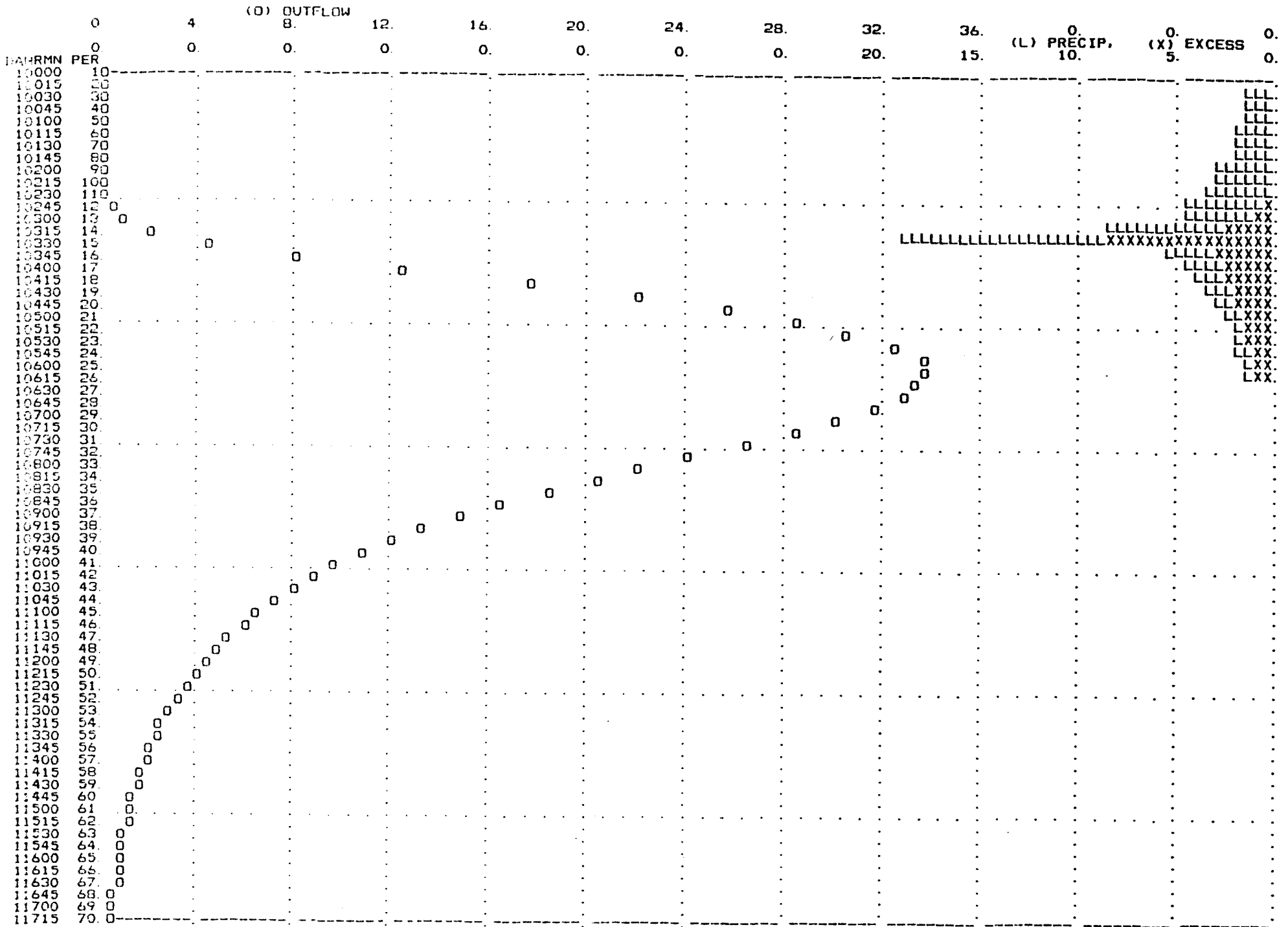
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 17.  | * |
| 1  | JUN | 0015 | 2   | 1.56  | 1.56  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 15.  | * |
| 1  | JUN | 0030 | 3   | 1.65  | 1.65  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 13.  | * |
| 1  | JUN | 0045 | 4   | 1.74  | 1.74  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 12.  | * |
| 1  | JUN | 0100 | 5   | 1.86  | 1.86  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 11.  | * |
| 1  | JUN | 0115 | 6   | 1.99  | 1.99  | 0.00   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 10.  | * |
| 1  | JUN | 0130 | 7   | 2.16  | 2.16  | 0.00   | 0.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 9.   | * |
| 1  | JUN | 0145 | 8   | 2.81  | 2.81  | 0.00   | 0.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 8.   | * |
| 1  | JUN | 0200 | 9   | 3.10  | 3.10  | 0.00   | 0.   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 7.   | * |
| 1  | JUN | 0215 | 10  | 3.74  | 3.65  | 0.09   | 0.   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 6.   | * |
| 1  | JUN | 0230 | 11  | 4.32  | 3.88  | 0.44   | 0.   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 5.   | * |
| 1  | JUN | 0245 | 12  | 4.55  | 3.73  | 0.83   | 0.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 5.   | * |
| 1  | JUN | 0300 | 13  | 3.35  | 6.03  | 2.32   | 1.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 5.   | * |
| 1  | JUN | 0315 | 14  | 19.23 | 10.90 | 8.32   | 2.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 4.   | * |
| 1  | JUN | 0330 | 15  | 5.50  | 2.54  | 2.96   | 4.   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 4.   | * |
| 1  | JUN | 0345 | 16  | 4.75  | 2.03  | 2.72   | 8.   | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0400 | 17  | 4.00  | 1.61  | 2.39   | 13.  | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0415 | 18  | 3.28  | 1.25  | 2.02   | 17.  | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0430 | 19  | 2.94  | 1.03  | 1.87   | 22.  | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0445 | 20  | 2.26  | 0.80  | 1.46   | 26.  | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0500 | 21  | 2.07  | 0.71  | 1.36   | 28.  | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0515 | 22  | 1.92  | 0.64  | 1.28   | 30.  | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0530 | 23  | 1.80  | 0.59  | 1.21   | 32.  | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0545 | 24  | 1.69  | 0.54  | 1.15   | 33.  | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0600 | 25  | 1.61  | 0.50  | 1.10   | 34.  | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 33.  | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 33.  | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 32.  | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 30.  | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 28.  | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 26.  | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 24.  | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 22.  | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 20.  | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 18.  | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 88.89, TOTAL LOSS = 57.37, TOTAL EXCESS = 31.52

|                       |              |             |                               |        |          |
|-----------------------|--------------|-------------|-------------------------------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>24. | MAXIMUM AVERAGE FLOW<br>24-HR | 72-HR  | 17.25-HR |
| 34.                   | 6.00         | 26.196      | 31.302                        | 31.302 | 31.302   |
|                       | (CU M/S)     | 512.        | 612.                          | 612.   | 612.     |
|                       | (MM)         |             |                               |        |          |
|                       | (1000 CU M)  |             |                               |        |          |

CUMULATIVE AREA = 19.55 SQ KM

STATION T-1



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26 KK \*\*\*\*\*  
 \* T-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2

28 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION T-SUMA  
 SUM OF 2 HYDROGRAPHS

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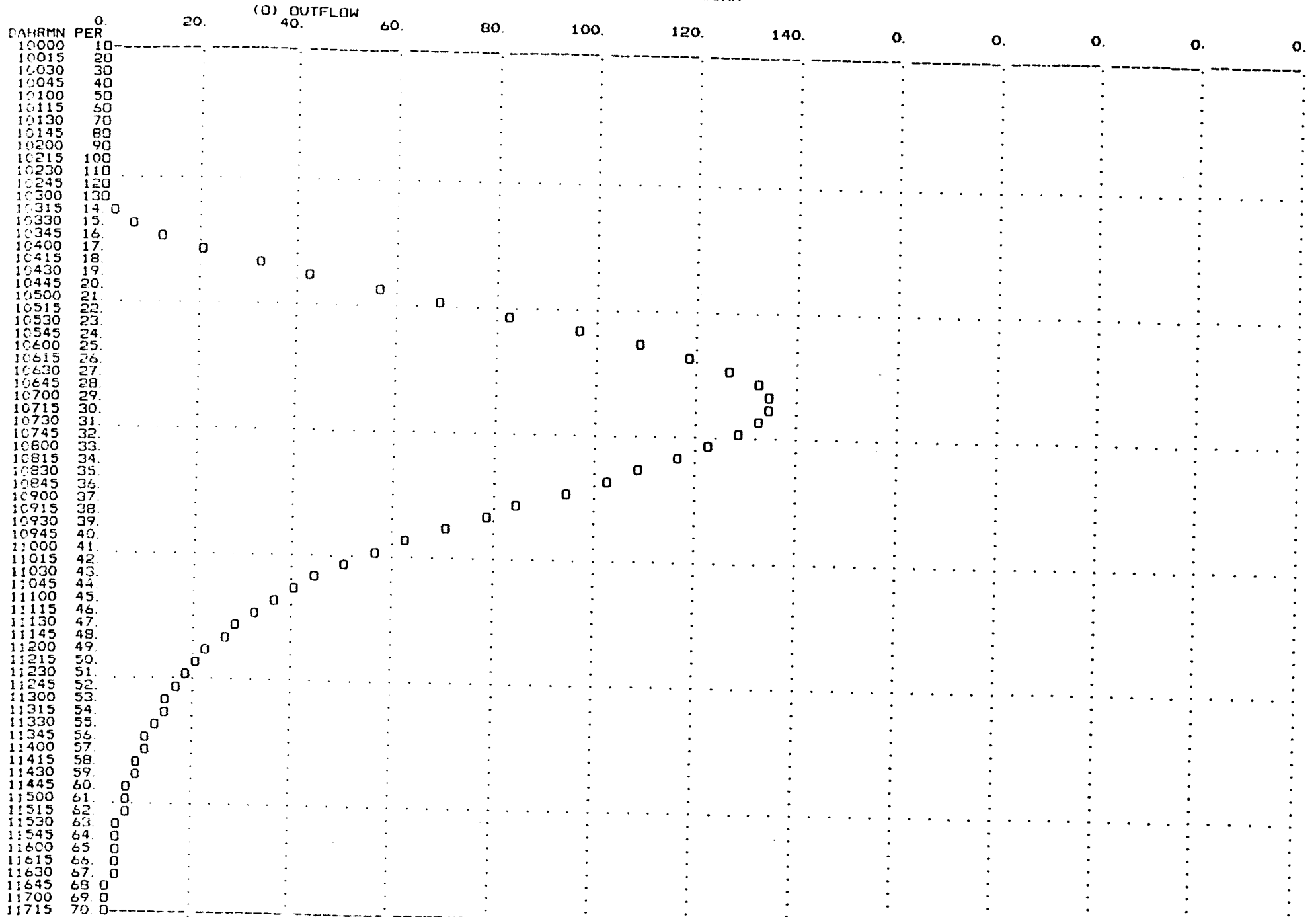
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 43.  | * | 1  | JUN | 0900 | 37  | 85.  | * | 1  | JUN | 1330 | 55  | 12.  | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 55.  | * | 1  | JUN | 0915 | 38  | 77.  | * | 1  | JUN | 1345 | 56  | 10.  | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 68.  | * | 1  | JUN | 0930 | 39  | 69.  | * | 1  | JUN | 1400 | 57  | 9.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 82.  | * | 1  | JUN | 0945 | 40  | 62.  | * | 1  | JUN | 1415 | 58  | 8.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 96.  | * | 1  | JUN | 1000 | 41  | 56.  | * | 1  | JUN | 1430 | 59  | 7.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 108. | * | 1  | JUN | 1015 | 42  | 50.  | * | 1  | JUN | 1445 | 60  | 7.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 119. | * | 1  | JUN | 1030 | 43  | 45.  | * | 1  | JUN | 1500 | 61  | 6.   | * |  |
| 1  | JUN | 0145 | 8   | 0.   | * | 1  | JUN | 0615 | 26  | 127. | * | 1  | JUN | 1045 | 44  | 40.  | * | 1  | JUN | 1515 | 62  | 5.   | * |  |
| 1  | JUN | 0200 | 9   | 0.   | * | 1  | JUN | 0630 | 27  | 132. | * | 1  | JUN | 1100 | 45  | 36.  | * | 1  | JUN | 1530 | 63  | 5.   | * |  |
| 1  | JUN | 0215 | 10  | 0.   | * | 1  | JUN | 0645 | 28  | 135. | * | 1  | JUN | 1115 | 46  | 32.  | * | 1  | JUN | 1545 | 64  | 4.   | * |  |
| 1  | JUN | 0230 | 11  | 0.   | * | 1  | JUN | 0700 | 29  | 135. | * | 1  | JUN | 1130 | 47  | 29.  | * | 1  | JUN | 1600 | 65  | 4.   | * |  |
| 1  | JUN | 0245 | 12  | 0.   | * | 1  | JUN | 0715 | 30  | 132. | * | 1  | JUN | 1145 | 48  | 26.  | * | 1  | JUN | 1615 | 66  | 3.   | * |  |
| 1  | JUN | 0300 | 13  | 1.   | * | 1  | JUN | 0730 | 31  | 128. | * | 1  | JUN | 1200 | 49  | 23.  | * | 1  | JUN | 1630 | 67  | 3.   | * |  |
| 1  | JUN | 0315 | 14  | 3.   | * | 1  | JUN | 0745 | 32  | 122. | * | 1  | JUN | 1215 | 50  | 20.  | * | 1  | JUN | 1645 | 68  | 3.   | * |  |
| 1  | JUN | 0330 | 15  | 6.   | * | 1  | JUN | 0800 | 33  | 116. | * | 1  | JUN | 1230 | 51  | 18.  | * | 1  | JUN | 1700 | 69  | 2.   | * |  |
| 1  | JUN | 0345 | 16  | 12.  | * | 1  | JUN | 0815 | 34  | 109. | * | 1  | JUN | 1245 | 52  | 16.  | * | 1  | JUN | 1715 | 70  | 2.   | * |  |
| 1  | JUN | 0400 | 17  | 21.  | * | 1  | JUN | 0830 | 35  | 101. | * | 1  | JUN | 1300 | 53  | 15.  | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 31.  | * | 1  | JUN | 0845 | 36  | 93.  | * | 1  | JUN | 1315 | 54  | 13.  | * |    |     |      |     |      |   |  |

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|                               |                      |                                 |                                |   |                                 |                                    |
|-------------------------------|----------------------|---------------------------------|--------------------------------|---|---------------------------------|------------------------------------|
| PEAK FLOW<br>(CU M/S)<br>135. | TIME<br>(HR)<br>6.75 | (CU M/S)<br>(MM)<br>(1000 CU M) | 6-HR<br>96.<br>33.010<br>2071. | MAXIMUM AVERAGE FLOW<br>24-HR<br>40.<br>39.828<br>2498. | 72-HR<br>40.<br>39.828<br>2498. | 17.25-HR<br>40.<br>39.828<br>2498. |
|-------------------------------|----------------------|---------------------------------|--------------------------------|---|---------------------------------|------------------------------------|

CUMULATIVE AREA = 62.73 SQ KM

STATION T-SUMA



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29 KK \*\*\*\*\*  
\* L-1 \*  
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BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

31 BA SUBBASIN CHARACTERISTICS  
TAREA 1.53 SUBBASIN AREA

PRECIPITATION DATA

32 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
13.90 22.80 43.10 60.80 73.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 1.53

33 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

34 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.30 STORAGE COEFFICIENT

35 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.7 1.5

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.30 HR  
SNYDER TP= 0.43 HR, CP= 0.66

UNIT HYDROGRAPH  
8 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0.

HYDROGRAPH AT STATION L-1

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0015 | 2   | 2.93  | 2.93  | 0.00   | 0.     | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0030 | 3   | 3.24  | 3.24  | 0.00   | 0.     | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0045 | 4   | 3.90  | 3.90  | 0.00   | 0.     | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0100 | 5   | 4.56  | 4.56  | 0.00   | 0.     | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0115 | 6   | 4.65  | 4.63  | 0.02   | 0.     | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0130 | 7   | 9.84  | 8.59  | 1.25   | 0.     | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0145 | 8   | 22.55 | 14.51 | 8.05   | 3.     | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0200 | 9   | 5.71  | 2.87  | 2.84   | 6.     | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 5.04  | 2.33  | 2.71   | 7.     | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 4.19  | 1.81  | 2.38   | 5.     | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 3.44  | 1.40  | 2.04   | 5.     | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 3.08  | 1.20  | 1.88   | 4.     | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 3.     | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 2.     | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 1.     | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.     | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 73.13, TOTAL LOSS = 51.96, TOTAL EXCESS = 21.18

|                       |              |                  |                   |                   |                      |
|-----------------------|--------------|------------------|-------------------|-------------------|----------------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(CU M/S) | 72-HR<br>(CU M/S) | 17.25-HR<br>(CU M/S) |
| 7.                    | 2.25         | 1.               | 1.                | 1.                | 1.                   |
|                       |              | (MM)             | (MM)              | (MM)              | (MM)                 |
|                       |              | 21.124           | 21.124            | 21.124            | 21.124               |
|                       |              | 32.              | 32.               | 32.               | 32.                  |
|                       |              | (1000 CU M)      | (1000 CU M)       | (1000 CU M)       | (1000 CU M)          |

CUMULATIVE AREA = 1.53 SQ KM

STATION L-1

| DAIRMN PER | (O) OUTFLOW |    |    |    |    |    |    |    |    |    | (L) PRECIP.<br>20. | (X) EXCESS<br>10. |                      |
|------------|-------------|----|----|----|----|----|----|----|----|----|--------------------|-------------------|----------------------|
|            | 0.          | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |                    |                   |                      |
| 10000      | 10          |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10015      | 20          |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10030      | 30          |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10045      | 40          |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10100      | 50          |    |    |    |    |    |    |    |    |    |                    |                   | LLL                  |
| 10115      | 60          |    |    |    |    |    |    |    |    |    |                    |                   | LLL                  |
| 10130      | 7.          | 0  |    |    |    |    |    |    |    |    |                    |                   | LLL                  |
| 10145      | 8.          |    |    |    |    |    |    |    |    |    |                    |                   | LLLL                 |
| 10200      | 9.          |    |    | 0  |    |    |    |    |    |    |                    |                   | LLLL                 |
| 10215      | 10.         |    |    |    |    |    |    |    |    |    |                    |                   | LLLL                 |
| 10230      | 11.         |    |    |    |    |    |    | 0  |    |    |                    |                   | LLLLLLLLLX           |
| 10245      | 12.         |    |    |    |    |    |    |    | 0  |    |                    |                   | LLLLLLLLLLLLXXXXXXXX |
| 10300      | 13.         |    |    |    |    | 0  |    | 0  |    |    |                    |                   | LLLXXX               |
| 10315      | 14.         |    |    |    |    |    | 0  |    |    |    |                    |                   | LLXXX                |
| 10330      | 15.         |    |    |    |    |    |    |    |    |    |                    |                   | LLXX                 |
| 10345      | 16.         |    |    | 0  |    |    |    |    |    |    |                    |                   | LXX                  |
| 10400      | 17.         | 0  | 0  |    |    |    |    |    |    |    |                    |                   | LXX                  |
| 10415      | 18.         | 0  |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10430      | 190         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10445      | 200         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10500      | 210         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10515      | 220         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10530      | 230         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10545      | 240         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10600      | 250         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10615      | 260         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10630      | 270         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10645      | 280         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10700      | 290         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10715      | 300         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10730      | 310         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10745      | 320         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10800      | 330         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10815      | 340         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10830      | 350         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10845      | 360         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10900      | 370         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10915      | 380         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10930      | 390         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 10945      | 400         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11000      | 410         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11015      | 420         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11030      | 430         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11045      | 440         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11100      | 450         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11115      | 460         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11130      | 470         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11145      | 480         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11200      | 490         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11215      | 500         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11230      | 510         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11245      | 520         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11300      | 530         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11315      | 540         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11330      | 550         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11345      | 560         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11400      | 570         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11415      | 580         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11430      | 590         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11445      | 600         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11500      | 610         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11515      | 620         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11530      | 630         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11545      | 640         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11600      | 650         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11615      | 660         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11630      | 670         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11645      | 680         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11700      | 690         |    |    |    |    |    |    |    |    |    |                    |                   |                      |
| 11715      | 700         |    |    |    |    |    |    |    |    |    |                    |                   |                      |



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36 KK \*\*\*\*\*  
\* B-2 \*  
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BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

38 BA SUBBASIN CHARACTERISTICS  
TAREA 7.28 SUBBASIN AREA

PRECIPITATION DATA

39 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
15.00 24.50 46.30 65.30 78.90 104.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 7.28

40 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNBR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

41 UC CLARK UNITGRAPH  
TC 1.00 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

42 UA ACCUMULATED-AREA VS. TIME, 5 ORDINATES  
0.0 2.0 4.1 6.0 7.3

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.00 HR, R= 1.00 HR  
SNYDER TP= 0.89 HR, CP= 0.54

UNIT HYDROGRAPH  
24 END-OF-PERIOD ORDINATES  
0. 1. 1. 1. 1. 1. 1. 1. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-2

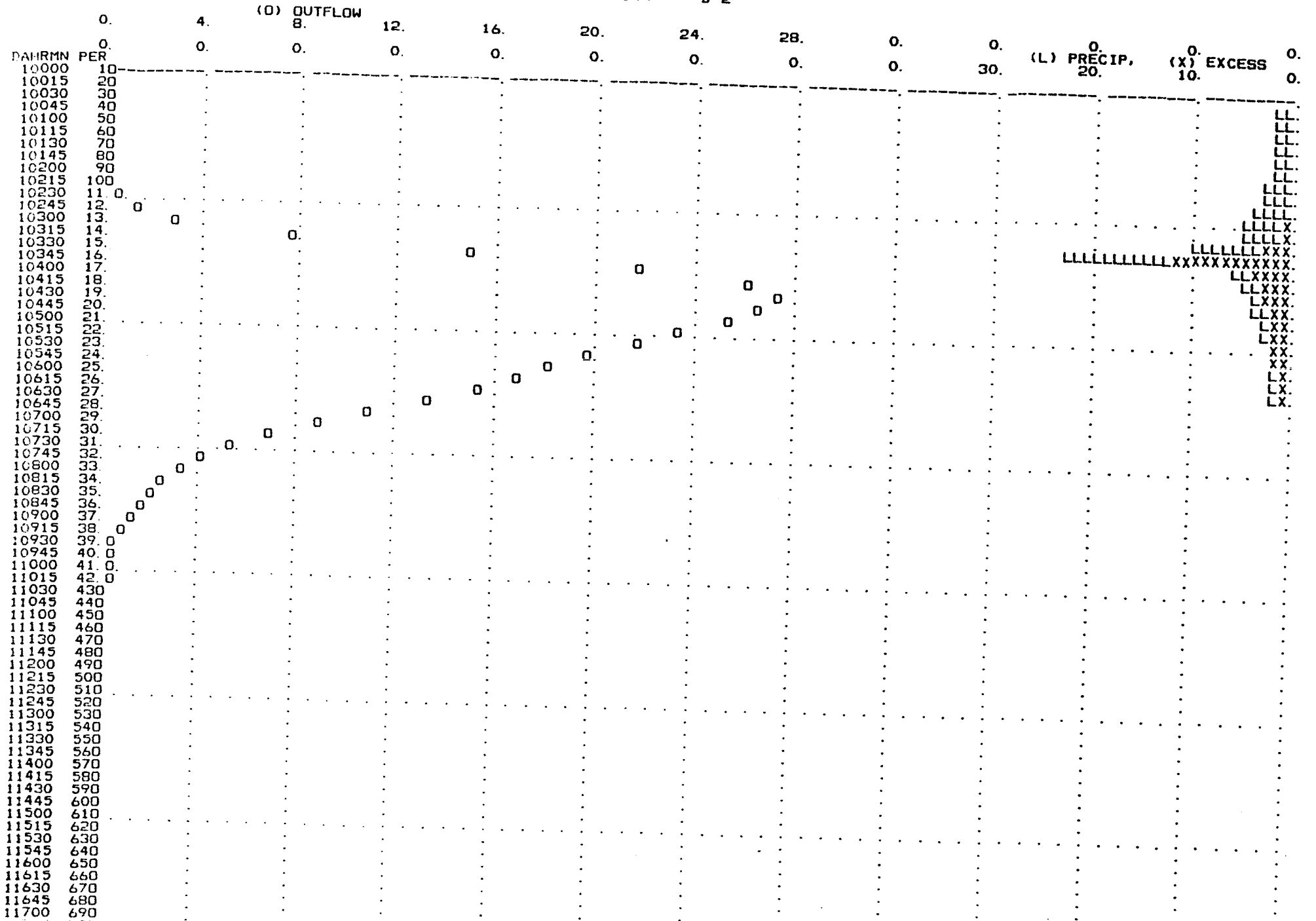
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q |  | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|--|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * |  | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0015 | 2   | 1.75  | 1.75  | 0.00   | 0.   | * |  | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0030 | 3   | 1.85  | 1.85  | 0.00   | 0.   | * |  | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0045 | 4   | 1.96  | 1.96  | 0.00   | 0.   | * |  | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0100 | 5   | 2.09  | 2.09  | 0.00   | 0.   | * |  | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0115 | 6   | 2.24  | 2.24  | 0.00   | 0.   | * |  | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0130 | 7   | 2.43  | 2.43  | 0.00   | 0.   | * |  | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0145 | 8   | 3.14  | 3.14  | 0.00   | 0.   | * |  | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0200 | 9   | 3.47  | 3.45  | 0.01   | 0.   | * |  | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0215 | 10  | 4.18  | 3.90  | 0.28   | 0.   | * |  | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0230 | 11  | 4.87  | 4.13  | 0.74   | 0.   | * |  | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0245 | 12  | 5.04  | 3.86  | 1.17   | 1.   | * |  | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0300 | 13  | 10.15 | 6.75  | 3.40   | 3.   | * |  | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0315 | 14  | 23.28 | 11.74 | 11.55  | 8.   | * |  | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0330 | 15  | 6.15  | 2.47  | 3.68   | 15.  | * |  | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0345 | 16  | 5.38  | 1.99  | 3.39   | 22.  | * |  | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0400 | 17  | 4.49  | 1.55  | 2.93   | 26.  | * |  | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0415 | 18  | 3.67  | 1.21  | 2.47   | 27.  | * |  | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0430 | 19  | 3.29  | 1.03  | 2.26   | 26.  | * |  | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0445 | 20  | 2.55  | 0.77  | 1.78   | 25.  | * |  | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0500 | 21  | 2.33  | 0.69  | 1.65   | 23.  | * |  | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0515 | 22  | 2.16  | 0.62  | 1.54   | 21.  | * |  | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0530 | 23  | 2.02  | 0.56  | 1.45   | 20.  | * |  | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0545 | 24  | 1.90  | 0.52  | 1.38   | 18.  | * |  | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0600 | 25  | 1.80  | 0.48  | 1.32   | 17.  | * |  | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 15.  | * |  | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 13.  | * |  | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 11.  | * |  | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 9.   | * |  | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 7.   | * |  | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 5.   | * |  | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 4.   | * |  | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 3.   | * |  | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 2.   | * |  | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 2.   | * |  | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 102.17, TOTAL LOSS = 61.17, TOTAL EXCESS = 41.00

|                       |              |                  |                               |        |          |
|-----------------------|--------------|------------------|-------------------------------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | MAXIMUM AVERAGE FLOW<br>24-HR | 72-HR  | 17.25-HR |
| 27.                   | 4.25         | 14.              | 5.                            | 5.     | 5.       |
|                       | (MM)         | 40.125           | 40.838                        | 40.838 | 40.838   |
|                       | (1000 CU M)  | 292.             | 297.                          | 297.   | 297.     |

CUMULATIVE AREA = 7.28 SQ KM

STATION B-2



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43 KK \*\*\*\*\*  
\* B-3 \*  
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BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

45 BA SUBBASIN CHARACTERISTICS  
TAREA 2.08 SUBBASIN AREA

PRECIPITATION DATA

46 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
15.00 24.50 46.30 65.40 79.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.08

47 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

48 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.40 STORAGE COEFFICIENT

49 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.9 2.1

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.40 HR  
SNYDER TP= 0.45 HR, CP= 0.58

UNIT HYDROGRAPH  
10 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-3

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q |   | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0015 | 2   | 3.14  | 3.14  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0030 | 3   | 3.47  | 3.47  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0045 | 4   | 4.21  | 4.21  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0100 | 5   | 4.91  | 4.91  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0115 | 6   | 5.00  | 4.91  | 0.09   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0130 | 7   | 10.52 | 8.85  | 1.67   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0145 | 8   | 24.14 | 14.76 | 9.38   | 4.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0200 | 9   | 6.14  | 2.90  | 3.24   | 8.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 5.43  | 2.35  | 3.08   | 10.    | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 4.52  | 1.82  | 2.70   | 8.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 3.69  | 1.40  | 2.28   | 7.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 3.29  | 1.19  | 2.10   | 6.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 5.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 3.     | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 2.     | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 1.     | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 78.47, TOTAL LOSS = 53.92, TOTAL EXCESS = 24.55

|                       |              |             |        |        |        |          |
|-----------------------|--------------|-------------|--------|--------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) |             | 6-HR   | 24-HR  | 72-HR  | 17.25-HR |
| 10.                   | 2.25         | (CU M/S)    | 2.     | 1.     | 1.     | 1.       |
|                       |              | (MM)        | 24.467 | 24.467 | 24.467 | 24.467   |
|                       |              | (1000 CU M) | 51.    | 51.    | 51.    | 51.      |

CUMULATIVE AREA = 2.08 SQ KM

| DAHRMN PER | STATION B-3 |    |                   |    |    |     |    |    |    |    | (L) PRECIP,<br>0.<br>20. | (X) EXCESS<br>0.<br>10. | 0.<br>0. |  |              |
|------------|-------------|----|-------------------|----|----|-----|----|----|----|----|--------------------------|-------------------------|----------|--|--------------|
|            | 0.          | 2. | (O) OUTFLOW<br>4. | 6. | 8. | 10. | 0. | 0. | 0. | 0. |                          |                         |          |  |              |
| 10000      | 10          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10015      | 20          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10030      | 30          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10045      | 40          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  | LLL.         |
| 10100      | 50          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  | LLL.         |
| 10115      | 60          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  | LLL.         |
| 10130      | 7.          |    |                   |    |    |     |    |    |    |    |                          |                         |          |  | LLLL.        |
| 10145      | 8.          | 0  |                   |    |    |     |    |    |    |    |                          |                         |          |  | LLLL.        |
| 10200      | 9.          |    | 0                 |    |    |     |    |    |    |    |                          |                         |          |  | LLLL.        |
| 10215      | 10.         |    |                   |    |    | 0   |    |    |    |    |                          |                         |          |  | LLLLLLLLLXX. |
| 10230      | 11.         |    |                   |    |    |     | 0  |    | 0  |    |                          |                         |          |  | LLLLLLLLLXX. |
| 10245      | 12.         |    |                   |    |    |     | 0  |    |    |    |                          |                         |          |  | LLLLLLLLLXX. |
| 10300      | 13.         |    |                   |    |    |     |    | 0  |    |    |                          |                         |          |  | LLXXX.       |
| 10315      | 14.         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  | LLXXX.       |
| 10330      | 15.         |    | 0                 |    | 0  |     |    |    |    |    |                          |                         |          |  | LLXX.        |
| 10345      | 16.         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  | LXX.         |
| 10400      | 17.         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10415      | 18.         | 0  |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10430      | 19.         | 0  |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10445      | 20.         | 0  |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10500      | 210         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10515      | 220         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10530      | 230         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10545      | 240         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10600      | 250         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10615      | 260         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10630      | 270         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10645      | 280         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10700      | 290         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10715      | 300         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10730      | 310         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10745      | 320         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10800      | 330         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10815      | 340         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10830      | 350         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10845      | 360         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10900      | 370         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10915      | 380         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10930      | 390         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 10945      | 400         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11000      | 410         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11015      | 420         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11030      | 430         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11045      | 440         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11100      | 450         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11115      | 460         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11130      | 470         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11145      | 480         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11200      | 490         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11215      | 500         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11230      | 510         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11245      | 520         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11300      | 530         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11315      | 540         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11330      | 550         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11345      | 560         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11400      | 570         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11415      | 580         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11430      | 590         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11445      | 600         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11500      | 610         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11515      | 620         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11530      | 630         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11545      | 640         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11600      | 650         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11615      | 660         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11630      | 670         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11645      | 680         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11700      | 690         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |
| 11715      | 700         |    |                   |    |    |     |    |    |    |    |                          |                         |          |  |              |

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50 KK  
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 \* B2+B3 \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3

52 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE  
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HYDROGRAPH AT STATION B2+B3  
 SUM OF 2 HYDROGRAPHS

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| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 27.  | * | 1  | JUN | 0900 | 37  | 1.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 25.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 23.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 22.  | * | 1  | JUN | 0945 | 40  | 0.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 20.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 18.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 17.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 4.   | * | 1  | JUN | 0615 | 26  | 15.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 8.   | * | 1  | JUN | 0630 | 27  | 13.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 10.  | * | 1  | JUN | 0645 | 28  | 11.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 9.   | * | 1  | JUN | 0700 | 29  | 9.   | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 9.   | * | 1  | JUN | 0715 | 30  | 7.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 7.   | * | 1  | JUN | 0730 | 31  | 5.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 13.  | * | 1  | JUN | 0745 | 32  | 4.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 18.  | * | 1  | JUN | 0800 | 33  | 3.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 23.  | * | 1  | JUN | 0815 | 34  | 2.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 27.  | * | 1  | JUN | 0830 | 35  | 2.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 28.  | * | 1  | JUN | 0845 | 36  | 1.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

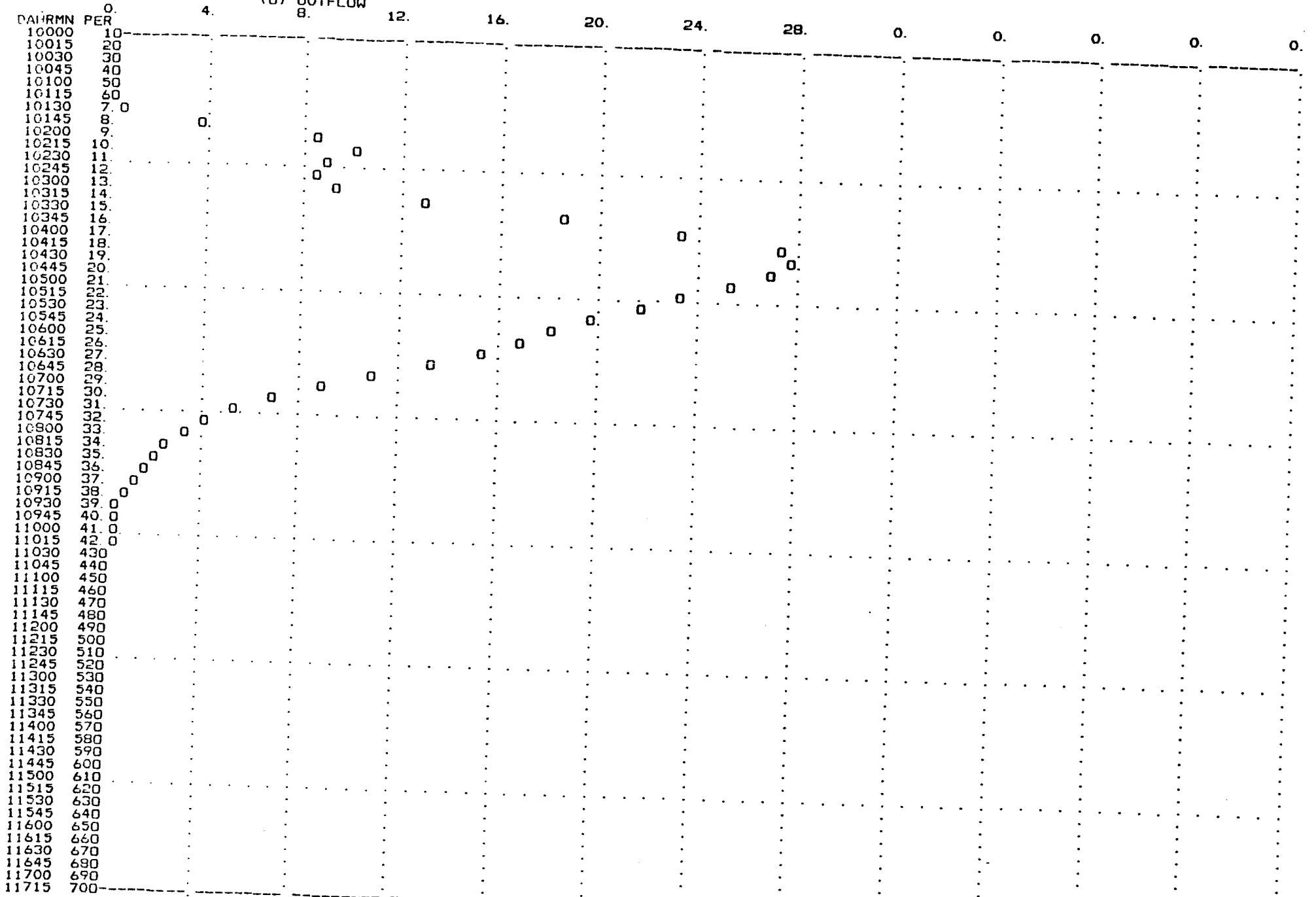
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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | MAXIMUM AVERAGE FLOW | 17. 25-HR |
|-----------------------|--------------|----------------------|-----------|
| 28.                   | 4. 25        | 6-HR<br>15.          | 6.        |
|                       | (CU M/S)     | 24-HR<br>37. 200     | 37. 200   |
|                       | (MM)         | 72-HR<br>348.        | 348.      |
|                       | (1000 CU M)  |                      |           |

CUMULATIVE AREA = 9. 36 SQ KM

STATION B2+B3

(D) OUTFLOW





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53 KK \*\*\*\*\*  
 \* R23T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1

HYDROGRAPH ROUTING DATA

55 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.20 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R23T01

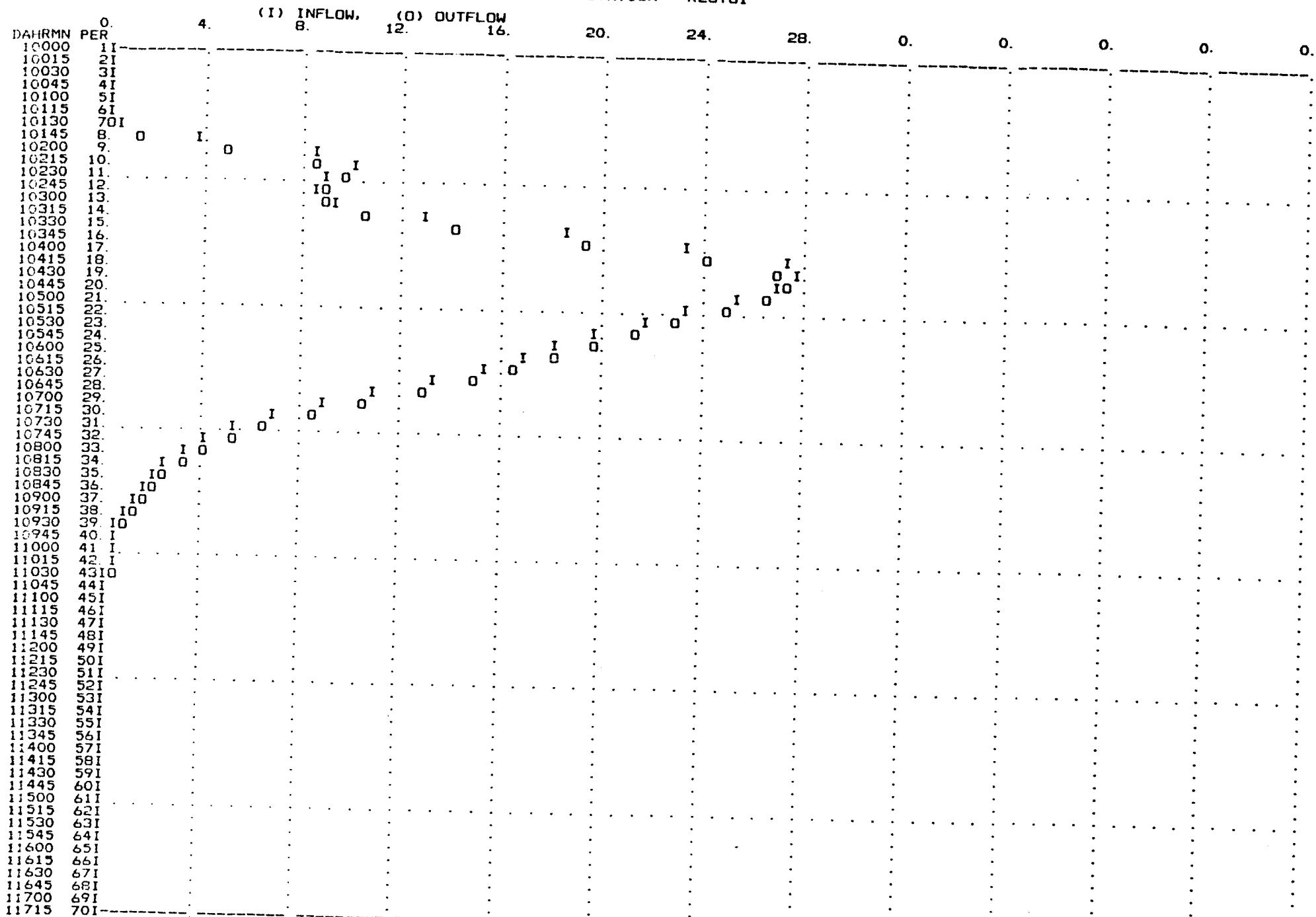
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| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 27.  | * | 1  | JUN | 0900 | 37  | 1.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 26.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 25.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 23.  | * | 1  | JUN | 0945 | 40  | 1.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 21.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 19.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 18.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 1.   | * | 1  | JUN | 0615 | 26  | 16.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 5.   | * | 1  | JUN | 0630 | 27  | 15.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 8.   | * | 1  | JUN | 0645 | 28  | 13.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 9.   | * | 1  | JUN | 0700 | 29  | 11.  | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 9.   | * | 1  | JUN | 0715 | 30  | 8.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 9.   | * | 1  | JUN | 0730 | 31  | 7.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 10.  | * | 1  | JUN | 0745 | 32  | 5.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 14.  | * | 1  | JUN | 0800 | 33  | 4.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 19.  | * | 1  | JUN | 0815 | 34  | 3.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 24.  | * | 1  | JUN | 0830 | 35  | 2.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 27.  | * | 1  | JUN | 0845 | 36  | 2.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | MAXIMUM AVERAGE FLOW |        |             |          |
|-----------------------|--------------|----------------------|--------|-------------|----------|
|                       |              | 6-HR                 | 24-HR  | 72-HR       | 17.25-HR |
| 27.                   | 4.50         | 15.                  | 6.     | 6.          | 6.       |
|                       |              | (CU M/S)             | (MM)   | (1000 CU M) |          |
|                       |              | 35.447               | 37.200 | 37.200      | 37.200   |
|                       |              | 332.                 | 348.   | 348.        | 348.     |
| CUMULATIVE AREA =     |              | 9.36 SQ KM           |        |             |          |

STATION R23T01



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56 KK \*\*\*\*\*  
\* B-4 \*  
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BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

58 BA SUBBASIN CHARACTERISTICS  
TAREA 10.73 SUBBASIN AREA

PRECIPITATION DATA

59 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
19.10 31.30 59.10 83.40 100.80 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 10.73

60 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

61 UC CLARK UNITGRAPH  
TC 1.50 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

62 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
0.0 0.9 1.8 3.4 6.1 9.0 10.7

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.50 HR, R= 1.00 HR  
SNYDER TP= 1.42 HR, CP= 0.80

UNIT HYDROGRAPH  
25 END-OF-PERIOD ORDINATES  
0. 0. 1. 1. 1. 2. 2. 1. 1. 1.  
1. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION B-4

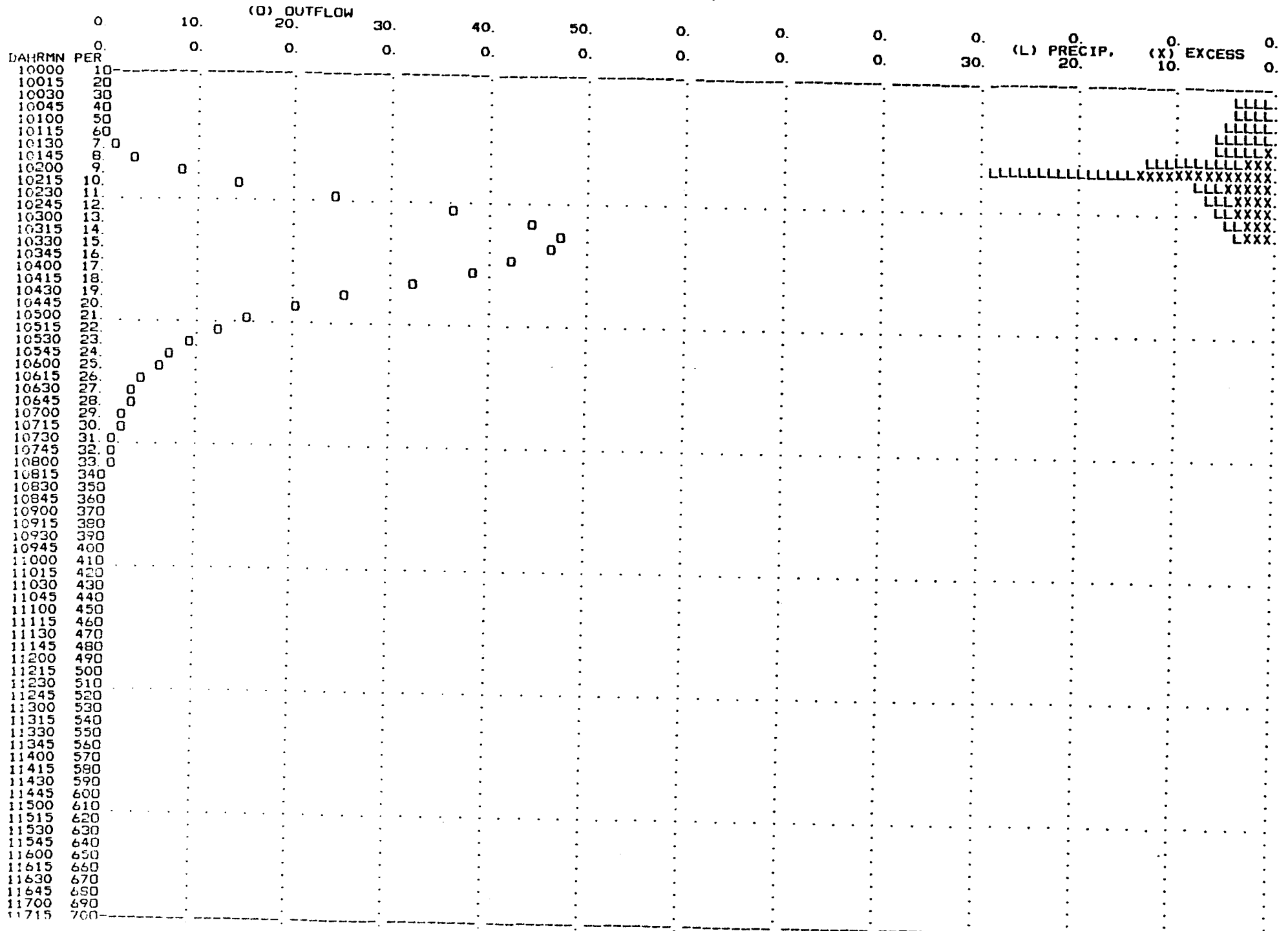
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q | * | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0015 | 2   | 4.01  | 4.01  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0030 | 3   | 4.43  | 4.43  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0045 | 4   | 5.35  | 5.35  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0100 | 5   | 6.21  | 6.16  | 0.05   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0115 | 6   | 6.45  | 5.74  | 0.71   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0130 | 7   | 12.65 | 9.31  | 3.34   | 1.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0145 | 8   | 29.07 | 15.00 | 14.07  | 3.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0200 | 9   | 7.85  | 3.04  | 4.82   | 8.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 6.85  | 2.40  | 4.45   | 14.    | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 5.73  | 1.85  | 3.88   | 24.    | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 4.69  | 1.42  | 3.27   | 36.    | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 4.21  | 1.20  | 3.00   | 44.    | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 47.    | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 46.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 42.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 38.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 32.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 25.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 20.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 15.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 12.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 9.     | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 7.     | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 6.     | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 4.     | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 3.     | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 3.     | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 2.     | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 2.     | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 1.     | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 1.     | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 1.     | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 97.50, TOTAL LOSS = 59.90, TOTAL EXCESS = 37.60

|                       |              |                  |               |                      |                  |
|-----------------------|--------------|------------------|---------------|----------------------|------------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | 72-HR<br>(1000 CU M) | 17.25-HR<br>(MM) |
| 47.                   | 3.25         | 18.              | 37.148        | 37.418               | 37.418           |
|                       |              | 399.             | 401.          | 401.                 | 401.             |

CUMULATIVE AREA = 10.73 SQ KM

STATION B-4



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63 KK \*\*\*\*\*  
 \* R4T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

65 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.30 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R4T01

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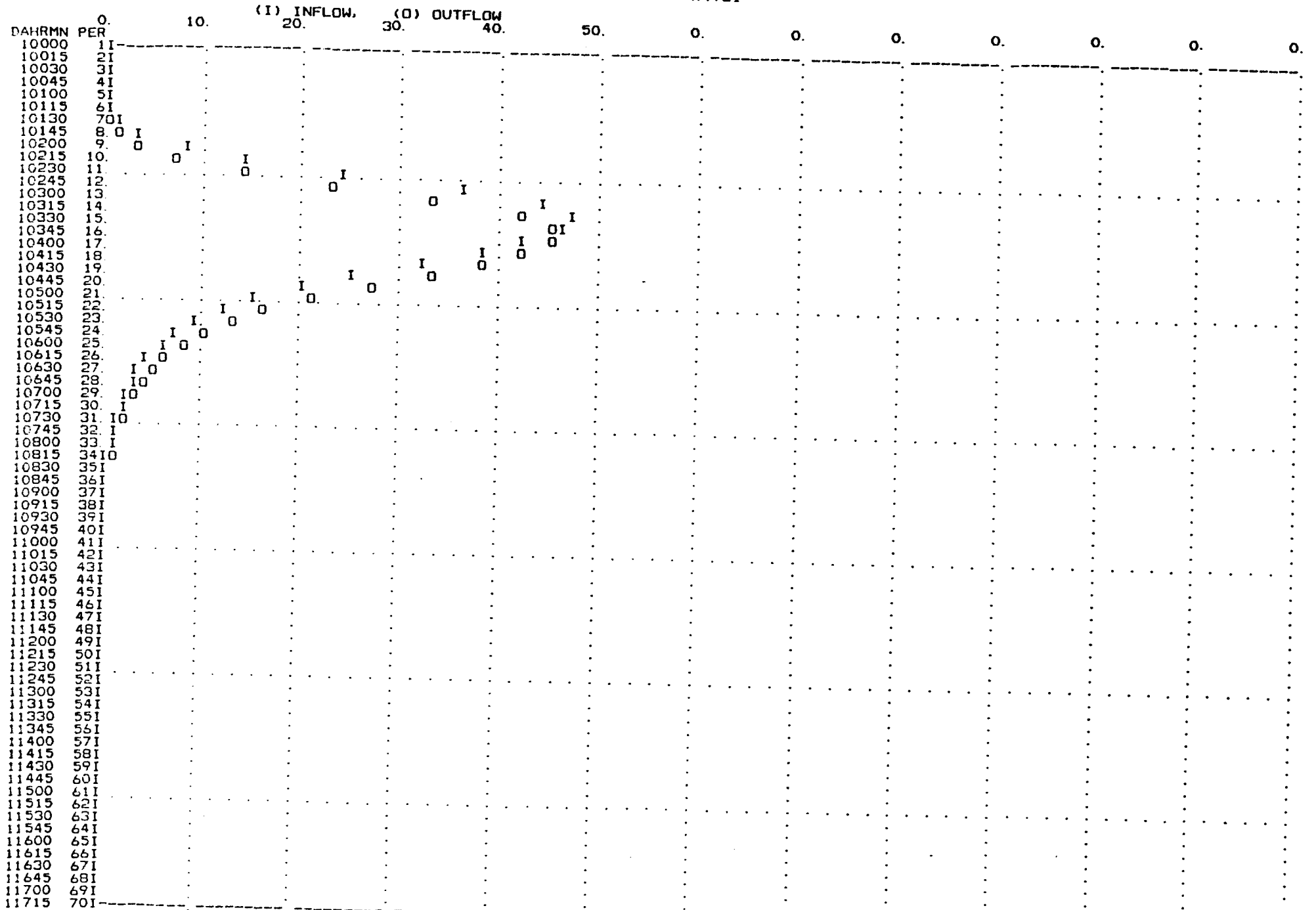
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 33.  | * | 1  | JUN | 0900 | 37  | 0.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 27.  | * | 1  | JUN | 0915 | 38  | 0.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 21.  | * | 1  | JUN | 0930 | 39  | 0.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 16.  | * | 1  | JUN | 0945 | 40  | 0.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 13.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 10.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 8.   | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 1.   | * | 1  | JUN | 0615 | 26  | 6.   | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 3.   | * | 1  | JUN | 0630 | 27  | 5.   | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 7.   | * | 1  | JUN | 0645 | 28  | 4.   | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 14.  | * | 1  | JUN | 0700 | 29  | 3.   | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 23.  | * | 1  | JUN | 0715 | 30  | 2.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 33.  | * | 1  | JUN | 0730 | 31  | 2.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 42.  | * | 1  | JUN | 0745 | 32  | 1.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 45.  | * | 1  | JUN | 0800 | 33  | 1.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 45.  | * | 1  | JUN | 0815 | 34  | 1.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 42.  | * | 1  | JUN | 0830 | 35  | 0.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 38.  | * | 1  | JUN | 0845 | 36  | 0.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>AVERAGE FLOW<br>(CU M/S) | 24-HR<br>AVERAGE FLOW<br>(MM) | 72-HR<br>AVERAGE FLOW<br>(1000 CU M) | 17.25-HR<br>AVERAGE FLOW<br>(1000 CU M) |
|-----------------------|--------------|----------------------------------|-------------------------------|--------------------------------------|---|
| 45.                   | 3.50         | 18.                              | 37.418                        | 37.418                               | 37.418                                  |
|                       |              | 6.                               | 401.                          | 401.                                 | 401.                                    |

CUMULATIVE AREA = 10.73 SQ KM

STATION R4T01



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66 KK \*\*\*\*\*  
\* B-1 \*  
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BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

68 BA SUBBASIN CHARACTERISTICS  
TAREA 2.18 SUBBASIN AREA

PRECIPITATION DATA

69 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
13.50 22.10 41.80 59.00 71.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.18

70 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNBR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

71 UC CLARK UNITGRAPH  
TC 0.75 TIME OF CONCENTRATION  
R 0.50 STORAGE COEFFICIENT

72 UA ACCUMULATED-AREA VS. TIME, 4 ORDINATES  
0.0 0.8 1.8 2.2

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.75 HR, R= 0.50 HR  
SNYDER TP= 0.57 HR, CP= 0.61

UNIT HYDROGRAPH  
12 END-OF-PERIOD ORDINATES  
0. 0. 1. 0. 0. 0. 0. 0. 0. 0.



HYDROGRAPH AT STATION B-1

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0015 | 2   | 2.84  | 2.84  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0030 | 3   | 3.14  | 3.14  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0045 | 4   | 3.79  | 3.79  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0100 | 5   | 4.42  | 4.42  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0115 | 6   | 4.52  | 4.51  | 0.01   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0130 | 7   | 9.50  | 8.42  | 1.08   | 0.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0145 | 8   | 21.76 | 14.32 | 7.44   | 2.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0200 | 9   | 5.55  | 2.86  | 2.68   | 5.   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0215 | 10  | 4.89  | 2.33  | 2.56   | 7.   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0230 | 11  | 4.07  | 1.81  | 2.26   | 7.   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0245 | 12  | 3.33  | 1.40  | 1.93   | 6.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0300 | 13  | 2.98  | 1.20  | 1.78   | 6.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 5.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 4.   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 2.   | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0915 | 34  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0930 | 35  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 70.80, TOTAL LOSS = 51.05, TOTAL EXCESS = 19.74

| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | MAXIMUM AVERAGE FLOW<br>24-HR | 72-HR  |
|-----------------------|--------------|-------------------------------|--------|
| 7.                    | 2.50         | 19.650                        | 19.650 |
| (CU M/S)              |              | 43.                           | 43.    |
| (MM)                  |              | 1.                            | 1.     |
| (1000 CU M)           |              | 43.                           | 43.    |

CUMULATIVE AREA = 2.18 SQ KM

STATION B-1

| DAHRMN PER | (O) OUTFLOW |    |    |    |    |    |    |    |    |    | 0.<br>30. | 0.<br>20. | 0.<br>10. | 0.<br>0. |  |  |      |
|------------|-------------|----|----|----|----|----|----|----|----|----|-----------|-----------|-----------|----------|--|--|------|
|            | 0.          | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |           |           |           |          |  |  |      |
| 10000      | 10          |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10015      | 20          |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10030      | 30          |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10045      | 40          |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10100      | 50          |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10115      | 60          |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10130      | 7.          | 0  |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10145      | 8           |    | 0  |    |    |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10200      | 9.          |    |    |    | 0  |    |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10215      | 10.         |    |    |    |    | 0  |    |    |    |    |           |           |           |          |  |  | LLL. |
| 10230      | 11.         |    |    |    |    |    |    |    | 0  | 0  |           |           |           |          |  |  | LLL. |
| 10245      | 12.         |    |    |    |    |    |    |    |    | 0  | 0         |           |           |          |  |  | LLL. |
| 10300      | 13.         |    |    |    |    |    |    |    |    |    | 0         |           |           |          |  |  | LLL. |
| 10315      | 14.         |    |    |    |    |    |    |    |    |    |           | 0         |           |          |  |  | LLL. |
| 10330      | 15.         |    |    |    |    |    | 0  |    | 0  |    |           |           |           |          |  |  | LLX. |
| 10345      | 16.         |    |    | 0  |    |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10400      | 17.         |    |    |    | 0  |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10415      | 18.         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10430      | 19.         |    |    | 0  |    |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10445      | 20.         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10500      | 21.         |    | 0  |    |    |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10515      | 22.         | 0  |    |    |    |    |    |    |    |    |           |           |           |          |  |  | LLX. |
| 10530      | 230         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10545      | 240         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10600      | 250         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10615      | 260         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10630      | 270         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10645      | 280         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10700      | 290         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10715      | 300         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10730      | 310         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10745      | 320         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10800      | 330         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10815      | 340         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10830      | 350         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10845      | 360         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10900      | 370         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10915      | 380         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10930      | 390         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 10945      | 400         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11000      | 410         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11015      | 420         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11030      | 430         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11045      | 440         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11100      | 450         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11115      | 460         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11130      | 470         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11145      | 480         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11200      | 490         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11215      | 500         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11230      | 510         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11245      | 520         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11300      | 530         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11315      | 540         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11330      | 550         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11345      | 560         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11400      | 570         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11415      | 580         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11430      | 590         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11445      | 600         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11500      | 610         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11515      | 620         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11530      | 630         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11545      | 640         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11600      | 650         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11615      | 660         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11630      | 670         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11645      | 680         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11700      | 690         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |
| 11715      | 700         |    |    |    |    |    |    |    |    |    |           |           |           |          |  |  |      |

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73 KK \*\*\*\*\*  
 \* B-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4

75 HC HYDROGRAPH COMBINATION  
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE  
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HYDROGRAPH AT STATION B-SUMA  
 SUM OF 3 HYDROGRAPHS

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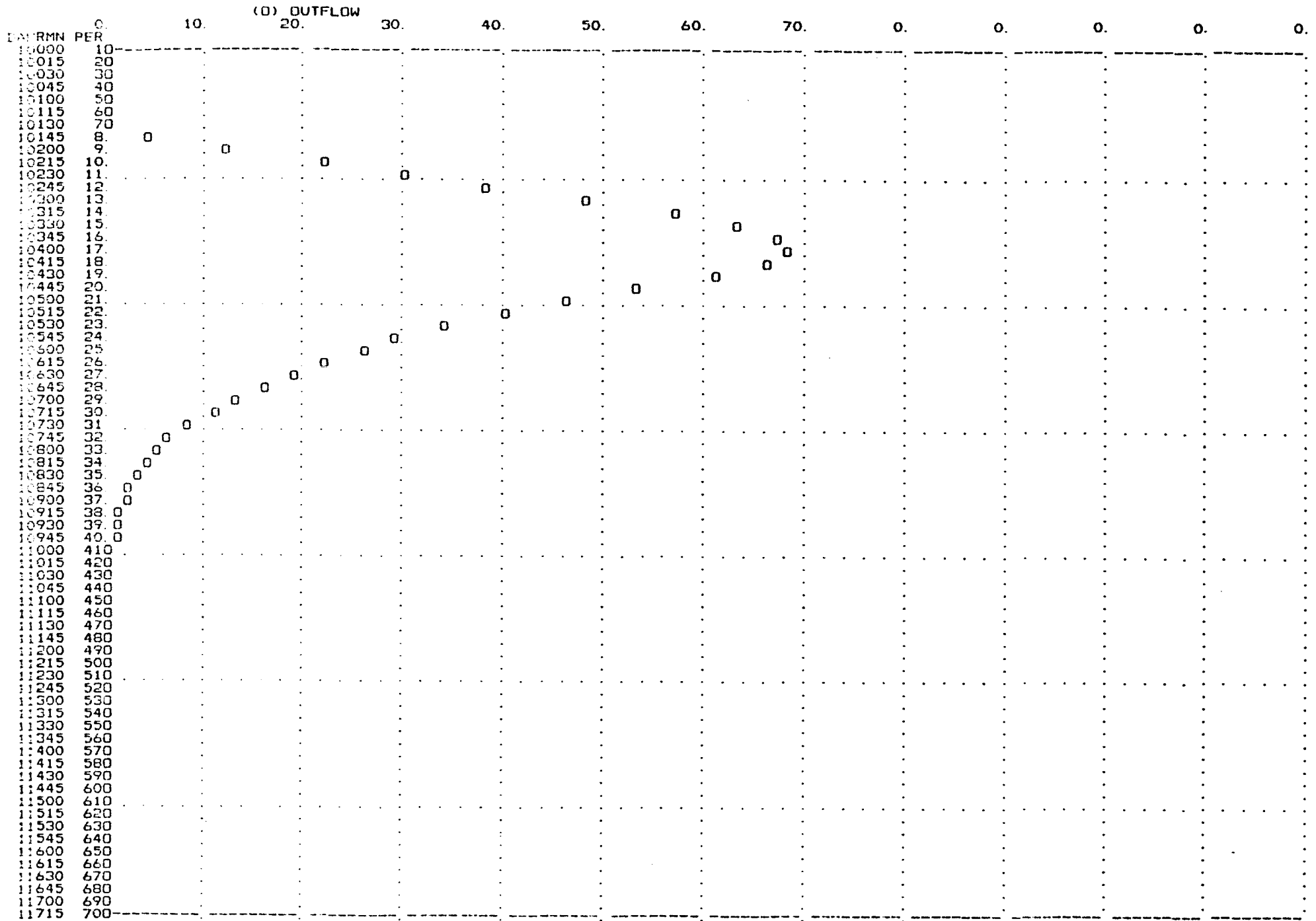
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 61.  | * | 1  | JUN | 0900 | 37  | 2.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 53.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 46.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 40.  | * | 1  | JUN | 0945 | 40  | 1.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 34.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 29.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 26.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 4.   | * | 1  | JUN | 0615 | 26  | 22.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 12.  | * | 1  | JUN | 0630 | 27  | 19.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 22.  | * | 1  | JUN | 0645 | 28  | 16.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 30.  | * | 1  | JUN | 0700 | 29  | 13.  | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 38.  | * | 1  | JUN | 0715 | 30  | 11.  | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 48.  | * | 1  | JUN | 0730 | 31  | 8.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 57.  | * | 1  | JUN | 0745 | 32  | 6.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 63.  | * | 1  | JUN | 0800 | 33  | 5.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 67.  | * | 1  | JUN | 0815 | 34  | 4.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 63.  | * | 1  | JUN | 0830 | 35  | 3.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 66.  | * | 1  | JUN | 0845 | 36  | 2.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | 72-HR<br>(1000 CU M) | 17.25-HR<br>(MM) |
|-----------------------|--------------|------------------|---------------|----------------------|------------------|
| 68.                   | 4.00         | 36.              | 34.590        | 770.                 | 13.              |
|                       |              | (MM)             | 793.          | 793.                 | 793.             |

CUMULATIVE AREA = 22.27 SQ KM

STATION B-SUMA



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76 KK \*\*\*\*\*  
 \* C-1 \*  
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BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

78 BA SUBBASIN CHARACTERISTICS  
 TAREA 10.45 SUBBASIN AREA

PRECIPITATION DATA

79 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM

| HYDRO-35 |        |        | TP-40 |       |       |       |       | TP-49 |       |       |        |
|----------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 5-MIN    | 15-MIN | 60-MIN | 2-HR  | 3-HR  | 6-HR  | 12-HR | 24-HR | 2-DAY | 4-DAY | 7-DAY | 10-DAY |
| 14.20    | 23.30  | 43.90  | 62.00 | 75.00 | 98.80 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00   |

STORM AREA = 10.45

80 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNBR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

81 UC CLARK UNITGRAPH  
 TC 1.50 TIME OF CONCENTRATION  
 R 1.10 STORAGE COEFFICIENT

82 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES

|     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|------|
| 0.0 | 2.1 | 4.0 | 5.8 | 8.1 | 9.5 | 10.5 |
|-----|-----|-----|-----|-----|-----|------|

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UNIT HYDROGRAPH PARAMETERS  
 CLARK IC= 1.50 HR, R= 1.10 HR  
 SNYDER TP= 1.23 HR, CP= 0.59

UNIT HYDROGRAPH  
 27 END-OF-PERIOD ORDINATES

|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 0. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. |
| 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |

HYDROGRAPH AT STATION C-1

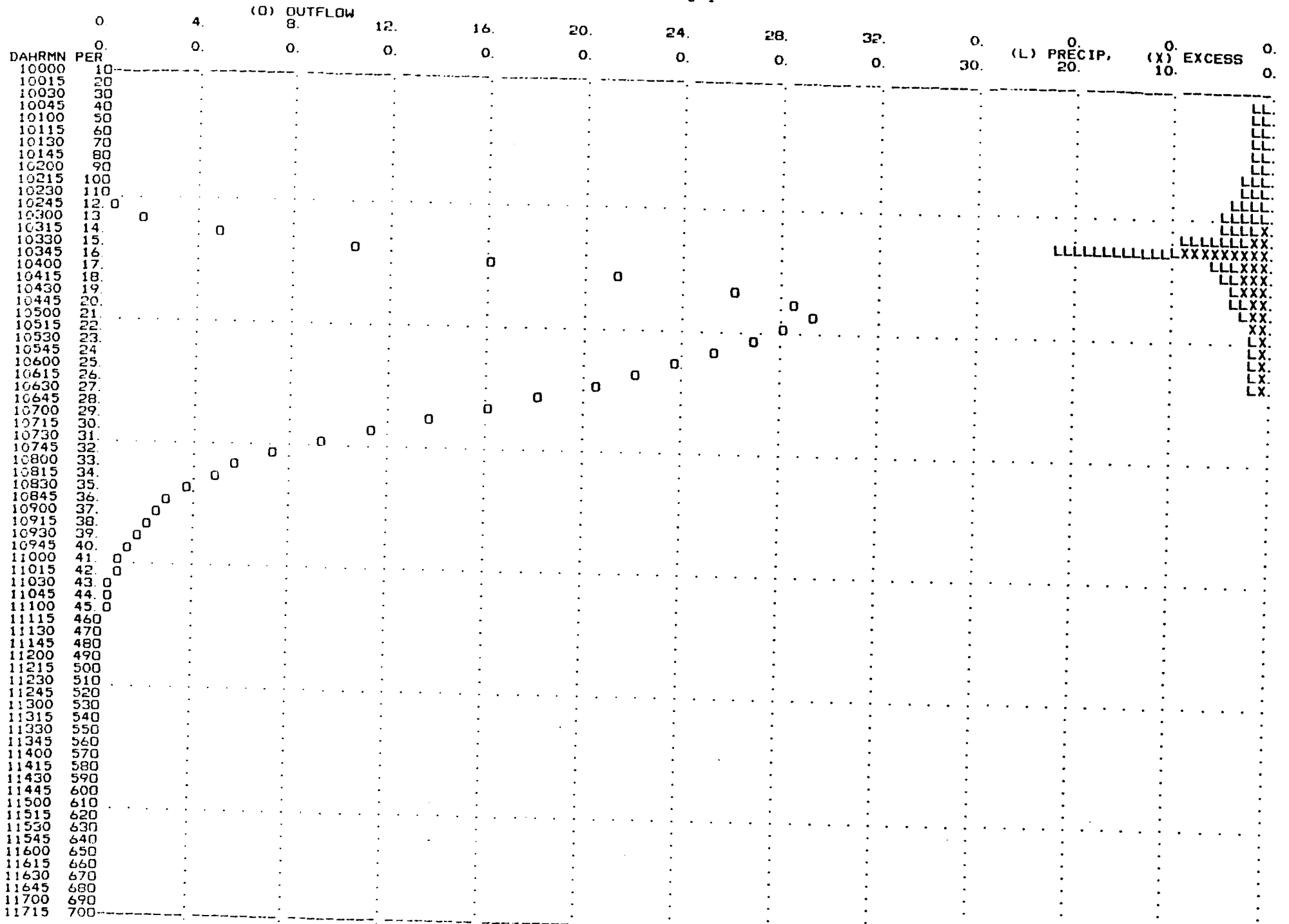
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q |   | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0015 | 2   | 1.66  | 1.66  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0030 | 3   | 1.75  | 1.75  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0045 | 4   | 1.85  | 1.85  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0100 | 5   | 1.98  | 1.98  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0115 | 6   | 2.12  | 2.12  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0130 | 7   | 2.31  | 2.31  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0145 | 8   | 3.00  | 3.00  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0200 | 9   | 3.31  | 3.31  | 0.00   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 3.98  | 3.94  | 0.05   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 4.63  | 4.24  | 0.39   | 0.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 4.78  | 4.00  | 0.78   | 0.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 9.39  | 6.93  | 2.46   | 1.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 21.68 | 12.49 | 9.19   | 5.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 5.82  | 2.73  | 3.09   | 10.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 5.10  | 2.22  | 2.88   | 16.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 4.27  | 1.75  | 2.52   | 21.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 3.50  | 1.36  | 2.14   | 26.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 3.14  | 1.17  | 1.97   | 29.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 2.41  | 0.87  | 1.54   | 29.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 2.21  | 0.78  | 1.43   | 28.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 2.05  | 0.70  | 1.35   | 27.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 1.91  | 0.64  | 1.27   | 25.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 1.80  | 0.59  | 1.21   | 24.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 1.70  | 0.55  | 1.16   | 22.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 20.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 18.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 16.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 14.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 11.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 9.     | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 7.     | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 6.     | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 5.     | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 4.     | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 96.36, TOTAL LOSS = 62.93, TOTAL EXCESS = 33.43

| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | 72-HR<br>(1000 CU M) | 17.25-HR<br>(MM) |
|-----------------------|--------------|------------------|---------------|----------------------|------------------|
| 29.                   | 4.75         | 16.              | 32.435        | 33.292               | 6.               |
|                       |              | 339.             | 348.          | 348.                 | 348.             |

CUMULATIVE AREA = 10.45 SQ KM

STATION C-1



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83 KK  
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 \* G-1 \*  
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BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

85 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.45 SUBBASIN AREA

PRECIPITATION DATA

86 PH DEPTHS FOR 6-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 17.00 27.80 52.40 74.00 89.40 117.80 0.00 0.00 0.00 0.00 0.00 0.00  
 STORM AREA = 19.45

87 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

88 UC CLARK UNITGRAPH  
 TC 2.00 TIME OF CONCENTRATION  
 R 1.80 STORAGE COEFFICIENT

89 UA ACCUMULATED-AREA VS. TIME, 9 ORDINATES  
 0.0 2.3 6.4 9.3 12.0 14.1 15.7 17.6 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.00 HR, R= 1.80 HR  
 SNYDER TP= 1.87 HR, CP= 0.57

UNIT HYDROGRAPH  
 42 END-OF-PERIOD ORDINATES  
 0. 1. 1. 1. 1. 1. 2. 2. 2. 2. 1.  
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 0.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.



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 HYDROGRAPH AT STATION G-1  
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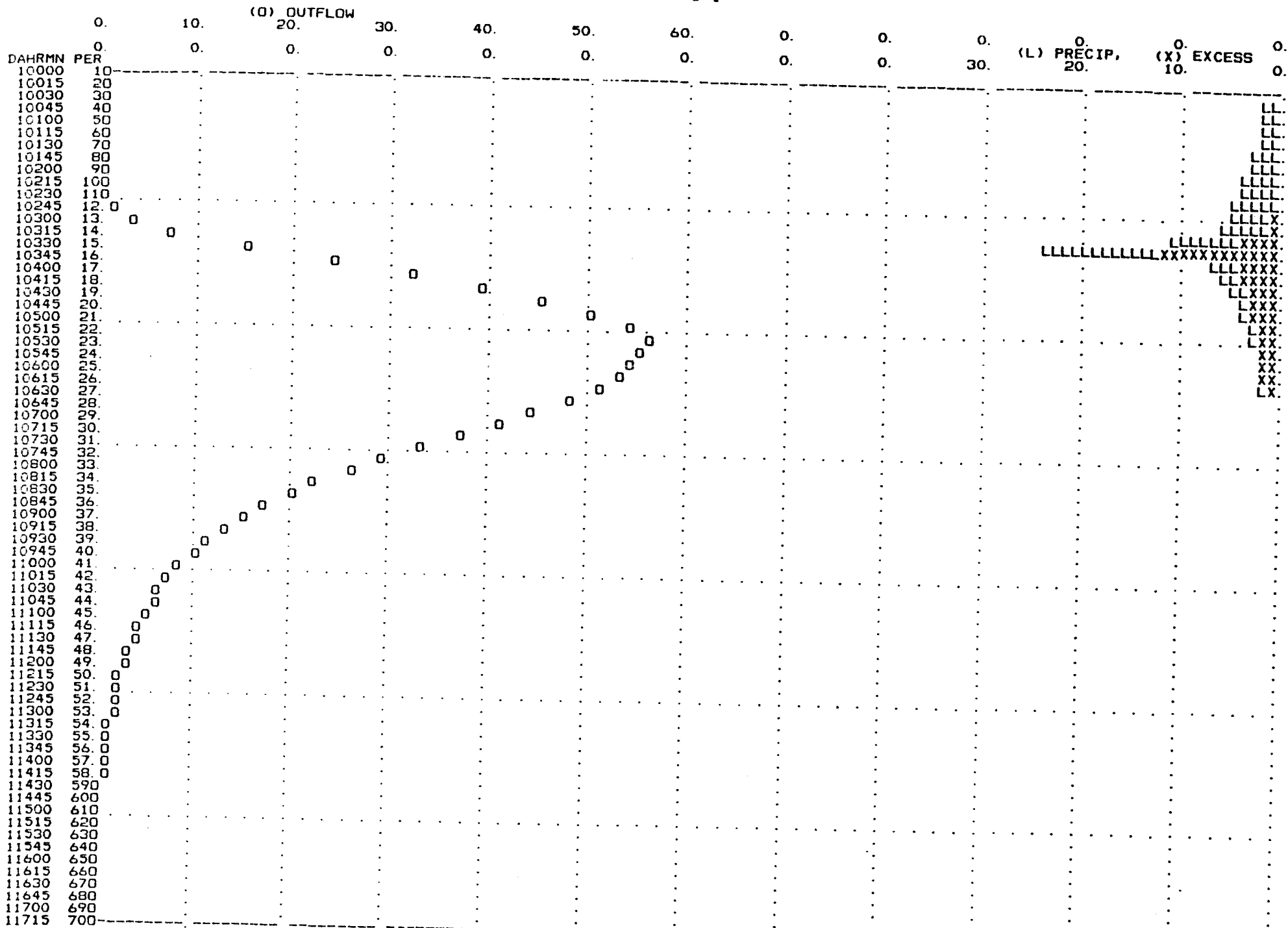
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q | * | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 17.    |
| 1  | JUN | 0015 | 2   | 1.98  | 1.98  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 15.    |
| 1  | JUN | 0030 | 3   | 2.09  | 2.09  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 13.    |
| 1  | JUN | 0045 | 4   | 2.21  | 2.21  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 11.    |
| 1  | JUN | 0100 | 5   | 2.36  | 2.36  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 10.    |
| 1  | JUN | 0115 | 6   | 2.53  | 2.53  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 8.     |
| 1  | JUN | 0130 | 7   | 2.74  | 2.74  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 7.     |
| 1  | JUN | 0145 | 8   | 3.55  | 3.55  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 6.     |
| 1  | JUN | 0200 | 9   | 3.91  | 3.89  | 0.02   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0215 | 10  | 4.75  | 4.39  | 0.36   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0230 | 11  | 5.49  | 4.61  | 0.88   | 0.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0245 | 12  | 5.77  | 4.38  | 1.40   | 1.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0300 | 13  | 10.59 | 6.99  | 3.60   | 3.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0315 | 14  | 24.42 | 12.40 | 12.02  | 7.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0330 | 15  | 6.97  | 2.84  | 4.13   | 15.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0345 | 16  | 6.03  | 2.26  | 3.77   | 24.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0400 | 17  | 5.08  | 1.78  | 3.30   | 32.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0415 | 18  | 4.14  | 1.37  | 2.76   | 39.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0430 | 19  | 3.72  | 1.18  | 2.54   | 45.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0445 | 20  | 2.87  | 0.88  | 1.99   | 50.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0500 | 21  | 2.63  | 0.78  | 1.85   | 54.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0515 | 22  | 2.44  | 0.70  | 1.74   | 56.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0530 | 23  | 2.28  | 0.64  | 1.64   | 55.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0545 | 24  | 2.15  | 0.59  | 1.56   | 54.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0600 | 25  | 2.03  | 0.55  | 1.49   | 53.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 51.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 48.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 44.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 41.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 37.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 33.    | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 29.    | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 25.    | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 22.    | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 20.    | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 3.     |

TOTAL RAINFALL = 112.73, TOTAL LOSS = 67.68, TOTAL EXCESS = 45.05

|           |      |             |                      |        |
|-----------|------|-------------|----------------------|--------|
| PEAK FLOW | TIME |             | MAXIMUM AVERAGE FLOW |        |
| (CU M/S)  | (HR) |             | 24-HR                | 72-HR  |
| 56.       | 5.25 | (CU M/S)    | 36.                  | 14.    |
|           |      | (MM)        | 40.414               | 44.825 |
|           |      | (1000 CU M) | 786.                 | 872.   |
|           |      |             |                      | 872.   |
|           |      |             |                      | 872.   |

CUMULATIVE AREA = 19.45 SQ KM

STATION G-1



RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
 AREA IN SQUARE KILOMETERS

| OPERATION     | STATION | PEAK<br>FLOW | TIME OF<br>PEAK | AVERAGE FLOW FOR MAXIMUM PERIOD |         |         | BASIN<br>AREA | MAXIMUM<br>STAGE | TIME OF<br>MAX STAGE |
|---------------|---------|--------------|-----------------|---------------------------------|---------|---------|---------------|------------------|----------------------|
|               |         |              |                 | 6-HOUR                          | 24-HOUR | 72-HOUR |               |                  |                      |
| HYDROGRAPH AT | T-2     | 106.71       | 6.25            | 73.73                           | 30.43   | 30.43   | 43.18         |                  |                      |
| ROUTED TO     | R2T01   | 104.44       | 7.00            | 73.26                           | 30.38   | 30.38   | 43.18         |                  |                      |
| HYDROGRAPH AT | T-1     | 33.55        | 6.00            | 23.71                           | 9.85    | 9.85    | 19.55         |                  |                      |
| 2 COMBINED AT | T-SUMA  | 134.78       | 6.75            | 95.87                           | 40.23   | 40.23   | 62.73         |                  |                      |
| HYDROGRAPH AT | L-1     | 6.73         | 2.25            | 1.50                            | 0.52    | 0.52    | 1.53          |                  |                      |
| HYDROGRAPH AT | B-2     | 27.33        | 4.25            | 13.52                           | 4.79    | 4.79    | 7.28          |                  |                      |
| HYDROGRAPH AT | B-3     | 9.74         | 2.25            | 2.36                            | 0.82    | 0.82    | 2.08          |                  |                      |
| 2 COMBINED AT | B2+B3   | 27.78        | 4.25            | 15.39                           | 5.61    | 5.61    | 9.36          |                  |                      |
| ROUTED TO     | R23T01  | 27.40        | 4.50            | 15.36                           | 5.61    | 5.61    | 9.36          |                  |                      |
| HYDROGRAPH AT | B-4     | 47.08        | 3.25            | 18.45                           | 6.47    | 6.47    | 10.73         |                  |                      |
| ROUTED TO     | R4T01   | 45.28        | 3.50            | 18.43                           | 6.47    | 6.47    | 10.73         |                  |                      |
| HYDROGRAPH AT | B-1     | 7.01         | 2.50            | 1.98                            | 0.69    | 0.69    | 2.18          |                  |                      |
| 3 COMBINED AT | B-SUMA  | 67.98        | 4.00            | 35.66                           | 12.76   | 12.76   | 22.27         |                  |                      |
| HYDROGRAPH AT | C-1     | 29.02        | 4.75            | 15.69                           | 5.60    | 5.60    | 10.45         |                  |                      |
| HYDROGRAPH AT | G-1     | 55.87        | 5.25            | 36.39                           | 14.04   | 14.04   | 19.45         |                  |                      |

\*\*\* NORMAL END OF HEC-1 \*\*\*

4.5 Avenida de 20 años de periodo de recurrencia

HEC-1 INPUT

| LINE | ID | 1   | 2        | 3     | 4    | 5     | 6     | 7     | 8     | 9     | 10    |
|------|----|---|----------|-------|------|-------|-------|-------|-------|-------|-------|
| 1    | ID | CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y GUAYADEQUE      |          |       |      |       |       |       |       |       |       |
| 2    | ID | PERIODO DE RECURRENCIA 20 AÑOS  |          |       |      |       |       |       |       |       |       |
| 3    | ID | TORMENTAS NO UNIFORMES  |          |       |      |       |       |       |       |       |       |
| 4    | IT | 15  | 1 JUN 87 | 000   | 70   |       |       |       |       |       |       |
| 5    | IO | 1   | 2        |       |      |       |       |       |       |       |       |
| 6    | IM |   |          |       |      |       |       |       |       |       |       |
| 7    | KK | T-2   |          |       |      |       |       |       |       |       |       |
| 8    | KM | BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION    |          |       |      |       |       |       |       |       |       |
| 9    | BA | 43.18   |          |       |      |       |       |       |       |       |       |
| 10   | PH | 5.0   |          | 19.2  | 31.4 | 59.3  | 83.7  | 101.1 | 133.2 |       |       |
| 11   | LS | 20.7  | 71       |       |      |       |       |       |       |       |       |
| 12   | UC | 3.0   | 2.2      |       |      |       |       |       |       |       |       |
| 13   | UA | 0.0   | 2.03     | 4.93  | 8.63 | 10.93 | 15.62 | 20.81 | 26.10 | 32.42 | 36.27 |
| 14   | UA | 39.40   | 41.93    | 43.18 |      |       |       |       |       |       |       |
| 15   | KK | R2T01   |          |       |      |       |       |       |       |       |       |
| 16   | KM | TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1                          |          |       |      |       |       |       |       |       |       |
| 17   | RM | 2   | 0.7      | 0.25  |      |       |       |       |       |       |       |
| 18   | KK | T-1   |          |       |      |       |       |       |       |       |       |
| 19   | KM | BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION    |          |       |      |       |       |       |       |       |       |
| 20   | BA | 19.55   |          |       |      |       |       |       |       |       |       |
| 21   | PH | 5.0   |          | 14.4  | 23.5 | 44.5  | 62.8  | 75.9  | 99.9  |       |       |
| 22   | LS | 17.8  | 74       |       |      |       |       |       |       |       |       |
| 23   | UC | 2.5   | 2.4      |       |      |       |       |       |       |       |       |
| 24   | UA | 0.0   | 1.23     | 3.23  | 5.78 | 9.16  | 12.34 | 14.94 | 16.02 | 17.12 | 18.02 |
| 25   | UA | 19.55   |          |       |      |       |       |       |       |       |       |
| 26   | KK | T-SUMA  |          |       |      |       |       |       |       |       |       |
| 27   | KM | COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2                |          |       |      |       |       |       |       |       |       |
| 28   | HC | 2   |          |       |      |       |       |       |       |       |       |
| 29   | KK | L-1   |          |       |      |       |       |       |       |       |       |
| 30   | KM | BARRANCO DE LA LICENCIA (SUBCUENCA L-1) - TORMENTA DE 3 HORAS DE DURACION |          |       |      |       |       |       |       |       |       |
| 31   | BA | 1.53  |          |       |      |       |       |       |       |       |       |
| 32   | PH | 5.0   |          | 15.1  | 24.8 | 46.7  | 66.0  | 79.8  |       |       |       |
| 33   | LS | 17.8  | 74       |       |      |       |       |       |       |       |       |
| 34   | UC | 0.5   | 0.3      |       |      |       |       |       |       |       |       |
| 35   | UA | 0.0   | 0.70     | 1.53  |      |       |       |       |       |       |       |
| 36   | KK | B-2   |          |       |      |       |       |       |       |       |       |
| 37   | KM | BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION       |          |       |      |       |       |       |       |       |       |
| 38   | BA | 7.28  |          |       |      |       |       |       |       |       |       |
| 39   | PH | 5.0   |          | 16.2  | 26.5 | 50.1  | 70.7  | 85.5  | 112.6 |       |       |
| 40   | LS | 17.8  | 74       |       |      |       |       |       |       |       |       |
| 41   | UC | 1.0   | 1.0      |       |      |       |       |       |       |       |       |
| 42   | UA | 0.0   | 2.00     | 4.11  | 6.03 | 7.28  |       |       |       |       |       |
| 43   | KK | B-3   |          |       |      |       |       |       |       |       |       |
| 44   | KM | BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION       |          |       |      |       |       |       |       |       |       |
| 45   | BA | 2.08  |          |       |      |       |       |       |       |       |       |
| 46   | PH | 5.0   |          | 16.2  | 26.6 | 50.2  | 70.8  | 85.6  |       |       |       |
| 47   | LS | 17.8  | 74       |       |      |       |       |       |       |       |       |
| 48   | UC | 0.5   | 0.4      |       |      |       |       |       |       |       |       |

HEC-1 INPUT

| LINE | ID | 1  | 2    | 3    | 4    | 5     | 6     | 7     | 8     | 9     | 10 |
|------|----|--|------|------|------|-------|-------|-------|-------|-------|----|
| 49   | UA | 0.0  | 0.93 | 2.08 |      |       |       |       |       |       |    |
| 50   | KK | B2+B3  |      |      |      |       |       |       |       |       |    |
| 51   | KM | COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3           |      |      |      |       |       |       |       |       |    |
| 52   | HC | 2  |      |      |      |       |       |       |       |       |    |
| 53   | KK | R23T01   |      |      |      |       |       |       |       |       |    |
| 54   | KM | TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1                     |      |      |      |       |       |       |       |       |    |
| 55   | RM | 1  | 0.2  | 0.25 |      |       |       |       |       |       |    |
| 56   | KK | B-4  |      |      |      |       |       |       |       |       |    |
| 57   | KM | BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION  |      |      |      |       |       |       |       |       |    |
| 58   | BA | 10.73  |      |      |      |       |       |       |       |       |    |
| 59   | PH | 5.0  |      | 20.7 | 33.9 | 64.1  | 90.5  | 109.3 |       |       |    |
| 60   | LS | 17.8   | 74   |      |      |       |       |       |       |       |    |
| 61   | UC | 1.5  | 1.0  |      |      |       |       |       |       |       |    |
| 62   | UA | 0.0  | 0.94 | 1.83 | 3.42 | 6.11  | 9.00  | 10.73 |       |       |    |
| 63   | KK | R4T01  |      |      |      |       |       |       |       |       |    |
| 64   | KM | TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1                     |      |      |      |       |       |       |       |       |    |
| 65   | RM | 1  | 0.3  | 0.25 |      |       |       |       |       |       |    |
| 66   | KK | B-1  |      |      |      |       |       |       |       |       |    |
| 67   | KM | BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION  |      |      |      |       |       |       |       |       |    |
| 68   | BA | 2.18   |      |      |      |       |       |       |       |       |    |
| 69   | PH | 5.0  |      | 14.6 | 24.0 | 45.3  | 63.9  | 77.2  |       |       |    |
| 70   | LS | 17.8   | 74   |      |      |       |       |       |       |       |    |
| 71   | UC | 0.75   | 0.5  |      |      |       |       |       |       |       |    |
| 72   | UA | 0.0  | 0.75 | 1.75 | 2.18 |       |       |       |       |       |    |
| 73   | KK | B-SUMA   |      |      |      |       |       |       |       |       |    |
| 74   | KM | COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4 |      |      |      |       |       |       |       |       |    |
| 75   | HC | 3  |      |      |      |       |       |       |       |       |    |
| 76   | KK | C-1  |      |      |      |       |       |       |       |       |    |
| 77   | KM | BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS    |      |      |      |       |       |       |       |       |    |
| 78   | BA | 10.45  |      |      |      |       |       |       |       |       |    |
| 79   | PH | 5.0  |      | 15.3 | 25.1 | 47.4  | 66.9  | 80.9  | 106.5 |       |    |
| 80   | LS | 19.8   | 72   |      |      |       |       |       |       |       |    |
| 81   | UC | 1.5  | 1.1  |      |      |       |       |       |       |       |    |
| 82   | UA | 0.0  | 2.05 | 4.02 | 5.82 | 8.09  | 9.55  | 10.45 |       |       |    |
| 83   | KK | G-1  |      |      |      |       |       |       |       |       |    |
| 84   | KM | BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS         |      |      |      |       |       |       |       |       |    |
| 85   | BA | 19.45  |      |      |      |       |       |       |       |       |    |
| 86   | PH | 5.0  |      | 18.2 | 29.7 | 56.1  | 79.2  | 95.7  | 126.1 |       |    |
| 87   | LS | 19.8   | 72   |      |      |       |       |       |       |       |    |
| 88   | UC | 2.0  | 1.8  |      |      |       |       |       |       |       |    |
| 89   | UA | 0.0  | 2.28 | 6.42 | 9.26 | 12.05 | 14.13 | 15.71 | 17.57 | 19.45 |    |
| 90   | ZZ |  |      |      |      |       |       |       |       |       |    |

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*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* FEBRUARY 1981 *
* REVISED 14 JUN 85 *
* RUN DATE TIME *
*****

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*****
* U. S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 440-3285 OR (FTS) 448- *
*****

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CALCULO DE AVENIDAS EN LOS BARRANCOS DE TIRAJANA, BALOS Y QUAYADEQUE  
 PERIODO DE RECURRENCIA 20 AÑOS  
 TORMENTAS NO UNIFORMES

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5 IO OUTPUT CONTROL VARIABLES
      IPRNT 1 PRINT CONTROL
      IPLOT 2 PLOT CONTROL
      QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
      NMIN 15 MINUTES IN COMPUTATION INTERVAL
      IDATE 1JUN87 STARTING DATE
      ITIME 0000 STARTING TIME
      NQ 70 NUMBER OF HYDROGRAPH ORDINATES
      NDDATE 1JUN87 ENDING DATE
      NDTIME 1715 ENDING TIME

      COMPUTATION INTERVAL 0.25 HOURS
      TOTAL TIME BASE 17.25 HOURS

METRIC UNITS
DRAINAGE AREA SQUARE KILOMETERS
PRECIPITATION DEPTH MILLIMETERS
LENGTH, ELEVATION METERS
FLOW CUBIC METERS PER SECOND
STORAGE VOLUME CUBIC METERS
SURFACE AREA SQUARE METERS
TEMPERATURE DEGREES CELSIUS

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7 KK \*\*\*\*\*  
 \* T-2 \*  
 \* \*  
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BARRANCO DE TIRAJANA (SUBCUENCA T-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

9 BA SUBBASIN CHARACTERISTICS  
 TAREA 43.18 SUBBASIN AREA

PRECIPITATION DATA

10 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 19.20 31.40 59.30 83.70 101.10 133.20 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 43.18

11 LS SCS LOSS RATE  
 STRTL 20.70 INITIAL ABSTRACTION  
 CRVNR 71.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

12 UC CLARK UNITGRAPH  
 TC 3.00 TIME OF CONCENTRATION  
 R 2.20 STORAGE COEFFICIENT

13 UA ACCUMULATED-AREA VS. TIME, 13 ORDINATES  
 0.0 2.0 4.9 8.6 10.9 15.6 20.8 26.1 32.4 36.3  
 39.4 41.9 43.2

\*\*\*

UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 3.00 HR, R= 2.20 HR  
 SNYDER TP= 2.56 HR, CP= 0.65

UNIT HYDROGRAPH  
 54 END-OF-PERIOD ORDINATES  
 0. 0. 1. 1. 1. 2. 2. 2. 2. 3.  
 3. 3. 3. 2. 2. 2. 2. 2. 1. 3.  
 1. 1. 1. 1. 1. 1. 1. 1. 0. 1.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.



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 HYDROGRAPH AT STATION T-2  
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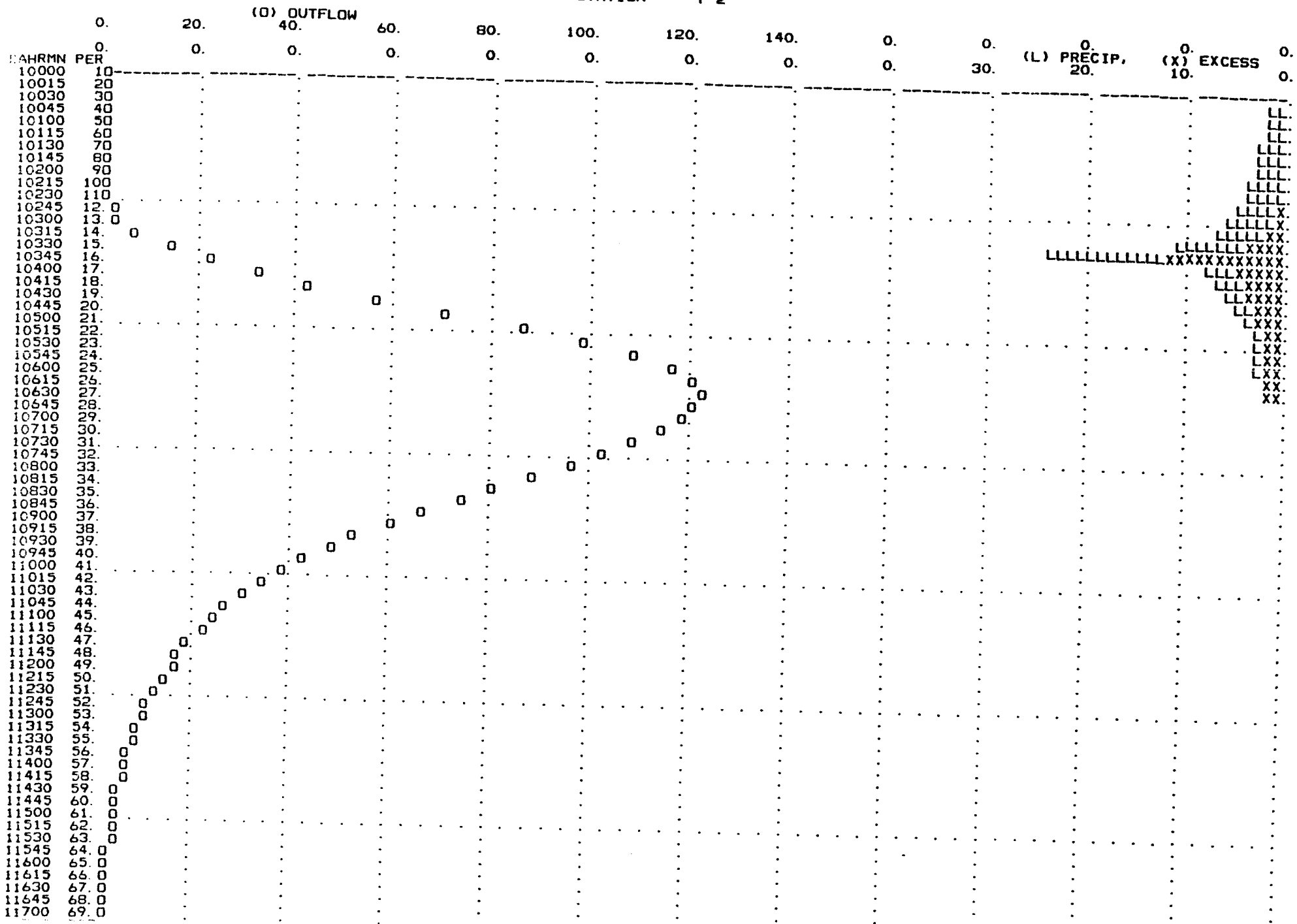
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 66.  | * |
| 1  | JUN | 0015 | 2   | 2.25  | 2.25  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 59.  | * |
| 1  | JUN | 0030 | 3   | 2.36  | 2.36  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 53.  | * |
| 1  | JUN | 0045 | 4   | 2.50  | 2.50  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 47.  | * |
| 1  | JUN | 0100 | 5   | 2.66  | 2.66  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 42.  | * |
| 1  | JUN | 0115 | 6   | 2.84  | 2.84  | 0.00   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 37.  | * |
| 1  | JUN | 0130 | 7   | 3.08  | 3.08  | 0.00   | 0.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 33.  | * |
| 1  | JUN | 0145 | 8   | 4.01  | 4.01  | 0.00   | 0.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 30.  | * |
| 1  | JUN | 0200 | 9   | 4.39  | 4.28  | 0.11   | 0.   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 27.  | * |
| 1  | JUN | 0215 | 10  | 5.36  | 4.79  | 0.57   | 0.   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 24.  | * |
| 1  | JUN | 0230 | 11  | 6.13  | 4.94  | 1.19   | 0.   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 21.  | * |
| 1  | JUN | 0245 | 12  | 6.71  | 4.86  | 1.85   | 1.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 19.  | * |
| 1  | JUN | 0300 | 13  | 10.54 | 6.66  | 3.88   | 3.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 17.  | * |
| 1  | JUN | 0315 | 14  | 24.21 | 11.98 | 12.23  | 7.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 15.  | * |
| 1  | JUN | 0330 | 15  | 7.94  | 3.18  | 4.76   | 13.  | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 13.  | * |
| 1  | JUN | 0345 | 16  | 6.69  | 2.45  | 4.23   | 22.  | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 12.  | * |
| 1  | JUN | 0400 | 17  | 5.70  | 1.95  | 3.75   | 31.  | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 11.  | * |
| 1  | JUN | 0415 | 18  | 4.63  | 1.49  | 3.14   | 43.  | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 10.  | * |
| 1  | JUN | 0430 | 19  | 4.19  | 1.29  | 2.90   | 56.  | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 9.   | * |
| 1  | JUN | 0445 | 20  | 3.21  | 0.95  | 2.26   | 71.  | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 8.   | * |
| 1  | JUN | 0500 | 21  | 2.95  | 0.85  | 2.11   | 85.  | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 7.   | * |
| 1  | JUN | 0515 | 22  | 2.75  | 0.76  | 1.98   | 99.  | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 6.   | * |
| 1  | JUN | 0530 | 23  | 2.57  | 0.70  | 1.88   | 109. | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 5.   | * |
| 1  | JUN | 0545 | 24  | 2.43  | 0.64  | 1.79   | 116. | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 5.   | * |
| 1  | JUN | 0600 | 25  | 2.30  | 0.59  | 1.71   | 121. | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 4.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 122. | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 4.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 121. | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 118. | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 114. | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 3.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 109. | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 103. | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 96.  | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 2.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 89.  | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 81.  | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 1.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 73.  | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 1.   | * |

TOTAL RAINFALL = 122.40, TOTAL LOSS = 72.06, TOTAL EXCESS = 50.35

|                       |              |                  |               |   |                  |
|-----------------------|--------------|------------------|---------------|---|------------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | MAXIMUM AVERAGE FLOW<br>72-HR<br>(CU M/S) | 17.25-HR<br>(MM) |
| 122.                  | 6.25         | 84.              | 42.184        | 35.<br>50.062                             | 35.<br>50.062    |
|                       |              | (1000 CU M)      | 1821.         | 2162.                                     | 2162.            |

CUMULATIVE AREA = 43.18 SQ KM

STATION T-2



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15 KK  
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 \* R2T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

17 RM MUSKINGUM ROUTING  
 NSTPS 2 NUMBER OF SUBREACHES  
 AMSKK 0.70 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R2T01

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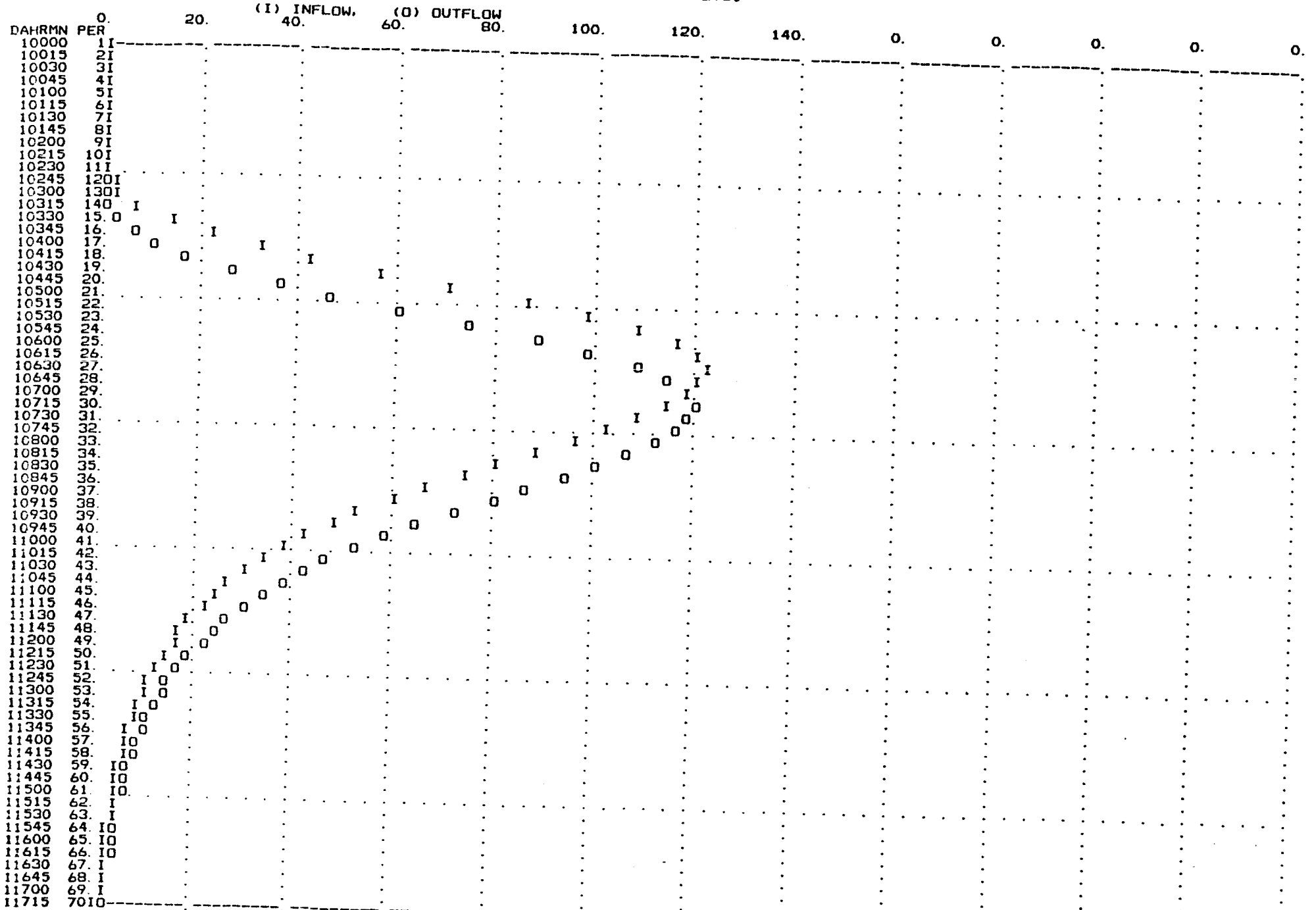
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |   |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|---|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 25.  | * | 1  | JUN | 0900 | 37  | 79.  | * | 1  | JUN | 1330 | 55  | 11.  | * |   |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 35.  | * | 1  | JUN | 0915 | 38  | 72.  | * | 1  | JUN | 1345 | 56  | 9.   | * |   |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 47.  | * | 1  | JUN | 0930 | 39  | 65.  | * | 1  | JUN | 1400 | 57  | 8.   | * |   |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 60.  | * | 1  | JUN | 0945 | 40  | 58.  | * | 1  | JUN | 1415 | 58  | 8.   | * |   |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 74.  | * | 1  | JUN | 1000 | 41  | 52.  | * | 1  | JUN | 1430 | 59  | 7.   | * |   |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 87.  | * | 1  | JUN | 1015 | 42  | 47.  | * | 1  | JUN | 1445 | 60  | 6.   | * |   |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 99.  | * | 1  | JUN | 1030 | 43  | 42.  | * | 1  | JUN | 1500 | 61  | 5.   | * |   |
| 1  | JUN | 0145 | 8   | 0.   | * | 1  | JUN | 0615 | 26  | 108. | * | 1  | JUN | 1045 | 44  | 37.  | * | 1  | JUN | 1515 | 62  | 5.   | * |   |
| 1  | JUN | 0200 | 9   | 0.   | * | 1  | JUN | 0630 | 27  | 115. | * | 1  | JUN | 1100 | 45  | 33.  | * | 1  | JUN | 1530 | 63  | 4.   | * |   |
| 1  | JUN | 0215 | 10  | 0.   | * | 1  | JUN | 0645 | 28  | 118. | * | 1  | JUN | 1115 | 46  | 30.  | * | 1  | JUN | 1545 | 64  | 4.   | * |   |
| 1  | JUN | 0230 | 11  | 0.   | * | 1  | JUN | 0700 | 29  | 119. | * | 1  | JUN | 1130 | 47  | 26.  | * | 1  | JUN | 1600 | 65  | 3.   | * |   |
| 1  | JUN | 0245 | 12  | 0.   | * | 1  | JUN | 0715 | 30  | 118. | * | 1  | JUN | 1145 | 48  | 24.  | * | 1  | JUN | 1615 | 66  | 3.   | * |   |
| 1  | JUN | 0300 | 13  | 0.   | * | 1  | JUN | 0730 | 31  | 116. | * | 1  | JUN | 1200 | 49  | 21.  | * | 1  | JUN | 1630 | 67  | 3.   | * |   |
| 1  | JUN | 0315 | 14  | 1.   | * | 1  | JUN | 0745 | 32  | 112. | * | 1  | JUN | 1215 | 50  | 19.  | * | 1  | JUN | 1645 | 68  | 2.   | * |   |
| 1  | JUN | 0330 | 15  | 2.   | * | 1  | JUN | 0800 | 33  | 106. | * | 1  | JUN | 1230 | 51  | 17.  | * | 1  | JUN | 1700 | 69  | 2.   | * |   |
| 1  | JUN | 0345 | 16  | 5.   | * | 1  | JUN | 0815 | 34  | 101. | * | 1  | JUN | 1245 | 52  | 15.  | * | 1  | JUN | 1715 | 70  | 2.   | * |   |
| 1  | JUN | 0400 | 17  | 10.  | * | 1  | JUN | 0830 | 35  | 94.  | * | 1  | JUN | 1300 | 53  | 13.  | * |    |     |      |     |      |   | * |
| 1  | JUN | 0415 | 18  | 17.  | * | 1  | JUN | 0845 | 36  | 87.  | * | 1  | JUN | 1315 | 54  | 12.  | * |    |     |      |     |      |   | * |

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|                       |              |             |        |                      |        |          |
|-----------------------|--------------|-------------|--------|----------------------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) |             | 6-HR   | MAXIMUM AVERAGE FLOW |        | 17.25-HR |
| 119.                  | 7.00         | (CU M/S)    | 84.    | 24-HR                | 35.    | 35.      |
|                       |              | (MM)        | 41.909 | 49.984               | 49.984 | 49.984   |
|                       |              | (1000 CU M) | 1810.  | 2158.                | 2158.  | 2158.    |

CUMULATIVE AREA = 43.18 SQ KM

STATION R2T01



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18 KK  
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 \* T-1 \*  
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BARRANCO DE TIRAJANA (SUBCUENCA T-1) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

20 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.55 SUBBASIN AREA

PRECIPITATION DATA

21 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 14.40 23.50 44.50 62.80 75.90 99.90 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 19.55

22 LS SCS LOSS RATE  
 STRTL 17.80 INITIAL ABSTRACTION  
 CRVNR 74.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

23 UC CLARK UNITGRAPH  
 TC 2.50 TIME OF CONCENTRATION  
 R 2.40 STORAGE COEFFICIENT

24 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES  
 0.0 9.2 12.3 14.9 16.0 17.1 18.0  
 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.50 HR, R= 2.40 HR  
 SNYDER TP= 1.75 HR, CP= 0.42

UNIT HYDROGRAPH  
 56 END-OF-PERIOD ORDINATES

|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| 0. | 0. | 0. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. |
| 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. | 1. |
| 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. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |

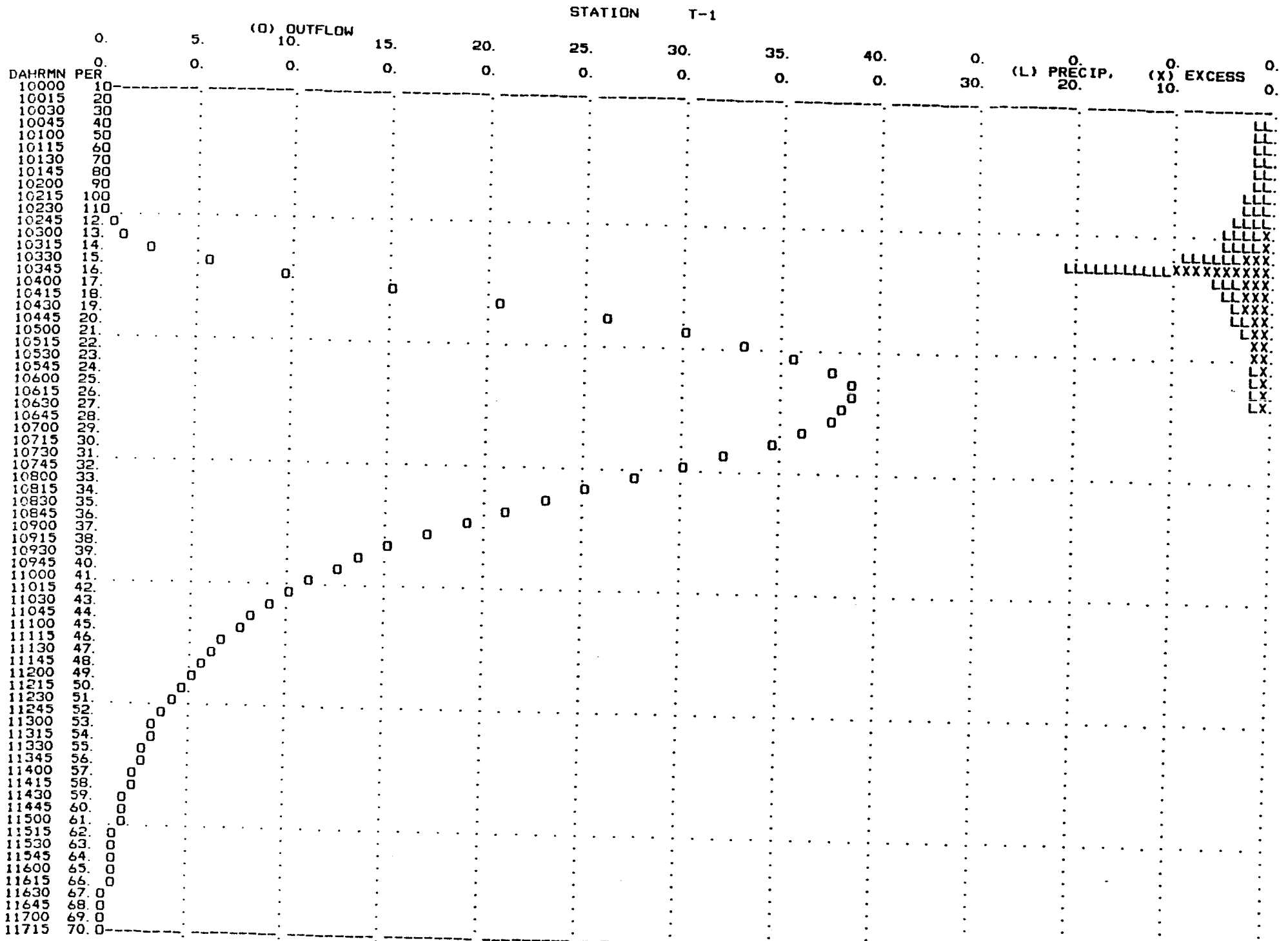
\*\*\*\*\*  
 HYDROGRAPH AT STATION T-1  
 \*\*\*\*\*

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q | * | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 19.    |
| 1  | JUN | 0015 | 2   | 1.68  | 1.68  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 17.    |
| 1  | JUN | 0030 | 3   | 1.77  | 1.77  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 15.    |
| 1  | JUN | 0045 | 4   | 1.87  | 1.87  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 14.    |
| 1  | JUN | 0100 | 5   | 1.99  | 1.99  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 12.    |
| 1  | JUN | 0115 | 6   | 2.14  | 2.14  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 11.    |
| 1  | JUN | 0130 | 7   | 2.32  | 2.32  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 10.    |
| 1  | JUN | 0145 | 8   | 3.02  | 3.02  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 9.     |
| 1  | JUN | 0200 | 9   | 3.33  | 3.32  | 0.00   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 8.     |
| 1  | JUN | 0215 | 10  | 4.02  | 3.82  | 0.20   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 7.     |
| 1  | JUN | 0230 | 11  | 4.65  | 4.03  | 0.62   | 0.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 7.     |
| 1  | JUN | 0245 | 12  | 4.93  | 3.87  | 1.05   | 0.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 6.     |
| 1  | JUN | 0300 | 13  | 9.03  | 6.22  | 2.82   | 1.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0315 | 14  | 20.63 | 11.03 | 9.60   | 2.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0330 | 15  | 5.95  | 2.57  | 3.38   | 6.     | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0345 | 16  | 5.11  | 2.04  | 3.07   | 10.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0400 | 17  | 4.30  | 1.61  | 2.69   | 15.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0415 | 18  | 3.52  | 1.25  | 2.27   | 21.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0430 | 19  | 3.16  | 1.07  | 2.09   | 25.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0445 | 20  | 2.42  | 0.79  | 1.63   | 30.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0500 | 21  | 2.22  | 0.71  | 1.52   | 33.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0515 | 22  | 2.06  | 0.64  | 1.42   | 35.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0530 | 23  | 1.93  | 0.58  | 1.35   | 37.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0545 | 24  | 1.82  | 0.53  | 1.28   | 38.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0600 | 25  | 1.72  | 0.50  | 1.22   | 39.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 38.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 37.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 36.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 34.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 32.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 30.    | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 28.    | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 25.    | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 23.    | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 21.    | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

\*\*\*\*\*  
 TOTAL RAINFALL = 95.58, TOTAL LOSS = 59.36, TOTAL EXCESS = 36.22  
 \*\*\*\*\*

|                       |              |                  |               |               |                  |
|-----------------------|--------------|------------------|---------------|---------------|------------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | 72-HR<br>(MM) | 17.25-HR<br>(MM) |
| 39.                   | 6.00         | 27.              | 30.111        | 35.977        | 35.977           |
|                       |              | (1000 CU M)      | 589.          | 703.          | 703.             |

CUMULATIVE AREA = 19.55 SQ KM



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26 KK \*\*\*\*\*  
 \* T-SUMA \*  
 \* \*\*\*\*\*

COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS T-1 Y T-2

28 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION T-SUMA  
 SUM OF 2 HYDROGRAPHS

\*\*\*\*\*

| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 51.  | * | 1  | JUN | 0900 | 37  | 96.  | * | 1  | JUN | 1330 | 55  | 13.  | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 65.  | * | 1  | JUN | 0915 | 38  | 87.  | * | 1  | JUN | 1345 | 56  | 12.  | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 80.  | * | 1  | JUN | 0930 | 39  | 79.  | * | 1  | JUN | 1400 | 57  | 11.  | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 95.  | * | 1  | JUN | 0945 | 40  | 71.  | * | 1  | JUN | 1415 | 58  | 9.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 111. | * | 1  | JUN | 1000 | 41  | 63.  | * | 1  | JUN | 1430 | 59  | 8.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 126. | * | 1  | JUN | 1015 | 42  | 57.  | * | 1  | JUN | 1445 | 60  | 8.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 137. | * | 1  | JUN | 1030 | 43  | 51.  | * | 1  | JUN | 1500 | 61  | 7.   | * |  |
| 1  | JUN | 0145 | 8   | 0.   | * | 1  | JUN | 0615 | 26  | 146. | * | 1  | JUN | 1045 | 44  | 45.  | * | 1  | JUN | 1515 | 62  | 6.   | * |  |
| 1  | JUN | 0200 | 9   | 0.   | * | 1  | JUN | 0630 | 27  | 152. | * | 1  | JUN | 1100 | 45  | 40.  | * | 1  | JUN | 1530 | 63  | 5.   | * |  |
| 1  | JUN | 0215 | 10  | 0.   | * | 1  | JUN | 0645 | 28  | 154. | * | 1  | JUN | 1115 | 46  | 36.  | * | 1  | JUN | 1545 | 64  | 5.   | * |  |
| 1  | JUN | 0230 | 11  | 0.   | * | 1  | JUN | 0700 | 29  | 154. | * | 1  | JUN | 1130 | 47  | 32.  | * | 1  | JUN | 1600 | 65  | 4.   | * |  |
| 1  | JUN | 0245 | 12  | 0.   | * | 1  | JUN | 0715 | 30  | 151. | * | 1  | JUN | 1145 | 48  | 29.  | * | 1  | JUN | 1615 | 66  | 4.   | * |  |
| 1  | JUN | 0300 | 13  | 1.   | * | 1  | JUN | 0730 | 31  | 145. | * | 1  | JUN | 1200 | 49  | 26.  | * | 1  | JUN | 1630 | 67  | 3.   | * |  |
| 1  | JUN | 0315 | 14  | 3.   | * | 1  | JUN | 0745 | 32  | 139. | * | 1  | JUN | 1215 | 50  | 23.  | * | 1  | JUN | 1645 | 68  | 3.   | * |  |
| 1  | JUN | 0330 | 15  | 8.   | * | 1  | JUN | 0800 | 33  | 132. | * | 1  | JUN | 1230 | 51  | 21.  | * | 1  | JUN | 1700 | 69  | 3.   | * |  |
| 1  | JUN | 0345 | 16  | 15.  | * | 1  | JUN | 0815 | 34  | 123. | * | 1  | JUN | 1245 | 52  | 18.  | * | 1  | JUN | 1715 | 70  | 2.   | * |  |
| 1  | JUN | 0400 | 17  | 25.  | * | 1  | JUN | 0830 | 35  | 115. | * | 1  | JUN | 1300 | 53  | 17.  | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 37.  | * | 1  | JUN | 0845 | 36  | 105. | * | 1  | JUN | 1315 | 54  | 15.  | * |    |     |      |     |      |   |  |

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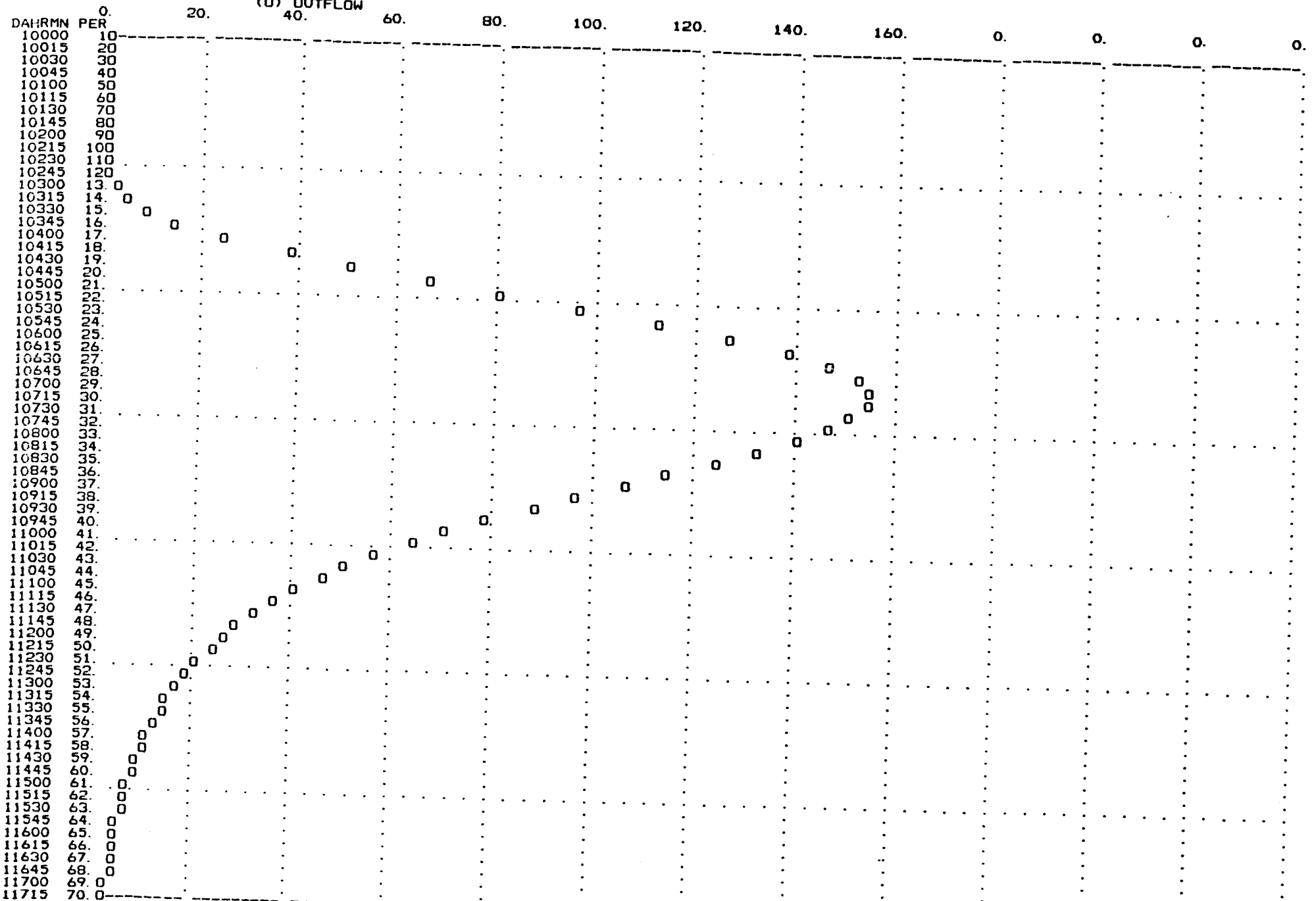
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | 72-HR<br>(1000 CU M) | 17. 25-HR<br>(MM) |
|-----------------------|--------------|------------------|---------------|----------------------|-------------------|
| 154.                  | 6.75         | 110.             | 37.790        | 2371.                | 46.               |
|                       |              | 46.              | 45.619        | 2862.                | 46.               |
|                       |              | 46.              | 45.619        | 2862.                | 2862.             |

CUMULATIVE AREA = 62.73 SQ KM



STATION T-SUMA

(O) OUTFLOW



\*\*\* \*\*

29 KK \*\*\*\*\*  
\* L-1 \*  
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BARRANCO DE LA LICENCIA (SUBCUENCA L-1) -TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

31 BA SUBBASIN CHARACTERISTICS  
TAREA 1.53 SUBBASIN AREA

PRECIPITATION DATA

32 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
15.10 24.80 46.70 66.00 79.80 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 1.53

33 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNBR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

34 UC CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.30 STORAGE COEFFICIENT

35 UA ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.7 1.5

\*\*\*

UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR. R= 0.30 HR  
SNYDER TP= 0.43 HR. CP= 0.66

UNIT HYDROGRAPH  
8 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0.

\*\*\*\*\*  
 HYDROGRAPH AT STATION L-1  
 \*\*\*\*\*

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0015 | 2   | 3.19  | 3.19  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0030 | 3   | 3.52  | 3.52  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0045 | 4   | 4.25  | 4.25  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0100 | 5   | 4.97  | 4.97  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0115 | 6   | 5.02  | 4.91  | 0.11   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0130 | 7   | 10.61 | 8.88  | 1.73   | 0.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0145 | 8   | 24.53 | 14.87 | 9.66   | 3.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0200 | 9   | 6.17  | 2.88  | 3.29   | 7.   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0215 | 10  | 5.49  | 2.35  | 3.14   | 8.   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0230 | 11  | 4.57  | 1.82  | 2.75   | 6.   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0245 | 12  | 3.74  | 1.40  | 2.33   | 5.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0300 | 13  | 3.34  | 1.20  | 2.15   | 5.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 4.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 2.   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 79.40, TOTAL LOSS = 54.24, TOTAL EXCESS = 25.16

|                       |              |                  |                               |        |          |
|-----------------------|--------------|------------------|-------------------------------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | MAXIMUM AVERAGE FLOW<br>24-HR | 72-HR  | 17.25-HR |
| 8.                    | 2.25         | 2.               | 1.                            | 1.     | 1.       |
|                       | (1000 CU M)  | 25.093           | 25.093                        | 25.093 | 25.093   |
|                       |              | 38.              | 38.                           | 38.    | 38.      |

CUMULATIVE AREA = 1.53 SQ KM

| DAHRMN PER | STATION L-1 |    |                   |    |    |    |    |    |    |    | (L) PRECIP.<br>20. | (X) EXCESS<br>10. |              |
|------------|-------------|----|-------------------|----|----|----|----|----|----|----|--------------------|-------------------|--------------|
|            | 0.          | 1. | (O) OUTFLOW<br>2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |                    |                   |              |
| 10000      | 10          |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10015      | 20          |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10030      | 30          |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10045      | 40          |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10100      | 50          |    |                   |    |    |    |    |    |    |    |                    |                   | LLL.         |
| 10115      | 60          |    |                   |    |    |    |    |    |    |    |                    |                   | LLL.         |
| 10130      | 7.          | 0  |                   |    |    |    |    |    |    |    |                    |                   | LLL.         |
| 10145      | 8.          |    |                   |    |    |    |    |    |    |    |                    |                   | LLL.         |
| 10200      | 9.          |    |                   | 0  |    |    |    |    |    |    |                    |                   | LLL.         |
| 10215      | 10.         |    |                   |    |    |    |    |    |    |    |                    |                   | LLLLLLLLLXX. |
| 10230      | 11.         |    |                   |    |    |    |    |    | 0  | 0  |                    |                   | LLLLLLLLLXX. |
| 10245      | 12.         |    |                   |    |    |    |    |    |    |    |                    |                   | LLLLLLLLLXX. |
| 10300      | 13.         |    |                   |    |    |    |    |    |    |    |                    |                   | LLXXX.       |
| 10315      | 14.         |    |                   |    |    |    |    |    |    |    |                    |                   | LLXXX.       |
| 10330      | 15.         |    |                   | 0  | 0  | 0  | 0  | 0  |    |    |                    |                   | LLXXX.       |
| 10345      | 16.         |    |                   | 0  |    |    |    |    |    |    |                    |                   | LLXX.        |
| 10400      | 17.         | 0  | 0                 |    |    |    |    |    |    |    |                    |                   | LXX.         |
| 10415      | 18.         | 0  |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10430      | 190         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10445      | 200         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10500      | 210         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10515      | 220         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10530      | 230         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10545      | 240         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10600      | 250         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10615      | 260         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10630      | 270         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10645      | 280         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10700      | 290         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10715      | 300         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10730      | 310         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10745      | 320         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10800      | 330         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10815      | 340         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10830      | 350         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10845      | 360         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10900      | 370         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10915      | 380         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10930      | 390         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 10945      | 400         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11000      | 410         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11015      | 420         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11030      | 430         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11045      | 440         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11100      | 450         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11115      | 460         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11130      | 470         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11145      | 480         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11200      | 490         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11215      | 500         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11230      | 510         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11245      | 520         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11300      | 530         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11315      | 540         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11330      | 550         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11345      | 560         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11400      | 570         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11415      | 580         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11430      | 590         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11445      | 600         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11500      | 610         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11515      | 620         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11530      | 630         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11545      | 640         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11600      | 650         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11615      | 660         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11630      | 670         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11645      | 680         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11700      | 690         |    |                   |    |    |    |    |    |    |    |                    |                   |              |
| 11715      | 700         |    |                   |    |    |    |    |    |    |    |                    |                   |              |

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36 KK \*\*\*\*\*  
\* B-2 \*  
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BARRANCO DE BALOS (SUBCUENCA B-2) - TORMENTA DE 6 HORAS DE DURACION

SUBBASIN RUNOFF DATA

38 BA SUBBASIN CHARACTERISTICS  
TAREA 7.28 SUBBASIN AREA

PRECIPITATION DATA

39 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
16.20 26.50 50.10 70.70 85.50 112.60 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 7.28

40 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

41 UC CLARK UNITGRAPH  
TC 1.00 TIME OF CONCENTRATION  
R 1.00 STORAGE COEFFICIENT

42 UA ACCUMULATED-AREA VS. TIME, 5 ORDINATES  
0.0 2.0 4.1 6.0 7.3

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 1.00 HR, R= 1.00 HR  
SNYDER TP= 0.89 HR, CP= 0.54

UNIT HYDROGRAPH  
24 END-OF-PERIOD ORDINATES

0. 1. 1. 1. 1. 1. 1. 1. 1. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

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 HYDROGRAPH AT STATION B-2  
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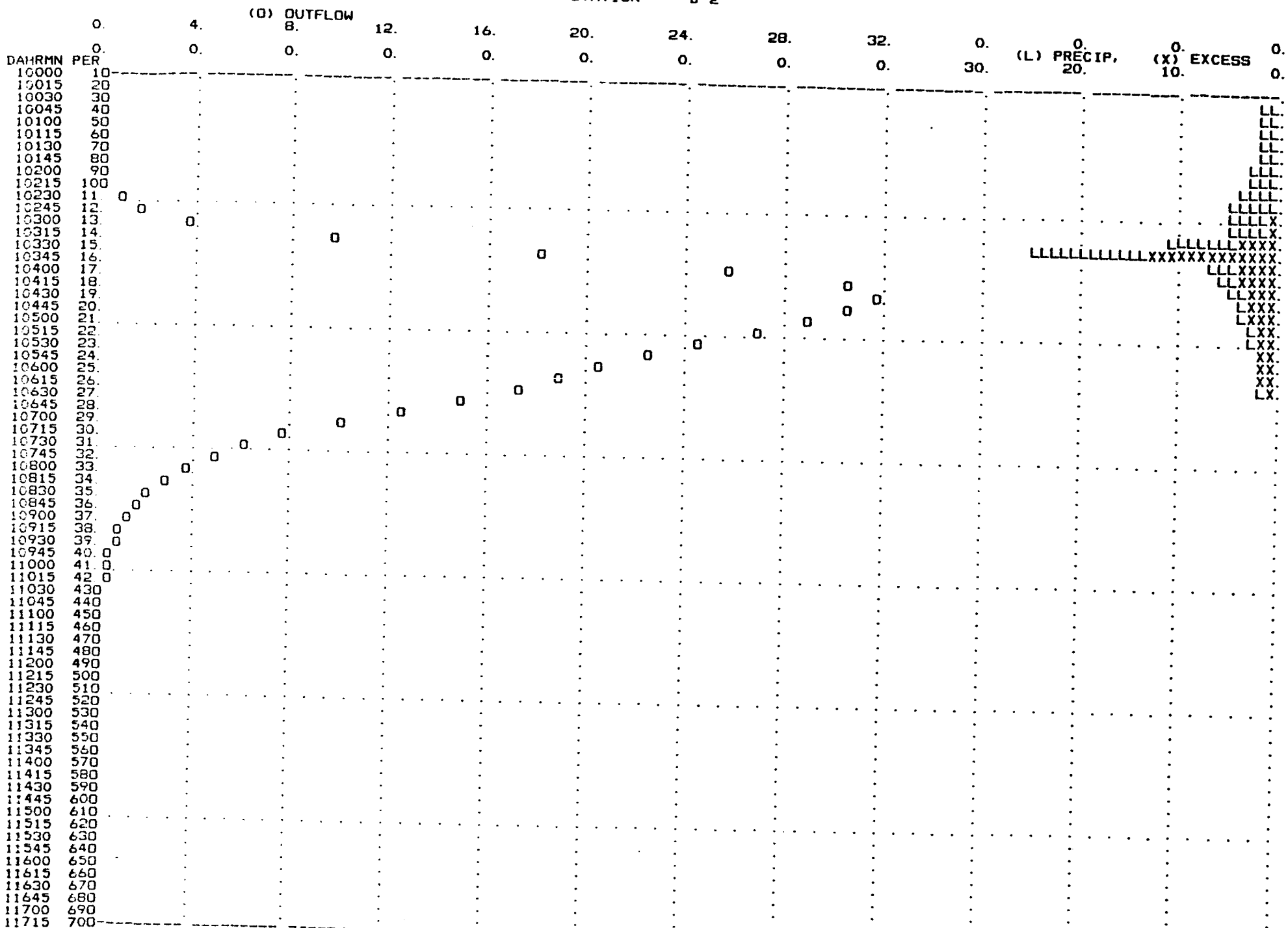
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q |   | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0015 | 2   | 1.89  | 1.89  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0030 | 3   | 1.99  | 1.99  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0045 | 4   | 2.11  | 2.11  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0100 | 5   | 2.25  | 2.25  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0115 | 6   | 2.42  | 2.42  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0130 | 7   | 2.63  | 2.63  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0145 | 8   | 3.41  | 3.41  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0200 | 9   | 3.77  | 3.69  | 0.08   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 4.53  | 4.07  | 0.46   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 5.28  | 4.28  | 0.99   | 1.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 5.45  | 3.98  | 1.47   | 2.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 10.99 | 6.91  | 4.08   | 4.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 25.18 | 11.84 | 13.35  | 9.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 6.66  | 2.47  | 4.19   | 18.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 5.83  | 1.98  | 3.84   | 25.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 4.86  | 1.55  | 3.32   | 31.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 4.00  | 1.20  | 2.79   | 32.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 3.58  | 1.03  | 2.55   | 31.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 2.75  | 0.76  | 1.99   | 29.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 2.52  | 0.68  | 1.84   | 27.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 2.33  | 0.61  | 1.72   | 22.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 2.18  | 0.55  | 1.62   | 22.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 2.05  | 0.51  | 1.54   | 21.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 1.94  | 0.47  | 1.47   | 19.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 17.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 15.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 12.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 10.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 8.     | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 6.     | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 5.     | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 4.     | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 3.     | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 2.     | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 110.62, TOTAL LOSS = 63.30, TOTAL EXCESS = 47.32

|                       |              |             |             |             |                |
|-----------------------|--------------|-------------|-------------|-------------|----------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>16. | 24-HR<br>6. | 72-HR<br>6. | 17.25-HR<br>6. |
| 32.                   | 4.25         | (CU M/S)    | 46.273      | 47.133      | 47.133         |
|                       |              | (MM)        | 337.        | 343.        | 343.           |
|                       |              | (1000 CU M) |             |             |                |

CUMULATIVE AREA = 7.28 SQ KM

STATION B-2



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\* B-3 \*  
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43 KK

BARRANCO DE BALOS (SUBCUENCA B-3) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

45 BA

SUBBASIN CHARACTERISTICS  
TAREA 2.08 SUBBASIN AREA

PRECIPITATION DATA

46 PH

| HYDRO-35 |        |        | DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM |       |      |       |       |       | TP-49 |       |        |  |
|----------|--------|--------|---|-------|------|-------|-------|-------|-------|-------|--------|--|
| 5-MIN    | 15-MIN | 60-MIN | 2-HR                                    | 3-HR  | 6-HR | 12-HR | 24-HR | 2-DAY | 4-DAY | 7-DAY | 10-DAY |  |
| 16.20    | 26.60  | 50.20  | 70.80                                   | 85.60 | 0.00 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00   |  |

STORM AREA = 2.08

47 LS

SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNB 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

48 UC

CLARK UNITGRAPH  
TC 0.50 TIME OF CONCENTRATION  
R 0.40 STORAGE COEFFICIENT

49 UA

ACCUMULATED-AREA VS. TIME, 3 ORDINATES  
0.0 0.9 2.1

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.50 HR, R= 0.40 HR  
SNYDER TP= 0.45 HR, CP= 0.58

UNIT HYDROGRAPH  
10 END-OF-PERIOD ORDINATES  
0. 1. 1. 0. 0. 0. 0. 0. 0. 0.



HYDROGRAPH AT STATION B-3

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q |
|----|-----|------|-----|-------|-------|--------|------|---|----|-----|------|-----|------|------|--------|------|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0015 | 2   | 3.42  | 3.42  | 0.00   | 0.   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0030 | 3   | 3.78  | 3.78  | 0.00   | 0.   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0045 | 4   | 4.54  | 4.54  | 0.00   | 0.   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0100 | 5   | 5.30  | 5.30  | 0.00   | 0.   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0115 | 6   | 5.41  | 5.18  | 0.23   | 0.   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0130 | 7   | 11.39 | 9.18  | 2.21   | 1.   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0145 | 8   | 26.21 | 15.08 | 11.13  | 4.   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0200 | 9   | 6.64  | 2.91  | 3.73   | 10.  | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0215 | 10  | 5.86  | 2.35  | 3.51   | 12.  | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0230 | 11  | 4.87  | 1.81  | 3.06   | 10.  | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0245 | 12  | 4.01  | 1.40  | 2.61   | 9.   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0300 | 13  | 3.58  | 1.19  | 2.39   | 7.   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 6.   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 4.   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 2.   | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 1.   | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.   | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   | * |

TOTAL RAINFALL = 85.02, TOTAL LOSS = 56.14, TOTAL EXCESS = 28.88

|                       |              |            |                                     |             |                |
|-----------------------|--------------|------------|-------------------------------------|-------------|----------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>3. | MAXIMUM AVERAGE FLOW<br>24-HR<br>1. | 72-HR<br>1. | 17.25-HR<br>1. |
| 12.                   | 2.25         | 28.782     | 28.782                              | 28.782      | 28.782         |
|                       | (CU M/S)     | 60.        | 60.                                 | 60.         | 60.            |
|                       | (MM)         |            |                                     |             |                |
|                       | (1000 CU M)  |            |                                     |             |                |

CUMULATIVE AREA = 2.08 SQ KM

STATION B-3

| DAHRMN PER | (O) OUTFLOW |    |    |    |    |     |     |    |    |    |    |    | (L) PRECIP.<br>0.<br>20. | (X) EXCESS<br>0.<br>10. | 0. |  |                  |
|------------|-------------|----|----|----|----|-----|-----|----|----|----|----|----|--------------------------|-------------------------|----|--|------------------|
|            | 0.          | 2. | 4. | 6. | 8. | 10. | 12. | 0. | 0. | 0. | 0. | 0. |                          |                         |    |  |                  |
| 10000      | 10          |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10015      | 20          |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  | LLL.             |
| 10030      | 30          |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  | LLLL.            |
| 10045      | 40          |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  | LLLLL.           |
| 10100      | 50          |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  | LLLLL.           |
| 10115      | 60          |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  | LLLLL.           |
| 10130      | 7.          | 0  |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  | LLLLL.           |
| 10145      | 8.          |    |    | 0  |    |     |     |    |    |    |    |    |                          |                         |    |  | LLLLL.           |
| 10200      | 9.          |    |    |    | 0  |     |     |    |    |    |    |    |                          |                         |    |  | LLLLL.           |
| 10215      | 10.         |    |    |    |    | 0   |     |    |    |    |    |    |                          |                         |    |  | LLLLLLLLXX.      |
| 10230      | 11.         |    |    |    |    |     | 0   |    |    |    |    |    |                          |                         |    |  | LLLLLLLLXXXXXXX. |
| 10245      | 12.         |    |    |    |    |     |     | 0  |    |    |    |    |                          |                         |    |  | LLLLXXXX.        |
| 10300      | 13.         |    |    |    |    |     |     |    | 0  |    |    |    |                          |                         |    |  | LLXXXX.          |
| 10315      | 14.         |    |    |    |    |     |     |    |    | 0  |    |    |                          |                         |    |  | LLXXX.           |
| 10330      | 15.         |    |    |    |    |     |     |    |    |    | 0  |    |                          |                         |    |  | LXXX.            |
| 10345      | 16.         |    |    |    |    |     |     |    |    |    |    | 0  |                          |                         |    |  | LLXX.            |
| 10400      | 17.         |    |    |    |    |     |     |    |    |    |    |    | 0                        |                         |    |  |                  |
| 10415      | 18.         | 0  |    |    |    |     |     |    |    |    |    |    |                          | 0                       |    |  |                  |
| 10430      | 19.         | 0  |    |    |    |     |     |    |    |    |    |    |                          |                         | 0  |  |                  |
| 10445      | 20.         | 0  |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10500      | 210         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10515      | 220         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10530      | 230         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10545      | 240         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10600      | 250         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10615      | 260         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10630      | 270         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10645      | 280         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10700      | 290         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10715      | 300         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10730      | 310         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10745      | 320         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10800      | 330         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10815      | 340         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10830      | 350         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10845      | 360         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10900      | 370         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10915      | 380         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10930      | 390         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 10945      | 400         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11000      | 410         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11015      | 420         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11030      | 430         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11045      | 440         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11100      | 450         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11115      | 460         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11130      | 470         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11145      | 480         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11200      | 490         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11215      | 500         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11230      | 510         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11245      | 520         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11300      | 530         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11315      | 540         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11330      | 550         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11345      | 560         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11400      | 570         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11415      | 580         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11430      | 590         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11445      | 600         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11500      | 610         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11515      | 620         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11530      | 630         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11545      | 640         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11600      | 650         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11615      | 660         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11630      | 670         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11645      | 680         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11700      | 690         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |
| 11715      | 700         |    |    |    |    |     |     |    |    |    |    |    |                          |                         |    |  |                  |

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50 KK  
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 \* B2+B3 \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-2 Y B-3

52 HC HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B2+B3  
 SUM OF 2 HYDROGRAPHS

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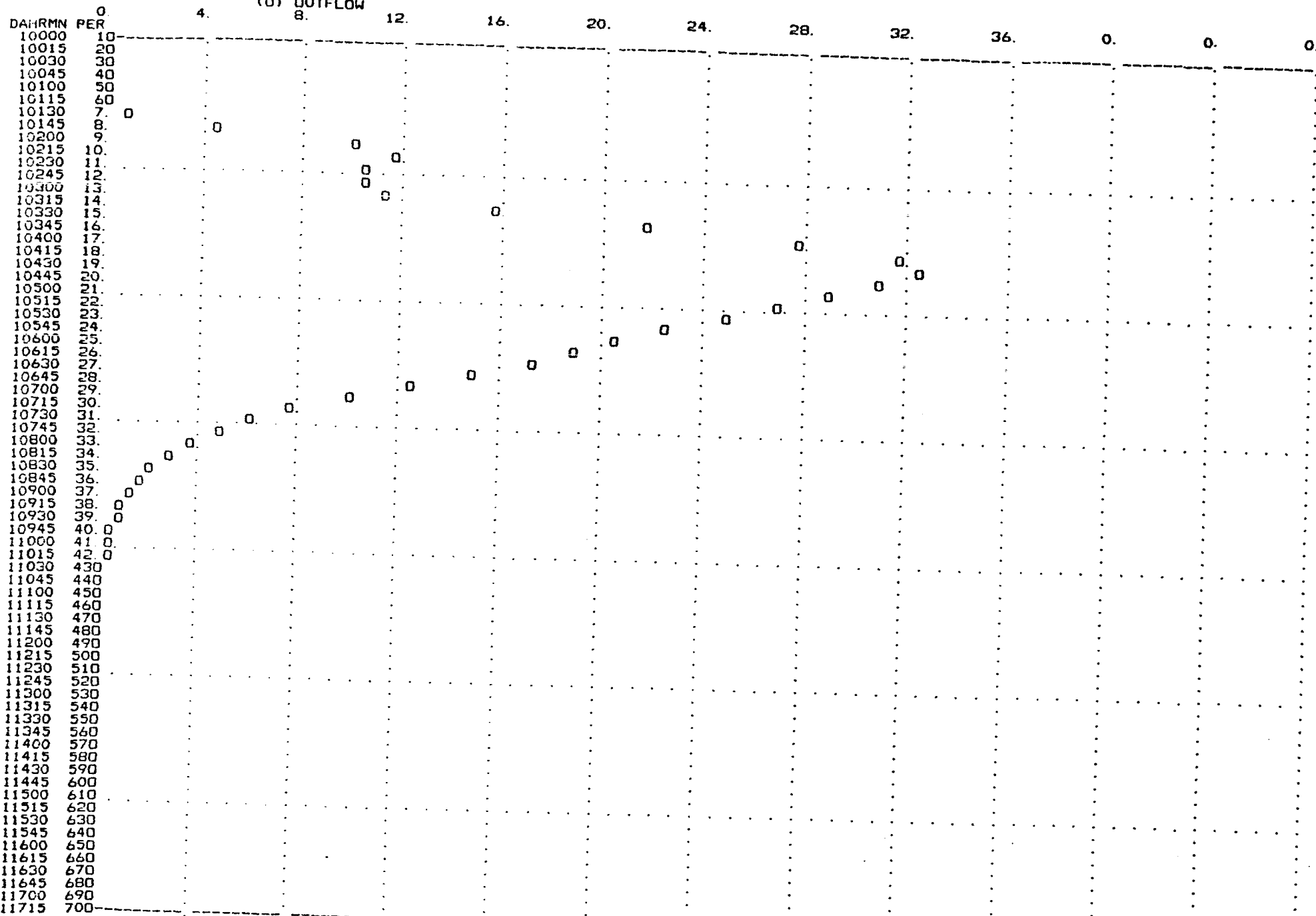
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |   |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|---|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 31.  | * | 1  | JUN | 0900 | 37  | 1.   | * | 1  | JUN | 1330 | 55  | 0.   | * |   |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 29.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |   |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 27.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |   |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 25.  | * | 1  | JUN | 0945 | 40  | 0.   | * | 1  | JUN | 1415 | 58  | 0.   | * |   |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 22.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |   |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 21.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |   |
| 1  | JUN | 0130 | 7   | 1.   | * | 1  | JUN | 0600 | 25  | 19.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |   |
| 1  | JUN | 0145 | 8   | 4.   | * | 1  | JUN | 0615 | 26  | 17.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |   |
| 1  | JUN | 0200 | 9   | 10.  | * | 1  | JUN | 0630 | 27  | 15.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |   |
| 1  | JUN | 0215 | 10  | 12.  | * | 1  | JUN | 0645 | 28  | 12.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |   |
| 1  | JUN | 0230 | 11  | 11.  | * | 1  | JUN | 0700 | 29  | 10.  | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |   |
| 1  | JUN | 0245 | 12  | 10.  | * | 1  | JUN | 0715 | 30  | 8.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |   |
| 1  | JUN | 0300 | 13  | 11.  | * | 1  | JUN | 0730 | 31  | 6.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |   |
| 1  | JUN | 0315 | 14  | 15.  | * | 1  | JUN | 0745 | 32  | 5.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |   |
| 1  | JUN | 0330 | 15  | 22.  | * | 1  | JUN | 0800 | 33  | 4.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |   |
| 1  | JUN | 0345 | 16  | 28.  | * | 1  | JUN | 0815 | 34  | 3.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |   |
| 1  | JUN | 0400 | 17  | 32.  | * | 1  | JUN | 0830 | 35  | 2.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   | * |
| 1  | JUN | 0415 | 18  | 32.  | * | 1  | JUN | 0845 | 36  | 2.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   | * |

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|                              |                      |                                 |                               |   |                               |                                  |
|------------------------------|----------------------|---------------------------------|-------------------------------|---|-------------------------------|----------------------------------|
| PEAK FLOW<br>(CU M/S)<br>32. | TIME<br>(HR)<br>4.25 | (CU M/S)<br>(MM)<br>(1000 CU M) | 6-HR<br>18.<br>41.130<br>385. | MAXIMUM AVERAGE FLOW<br>24-HR<br>6.<br>43.055<br>403. | 72-HR<br>6.<br>43.055<br>403. | 17.25-HR<br>6.<br>43.055<br>403. |
| CUMULATIVE AREA =            |                      |                                 | 9.36 SQ KM                    |   |                               |                                  |

STATION B2+B3

(O) OUTFLOW



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53 KK \*\*\*\*\*  
 \* R23T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA B-1

HYDROGRAPH ROUTING DATA

55 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.20 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R23T01

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| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 32.  | * | 1  | JUN | 0900 | 37  | 2.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 30.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 28.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 26.  | * | 1  | JUN | 0945 | 40  | 1.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 24.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 22.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 20.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 2.   | * | 1  | JUN | 0615 | 26  | 19.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 6.   | * | 1  | JUN | 0630 | 27  | 17.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 10.  | * | 1  | JUN | 0645 | 28  | 14.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 11.  | * | 1  | JUN | 0700 | 29  | 12.  | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 11.  | * | 1  | JUN | 0715 | 30  | 9.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 10.  | * | 1  | JUN | 0730 | 31  | 7.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 12.  | * | 1  | JUN | 0745 | 32  | 6.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 17.  | * | 1  | JUN | 0800 | 33  | 4.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 23.  | * | 1  | JUN | 0815 | 34  | 3.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 28.  | * | 1  | JUN | 0830 | 35  | 3.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 31.  | * | 1  | JUN | 0845 | 36  | 2.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

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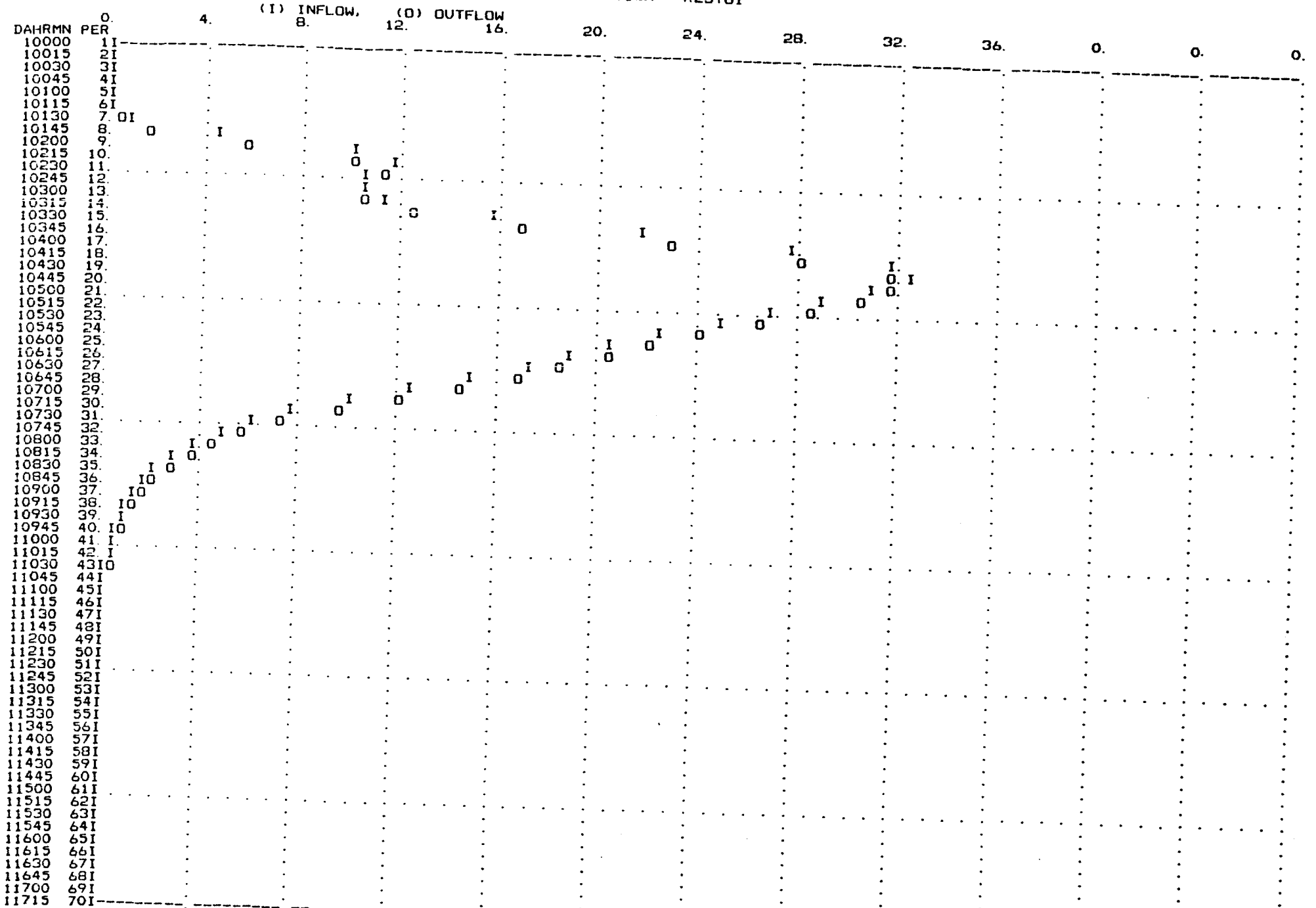
PEAK FLOW TIME  
 (CU M/S) (HR)  
 32. 4.50  
 (CU M/S)  
 (MM) 41.027  
 (1000 CU M) 384.

6-HR MAXIMUM AVERAGE FLOW  
 18. 24-HR 43.055  
 6. 72-HR 403.  
 43.055  
 403.

17.25-HR  
 6. 43.055  
 403.

CUMULATIVE AREA = 9.36 SQ KM

STATION R23T01



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56 KK \*\*\*\*\*  
 \* B-4 \*  
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BARRANCO DE BALOS (SUBCUENCA B-4) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

58 BA SUBBASIN CHARACTERISTICS  
 TAREA 10.73 SUBBASIN AREA

PRECIPITATION DATA

59 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 20.70 33.90 64.10 90.50 109.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00  
 STORM AREA = 10.73

60 LS SCS LOSS RATE  
 STRIL 17.80 INITIAL ABSTRACTION  
 CRVNB 74.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

61 UC CLARK UNITGRAPH  
 TC 1.50 TIME OF CONCENTRATION  
 R 1.00 STORAGE COEFFICIENT

62 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
 0.0 0.9 1.8 3.4 6.1 9.0 10.7

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 1.50 HR, R= 1.00 HR  
 SNYDER TP= 1.42 HR, CP= 0.80

UNIT HYDROGRAPH  
 25 END-OF-PERIOD ORDINATES  
 0. 0. 1. 1. 1. 2. 2. 1. 1. 1.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

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 HYDROGRAPH AT STATION B-4  
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| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP | Q | * | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP | Q | * |
|----|-----|------|-----|-------|-------|--------|------|---|---|----|-----|------|-----|------|------|--------|------|---|---|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.   |   | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0015 | 2   | 4.33  | 4.33  | 0.00   | 0.   |   | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0030 | 3   | 4.79  | 4.79  | 0.00   | 0.   |   | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0045 | 4   | 5.81  | 5.81  | 0.00   | 0.   |   | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0100 | 5   | 6.75  | 6.59  | 0.16   | 0.   |   | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0115 | 6   | 7.01  | 5.99  | 1.02   | 0.   |   | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0130 | 7   | 13.74 | 9.60  | 4.14   | 1.   |   | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0145 | 8   | 31.48 | 15.15 | 16.33  | 4.   |   | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0200 | 9   | 8.53  | 3.04  | 5.49   | 9.   |   | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0215 | 10  | 7.44  | 2.39  | 5.05   | 17.  |   | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0230 | 11  | 6.23  | 1.83  | 4.39   | 29.  |   | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0245 | 12  | 5.07  | 1.40  | 3.68   | 42.  |   | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0300 | 13  | 4.54  | 1.18  | 3.36   | 52.  |   | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 55.  |   | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 53.  |   | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 49.  |   | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 43.  |   | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 36.  |   | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 29.  |   | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 23.  |   | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 18.  |   | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 14.  |   | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 11.  |   | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 8.   |   | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 6.   |   | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 5.   |   | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 4.   |   | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 3.   |   | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 2.   |   | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 2.   |   | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 1.   |   | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 1.   |   | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 1.   |   | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.   |   | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.   |   | * |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.   |   | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.   |   | * |

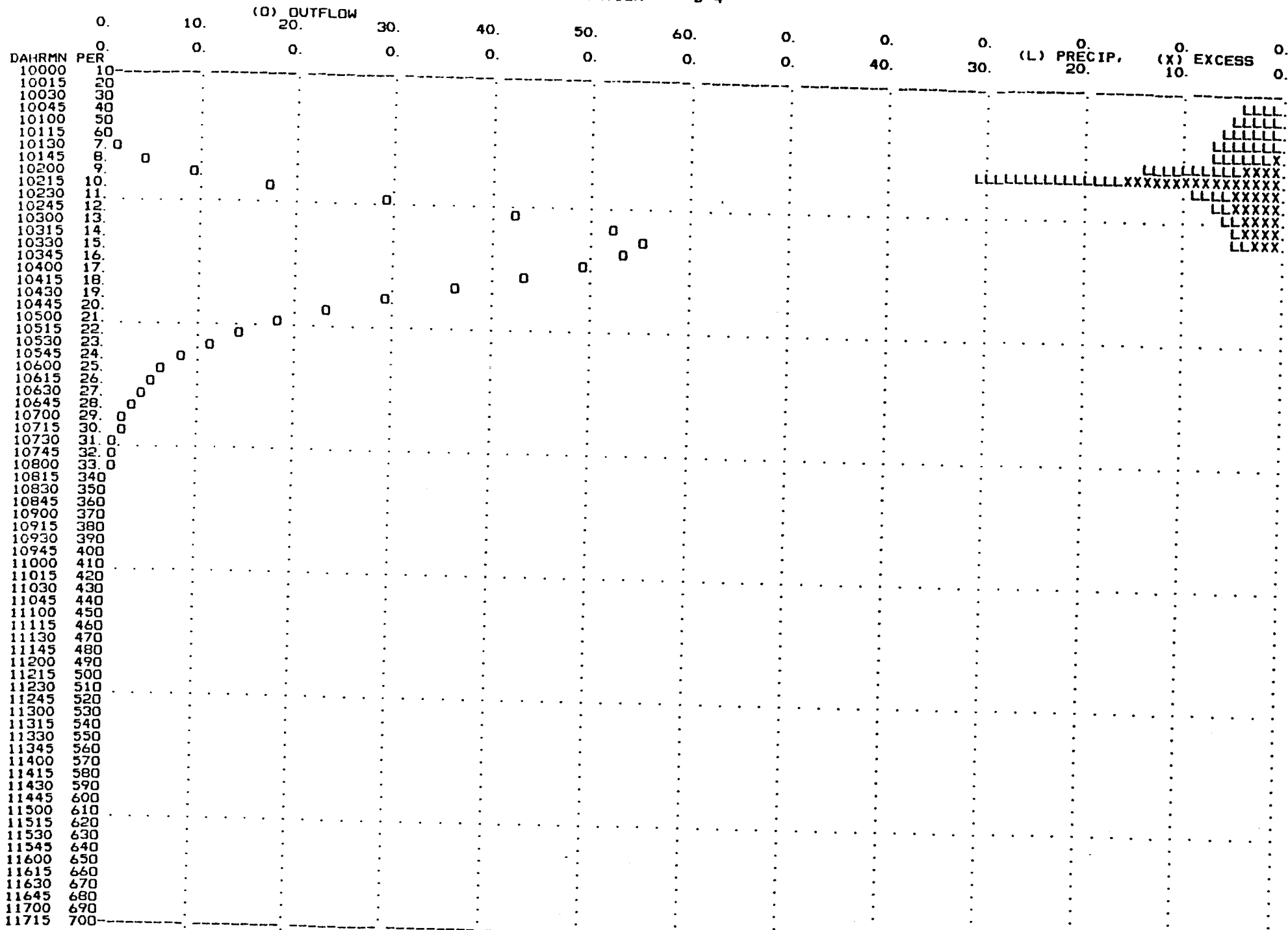
\*\*\*\*\*  
 TOTAL RAINFALL = 105.72, TOTAL LOSS = 62.09, TOTAL EXCESS = 43.64

|           |      |             |        |                      |          |
|-----------|------|-------------|--------|----------------------|----------|
| PEAK FLOW | TIME |             |        | MAXIMUM AVERAGE FLOW |          |
| (CU M/S)  | (HR) |             | 6-HR   | 24-HR                | 72-HR    |
| 55.       | 3.25 | (CU M/S)    | 21.    | 8.                   | 17.25-HR |
|           |      | (MM)        | 43.104 | 43.423               | 8.       |
|           |      | (1000 CU M) | 463.   | 466.                 | 43.423   |
|           |      |             |        | 466.                 | 466.     |

CUMULATIVE AREA = 10.73 SQ KM



STATION B-4



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63 KK \*\*\*\*\*  
 \* R4T01 \*  
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TRANSPORTE DEL HIDROGRAMA HASTA LA SUBCUENCA T-1

HYDROGRAPH ROUTING DATA

65 RM MUSKINGUM ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 AMSKK 0.30 MUSKINGUM K  
 X 0.25 MUSKINGUM X

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HYDROGRAPH AT STATION R4T01

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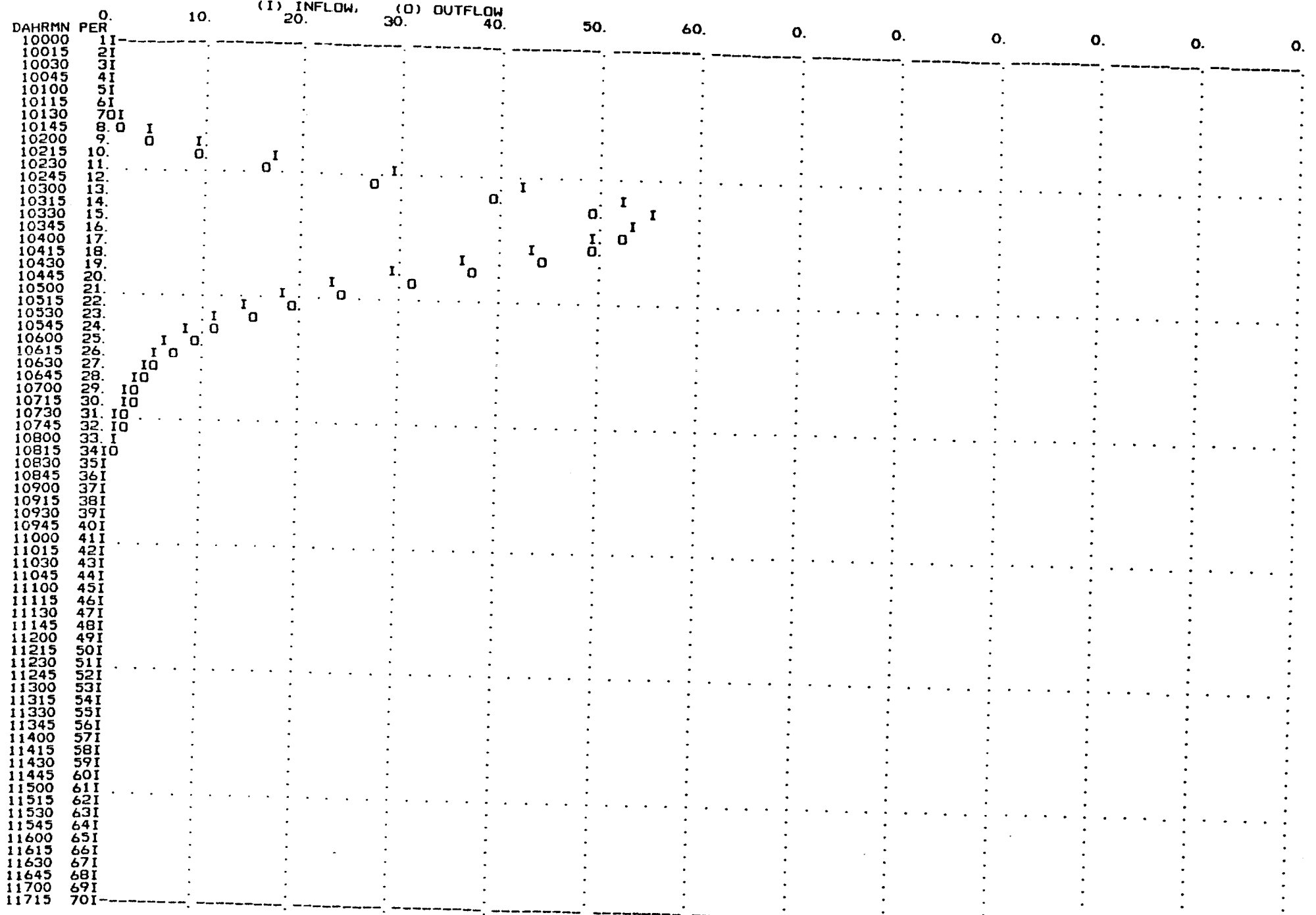
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 37.  | * | 1  | JUN | 0900 | 37  | 0.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 31.  | * | 1  | JUN | 0915 | 38  | 0.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 24.  | * | 1  | JUN | 0930 | 39  | 0.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 19.  | * | 1  | JUN | 0945 | 40  | 0.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 15.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 11.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 0.   | * | 1  | JUN | 0600 | 25  | 9.   | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 1.   | * | 1  | JUN | 0615 | 26  | 7.   | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 4.   | * | 1  | JUN | 0630 | 27  | 5.   | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 9.   | * | 1  | JUN | 0645 | 28  | 4.   | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 16.  | * | 1  | JUN | 0700 | 29  | 3.   | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 27.  | * | 1  | JUN | 0715 | 30  | 3.   | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 39.  | * | 1  | JUN | 0730 | 31  | 2.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 49.  | * | 1  | JUN | 0745 | 32  | 2.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 53.  | * | 1  | JUN | 0800 | 33  | 1.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 52.  | * | 1  | JUN | 0815 | 34  | 1.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 49.  | * | 1  | JUN | 0830 | 35  | 0.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 44.  | * | 1  | JUN | 0845 | 36  | 0.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

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| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>21       | 24-HR<br>8 | 72-HR<br>8 | 17.25-HR<br>8 |
|-----------------------|--------------|------------------|------------|------------|---------------|
| 53.                   | 3.50         | 43.049           | 43.423     | 43.423     | 43.423        |
|                       |              | (1000 CU M) 462. | 466.       | 466.       | 466.          |

CUMULATIVE AREA = 10.73 SQ KM

STATION R4T01



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66 KK \*\*\*\*\*  
\* B-1 \*  
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BARRANCO DE BALOS (SUBCUENCA B-1) - TORMENTA DE 3 HORAS DE DURACION

SUBBASIN RUNOFF DATA

68 BA SUBBASIN CHARACTERISTICS  
TAREA 2.18 SUBBASIN AREA

PRECIPITATION DATA

69 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
HYDRO-35 TP-40 TP-49  
5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
14.60 24.00 45.30 63.90 77.20 0.00 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 2.18

70 LS SCS LOSS RATE  
STRTL 17.80 INITIAL ABSTRACTION  
CRVNR 74.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

71 UC CLARK UNITGRAPH  
TC 0.75 TIME OF CONCENTRATION  
R 0.50 STORAGE COEFFICIENT

72 UA ACCUMULATED-AREA VS. TIME, 4 ORDINATES  
0.0 0.8 1.8 2.2

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UNIT HYDROGRAPH PARAMETERS  
CLARK TC= 0.75 HR, R= 0.50 HR  
SNYDER TP= 0.57 HR, CP= 0.61

UNIT HYDROGRAPH  
12 END-OF-PERIOD ORDINATES

0. 0. 1. 0. 0. 0. 0. 0. 0. 0.

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 HYDROGRAPH AT STATION B-1  
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| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q |   | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0015 | 2   | 3.07  | 3.07  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0030 | 3   | 3.40  | 3.40  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0045 | 4   | 4.10  | 4.10  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0100 | 5   | 4.78  | 4.78  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0115 | 6   | 4.89  | 4.82  | 0.06   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0130 | 7   | 10.28 | 8.76  | 1.52   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0145 | 8   | 23.63 | 14.70 | 8.93   | 2.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0200 | 9   | 6.00  | 2.89  | 3.11   | 6.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 5.29  | 2.34  | 2.95   | 8.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 4.40  | 1.81  | 2.59   | 8.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 3.60  | 1.40  | 2.20   | 8.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 3.22  | 1.20  | 2.03   | 7.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 0.00  | 0.00  | 0.00   | 6.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 0.00  | 0.00  | 0.00   | 4.     | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 0.00  | 0.00  | 0.00   | 3.     | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 0.00  | 0.00  | 0.00   | 2.     | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 0.00  | 0.00  | 0.00   | 1.     | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 0.00  | 0.00  | 0.00   | 1.     | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 76.65, TOTAL LOSS = 53.27, TOTAL EXCESS = 23.39

|                       |              |                  |               |               |                  |
|-----------------------|--------------|------------------|---------------|---------------|------------------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | 6-HR<br>(CU M/S) | 24-HR<br>(MM) | 72-HR<br>(MM) | 17.25-HR<br>(MM) |
| 8.                    | 2.50         | 2.               | 23.276        | 23.276        | 23.276           |
|                       |              | (1000 CU M)      | 51.           | 51.           | 51.              |

CUMULATIVE AREA = 2.18 SQ KM

STATION B-1

| DAHRMN | PER | 0. | 1. | (O) OUTFLOW<br>2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 0.<br>(L) PRECIP,<br>20. | 0.<br>(X) EXCESS<br>10. | 0.         |
|--------|-----|----|----|-------------------|----|----|----|----|----|----|----|--------------------------|-------------------------|------------|
| 10000  | 10  |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10015  | 20  |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10030  | 30  |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10045  | 40  |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10100  | 50  |    |    |                   |    |    |    |    |    |    |    |                          |                         | LLL        |
| 10115  | 60  |    |    |                   |    |    |    |    |    |    |    |                          |                         | LLL        |
| 10130  | 7.  | 0  |    |                   |    |    |    |    |    |    |    |                          |                         | LLL        |
| 10145  | 8.  |    |    | 0                 |    |    |    |    |    |    |    |                          |                         | LLLL       |
| 10200  | 9.  |    |    |                   |    |    |    |    |    |    |    |                          |                         | LLLL       |
| 10215  | 10. |    |    |                   |    |    |    |    |    |    |    |                          |                         | LLLL       |
| 10230  | 11. |    |    |                   |    |    |    | 0  |    |    |    |                          |                         | LLLLLXXX   |
| 10245  | 12. |    |    |                   |    |    |    |    |    |    |    |                          |                         | XXXXXXXXXX |
| 10300  | 13. |    |    |                   |    |    |    |    |    | 0  |    |                          |                         | LLLXXX     |
| 10315  | 14. |    |    |                   |    |    |    |    |    |    |    |                          |                         | LLXXX      |
| 10330  | 15. |    |    |                   |    |    |    |    | 0  |    |    |                          |                         | LXXX       |
| 10345  | 16. |    |    |                   |    | 0  |    |    |    |    |    |                          |                         | LLXX       |
| 10400  | 17. |    |    | 0                 |    | 0  |    |    |    |    |    |                          |                         | LXX        |
| 10415  | 18. |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10430  | 19. |    | 0  |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10445  | 20. | 0  | 0  |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10500  | 21. | 0  |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10515  | 22. | 0  |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10530  | 230 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10545  | 240 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10600  | 250 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10615  | 260 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10630  | 270 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10645  | 280 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10700  | 290 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10715  | 300 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10730  | 310 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10745  | 320 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10800  | 330 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10815  | 340 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10830  | 350 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10845  | 360 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10900  | 370 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10915  | 380 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10930  | 390 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 10945  | 400 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11000  | 410 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11015  | 420 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11030  | 430 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11045  | 440 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11100  | 450 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11115  | 460 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11130  | 470 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11145  | 480 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11200  | 490 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11215  | 500 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11230  | 510 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11245  | 520 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11300  | 530 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11315  | 540 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11330  | 550 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11345  | 560 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11400  | 570 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11415  | 580 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11430  | 590 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11445  | 600 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11500  | 610 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11515  | 620 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11530  | 630 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11545  | 640 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11600  | 650 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11615  | 660 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11630  | 670 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11645  | 680 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11700  | 690 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |
| 11715  | 700 |    |    |                   |    |    |    |    |    |    |    |                          |                         |            |

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73 KK  
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 \* B-SUMA \*  
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COMBINACION DE LOS HIDROGRAMAS DE LAS SUBCUENCAS B-1, B-2, B-3 Y B-4

75 HC HYDROGRAPH COMBINATION  
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION B-SUMA  
 SUM OF 3 HYDROGRAPHS

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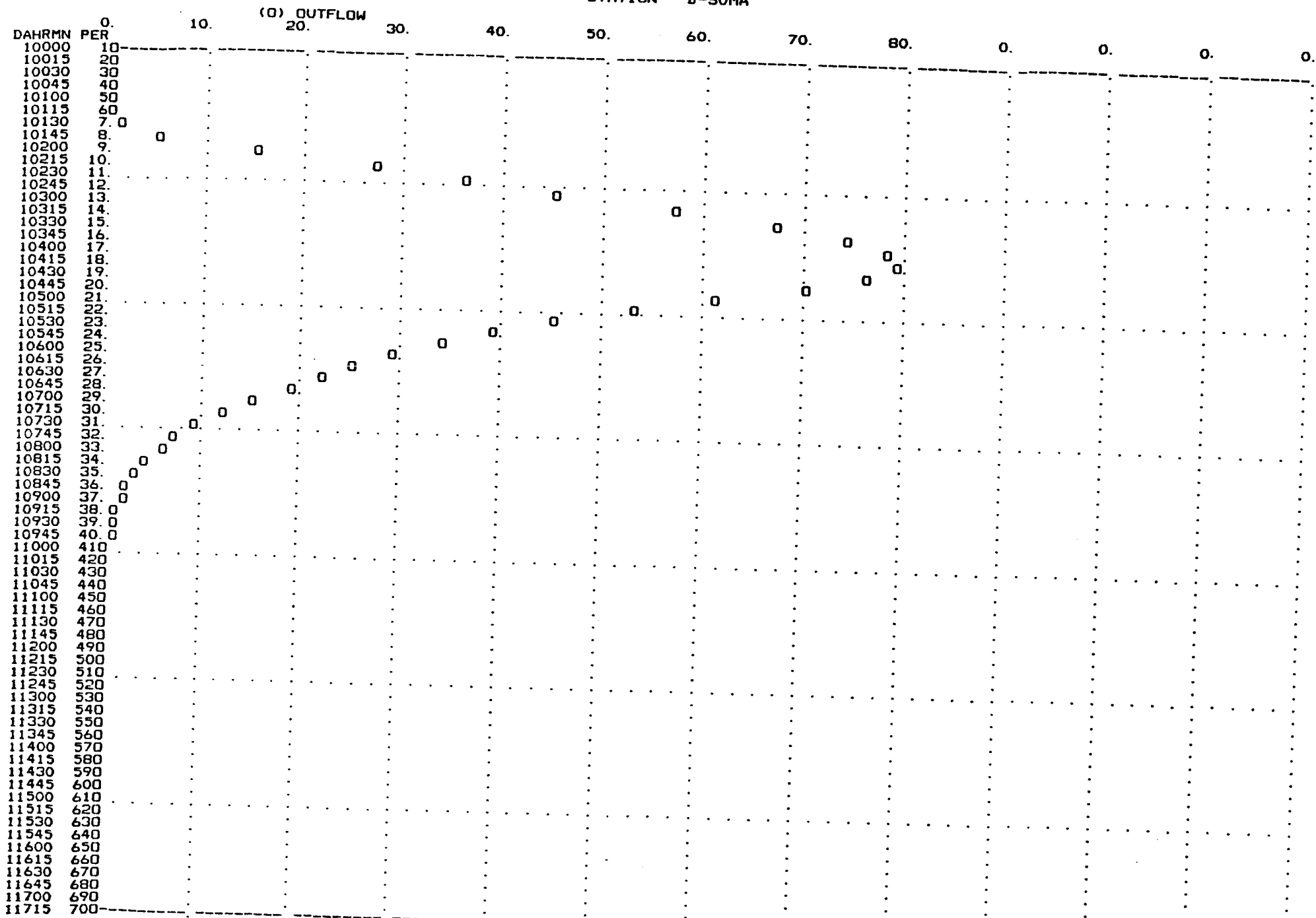
| DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * | DA | MON | HRMN | ORD | FLOW | * |  |
|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|----|-----|------|-----|------|---|--|
| 1  | JUN | 0000 | 1   | 0.   | * | 1  | JUN | 0430 | 19  | 70.  | * | 1  | JUN | 0900 | 37  | 2.   | * | 1  | JUN | 1330 | 55  | 0.   | * |  |
| 1  | JUN | 0015 | 2   | 0.   | * | 1  | JUN | 0445 | 20  | 61.  | * | 1  | JUN | 0915 | 38  | 1.   | * | 1  | JUN | 1345 | 56  | 0.   | * |  |
| 1  | JUN | 0030 | 3   | 0.   | * | 1  | JUN | 0500 | 21  | 53.  | * | 1  | JUN | 0930 | 39  | 1.   | * | 1  | JUN | 1400 | 57  | 0.   | * |  |
| 1  | JUN | 0045 | 4   | 0.   | * | 1  | JUN | 0515 | 22  | 45.  | * | 1  | JUN | 0945 | 40  | 1.   | * | 1  | JUN | 1415 | 58  | 0.   | * |  |
| 1  | JUN | 0100 | 5   | 0.   | * | 1  | JUN | 0530 | 23  | 39.  | * | 1  | JUN | 1000 | 41  | 0.   | * | 1  | JUN | 1430 | 59  | 0.   | * |  |
| 1  | JUN | 0115 | 6   | 0.   | * | 1  | JUN | 0545 | 24  | 34.  | * | 1  | JUN | 1015 | 42  | 0.   | * | 1  | JUN | 1445 | 60  | 0.   | * |  |
| 1  | JUN | 0130 | 7   | 1.   | * | 1  | JUN | 0600 | 25  | 29.  | * | 1  | JUN | 1030 | 43  | 0.   | * | 1  | JUN | 1500 | 61  | 0.   | * |  |
| 1  | JUN | 0145 | 8   | 5.   | * | 1  | JUN | 0615 | 26  | 25.  | * | 1  | JUN | 1045 | 44  | 0.   | * | 1  | JUN | 1515 | 62  | 0.   | * |  |
| 1  | JUN | 0200 | 9   | 15.  | * | 1  | JUN | 0630 | 27  | 22.  | * | 1  | JUN | 1100 | 45  | 0.   | * | 1  | JUN | 1530 | 63  | 0.   | * |  |
| 1  | JUN | 0215 | 10  | 27.  | * | 1  | JUN | 0645 | 28  | 19.  | * | 1  | JUN | 1115 | 46  | 0.   | * | 1  | JUN | 1545 | 64  | 0.   | * |  |
| 1  | JUN | 0230 | 11  | 36.  | * | 1  | JUN | 0700 | 29  | 15.  | * | 1  | JUN | 1130 | 47  | 0.   | * | 1  | JUN | 1600 | 65  | 0.   | * |  |
| 1  | JUN | 0245 | 12  | 45.  | * | 1  | JUN | 0715 | 30  | 12.  | * | 1  | JUN | 1145 | 48  | 0.   | * | 1  | JUN | 1615 | 66  | 0.   | * |  |
| 1  | JUN | 0300 | 13  | 57.  | * | 1  | JUN | 0730 | 31  | 9.   | * | 1  | JUN | 1200 | 49  | 0.   | * | 1  | JUN | 1630 | 67  | 0.   | * |  |
| 1  | JUN | 0315 | 14  | 67.  | * | 1  | JUN | 0745 | 32  | 7.   | * | 1  | JUN | 1215 | 50  | 0.   | * | 1  | JUN | 1645 | 68  | 0.   | * |  |
| 1  | JUN | 0330 | 15  | 74.  | * | 1  | JUN | 0800 | 33  | 6.   | * | 1  | JUN | 1230 | 51  | 0.   | * | 1  | JUN | 1700 | 69  | 0.   | * |  |
| 1  | JUN | 0345 | 16  | 78.  | * | 1  | JUN | 0815 | 34  | 4.   | * | 1  | JUN | 1245 | 52  | 0.   | * | 1  | JUN | 1715 | 70  | 0.   | * |  |
| 1  | JUN | 0400 | 17  | 79.  | * | 1  | JUN | 0830 | 35  | 3.   | * | 1  | JUN | 1300 | 53  | 0.   | * |    |     |      |     |      |   |  |
| 1  | JUN | 0415 | 18  | 76.  | * | 1  | JUN | 0845 | 36  | 2.   | * | 1  | JUN | 1315 | 54  | 0.   | * |    |     |      |     |      |   |  |

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|                              |                      |                                 |             |                 |                        |                           |
|------------------------------|----------------------|---------------------------------|-------------|-----------------|------------------------|---------------------------|
| PEAK FLOW<br>(CU M/S)<br>79. | TIME<br>(HR)<br>4.00 | (CU M/S)<br>(MM)<br>(1000 CU M) | 6-HR<br>41. | 24-HR<br>41.296 | 72-HR<br>15.<br>41.296 | 17.25-HR<br>15.<br>41.296 |
|                              |                      |                                 | 894.        | 920.            | 920.                   | 920.                      |

CUMULATIVE AREA = 22.27 SQ KM

STATION B-SUMA





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76 KK \*\*\*\*\*  
 \* C-1 \*  
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BARRANCO DE LOS CORRALILLOS (SUBCUENCA C-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

78 BA SUBBASIN CHARACTERISTICS  
 TAREA 10.45 SUBBASIN AREA

PRECIPITATION DATA

79 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 15.30 25.10 47.40 66.90 80.90 106.50 0.00 0.00 0.00 0.00 0.00 0.00  
 STORM AREA = 10.45

80 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNBR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

81 UC CLARK UNITGRAPH  
 TC 1.50 TIME OF CONCENTRATION  
 R 1.10 STORAGE COEFFICIENT

82 UA ACCUMULATED-AREA VS. TIME, 7 ORDINATES  
 0.0 2.1 4.0 5.8 8.1 9.5 10.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 1.50 HR, R= 1.10 HR  
 SNYDER TP= 1.23 HR, CP= 0.59

UNIT HYDROGRAPH  
 27 END-OF-PERIOD ORDINATES  
 0. 1. 1. 1. 1. 1. 1. 1. 1. 1.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

HYDROGRAPH AT STATION C-1

| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q |   | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0015 | 2   | 1.79  | 1.79  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0030 | 3   | 1.88  | 1.88  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0045 | 4   | 1.99  | 1.99  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0100 | 5   | 2.13  | 2.13  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0115 | 6   | 2.29  | 2.29  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0130 | 7   | 2.48  | 2.48  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0145 | 8   | 3.23  | 3.23  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0200 | 9   | 3.56  | 3.56  | 0.00   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0215 | 10  | 4.29  | 4.15  | 0.14   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0230 | 11  | 4.99  | 4.41  | 0.58   | 0.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0245 | 12  | 5.18  | 4.16  | 1.01   | 1.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0300 | 13  | 10.17 | 7.15  | 3.01   | 2.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0315 | 14  | 23.35 | 12.67 | 10.68  | 6.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0330 | 15  | 6.30  | 2.75  | 3.55   | 13.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0345 | 16  | 5.50  | 2.22  | 3.27   | 19.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0400 | 17  | 4.60  | 1.74  | 2.85   | 25.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0415 | 18  | 3.77  | 1.36  | 2.41   | 31.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0430 | 19  | 3.38  | 1.17  | 2.22   | 33.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0445 | 20  | 2.60  | 0.86  | 1.73   | 34.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0500 | 21  | 2.38  | 0.77  | 1.61   | 32.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0515 | 22  | 2.20  | 0.69  | 1.51   | 31.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0530 | 23  | 2.06  | 0.63  | 1.42   | 29.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0545 | 24  | 1.94  | 0.58  | 1.35   | 27.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 1.83  | 0.54  | 1.29   | 25.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 23.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 21.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 18.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 15.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 13.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 10.    | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 8.     | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 7.     | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 5.     | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 4.     | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 103.87, TOTAL LOSS = 65.22, TOTAL EXCESS = 38.66

|                       |              |             |        |                      |          |
|-----------------------|--------------|-------------|--------|----------------------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | (CU M/S)    | 6-HR   | MAXIMUM AVERAGE FLOW | 17.25-HR |
| 34.                   | 4.75         | (MM)        | 18.    | 24-HR                | 6.       |
|                       |              | (1000 CU M) | 37.485 | 72-HR                | 38.495   |
|                       |              |             | 392.   | 402.                 | 402.     |

CUMULATIVE AREA = 10.45 SQ KM

STATION C-1

| DAHRMN | PER | (O) OUTFLOW |    |    |     |     |     |     |     |     |     | (L) PRECIP,<br>20. | (X) EXCESS<br>10. | 0. |   |       |
|--------|-----|-------------|----|----|-----|-----|-----|-----|-----|-----|-----|--------------------|-------------------|----|---|-------|
|        |     | 0.          | 4. | 8. | 12. | 16. | 20. | 24. | 28. | 32. | 36. |                    |                   |    |   |       |
| 10000  | 10  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10015  | 20  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10030  | 30  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10045  | 40  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10100  | 50  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10115  | 60  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10130  | 70  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10145  | 80  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10200  | 90  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10215  | 100 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LL    |
| 10230  | 11  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LLL   |
| 10245  | 12  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LLL   |
| 10300  | 13  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LLL   |
| 10315  | 14  |             |    | 0  |     |     |     |     |     |     |     |                    |                   |    |   | LLLX  |
| 10330  | 15  |             |    |    | 0   |     |     |     |     |     |     |                    |                   |    |   | LLLX  |
| 10345  | 16  |             |    |    | 0   |     |     |     |     |     |     |                    |                   |    |   | LLLX  |
| 10400  | 17  |             |    |    |     | 0   |     |     |     |     |     |                    |                   |    |   | LLLX  |
| 10415  | 18  |             |    |    |     |     | 0   |     |     |     |     |                    |                   |    |   | LLXXX |
| 10430  | 19  |             |    |    |     |     |     | 0   |     |     |     |                    |                   |    |   | LLXXX |
| 10445  | 20  |             |    |    |     |     |     |     | 0   |     |     |                    |                   |    |   | LLXXX |
| 10500  | 21  |             |    |    |     |     |     |     |     | 0   |     |                    |                   |    |   | LLXX  |
| 10515  | 22  |             |    |    |     |     |     |     |     |     | 0   |                    |                   |    |   | LXX   |
| 10530  | 23  |             |    |    |     |     |     |     |     |     |     | 0                  |                   |    |   | LXX   |
| 10545  | 24  |             |    |    |     |     |     |     |     |     |     |                    | 0                 |    |   | XX    |
| 10600  | 25  |             |    |    |     |     |     |     |     |     |     |                    |                   | 0  |   | XX    |
| 10615  | 26  |             |    |    |     |     |     |     |     |     |     |                    |                   |    | 0 | LX    |
| 10630  | 27  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LX    |
| 10645  | 28  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   | LX    |
| 10700  | 29  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10715  | 30  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10730  | 31  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10745  | 32  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10800  | 33  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10815  | 34  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10830  | 35  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10845  | 36  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10900  | 37  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10915  | 38  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10930  | 39  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 10945  | 40  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11000  | 41  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11015  | 42  |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11030  | 43  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11045  | 44  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11100  | 45  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11115  | 46  | 0           |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11130  | 470 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11145  | 480 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11200  | 490 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11215  | 500 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11230  | 510 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11245  | 520 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11300  | 530 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11315  | 540 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11330  | 550 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11345  | 560 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11400  | 570 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11415  | 580 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11430  | 590 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11445  | 600 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11500  | 610 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11515  | 620 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11530  | 630 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11545  | 640 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11600  | 650 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11615  | 660 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11630  | 670 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11645  | 680 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11700  | 690 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |
| 11715  | 700 |             |    |    |     |     |     |     |     |     |     |                    |                   |    |   |       |

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83 KK \*\*\*\*\*  
 \* G-1 \*  
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BARRANCO DE GUAYADEQUE (SUBCUENCA G-1) - TORMENTA DE 6 HORAS

SUBBASIN RUNOFF DATA

85 BA SUBBASIN CHARACTERISTICS  
 TAREA 19.45 SUBBASIN AREA

PRECIPITATION DATA

86 PH DEPTHS FOR 5-PERCENT HYPOTHETICAL STORM  
 HYDRO-35 TP-40 TP-49  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 18.20 29.70 56.10 79.20 95.70 126.10 0.00 0.00 0.00 0.00 0.00 0.00

STORM AREA = 19.45

87 LS SCS LOSS RATE  
 STRTL 19.80 INITIAL ABSTRACTION  
 CRVNBR 72.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

88 UC CLARK UNITGRAPH  
 TC 2.00 TIME OF CONCENTRATION  
 R 1.80 STORAGE COEFFICIENT

89 UA ACCUMULATED-AREA VS. TIME, 9 ORDINATES  
 0.0 2.3 6.4 9.3 12.0 14.1 15.7 17.6 19.5

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UNIT HYDROGRAPH PARAMETERS  
 CLARK TC= 2.00 HR, R= 1.80 HR  
 SNYDER TP= 1.87 HR, CP= 0.57

UNIT HYDROGRAPH  
 42 END-OF-PERIOD ORDINATES  
 0. 1. 1. 1. 1. 1. 2. 2. 2. 1.  
 1. 1. 1. 1. 1. 1. 1. 1. 1. 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. 0. 0. 0. 0. 0.

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 HYDROGRAPH AT STATION C-1  
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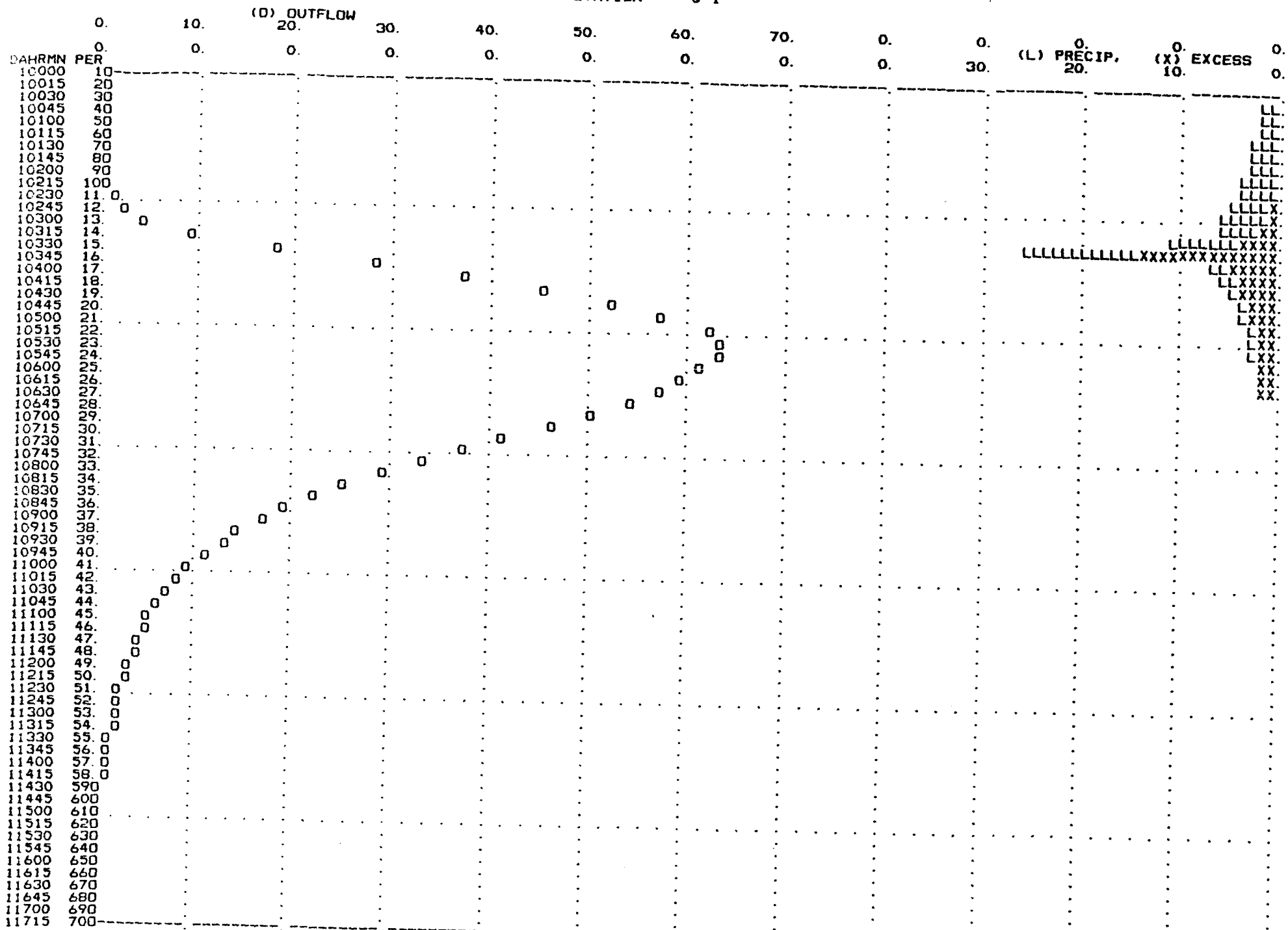
| DA | MON | HRMN | ORD | RAIN  | LOSS  | EXCESS | COMP Q | * | DA | MON | HRMN | ORD | RAIN | LOSS | EXCESS | COMP Q |
|----|-----|------|-----|-------|-------|--------|--------|---|----|-----|------|-----|------|------|--------|--------|
| 1  | JUN | 0000 | 1   | 0.00  | 0.00  | 0.00   | 0.     | * | 1  | JUN | 0845 | 36  | 0.00 | 0.00 | 0.00   | 19.    |
| 1  | JUN | 0015 | 2   | 2.12  | 2.12  | 0.00   | 0.     | * | 1  | JUN | 0900 | 37  | 0.00 | 0.00 | 0.00   | 17.    |
| 1  | JUN | 0030 | 3   | 2.24  | 2.24  | 0.00   | 0.     | * | 1  | JUN | 0915 | 38  | 0.00 | 0.00 | 0.00   | 14.    |
| 1  | JUN | 0045 | 4   | 2.37  | 2.37  | 0.00   | 0.     | * | 1  | JUN | 0930 | 39  | 0.00 | 0.00 | 0.00   | 13.    |
| 1  | JUN | 0100 | 5   | 2.52  | 2.52  | 0.00   | 0.     | * | 1  | JUN | 0945 | 40  | 0.00 | 0.00 | 0.00   | 11.    |
| 1  | JUN | 0115 | 6   | 2.71  | 2.71  | 0.00   | 0.     | * | 1  | JUN | 1000 | 41  | 0.00 | 0.00 | 0.00   | 9.     |
| 1  | JUN | 0130 | 7   | 2.93  | 2.93  | 0.00   | 0.     | * | 1  | JUN | 1015 | 42  | 0.00 | 0.00 | 0.00   | 8.     |
| 1  | JUN | 0145 | 8   | 3.80  | 3.80  | 0.00   | 0.     | * | 1  | JUN | 1030 | 43  | 0.00 | 0.00 | 0.00   | 7.     |
| 1  | JUN | 0200 | 9   | 4.19  | 4.10  | 0.09   | 0.     | * | 1  | JUN | 1045 | 44  | 0.00 | 0.00 | 0.00   | 6.     |
| 1  | JUN | 0215 | 10  | 5.08  | 4.55  | 0.53   | 0.     | * | 1  | JUN | 1100 | 45  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0230 | 11  | 5.87  | 4.75  | 1.12   | 1.     | * | 1  | JUN | 1115 | 46  | 0.00 | 0.00 | 0.00   | 5.     |
| 1  | JUN | 0245 | 12  | 6.20  | 4.50  | 1.69   | 2.     | * | 1  | JUN | 1130 | 47  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0300 | 13  | 11.36 | 7.15  | 4.22   | 4.     | * | 1  | JUN | 1145 | 48  | 0.00 | 0.00 | 0.00   | 4.     |
| 1  | JUN | 0315 | 14  | 26.09 | 12.48 | 13.61  | 9.     | * | 1  | JUN | 1200 | 49  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0330 | 15  | 7.48  | 2.84  | 4.63   | 18.    | * | 1  | JUN | 1215 | 50  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0345 | 16  | 6.45  | 2.25  | 4.20   | 28.    | * | 1  | JUN | 1230 | 51  | 0.00 | 0.00 | 0.00   | 3.     |
| 1  | JUN | 0400 | 17  | 5.43  | 1.77  | 3.66   | 37.    | * | 1  | JUN | 1245 | 52  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0415 | 18  | 4.43  | 1.36  | 3.07   | 45.    | * | 1  | JUN | 1300 | 53  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0430 | 19  | 3.98  | 1.17  | 2.81   | 52.    | * | 1  | JUN | 1315 | 54  | 0.00 | 0.00 | 0.00   | 2.     |
| 1  | JUN | 0445 | 20  | 3.07  | 0.87  | 2.20   | 57.    | * | 1  | JUN | 1330 | 55  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0500 | 21  | 2.81  | 0.77  | 2.04   | 62.    | * | 1  | JUN | 1345 | 56  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0515 | 22  | 2.61  | 0.69  | 1.91   | 63.    | * | 1  | JUN | 1400 | 57  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0530 | 23  | 2.44  | 0.63  | 1.81   | 63.    | * | 1  | JUN | 1415 | 58  | 0.00 | 0.00 | 0.00   | 1.     |
| 1  | JUN | 0545 | 24  | 2.30  | 0.58  | 1.72   | 61.    | * | 1  | JUN | 1430 | 59  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0600 | 25  | 2.18  | 0.54  | 1.64   | 59.    | * | 1  | JUN | 1445 | 60  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0615 | 26  | 0.00  | 0.00  | 0.00   | 57.    | * | 1  | JUN | 1500 | 61  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0630 | 27  | 0.00  | 0.00  | 0.00   | 54.    | * | 1  | JUN | 1515 | 62  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0645 | 28  | 0.00  | 0.00  | 0.00   | 50.    | * | 1  | JUN | 1530 | 63  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0700 | 29  | 0.00  | 0.00  | 0.00   | 46.    | * | 1  | JUN | 1545 | 64  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0715 | 30  | 0.00  | 0.00  | 0.00   | 41.    | * | 1  | JUN | 1600 | 65  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0730 | 31  | 0.00  | 0.00  | 0.00   | 37.    | * | 1  | JUN | 1615 | 66  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0745 | 32  | 0.00  | 0.00  | 0.00   | 33.    | * | 1  | JUN | 1630 | 67  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0800 | 33  | 0.00  | 0.00  | 0.00   | 29.    | * | 1  | JUN | 1645 | 68  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0815 | 34  | 0.00  | 0.00  | 0.00   | 25.    | * | 1  | JUN | 1700 | 69  | 0.00 | 0.00 | 0.00   | 0.     |
| 1  | JUN | 0830 | 35  | 0.00  | 0.00  | 0.00   | 22.    | * | 1  | JUN | 1715 | 70  | 0.00 | 0.00 | 0.00   | 0.     |

TOTAL RAINFALL = 120.68, TOTAL LOSS = 69.71, TOTAL EXCESS = 50.97

|                       |              |                      |        |        |        |          |
|-----------------------|--------------|----------------------|--------|--------|--------|----------|
| PEAK FLOW<br>(CU M/S) | TIME<br>(HR) | MAXIMUM AVERAGE FLOW | 6-HR   | 24-HR  | 72-HR  | 17.25-HR |
| 63.                   | 5.25         | (CU M/S)             | 41.    | 16.    | 16.    | 16.      |
|                       |              | (MM)                 | 45.682 | 50.713 | 50.713 | 50.713   |
|                       |              | (1000 CU M)          | 889.   | 986.   | 986.   | 986.     |

CUMULATIVE AREA = 19.45 SQ KM

STATION G-1



RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC METERS PER SECOND  
 AREA IN SQUARE KILOMETERS

| OPERATION     | STATION | PEAK<br>FLOW | TIME OF<br>PEAK | AVERAGE FLOW FOR MAXIMUM PERIOD |         |         | BASIN<br>AREA | MAXIMUM<br>STAGE | TIME OF<br>MAX STAGE |
|---------------|---------|--------------|-----------------|---------------------------------|---------|---------|---------------|------------------|----------------------|
|               |         |              |                 | 6-HOUR                          | 24-HOUR | 72-HOUR |               |                  |                      |
| HYDROGRAPH AT | T-2     | 122.01       | 6.25            | 84.33                           | 34.81   | 34.81   | 43.18         |                  |                      |
| ROUTED TO     | R2T01   | 119.39       | 7.00            | 83.78                           | 34.76   | 34.76   | 43.18         |                  |                      |
| HYDROGRAPH AT | T-1     | 38.54        | 6.00            | 27.25                           | 11.33   | 11.33   | 19.55         |                  |                      |
| 2 COMBINED AT | T-SUMA  | 154.31       | 6.75            | 109.75                          | 46.08   | 46.08   | 62.73         |                  |                      |
| HYDROGRAPH AT | L-1     | 8.03         | 2.25            | 1.78                            | 0.62    | 0.62    | 1.53          |                  |                      |
| HYDROGRAPH AT | B-2     | 31.72        | 4.25            | 15.60                           | 5.53    | 5.53    | 7.28          |                  |                      |
| HYDROGRAPH AT | B-3     | 11.55        | 2.25            | 2.77                            | 0.96    | 0.96    | 2.08          |                  |                      |
| 2 COMBINED AT | B2+B3   | 32.23        | 4.25            | 17.82                           | 6.49    | 6.49    | 9.36          |                  |                      |
| ROUTED TO     | R23T01  | 31.76        | 4.50            | 17.78                           | 6.49    | 6.49    | 9.36          |                  |                      |
| HYDROGRAPH AT | B-4     | 54.68        | 3.25            | 21.41                           | 7.50    | 7.50    | 10.73         |                  |                      |
| ROUTED TO     | R4T01   | 52.66        | 3.50            | 21.38                           | 7.50    | 7.50    | 10.73         |                  |                      |
| HYDROGRAPH AT | B-1     | 8.33         | 2.50            | 2.35                            | 0.82    | 0.82    | 2.18          |                  |                      |
| 3 COMBINED AT | B-SUMA  | 78.82        | 4.00            | 41.39                           | 14.81   | 14.81   | 22.27         |                  |                      |
| HYDROGRAPH AT | C-1     | 33.69        | 4.75            | 18.14                           | 6.48    | 6.48    | 10.45         |                  |                      |
| HYDROGRAPH AT | G-1     | 63.32        | 5.25            | 41.13                           | 15.88   | 15.88   | 19.45         |                  |                      |

\*\*\* NORMAL END OF HEC-1 \*\*\*