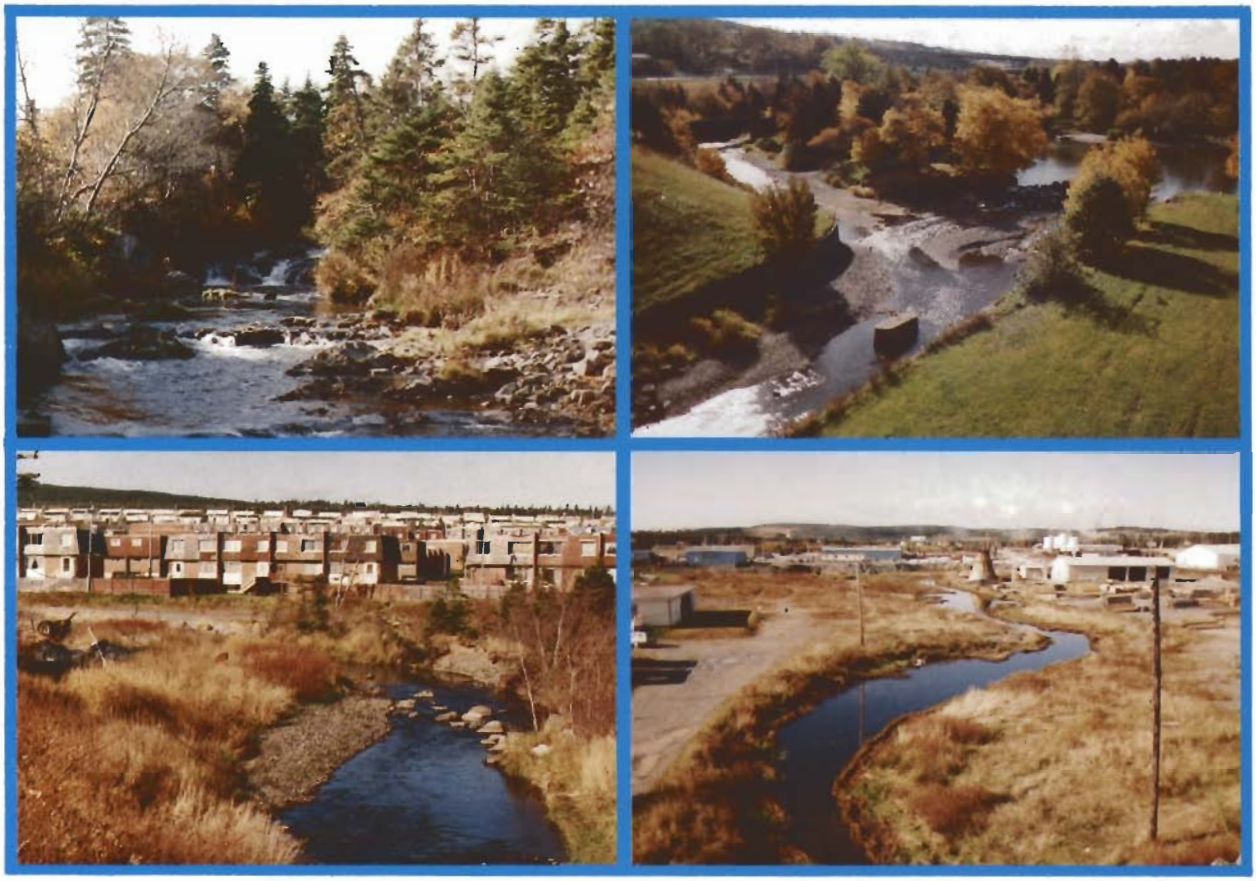
Government of Newfoundland and Labrador
Department of Environment
Water Resources Division
St. John's, Newfoundland

Government of Canada
Environment Canada
Inland Waters Directorate
Dartmouth, Nova Scotia

National Water Research Institute
Burlington, Ontario

WATERSHED MODELLING REPORT HYMO, 1988

APPENDICES



Urban Hydrology Study of the Waterford River Basin

TECHNICAL REPORT No.
UHS-WRB 1.10

EVALUATION OF URBANIZATION EFFECTS ON STORM RUNOFF CHARACTERISTICS IN THE WATERFORD RIVER BASIN (APPLICATION OF THE HYMO MODEL)

VOLUME 2

(APPENDICES)

WATER RESOURCES DIVISION
NEWFOUNDLAND DEPARTMENT OF
ENVIRONMENT AND LANDS
ST. JOHN'S, NEWFOUNDLAND

WATER PLANNING & MANAGEMENT BRANCH
INLAND WATERS DIRECTORATE
CONSERVATION AND PROTECTION
ENVIRONMENT CANADA
DARTMOUTH, NOVA SCOTIA

April 1988

Environment Canada | Environnement Canada
Conservation and Protection | Conservation et Protection

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4th Floor, Queen Square
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April 18, 1988

Your file *Votre référence*

Our file *Notre référence*

5100-15

Dr. Wasi Ullah, Chairman
Technical Committee
Waterford River Basin Urban Hydrology Study
Water Resources Division
Department of Environment and Lands
Government of Newfoundland and Labrador
P.O. Box 4750
St. John's, Newfoundland
A1C 5T7

Dear Dr. Ullah:

On behalf of those who participated in the task, "Evaluation of Urbanization Effects on Storm Runoff Characteristics in the Waterford River Basin (Application of the HYMO model)", I am pleased to submit the final report.

Yours sincerely,

David A. Smith

David A. Smith
Senior Hydrologic Engineer
Water Planning and Management Branch

DAS/0639D

c.c.: J. Marsalek
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Canada

ABSTRACT

The Governments of Canada and the Province of Newfoundland agreed to undertake a five-year urban hydrology study of the Waterford River on a work shared basis starting in April, 1980. The study contained a number of components. For this component, a simple single event hydrologic model (HYMO) was applied to attempt to discern if urbanization between 1973 and 1981 was having a significant impact on peak flows resulting from rain storms. Estimates of 20 and 100 year peak flows were made for the flood study component, and an indication was provided of the potential effects on peak flows of further development in the study area.

RÉSUMÉ

Les gouvernements canadien et terre-neuvien ont entrepris, en Avril 1980, une étude conjointe quinquennale concernant l'hydrologie urbaine du bassin versant de la rivière Waterford. Le rapport qui suit décrit un des volets de cette étude: l'utilisation du modèle hydrologique HYMO pour déterminer si l'urbanisation qui s'est pproduite entre 1973 et 1981 a eu une influence sur les débits causés par des orages de grande intensité. Le modèle HYMO a également été utilisé pour estimer les débits de pointe pour les périodes de récurrence de vingt et cent ans et pour formir une indication de l'influence sur les débits de pointe qui pourrait produire tout nouveau développement urbain,

PREFACE

The Waterford River Basin Urban Hydrology Study, developed as a co-operative effort between the Governments of Canada and Newfoundland and Labrador, was proposed by the Newfoundland Department of the Environment in response to watershed management problems that had resulted from urbanization of the Waterford River basin. Among such problems, negative effects of urbanization on both water quality and quantity were believed to be so serious that the Newfoundland Department of the Environment identified the Waterford River basin as a high priority area.

The five-year study began in 1980 and most tasks were completed in March, 1985. Primary objectives of the study were to develop environmentally acceptable criteria for urban development in Newfoundland, and to utilize the study results directly in the urban planning process in the Province. The specific objectives of the study, as outlined in the report "Waterford River Basin Urban Hydrology Study Plan" were as follows:

(1) To examine the processes leading to changes in the hydrologic regime of the Waterford River watershed. This should include evaluation and monitoring of major hydrologic changes caused by urbanization, the study of precipitation/runoff processes, and the study of various forms of pollution originating in the urban areas of the watershed.

(2) To provide a hierarchy of mathematical models describing hydrologic processes in the watershed. Such models should deal with water quantity and quality, and should be capable of simulating the impact of urbanization on the water resources in the studied basin.

(3) To recommend solutions to specific water management problems in the studied basin and to develop guidelines for implementation of similar solutions elsewhere in Newfoundland. Furthermore, planning and management criteria should be developed for those aspects of the urban development which relate to the environmental protection of the affected water resources.

The complexity of the study called for a comprehensive approach, which included hydrometric surveys, hydrologic modelling, groundwater studies, biologic surveys, water quality assessment, investigations of flooding, and land use and socio-economic analysis.

The study was administered by a Steering Committee appointed by the governments of Newfoundland and Canada. To implement the study plan, a Technical Committee, consisting of two representatives of each government, was established.

Subsequently, the Technical Committee appointed subcommittees and working groups to prepare and carry out the work plans for the various components of the study. The report that follows deals with one such component related to the effects of urbanization on the surface runoff characteristics such as peak flows and peak volumes.

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APPENDIX A

LAND USE/IMPERMEABILITY CATEGORIES

LAND USE/IMPERMEABILITY CATEGORIES

The following list contains a description of the land use/impermeability categories adopted for use in the study. Impermeability in the following categories includes roof tops, pavement, hard-packed ground, and some goods, stock-piled outside which allow rapid runoff of surface water.

Agricultural

A_1 Bog; which is used for grazing or improved for agricultural use.

A_2 Cropland, Close Grown, Improved Pasture and Forage Crops; includes land used for associated farm buildings.

A_3 Cropland Grown in Rows.

A_4 Land Cleared for Agricultural Purposes; brush piles evident.

H Intensive Agricultural Activity; e.g. greenhouses.

K Natural Grasslands; or unimproved pasture (where grazing may occur). Idle land which is not principally vegetated in shrubs, or trees. (Bushes and trees may cover no more than 25%)

Commercial/Industrial

C_1 Very Low Percentage of Impermeable Surfaces; Commercial/industrial property where very little of its surfaces can be interpreted as impermeable; e.g. initial stages of construction.

Impermeability: 0 - 15%

C_2 Small Percentage of Impermeable Surfaces; low building density.

Impermeability: 16 - 30%

C_3 Moderate Percentage of Impermeable Surfaces;

Impermeability: 31 - 45%

C_4 Moderately High Proportion of Impermeable Surfaces; Similar to C_2, but a greater percentage will be impervious.

Impermeability 47 - 60%

C_5 High Percentage of Impermeable Surfaces; where close spacing of buildings and large areas of hard, impervious surfaces can be seen.

Impermeability: 61 - 75%

C_6 Very High Percentage of Impermeable Surfaces; where clearly most of the area is impervious.

Impermeability: 76 - 90%

C_7 Virtually Complete Impermeability; commercial property, which regardless of building size has virtually all of its surface interpreted as impermeable.

Impermeability: 91% plus

Institutional

I_1 Institutional where less than 40% are impermeable surfaces; e.g. cemetaries, schools, hospitals.

I_2 Institutional where all surfaces account for greater than or equal to 40% of the area; e.g. some schools, hospitals, community centres.

Unvegetated Surfaces

L_1 Unvegetated, Low Impermeability; where less than 40% is impervious. This may have resulted from removal of surface material clearing; or areas to which fill has been brought in but not graded.

L_2 Unvegetated, High Impermeability; where 40 percent or greater is impervious - surfaces are usually graded and land use activity tends to be in transition.

L_3 Rockland, Natural Bare Rock; may consist of minimal amount of vegetative cover.

Residential

R_1 Initial Stages of Construction

Impermeability: 0 - 15%

R_2 Low Density Housing; (in terms of space between houses). This often includes rural dwellings.

Impermeability: 16 - 30%

R_3 Medium - Density Housing;

Impermeability: 31 - 45%

R_4 Medium - High Density Housing; moderate area of impervious surfaces, either consolidated or separated. Most suburban housing falls here.

Impermeability: 46 - 60%

R_5 High Density Housing; close spacing of houses where much of the ground surface is impervious with either consolidated or separated portions of pavement.

Impermeability: 61 - 75%

R_6 Very High Density in Housing Group; where clearly most if not all the ground surface is impervious.

Other Categories

X Highways; major transportation routes, which are usually four lanes wide - includes land on road right-of-way draining into highway runoff system.

E Excavation, Gravel Pits, Quarries; where there clearly appears to be significant removal of earth materials, e.g. Borrow pits, quarries, which contribute to depression water storage.

O Open Space, Parkland, Recreation Use; (grass covered) e.g. baseball, golf courses.

T Trees, Forest; where crown closure is greater than 25% and trees are at least seven metres in height.

U_1 Unproductive Woodlands, Scrub - Wet Site; Land with vegetative crown cover of less than 25% and shorter than seven metres in height. Stunted, trees, bushes.

U_2 Unproductive Woodlands, Scrub - Messic to dry site; Land with vegetative crown cover of less than 25%.

M Marsh, Bogs; Low-lying, level areas with characteristic vegetation appearing very low and evenly textured. Water may be visible.

Z Water Bodies; Ponds, rivers, lakes.

* A subscript on a symbol refines a broad land use category e.g. I(K) indicates an institutional land use with a vegetative cover type of grassland.

** Minimum mapping unit is 56 metres.

APPENDIX B

B1 SOIL TYPE DESCRIPTIONS

B2 DESCRIPTION OF SCS SOIL GROUPS

B3 ASSIGNMENT OF STUDY AREA SOILS INTO SCS HYDROLOGIC SOIL GROUPS

B4 SOIL SYMBOL CONVENTION

B1 Soil Type Descriptions

The following are descriptions of the types of soils found within the study area (ref. 1):

(a) Bauline (Ba)

The soils are developed from shallow, stony, medium textured glacial till derived from siltstone, greywacke, slate and minor volcanic rocks. This material is interspersed among extensive areas of rock outcrop.

Surface and internal drainage is rapid on steep slopes, but in small valleys, wet conditions are prevalent most of the year.

(b) Cochrane (Cr)

Cochrane soils are developed from medium textured, dark olive gray glacial till derived mainly from grey slate and siltstone.

They are well to rapidly drained on the surface and there is good runoff on the slopes. They are moderately well to well drained internally. Small areas of contiguous soils with some signs of imperfect drainage in the lower horizons have been included with the Cochrane soils. These areas have the most vigorous tree growth.

(c) Organic (O)

The soils are developed from the growth and decomposition of mosses, sedges, heath plants and other hydrophytic vegetation.

The soils are poorly drained and usually saturated with water most of the year unless artificially drained.

(d) Pouch Cove (Pc)

They are developed from stony, coarse textured, dark olive glacial till derived from siltstone and slate.

Pouch Cove soils are imperfectly to well drained on the surface, but have imperfect to poor drainage internally. In some areas, moist conditions are maintained by fog and a humid atmosphere. A peaty surface horizon keeps the soils moist for prolonged periods, hampering aeration and producing mottled colours in the upper horizons.

(e) Red Cove (Rc)

These soils are developed from extremely stony, coarse textured, reddish grey glacial till derived from red sandstone, siltstone, slate and red conglomerate.

The surface drainage is very rapid, but internal drainage is imperfect to poor.

(f) Torbay (Tb)

These soils are developed from moderately coarse textured, olive coloured, glacial till derived from acid slate, siltstone and acid volcanic rocks.

Surface drainage is poor in depressions on level sites, and in locations where drainage is impeded by vegetation. In some drainage basins or lower slopes, that receive abundant moisture for extended periods of the year, surface drainage is adequate or even rapid. Internal drainage is from poor to very poor.

B2 Description of SCS Soil Groups

The following are the descriptions of the United States Soil Conservation Service (SCS) hydrologic soil groups (ref, 10):

Group

A. (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmission.

B. Soils having moderate infiltration rates when thoroughly wetted and consistying chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C. Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

B3 Assignment of the Soils of the Study Area into the SCS Hydrologic Soil Groups

The following list contains the SCS hydrologic soils group assigned to each category found within the study area.

Ba; Ba : C_5 D_5
- Rapid surface and internal drainage on steep slopes;
- Wet conditions are prevalent in small valleys.
- Slope is gentle to moderate.
- SCS soil group: A

Cr; Cr; Cr; Cr; Cr : C_2 D_4 D_4II D_4I D_5
- Moderately well to well drained internally and well to rapidly drained on the surface.
- Slope is gentle to moderate.
- SCS soil group: B

Cr; Cr; Cr : C_4 F_3I F_4
- Good runoff on the slopes.
- Slope is strong to steep.
- SCS soil group: B/C

Cr:Pc; Cr:Pc; Cr:Pc; Cr:Pc: C_2 C_4 D_3II E_3
- Mixture of a moderately well to well drained soil with an imperfectly to well drained soil.
- Soil is from gentle to strong.
- SCS soil group: B/C

Cr:Rc : F_4II
- Mixture of a moderately well to well drained soil with a very rapid surface drainage and an imperfect to poor internal drainage.
- Slope is steep.
- SCS soil group: B/C

Cr:Tb; Cr:Tb: D4I E4
- Mixture of a moderately well to well drained soil with an imperfectly to well drained soil.
- Slope is gentle to strong.
- SCS soil group: B/C

Cr:Rc : F_4II
- Mixture of a moderately well to well drained soil with a very rapid surface drainage and an imperfect to poor internal drainage.
- Soil is steep.
- SCS soil group: B/C

B3 (Continued)

Cr:Tb; Cr:Tb :
D4I E4

- Mixture of a moderately well to well drained soil with a poorly to very poorly drained soil.
- Slope is moderate to strong.
- SCS soil group: C

Cr:Pc:$\frac{O_3}{B3}$:

- Mixture of a moderately well to well drained soil, with an imperfectly to well drained soil and a poorly drained soil.
- Slope is very gentle.
- SCS soil group: C

$\frac{O_3}{B}$, $\frac{O_4}{B}$, $\frac{O_5}{B}$:

- Poorly drained and saturated with water most of the year (high water table).
- Slope is very gentle.
- SCS soil group: D

Pc :
F3

- Surface is imperfectly to well drained and the internal drainage is imperfect to poor.
- Slope is steep.
- SCS soil group: C

Pc:$\frac{O_6}{C_4}$:

- Mixture of a soil which is imperfectly to well drained on the surface and imperfectly to poorly drained internally with a poorly drained soil.
- Slope is gentle.
- SCS soil group: C/D

Pc:Tb :
D3

- Mixture of a soil which is imperfectly to well drained on the surface and imperfectly to poorly drained internally with a poorly to very poorly drained soil.
- Slope is moderate.
- SCS soil group: C

Rc:$\frac{O_2}{F4IV}$:

- Mixture of a soil which is very rapidly drained on the surface and imperfectly to poorly drained internally with a poorly drained soil.
- Slope is steep.
- SCS soil group: C/D

Tb : E_4	- Surface drainage varies from poor to rapid depending on the slope and the internal drainage is from poor to very poor. - Slope is strong. - SCS soil group: C
Tb:Cr, Tb:Cr : D_5 B_3	- Mixture of poorly to very poorly internally drained soil with a moderately well to well drained soil. - Slope is moderate. - SCS soil group: C/D
Tb:O_6 ; Tb:O_8 : B_3 B_4	- Mixture of a poorly to very poorly drained soil with a poorly drained soil which is saturated with water. - Slope is very gentle. - SCS soil group: C/D
Tb:Pc : D_3	- Mixture of a poorly to very poorly drained soil with an imperfectly to well drained soil. - Slope is gentle. - SCS soil group: C

B4 SOIL SYMBOL CONVENTION[1]

Soil Symbol: $\frac{\text{Soil Series}^{2}}{\text{Topography Stoniness Rockiness}}$ e.g. $\frac{\text{Rc:O}_{2}}{\text{F}_{4}\text{IV}}$

A single soil series symbol indicates that the series occupies 80% of the area or more. Complex Symbols denote that the first named series occupies 40 to 80% of the area and the second and third together occupy 20 to 40% of the area. Soils occupying less than 20% of an area are not designated.

For organic soils, the symbol O6F5, for example, is interpreted as follows:

- O is the basic symbol, denoting Oligotrophic Peat
- 6 is the von Post decomposition class on a scale of 1 (least decomposed) to 10 (most decomposed) estimated on the material at 50 cm depth.
- F indicates presence of Flashets (ponds)
- 5 indicates depth of organic material where measured in feet.

TOPOGRAPHIC CLASSES

Simple and Complex Topography

	Single Slopes		Multiple Slopes	Slope %
A	depressional to level	a	nearly level	0 to 0.5
B	very gently sloping	b	gently undulating	0.5+ to 2
C	gently sloping	c	undulating	2+ to 5
D	moderately sloping	d	gently rolling	5+ to 9
E	strongly sloping	e	moderately rolling	9+ to 15
F	steeply sloping	f	strongly rolling	15+ to 30
G	very steeply sloping	g	hilly	30+ to 60
H	extremely sloping	h	very hilly	over 60

1. The source is ref. 1.
2. The soils series symbols are described in Appendix B1.

STONINESS

0 - Non stony.

1 - Slightly stony; slight to no hindrance to cultivation.

2 - Moderately stony; some interference with cultivation.

3 - Very stony; sufficient stones to constitute a serious handicap to cultivation.

4 - Exceedingly stony; sufficient stones to prevent cultivation until considerable clearing is done.

5 - Excessively stony; too stony to permit any cultivation (boulder or stone pavement,

ROCKINESS

I - 2 to 10 percent exposed bedrock; some interference with tillage but not enough to make intertilled crops impracticable.

II - 10 to 25 percent exposed bedrock; tillage restricted to hay crops or improved pasture.

III - 25 to 50 percent exposed bedrock; sufficient rock outcrop to make all use of machinery impracticable except for light machinery where other soil characteristics are especially favourable for improved pasture.

IV - 50 to 90 percent exposed bedrock; sufficient rock outcrop to make all use of machinery impracticable.

V - Over 90 percent exposed bedrock.

APPENDIX C

SCS CURVE NUMBERS FOR AMC II

and

CN CONVERSION TABLE

TABLE C.1

INITIAL ESTIMATES OF SCS CURVE NUMBERS (CN) FOR AMC II

Land Use/ Impermeability Categories+	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Agricultural							
A_1	0	0	0	0	0	0	0
A_2	51-66 60	59-72 66	67.77 72	72.81 77	76.85 81	78.87 83	80.89 84
A_3	62-72 67	72	71-81 76	80	78.91 83	85	81.94 86
A_4	77	82	86	89	91	93	94
K	39-68 52	61	61-79 70	75	74-86 80	82	80-89 84
H	46	56	66	72	77	80	82
Commercial							
C_1	* (74)	* (79)	* (83)	* (86)	* (88)	* (89)	* (90)
C_2	78	82	86	88	90	90	91
C_3	82	85	88	90	91	92	92
C_4	86	88	90	92	93	94	94
C_5	90	92	93	94	94	94	95
C_6	94	94	95	96	96	96	96
C_7	97	97	97	97	97	97	97

* Requires a look at air photos to set CN. Number in brackets assumes same type of cover for remaining area (bare soil) as occurs for C_2, etc.

\+ Land use/impermeability categories are defined in Appendix A and mapped in Appendix K (Map K.2).

TABLE C.1 (Continued)

INITIAL ESTIMATES OF SCS CURVE NUMBERS (CN) FOR AMC II

Land Use/ Impermeability Categories+	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Institutional							
I_1	46	56	66	72	77	80	82
I_2	64	71	77	81	85	87	88
Unvegetated Surfaces							
L_1	81	85	88	91	92	94	95
L_2	92	93	94	95	96	97	97
L_3	70 98*	70 98*	70 98*	70 98*	70 98*	70 98*	70 98*
Residential* **							
R_1	(72-76) 74**	(77-80) 78**	(82-85) 83**	(84-88) 86**	(87-90) 88**	88-90) 89**	(89-91) 90**
R_2	61	73	76	80	84	86	87
R_3	68	75	78	82	85	86	88
R_4	76	78	80	84	87	88	89
R_5	75	78	81	85	88	89	90
R_6	(75-100)	(78-100)	(81-100)	(85-100)	(88-100)	(89-100)	(90-100)

* If drained directly to a stream.

** Should refer directly back to airphotos and make a judgement. Typically dealing with areas which contained scrub spruce which have been completely cleared (hence bare soil) at this stage.

*** Basis for the CN's for Residential category is the proportion of area covered by grass (pasture or range) with a FAIR condition (refer to Tables 8.1 and 8.2 of SCS reference handbook, ref. 10) and impervious surface (CN=100)

\+ Land use/impermeability categories are defined in Appendix A and mapped in Appendix K (Map K.2).

TABLE C.1 (Continued)

INITIAL ESTIMATES OF SCS CURVE NUMBERS (CN) FOR AMC II

Land Use/ Impermeability Categories+	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Other Categories							
X	74	79	84	87	90	91	92
E	0	0	0	0	0	0	0
O	39	50	61	67	74	77	80
T	36	48	60	66	73	76	79
U_1	23	36	50	56	61	64	67
$U_{2,3}$	45	55	66	72	77	80	83
M	100	100	100	100	100	100	100
Z	100	100	100	100	100	100	100

+ Land use/impermeability categories are defined in Appendix A and mapped in Appendix K (Map K.2).

TABLE C.2

Curve Numbers (CN) and Constants for the Case $I_a = 0.2S$

1	2	3	4	5	1	2	3	4	5
CN for condition II	CN for conditions I	CN for conditions II	S values* (inches)	Curve* starts where P = (inches)	CN for condition II	CN for conditions I	CN for conditions III	S values* (inches)	Curve* starts where P = (inches)
100	100	100	0	0	60	40	78	6.67	1.33
99	97	100	.101	.02	59	39	77	6.95	1.39
98	94	99	.204	.04	58	38	76	7.24	1.45
97	91	99	.309	.06	57	37	75	7.54	1.51
96	89	99	.417	.08	56	36	75	7.86	1.57
95	87	98	.526	.11	55	35	74	8.18	1.64
94	85	98	.638	.13	54	34	73	8.52	1.70
93	83	98	.753	.15	53	33	72	8.87	1.77
92	81	97	.870	.17	52	32	71	9.23	1.85
91	80	97	.989	.20	52	31	70	9.61	1.92
90	78	96	1.11	.22	50	31	70	10.0	2.00
89	76	96	1.24	.25	49	30	69	10.4	2.08
88	75	95	1.36	.27	48	29	68	10.8	2.16
87	73	95	1.49	.30	47	28	67	11.3	2.26
86	72	94	1.63	.33	46	27	66	11.7	2.34
85	70	94	1.76	.35	45	26	65	12.2	2.44
84	68	93	1.90	.38	44	25	64	12.7	2.54
83	67	93	2.05	.41	43	25	63	13.2	2.64
82	66	91	2.20	.44	42	24	62	13.8	2.76
81	64	92	2.34	.47	41	23	61	14.4	2.88
80	63	91	2.50	.50	40	22	60	15.0	3.00
79	62	91	2.66	.53	39	21	59	15.6	3.12
78	60	90	2.82	.56	38	21	58	16.3	3.26
77	59	89	2.99	.60	37	20	57	17.0	3.40
76	58	89	3.16	.63	36	19	56	17.8	3.56
75	57	88	3.33	.67	35	18	55	18.6	3.72
74	55	88	3.51	.70	34	18	54	19.4	3.88
73	54	87	3.70	.74	33	17	53	20.3	4.06
72	53	86	3.89	.78	32	16	52	21.2	4.24
71	52	86	4.08	.82	31	16	51	22.2	4.44
70	51	85	4.28	.86	30	15	50	23.3	4.66
69	50	84	4.49	.90					
68	48	84	4.70	.94	25	12	43	30.0	6.00
67	47	83	4.92	.98	20	9	37	40.0	8.00
66	46	82	5.15	1.03	15	6	30	56.7	11.34
65	45	82	5.38	1.08	10	4	22	90.0	18.00
64	44	81	5.62	1.12	5	2	13	190.0	38.00
63	43	80	5.87	1.17	0	0	0	----infinity----	
62	42	79	6.13	1.23					
61	41	78	6.39	1.28					

* For CN in Column 1

APPENDIX D

RAINFALL INTENSITY-DURATION-FREQUENCY ANALYSIS

ST. JOHN'S AIRPORT

TABLE D.1

ATMOSPHERIC ENVIRONMENT SERVICE

RAINFALL INTENSITY-DURATION-FREQUENCY DATA

Prepared by the Hydrometeorology Division, Canadian Climate Centre (8/82)

Station Name	Prov.	Year	5 Min.	10 Min.	15 Min.	30 Min	1 Hr.	2 Hr.	6 Hr.	12 Hr.	24 Hr.
St. John's A	Nfld.	1949	8.9	8.9	10.2	17.5	28.2	52.6	61.7	62.0	63.5
St. John's A	Nfld.	1961	3.0	4.3	5.3	6.9	8.6	13.5	25.7	35.6	38.6
St. John's A	Nfld.	1962	2.8	4.6	4.6	8.1	13.0	20.6	33.8	54.9	59.7
St. John's A	Nfld.	1963	10.2	11.2	11.7	13.7	18.5	23.6	40.9	52.3	57.9
St. John's A	Nfld.	1964	4.3	6.9	7.9	11.2	19.3	28.2	54.9	72.6	77.5
St. John's A	Nfld.	1965	5.3	7.4	9.9	13.0	17.8	19.6	32.3	51.8	59.7
St. John's A	Nfld.	1966	8.4	13.2	17.0	25.4	29.7	43.7	48.5	64.5	85.3
St. John's A	Nfld.	1967	2.3	3.8	5.3	9.9	10.9	16.3	29.5	44.4	58.4
St. John's A	Nfld.	1968	6.3	12.7	13.7	14.7	17.5	22.4	41.9	55.1	61.7
St. John's A	Nfld.	1969	5.6	7.1	8.4	8.6	11.7	19.0	30.7	34.5	48.3
St. John's A	Nfld.	1970	5.6	7.1	10.7	15.2	16.3	19.6	42.4	62.5	87.4
St. John's A	Nfld.	1971	6.3	10.4	14.5	16.0	19.0	22.1	34.3	41.1	77.7
St. John's A	Nfld.	1972	4.8	5.3	6.6	10.9	15.0	20.6	47.8	72.6	89.2
St. John's A	Nfld.	1973	5.3	6.9	7.9	10.4	16.5	30.0	49.5	65.8	67.1
St. John's A	Nfld.	1974	3.6	5.6	6.3	9.9	16.3	22.4	42.4	53.3	72.9
St. John's A	Nfld.	1975	8.1	10.4	12.2	17.8	19.0	19.6	46.5	71.9	82.3
St. John's A	Nfld.	1976	3.6	4.8	6.1	8.4	12.7	19.0	33.8	42.2	53.6
St. John's A	Nfld.	1977	3.8	5.6	7.6	11.7	17.5	23.4	38.6	40.4	41.4
St. John's A	Nfld.	1978	4.0	5.9	7.4	7.6	12.9	13.1	27.1	37.6	43.0
St. John's A	Nfld.	1979	3.2	4.2	5.9	10.2	16.2	18.1	29.3	41.9	49.2
St. John's A	Nfld.	1980	3.2	6.1	7.4	12.2	17.4	23.9	33.6	41.6	69.8
St. John's A	Nfld.	1981	-99.9	-99.9	-99.9	-99.9	15.0	22.4	46.7	72.5	82.6
NOTE: -99.9 indicates missing data											
MEAN EXTREME			5.2	7.3	8.9	12.3	16.8	23.3	39.6	53.2	64.9
STANDARD DEVIATION			2.2	2.8	3.4	4.4	4.9	9.0	9.5	13.1	15.5
COEFFICIENT OF SKEW			0.86	0.86	0.92	1.40	1.19	2.19	0.52	0.19	-0.03
COEFFICIENT OF KURTOSIS			3.29	3.06	3.50	5.92	5.59	8.45	3.04	2.01	2.28

WARNING: *** Year 1949 had a value greater than 100 year storm.

TABLE D.2

ATMOSPHERIC ENVIRONMENT SERVICE

RAINFALL INTENSITY-DURATION-FREQUENCY ANALYSIS

Prepared by the Hydrometeorology Division, Canadian Climate Centre (8/82)

St. John's, Newfoundland

Return Period Rainfall Amounts (mm)

Duration	2 Yrs.	5 Yr.	10 Yr.	25 Yr.	50 Yr.	100 Yr.	Years of Record
5 Minutes	4.81	6.75	8.04	9.66	10.87	12.07	21
10 Minutes	6.79	9.28	10.94	13.02	14.56	16.10	21
15 Minutes	8.33	11.30	13.28	15.76	17.61	19.44	21
30 Minutes	11.634	15.48	18.04	21.26	23.65	26.02	21
1 Hour	15.97	20.28	23.14	26.74	29.41	32.07	22
2 Hours	21.87	29.85	35.15	41.83	46.78	51.71	22
6 Hours	38.07	46.49	52.08	59.13	64.35	69.55	22
12 Hours	51.08	62.66	70.34	80.03	87.21	94.35	22
24 Hours	62.30	76.03	85.14	96.63	105.15	113.62	22

****

RETURN PERIOD RAINFALL RATES EXPRESSED AS MM/HR WITH CONFIDENCE LIMITS

Duration	2 Yrs.			5 Yrs			10 Yrs.			25 Yrs.			50 Yrs.			100 Yrs.		
5 Minutes	57.73	+/-	3.56	81.02	+/-	5.99	96.47	+/-	8.10	115.96	+/-	10.92	130.41	+/-	13.06	144.78	+/-	15.22
10 Minutes	40.77	+/-	2.28	55.70	+/-	3.84	65.61	+/-	5.19	78.11	+/-	7.00	87.38	+/-	8.38	96.50	+/-	9.76
15 Minutes	33.34	+/-	1.82	45.22	+/-	3.06	53.11	+/-	4.13	63.05	+/-	5.57	70.43	+/-	6.67	77.76	+/-	7.77
30 Minutes	23.27	+/-	1.18	30.96	+/-	1.98	36.07	+/-	2.68	42.52	+/-	3.61	47.29	+/-	4.32	52.04	+/-	5.03
1 Hour	15.97	+/-	0.64	20.28	+/-	1.08	23.14	+/-	1.46	26.74	+/-	1.97	29.41	+/-	2.36	32.07	+/-	2.75
2 Hours	10.93	+/-	0.60	14.93	+/-	1.00	17.57	+/-	1.36	20.92	+/-	1.83	23.39	+/-	2.19	25.86	+/-	2.55
6 Hours	6.93	+/-	0.21	7.75	+/-	0.35	8.68	+/-	0.48	9.86	+/-	0.64	10.73	+/-	0.77	11.59	+/-	0.90
12 Hours	4.26	+/-	0.14	5.22	+/-	0.24	5.86	+/-	0.33	6.67	+/-	0.44	7.27	+/-	0.53	7.86	+/-	0.62
24 Hours	2.60	+/-	0.09	3.17	+/-	0.14	3.55	+/-	0.19	4.03	+/-	0.26	4.38	+/-	0.31	4.73	+/-	0.37

SHORT DURATION RAINFALL INTENSITY-DURATION FREQENCY DATA FOR SAINT JOHN'S "A" PERIOD OF RECORD 1949-1981

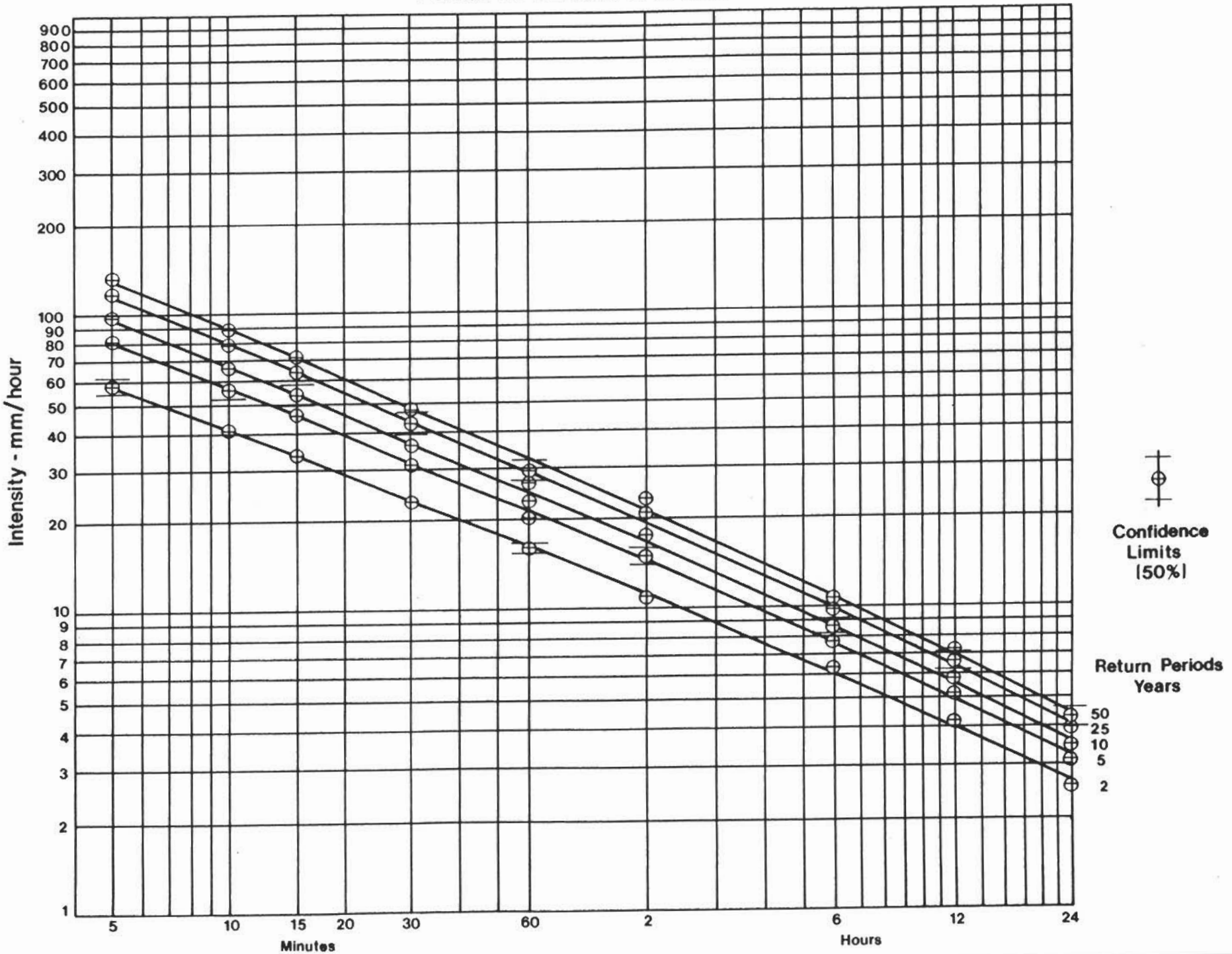

Figure D-1

APPENDIX E

CALCULATION OF THE TIME OF CONCENTRATION

BRANSBY WILLIAMS METHOD

CALCULATION OF 't_c' USING THE BRANSBY WILLIAMS FORMULA

Source: Ministry of Transportation and Communications, Ontario, Design Flood Estimation for Small Watersheds (ref. 6).

$$tc = \frac{0.057L}{S^{0.2} A^{0.1}}$$

Where L = Length of Main Channel to head of basin including undefined portion of channel (metres)

S = Net Slope (percent)

A = Effective watershed area (hectares)

t_c = Watershed time of concentration in minutes

Donovans

L = 1.988 + 2.755 + 0.400 = 5.143 km = 5143 m

A = 11.4 km^2 = 1140 hectares

$$S = \frac{174 - 145}{0.75\ (5143)} = 0.75 \text{ percent}$$

$$t_c = \frac{0.057(5143)}{(0.75)^{.2}(1140)^{.1}} = 153.6 \text{ min} = 2.56 \text{ h}$$

Mount Pearl

L = 5.143 + 1.875 = 7018 m

A = 16.6 km^2 = 1660 hectares

$$S = \frac{168 - 124}{0.75\ (7018)} = 0.84 \text{ percent}$$

$$t_c = \frac{0.057\ (7018)}{(.84).2(1660).1} = 197.34 \text{ min} = 3.28 \text{ h}$$

Kilbride

L = 7018 + 5625 = 12643 m

A = 52.7 km^2 = 5270 hectares

$$S = \frac{168 - 55}{0.75\ (12643)} = 1.19 \text{ percent}$$

$$t_c = \frac{0.057\ (12643)}{(1.19)^{.2}(5270)^{.1}} = 295 \text{ min} = 4.92 \text{ h}$$

APPENDIX F

FLOOD ESTIMATES DERIVED USING SINGLE STATION ANALYSIS OF STREAMFLOW DATA

Flood Estimates Derived Using Single Station Analysis of Streamflow Data

A rough estimate of peak flows for specific return periods can be made for the Waterford River using data published by the Water Survey of Canada for the hydrometric station at Kilbride (02ZM002). The analysis summarized on the next two pages was undertaken using computer program FDRPFFA (ref. 20) which employs four different frequency distributions.

As a result of a comparison, to theoretical values, of the coefficients of skew and kurtosis of the untransformed and transformed set of annual maximum instantaneous discharges, the Gumbel I distribution was selected as the most representative of the first three distributions in FDRPFFA (Gumbel I, Log Normal and Three Parameter Log Normal). There is no similar test to determine the adequacy of the fit to the Log-Pearson III distribution.

Based on a visual fit of the Gumbel I frequency curve to the data points plotted on Figure F-1, and a comparison with the tabulated results for other distributions, it can be concluded that use of the Gumbel I distribution may be underestimating the magnitude of the peaks for rare events. However, with just 10 data points in the set, little faith can be placed in any of the estimates obtained from this analysis.

FREQUENCY ANALYSIS OF

MAXIMUM ANNUAL INSTANTANEOUS DISCHARGES m^3/s

02ZM008 WATERFORD R. AT KILBRIDE

YEAR	MONTH	DATA	ORDERED	RANK	PROB.	RET. PERIOD
1974	8	30.900	66.100	1	.072	13.816
1975	8	21.800	53.400	2	.168	5.966
1976	1	28.300	41.700	3	.263	3.804
1977	12	40.200	40.200	4	.358	2.793
1978	1	30.900	34.500	5	.453	2.206
1979	1	34.500	30.900	6	.549	1.823
1980	10	22.700	30.900	7	.644	1.553
1981	11	66.100	28.300	8	.739	1.353
1982	10	53.400	22.700	9	.834	1.199
1983	10	41.700	21.800	10	.930	1.076

SAMPLE STATISTICS

MEAN = 37. S.D. = 13.9 C.S. = 1.1039 C.K. = 5.1938

SAMPLE STATISTICS (LOGS)

MEAN = 3.5543 S.D. = .3529 C.S. = .4528 C.K. = 4.0135

SAMPLE MIN = 22. SAMPLE MAX = 66. N = 10

PARAMETERS FOR GUMBEL I A = .104216 U = 31.

PARAMETERS FOR LOGNORMAL M = 3.5543 S = .3529

STATISTICS OF LOG(X-A)

MEAN = 2.7583 S.D. = .7498 C.S. = -.2722 C.K. = 3.8681

PARAMETERS FOR THREE PARAMETER LOGNORMAL A = 17. M = 2.7583 S = .7498

PARAMETERS FOR LOG PEARSON III BY MOMENTS A = .0799 B = .1951E+02 LOG(M) = 1.9959 M = .7359E+01

NO MAXIMUM LIKELIHOOD SOLUTION FOR LOG PEARSON III

	GUMBEL I		LOGNORMAL		THREE PARAMETER LOGNORMAL		LOG PEARSON III MAX. LIKELIHOOD		LOG PEARSON III MOMENTS	
RETURN PERIOD	FLOOD ESTIMATE	ST. ERROR PERCENT	FLOOD ESTIMATE	ST. ERROR PERCENT	FLOOD ESTIMATE	ST. ERROR PERCENT	FLOOD ESTIMATE	ST. ERROR PERCENT	FLOOD ESTIMATE	ST. ERROR PERCENT
1.005	15.100	28.00	14.100	23.20	19.400	9.95	0.000	0.00	16.300	28.30
1.050	20.500	16.80	19.600	17.10	21.700	8.02	0.000	0.00	20.500	14.80
1.250	26.600	11.40	26.000	13.00	25.500	9.31	0.000	0.00	25.900	11.40
2.000	34.700	10.30	35.000	11.20	32.900	11.90	0.000	0.00	34.000	12.20
5.000	45.500	12.00	47.100	13.00	44.300	17.50	0.000	0.00	46.600	14.60
10.000	52.700	13.30	55.000	15.10	58.400	23.20	0.000	0.00	55.700	18.50
20.000	59.600	14.40	62.500	17.10	71.300	29.50	0.000	0.00	65.100	24.00
50.000	68.600	15.60	72.200	19.70	90.700	38.00	0.000	0.00	78.400	32.80
100.000	75.300	16.30	79.400	21.50	107.000	44.30	0.000	0.00	89.200	40.20
200.000	82.000	16.90	86.800	23.20	126.000	50.50	0.000	0.00	101.000	48.10
500.000	90.800	17.60	96.600	25.30	154.000	58.30	0.000	0.00	118.000	59.00

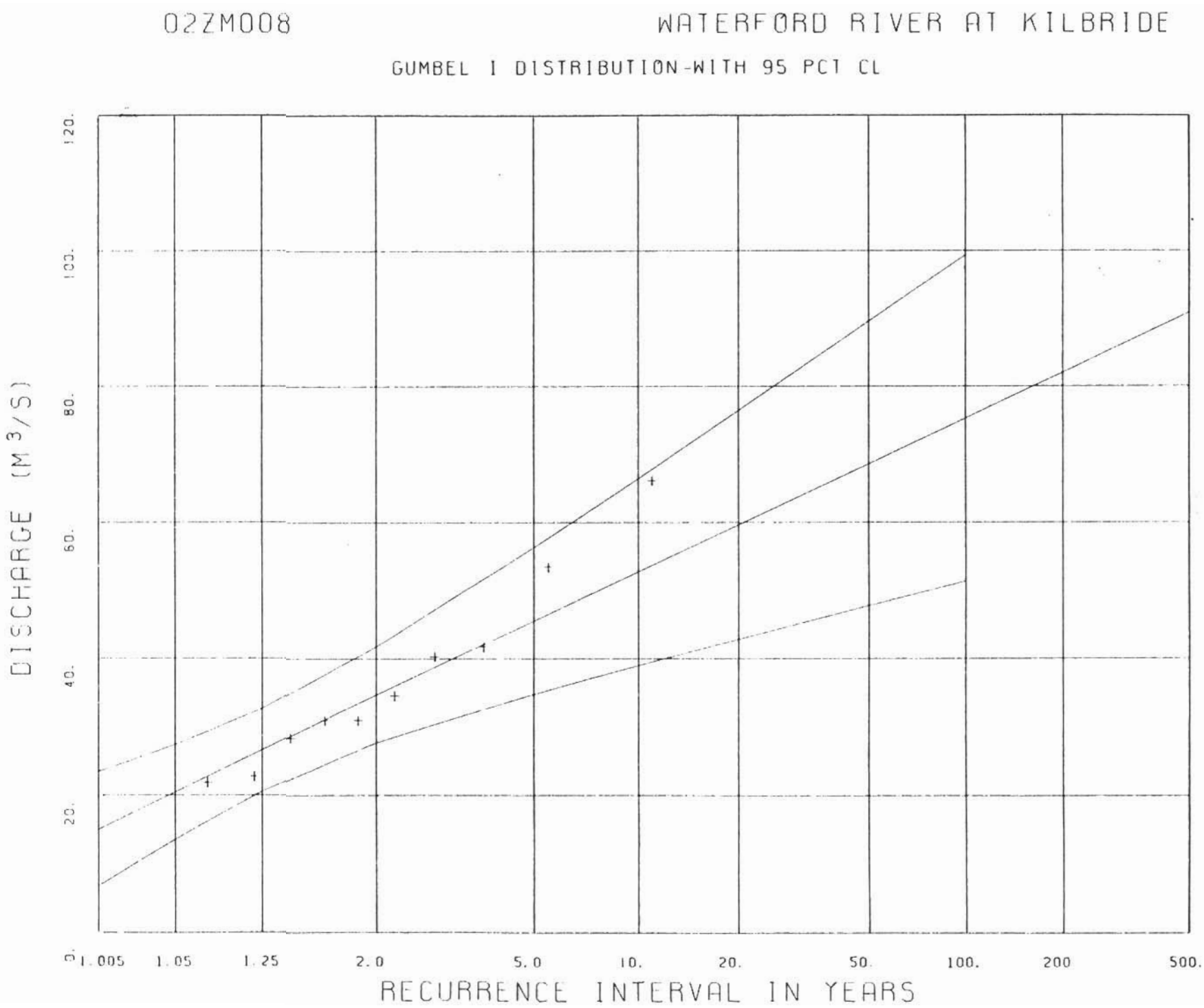
02ZM008
WATERFORD RIVER AT KILBRIDE
GUMBEL I DISTRIBUTION-WITH 95 PCT CL
DISCHARGE (M 3/S)
0.
20.
40.
60.
80.
100.
120.
1.005
1.05
1.25
2.0
5.0
10.
20.
50.
100.
200
500.
RECURRENCE INTERVAL IN YEARS

Figure F-1

APPENDIX G

DEVELOPMENT SCENARIO

HYPOTHETICAL DEVELOPMENT SCENARIO FOR 1991 BY HYDROLOGIC UNIT*

Unit Number

1. Potential for reduction of T, U_2 and L_2 in this sub-area. However, effect will probably be negated by increasees in E. Runoff controlled by Bremigan's Pond.

2. Potential for reduction in T, U and L_2 for residential and commercial development.

3. Potential for reduction of T, U, U_2 and L_2 for residential and commercial development. However, effect generated would probably be negated by E.

4. Reduction in T, U and L for commercial development. Potential for new excavation and change from existing excavation to commercial. Some potential for reduction of marsh (wet land).

5. Potential for some reduction in T and U for commercial development.

6. Potential for reduction in T, U and L for commercial and residential development.

7. Potential for reduction in T, U and L for residential and commercial development.

8. Some potential for increases in residential development.

9. Potential reduction in T and U for residential and commercial development.

10. Some potential for increases in residential and commercial development.

11. Potential reduction in T, U and L for residential development. Minor commercial development may also occur.

12. Reductions in T, U and L for residential and commercial development.

13. No significant changes expected in this unit.

14. Potential reduction of U and T for residential development.

15. Potential reduction of U, T and L for residential development.

16. Some minor potential for residential and commercial development.

---

* Refer to Land Use/Impermeability Categories found in Appendix A.

* Table based on comparison of 1973 and 1981 land use/impermeability maps. The 1981 land use map is presented as in Appendix K.

20. Some development potential exists. However, this would be of a minor nature. Hydrologic unit should stay in similar state.

21 Some potential exists for residential development.

22 Some potential for residential and light commercial development exists.

23 Minor residential expansion may occur in northern end of hydrologic unit.

24. Some potential for residential and light commercial development exists.

25 Sub-area has potential for residential and light commercial expansion. Fair amount of agricultural land controlled by Provincial Government.

26. Potential for expansion of residential development in community of Kilbride.

27. Unit should remain as is. No potential for development is apparent.

APPENDIX H

RAINFALL ADJUSTMENT FACTORS

The rainfall factors discussed in Section 3.5 of the main report and presented in Tables H.1 and H.2 were developed in the following manner:

Thiessen polygons (ref. 11) were drawn on a map around the locations of seven precipitation stations (includes the CDA). For each HU, the proportion of its drainage covered by the polygon for each gauge was determined. Each of those proportions were then multiplied by two factors and the products were added to determine the rainfall factor for a given storm. The two factors were: (i) the gauge correction factor shown on Figure 3.2; and (ii) the ratio of the total rainfall recorded for the event at the relevant standard gauge to the total rainfall recorded for the event at the standard gauge.

Those factors were then input to the HYMO model along with the hyetograph recorded at the CDA.

TABLE H.1

RAIN ADJUSTMENT FACTORS (AMC I[1] EVENTS)

Hydrologic Unit	June 11-12 1981	July 8-9 1981	Sept. 12-13 1981	Sept 25-26 1981
301	1.178	0.985	1.082	0.991
302	1.209	1.033	0.989	1.009
303	1.209	1.033	0.989	1.009
304	1.164	0.974	1.099	0.985
305	1.209	1.033	0.989	1.009
306	1.148	1.006	1.021	0.984
307	1.125	0.891	1.015	0.859
308	0.918	0.942	1.094	0.926
309	1.057	0.773	1.026	0.736
310	1.003	0.971	1.047	0.963
311	1.060	0.764	1.021	0.726
312	1.005	0.945	1.089	0.930
313	1.000	1.000	1.002	0.999
314	1.067	0.738	1.023	0.695
315	1.033	0.888	1.051	0.914
316	0.999	1.046	1.094	1.159
320	1.081	0.925	1.171	0.949
321	1.001	1.000	1.084	1.050
322	0.998	1.076	1.156	1.265
323	0.998	1.076	1.156	1.265
324	0.998	1.076	1.156	1.265
325	1.000	0.998	1.017	1.006
326	0.998	1.076	1.156	1.265
327	0.998	1.076	1.156	1.265

---

1. AMC I is an acronym (used by the SCS) for dry antecedent moisture conditions.

TABLE H.2

RAIN ADJUSTMENT FACTORS (AMC III[1] EVENTS)

Hydrologic Unit	October 10 1981	October 11 1981	Oct. 17-18 1981	Nov. 26-27 1981
301	0.887	0.887	0.854	0.935
302	0.802	0.802	0.923	1.048
303	0.802	0.802	0.923	1.148
304	0.908	0.908	0.851	0.912
305	0.802	0.802	0.923	1.048
306	0.863	0.863	0.951	0.998
307	0.997	0.997	0.979	0.985
308	1.005	1.005	1.018	0.879
309	1.161	1.161	1.014	0.944
310	1.003	1.003	1.009	0.939
311	1.170	1.170	1.024	0.949
312	1.005	1.005	1.017	0.885
313	1.000	1.000	1.000	1.000
314	1.189	1.189	1.027	0.944
315	1.132	1.132	0.994	1.009
316	1.088	1.088	0.954	1.088
320	1.012	1.012	0.857	0.811
321	1.046	1.046	0.984	0.996
322	1.147	1.147	0.924	0.765
323	1.147	1.147	0.924	0.765
324	1.147	1.147	0.924	0.765
325	1.008	1.008	0.998	0.995
326	1.147	1.147	0.924	0.765
327	1.147	1.147	0.924	0.765

---

1 AMC III is an acronym (used by the SCS) for wet antecedent moisture conditions.

APPENDIX I

HYMO COMPUTER MODEL SET-UP

```
*
*
*                    ---------------------------------------
*                     WATERFORD RIVER URBAN HYDROLOGY STUDY
*                    ---------------------------------------
*
*                  FROM THE HEADWATERS OF THE WATERFORD RIVER
*                              THROUGH DONOVANS TO
*                           THE GAUGE AT MOUNT PEARL
*
*
*                     TYPE OF EVENT>>>>>
*
*                     DATE OF EVENT>>>>>
*
START                 RAINFALL BEGINS AT 00.00 HOURS  WITH AMC &
                      AUXILLARY OUTPUT CODE=-1
* USE DUMMY COMPUTE HYD TO INSERT THE RAINFALL DATA INTO THE STORAGE ARRAY
* COMPUTE HYDROGRAPH FOR 'DUMMY' HYDROLOGIC UNIT
COMPUTE HYD           ID=5      HYD UNIT NO=300     TIME INTERVAL=RTI HOURS
                      DRAINAGE AREA= 1.00 SQ KM       CURVE NO = 100
                      CATCHMENT>     HEIGHT=    1 M  LENGTH= 1.000 KM
                      MASS RAINFALL FROM TB GUAGE AT ST JOHN'S WEST (CDA)
PRINT HYD             ID=5 PEAK VOLUME CODE = +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #1
COMPUTE HYD           ID=1      HYD UNIT NO=301     TIME INTERVAL=RTI HOURS
                      DRAINAGE AREA=  1.93  SQ KM       CURVE NO= CN1
                      CATCHMENT>     HEIGHT=   14 M  LENGTH= 1.988 KM
                      MASS RAINFALL= -RAIN ADJ1
PRINT HYD               ID= 1           PEAK VOL CODE=+1
*ROUTE HYDROGRAPH THRU BREMIGANS POND (RESERVOIR)
ROUTE RESERVOIR       ID= 5      HYD NO=501           INFLOW HYD ID= 1
                        OUTFLOW (CMS)       STORAGE(HA M)
                           0.0                 0.0
                           0.0166              0.114
                           0.0846              0.342
                           0.182               0.570
                           0.512               1.14
                           0.946               1.71
                           1.48                1.75
                           2.04                2.85
                           2.73                3.42
                           4.12                4.56
                           6.64                6.27
PRINT HYD               ID= 5           PEAK VOL CODE=-1
*  HYD 301 (O)  HYD 501 (+)        ROUTED THROUGH BREMIGANS POND
PLOT HYD              IDI=1    IDII= 5
*
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 1 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>*
*
* VALLEY SECTION 1.1
COMPUTE RATING CURVE ID=1  VALLEY SECTION= 1.1 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.918M     MAX=100.5   M
                      SLOPE >      CHANNEL=0.0013    FLOODPLAIN=0.0013
                      N=0.06 DIST=102.6 N=-.045 DIST=107.6 N= .06  DIST=120.0
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                                                                   95.        100.5
                       100.0      99.972     102.6      99.521     103.0      99.333
                       104.4      98.973     105.5      98.918     106.4      98.965
                       106.5      99.629     108.0      99.896     119.0      100.0
                       120.       100.5
* VALLEY SECTION 1.2                                                              *
COMPUTE RATING CURVE ID=2  VALLEY SECTION= 1.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION  >  MIN=134.09M     MAX=135.0 M
                      SLOPE >      CHANNEL=0.0096    FLOODPLAIN=0.0096
                     N=0.035 DIST=19.05 N=-.035 DIST=24.689 N=0.035 DIST=41.148
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                         0.0      136.524      1.524    136.424      5.486    136.114
                         8.230    135.989     11.887    135.550     14.935    134.660
                        17.678    134.799     18.288    134.606     18.898    134.458
                        19.050    134.114     19.507    134.090     20.726    134.122
                        22.555    134.293     24.079    134.340     24.689    134.499
                        24.994    134.708     26.213    134.995     28.042    135.417
                        29.261    135.861     30.480    135.918     34.747    136.164
                        39.014    136.234     41.148    136.302
```

```
*                                                                              *
COMPUTE TRAVEL TIME ID= 3     REACH NO = 1  NO OF VALLEY SECTIONS= 2
                    LENGTH= 2681            SLOPE= 0.012
* ROUTE HYDROGRAPH FROM HYDROLOGIC  UNIT 1 THRU REACH 1
ROUTE               ID=3       HYD NO= 101          INFLOW HYD ID= 5
                    TIME INTERVAL=TRTI
PRINT HYD            ID=3    +1
PRINT HYD            ID= 3          PEAK VOL CODE=-1
*  HYD 101 (0)  HYD 501 (+)                                                    *
PLOT HYD            IDI= 3   IDII= 5
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #2                                   *
COMPUTE HYD         ID=1      HYD UNIT NO=302    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=  2.68  SQ KM       CURVE NO= CN2
                    CATCHMENT>     HEIGHT=  67  M  LENGTH= 2.755 KM
                    MASS RAINFALL= -RAIN ADJ2
PRINT HYD           ID=1  +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #3
COMPUTE HYD         ID=2     HYD UNIT NO=303    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=  2.28  SQ KM       CURVE NO= CN3
                    CATCHMENT>     HEIGHT=   48 M  LENGTH= 1.838 KM
                    MASS RAINFALL= -RAIN ADJ3
PRINT HYD           ID=2  +1
* HYD 302 (0)  HYD 303 (+)                                                    *
*PLOT HYD            IDI= 1   IDII= 2
*ADD HYROGRAPH FROM HYDROLOGIC UNITS 2 AND 3                                  *
ADD HYD             ID=5  COMBINED HYDROGRAPH NO=102
                     ADD HYROGRAPH FROM ID= 1 AND ID= 2
*ADD HYROGRAPH FROM HYDROLOGIC UNITS 1 AND (2 AND 3)
ADD HYD             ID=6  COMBINED HYDROGRAPH NO=103
                     ADD HYROGRAPH FROM ID=3  AND ID=5
PRINT HYD            ID=6  +1
*  HYD 103 (0)                                                               *
*PLOT HYD            IDI=4
*                                                                            *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<ROUTING REACH 2 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
*
*VALLEY SECTION 2.1
COMPUTE RATING CURVE ID=1  VALLEY SECTION= 2.1 WHICH IS DIVIDED INTO 3 SECTIONS
                     ELEVATION >  MIN=133.507M    MAX=136.0     M
                     SLOPE >      CHANNEL=0.00025   FLOODPLAIN=0.00025
                     N=0.05 DIST=8.839 N=-.035 DIST=16.714 N=.045 DIST=78.029
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                         0.0   136.354     0.610   136.256     1.829   136.197
                         4.267 135.908     6.401   135.173     7.620   134.834
                         8.230 134.658     8.839   134.428     9.449   134.178
                         9.754 134.046    10.363   133.856    10.668   133.750
                        11.278 133.543    11.887   133.507    12.497   133.562
                        13.411 135.583    14.326   133.668    14.935   133.608
                        15.545 133.683    15.850   133.786    16.155   134.011
                        16.459 134.185    16.714   134.411    17.069   134.945
                        17.983 135.173    18.899   135.583    19.507   135.277
                        19.812 135.172    22.555   135.269    25.299   135.189
                        27.432 135.060    31.395   135.056    40.539   134.970
                        55.779 135.099    61.875   135.352    63.703   135.726
                        64.923 135.884    65.837   136.324    68.580   136.286
                        73.152 136.323    75.895   136.207    78.029   136.182
*VALLEY SECTION 2.2                                                          *
COMPUTE RATING CURVE ID=2  VALLEY SECTION= 2.2 WHICH IS DIVIDED INTO 3 SECTIONS
                     ELEVATION >  MIN=133.171M    MAX=135.     M
                     SLOPE >      CHANNEL=0.00025  FLOODPLAIN=0.00025
                     N=0.050 DIST=19.203 N=-.035 DIST=34.443 N=0.045 DIST=71.933
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                         0.0   136.448     2.743   136.384     7.925   136.171
                        10.363 135.766    11.583   135.955    13.107   135.858
                        14.021 135.981    14.935   135.850    15.850   135.598
                        19.203 135.444    22.555   133.986    24.079   133.967
                        24.689 134.147    24.994   134.062    25.299   133.709
                        25.908 133.662    26.213   133.714    26.823   133.829
                        27.432 133.782    29.261   133.529    31.090   133.659
                        32.004 133.639    32.919   133.366    33.528   133.171
                        34.443 133.792    35.052   134.184    36.881   134.384
                        40.234 134.326    44.501   134.402    49.073   134.409
                        53.645 134.445    58.217   134.465    62.789   134.477
                        67.666 134.547    71.933   134.966
```

```
* VALLEY SECTION 2.3                                                    *
COMPUTE RATING CURVE ID=3  VALLEY SECTION= 2.3 WHICH IS DIVIDED INTO 3 SECTIONS
                     ELEVATION >  MIN=131.901M   MAX=134.     M
                     SLOPE >      CHANNEL=0.0037  FLOODPLAIN=0.0037
                     N=0.025 DIST=.305 N=-.030 DIST=3.048 N=.025 DIST= 3.429
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                                                             0.         135.1
                         0.0     132.197     0.305   132.131     0.610   132.030
                         0.914   132.052     1.219   131.965     1.524   132.064
                         1.829   131.964     2.134   131.941     2.438   131.930
                         2.743   131.901     3.048   132.002     3.429   132.091
                         3.429   135.1
*
COMPUTE TRAVEL TIME ID=4      REACH NO = 2  NO OF VALLEY SECTIONS= 3
                    LENGTH= 338             SLOPE=  .012
*ROUTE HYDROGRAPH FROM UNITS 1,2 AND 3
ROUTE               ID=4       HYD NO=  203        INFLOW HYD ID= 6
                    TIME INTERVAL=TRTI
PRINT HYD           ID=4    +1
PRINT HYD             ID=4 +1                                           *
*  HYD 203 (0)
*PLOT HYD            IDI=4                                             *
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #4
COMPUTE HYD         ID=1      HYD UNIT NO=304    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=  3.40  SQ KM      CURVE NO= CN4
                    CATCHMENT>    HEIGHT=  74  M  LENGTH= 3.475 KM
                    MASS RAINFALL= -RAIN ADJ4
PRINT HYD           ID= 1           PEAK VOL CODE=+1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #5
COMPUTE HYD         ID=2      HYD UNIT NO=305    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=  1.06  SQ KM      CURVE NO= CN5
                    CATCHMENT>    HEIGHT=   92 M  LENGTH= 2.438 KM
                    MASS RAINFALL= -RAIN ADJ5
PRINT HYD            ID=2 +1
*  HYD 304 (0)  HYD 305 (+)                                           *
*PLOT HYD            IDI= 1   IDII= 2
PRINT HYD           ID=  1          PEAK VOL CODE=+1
*ADD HYROGRAPH FROM UNITS 4 AND 5
ADD HYD             ID=3  COMBINED HYDROGRAPH NO= 105
                     ADD HYROGRAPH FROM ID=1  AND ID= 2
*SUM OF ALL UNITS 1 THRU 5 TO THE USC GAUGE BELOW DONOVANS (02ZM011)    *
ADD HYD             ID=5  COMBINED HYDROGRAPH NO=205
                     ADD HYROGRAPH FROM ID= 3 AND ID= 4
*
PRINT HYD           ID= 5           PEAK VOL CODE=+1
STORE HYD           ID=1 ESTIMATED BASE FLOW HYD=155 DT=24  DA=0.05
                    BASEQA   BASEQA   BASEQA    BASEQA
ADD HYD             ID=6  SIMULATED PLUS ESTIMATED BASEFLOW HYDROGRAPHS
                     COMBINED HYD NO =255 INPUTS =5 AND 1
PRINT HYD           ID=6 +1
*>>>>>>>>>>>>>>>>>
* DONOVANS GAUGE
*<<<<<<<<<<<<<<<<<
PRINT HYD              ID=1 +1
* HYDROGRAPHS TO DONOVANS GAUGE >> COMPUTED 'O'  AND  MEASURED '+'      *
PLOT HYD            IDI=5 IDII=1
* HYDROGRAPHS TO DONOVANS GAUGE >> COMPUTED(PLUS BASEFLOW) 'O' AND MEASURED '+'*
PLOT HYD             IDI=6  IDII=1
ERROR ANALYSIS      ID=6 AND ID=1                                      *
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #6                           *
COMPUTE HYD         ID=2      HYD UNIT NO=306    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=   1.777 SQ KM   CURVE NO= CN6
                    CATCHMENT>     HEIGHT= 60.5 M  LENGTH= 1.55  M
                    MASS RAINFALL= -RAIN ADJ6
PRINT HYD             ID=2 +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #7
COMPUTE HYD         ID=3      HYD UNIT NO=307    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA= 2.168 SQ KM     CURVE NO= CN7
                    CATCHMENT>     HEIGHT= 79   M  LENGTH= 1.875 M
                    MASS RAINFALL= -RAIN ADJ7
PRINT HYD              ID=3 +1
*ADD HYROGRAPHS FROM  UNITS #6 AND #7
ADD HYD             ID=6 COMBINED HYDROGRAPH NO = 107
                         ADD HYROGRAPHS FROM ID= 2 AND ID=3
```

```
*  HYD 306 (O)  HYD 307 (+)                                                    *
*PLOT HYD            IDI=2   IDII=3
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #8                                   *
COMPUTE HYD          ID=4      HYD UNIT NO=308    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA= 1.33 SQ KM      CURVE NO= CN8
                     CATCHMENT *     HEIGHT= 33   M  LENGTH= 1.225 M
                     MASS RAINFALL= -RAIN ADJ8
PRINT HYD               ID=4 +1
*ADD HYROGRAPHS FROM UNITS 6, 7 AND 8
ADD HYD              ID= 3 COMBINED HYDROGRAPH NO=  108
                        ADD HYROGRAPH FROM ID= 6 AND ID= 4
*  HYD 205 (O)  HYD 108 (+)                                                   *
PLOT HYD             IDI= 4     IDII=5
PRINT HYD            ID= 3      +1                                           *
*
*
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 3 >>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
*
* VALLEY SECTION 3.2
COMPUTE RATING CURVE ID=1  VALLEY SECTION= 3.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=99.234M     MAX=102.00  M
                      SLOPE >      CHANNEL=0.00033  FLOODPLAIN=0.00033
                      N=0.06  DIST=101. N=-.045 DIST=107.6 N=0.10 DIST=114.0
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                                             96.0       102.        99.0       101.
                       100.0      100.54     101.0       99.324    102.6       99.234
                       104.2       99.315    105.4       99.344    107.6       99.468
                       108.4      100.0      113.0      101.0      114.       102.
* VALLEY SECTION 3.3                                                          *
COMPUTE RATING CURVE ID= 2 VALLEY SECTION= 3.3 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION>  MIN=95.210M     MAX=97.00  M
                      SLOPE >      CHANNEL=0.0097   FLOODPLAIN=0.0097
                      N=0.065  DIST=101.5 N=-.06 DIST=106.1 N=0.06 DIST=111.3
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                      100.0      97.199     100.7      96.640     101.5      95.638
                      103.9      95.210     104.2      95.324     105.1      95.416
                      106.1      95.723     107.0      95.777     108.0      96.249
                      109.2      96.362     111.3      97.289
*                                                                             *
COMPUTE TRAVEL TIME ID= 4     REACH NO = 3  NO OF VALLEY SECTIONS= 2
                    LENGTH= 1913 M          SLOPE= 0.013
* ROUTE INFLOW HYDROGRAPH THROUGH REACH 3
ROUTE               ID= 4      HYD NO= 205          INFLOW HYD ID= 5
                    TIME INTERVAL=TRTI
PRINT HYD           ID=4    +1
* SUM OF ALL UNITS
ADD HYD             ID= 5 COMBINED HYDROGRAPH NO= 208
                     ADD HYROGRAPH FROM ID= 3 AND ID= 4
PRINT HYD           ID= 5          PEAK VOL CODE=+1
STORE HYD           ID=1 ESTIMATED BASE FLOW HYD=158 DT=24  DA=0.01
                    BASEQB   BASEQB   BASEQB    BASEQB
ADD HYD             ID=6  SIMULATED PLUS ESTIMATED BASEFLOW HYDROGRAPHS
                     COMBINED HYD NO =258 INPUTS =5 AND 1
PRINT HYD           ID=6  +1
*<<<<<<<<<<<<<<<<<<<                                                         *
* MOUNT PEARL GAUGE
*>>>>>>>>>>>>>>>>>>>
PRINT HYD            ID=1   +1
* HYDROGRAPH TO MT. PEARL >> COMPUTED 'O' AND MEASURED '+'                    *
PLOT HYD             ID= 5  IDII=1
* HYDROGRAPH TO MT. PEARL >> COMPUTED(PLUS BASEFLOW) 'O' AND MEASURED '+'     *
PLOT HYD             ID= 6 IDII=1
ERROR ANALYSIS        ID=6 AND ID=1
```

```
*
*                    ----------------------------------------
*                     WATERFORD RIVER URBAN HYDROLOGY STUDY
*                    ----------------------------------------
*
*                  FROM THE HYDROMETRIC STATION AT MT. PEARL
*                   TO THE HYDROMETRIC STATION AT KILBRIDE
*                      PLUS INFLOW FROM SOUTH BROOK
*
*                                                                              *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<  ROUTING REACH 4A >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
*  MOUNT PEARL FLOOD PLAIN SECTION 13
COMPUTE RATING CURVE  ID=1 VALLEY SECTION= 4.1 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =103.405M    MAX =105.000 M
                      SLOPE        CHANNEL=0.0024   FLOODPLAIN=0.002
                      N=0.07  DIST=6.096 N=-.04  DIST=13.106 N=0.07  DIST=114.3
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                         0.0     105.257     3.048   104.717     6.096   104.124
                         9.144   103.818    10.668   103.617    11.887   103.782
                        13.106   104.182    13.716   104.269    15.240   103.922
                        16.307   103.632    16.459   103.537    18.288   103.416
                        19.812   103.405    21.336   103.424    23.165   103.522
                        24.994   104.022    29.566   104.017    38.100   104.437
                        45.720   104.342    53.340   104.259    68.580   104.462
                        83.820   104.502    99.060   104.246   106.680   104.192
                       114.300   104.135
* MOUNT PEARL FLOOD PLAIN SECTION 8                                            *
COMPUTE RATING CURVE  ID=2  VALLEY SECTION=4.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =101.436M    MAX =103.751 M
                      SLOPE        CHANNEL=0.002    FLOODPLAIN=0.002
                      N=0.10 DIST=97.841 N=-.04 DIST=113.385 N=0.07 DIST=119.481
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                         0.0     103.751     3.048   102.571     6.096   102.311
                        14.936   102.196    25.298   102.216    32.918   102.136
                        42.062   102.026    53.035   101.996    61.569   102.016
                        69.799   102.071    78.029   102.001    88.392   101.436
                        89.611   101.951    90.830   102.296    97.841   102.336
                       108.204   101.822   109.423   101.661   110.947   101.861
                       113.385   102.178   115.214   102.278   117.957   103.298
                       119.481   103.304
* STEADYWATERS FOOTBRIDGE                                                      *
COMPUTE RATING CURVE  ID=3 VALLEY SECTION= 4.3 WHICH IS DIVIDED INTO3 SECTIONS
                      ELEVATION >  MIN =100.890M    MAX =103.800 M
                      SLOPE        CHANNEL=0.001  FLOODPLAIN=0.001
                      N=0.05 DIST=73.152 N=-.04 DIST=85.344 N=0.05 DIST=97.536
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       0.0     104.027     3.048   103.757     6.096   103.537
                       9.144   103.427    12.192   103.312    15.240   103.184
                      18.288   103.077    21.336   102.887    24.384   102.637
                      27.432   102.492    30.480   102.527    33.223   102.697
                      34.747   102.224    36.576   101.860    37.490   101.627
                      39.624   101.392    42.672   101.245    45.720   100.957
                      48.768   100.890    49.073   101.022    51.816   101.497
                      53.950   101.607    54.864   101.517    55.474   101.687
                      55.778   101.987    57.912   102.107    58.217   102.287
                      58.522   102.464    60.960   102.552    64.008   102.577
                      67.056   102.672    70.104   102.730    73.152   102.800
                      85.344   102.879    88.392   102.893    91.440   102.900
                      94.488   102.988    95.098   103.022    97.536   103.747
COMPUTE TRAVEL TIME  ID= 4   REACH NO = 4A NO OF VALLEY SECTIONS= 3             *
                      LENGTH=  1825 M          SLOPE= .0047
ROUTE                ID= 4      HYD NO= 4A          INFLOW HYD ID= 5
                     TIME INTERVAL=TRTI
PRINT HYD            ID=4    +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #9                                    *
COMPUTE HYD          ID=1      HYD UNIT NO=309    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA= 2.342 SQ KM     CURVE NO= CN9
                     CATCHMENT>     HEIGHT= 156.5M  LENGTH= 1.500 KM
                     MASS RAINFALL= -RAIN ADJ9
PRINT HYD              ID= 1          PEAK VOL CODE=+1
```

```
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #10
COMPUTE HYD          ID=2       HYD UNIT NO=310    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA= 1.662 SQ KM      CURVE NO= CN10
                     CATCHMENT>      HEIGHT= 118  M  LENGTH= 4.063 KM
                     MASS RAINFALL= -RAIN ADJ10
PRINT HYD            ID= 2           PEAK VOL CODE=+1
*
ADD HYD              ID= 3 COMBINED HYDROGRAPH NO= 109
                        ADD HYROGRAPH FROM ID= 1 AND ID= 2
*
ADD HYD              ID= 6 COMBINED HYDROGRAPH NO= 110
                        ADD HYROGRAPH FROM ID=3  AND ID= 4
PRINT HYD            ID= 6           PEAK VOL CODE=+1
* HYDROGRAPH AT STEADY WATERS FOOTBRIDGE                                    *
PLOT HYD                ID=6
*                                                                           *
                                                                            *
 <<<<<<<<<<<<<<<<<<<<<<<<<  ROUTING REACH 4B >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
* ABOVE DUNNS BRIDGE
COMPUTE RATING CURVE  ID=1 VALLEY SECTION= 4.4 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =99.03 M    MAX =101.000 M
                      SLOPE >      CHANNEL=0.02   FLOODPLAIN=0.003
                      N=0.05 DIST=102.5 N=-.04  DIST=110.5 N=0.05 DIST=115.0
                       DIST      ELEV      DIST       ELEV      DIST      ELEV
                                                                92.5      100.5
                       100.0     100.0     102.6      99.19     106.4      99.030
                       108.5      99.185   110.5      99.71     111.6     100.255
                       115.00    100.5
*                                                                           *
COMPUTE TRAVEL TIME  ID= 4   REACH NO =4B  NO OF VALLEY SECTIONS= 1
                      LENGTH=  1000 M        SLOPE= .03
ROUTE                ID= 4      HYD NO= 4B         INFLOW HYD ID= 6
                   TIME INTERVAL =TRTI
PRINT HYD            ID=4    +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #11                                *
COMPUTE HYD          ID=5       HYD UNIT NO=311    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA=  1.791 SQ KM  CURVE NO= CN11
                     CATCHMENT>      HEIGHT= 186.5M  LENGTH= 1.843 KM
                     MASS RAINFALL= -RAIN ADJ11
PRINT HYD             ID= 5           PEAK VOL CODE=+1
*
ADD HYD              ID= 6 COMBINED HYDROGRAPH NO= 111
                        ADD HYROGRAPH FROM ID= 5 AND ID= 4
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #12
COMPUTE HYD          ID=5       HYD UNIT NO=312    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA= 2.985 SQ KM  CURVE NO= CN12
                     CATCHMENT>      HEIGHT=   32 M  LENGTH=  1.937 KM
                     MASS RAINFALL= -RAIN ADJ12
PRINT HYD             ID= 5           PEAK VOL CODE=+1
*                                                                           *
 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 10 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
COMPUTE RATING CURVE ID=1 VALLEY SECTION= 10.1 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =99.168M     MAX =100.8 M
                      SLOPE        CHANNEL=0.0024   FLOODPLAIN=0.0024
                      N=0.07 DIST=104.4 N=-.05 DIST=106.2 N=0.07 DIST=115.0
                      DIST      ELEV       DIST       ELEV      DIST      ELEV
                                                                95.0      100.8
                      100.0     100.0      101.2      99.681    101.4      99.407
                      102.6      99.168    105.1      99.386    106.2      99.74
                      107.4     100.003    108.0     100.012    115.0     100.8
*                                                                           *
COMPUTE RATING CURVE ID=2 VALLEY SECTION= 10.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =99.411M     MAX =100.873 M
                      SLOPE        CHANNEL=0.015    FLOODPLAIN=0.015
                      N=0.07 DIST=101.6 N=-.05 DIST=105.0 N=0.07 DIST=106.8
                       DIST      ELEV      DIST       ELEV      DIST      ELEV
                       100.0     100.873   100.7     100.553    101.6      99.866
                       102.2      99.643   103.5      99.411    105.0      99.664
                       106.1     100.225   106.8     100.808
```

```
*                                                                              *
COMPUTE RATING CURVE ID=3 VALLEY SECTION=10.3 WHICH IS DIVIDED INTO 3 SECTIONS
                     ELEVATION >  MIN =98.571M     MAX =100.0    M
                     SLOPE        CHANNEL=0.0187   FLOODPLAIN=0.0187
                     N=0.07 DIST=102.3 N=-.05 DIST=105.1 N=0.07  DIST=110.5
                      DIST      ELEV      DIST      ELEV      DIST      ELEV
                      100.2      99.773   102.3      98.831   103.0      98.571
                      105.1      98.901   108.5      99.303   110.5     100.0
*                                                                              *
COMPUTE TRAVEL TIME ID=4      REACH NO= 10 NO OF VALLEY SECTIONS= 3
                    LENGTH= 2281 M          SLOPE=  .0259
*
ROUTE               ID=4       HYD NO= 12          INFLOW HYD ID=5
                    TIME INTERVAL=TRTI
PRINT HYD           ID=4    +1
*
ADD HYD             ID=1  COMBINED HYDROGRAPH NO= 112
                       ADD HYROGRAPH FROM ID= 4 AND ID= 6
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #13                                   *
COMPUTE HYD         ID=2      HYD UNIT NO=313    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA= 1.102 SQ KM     CURVE NO= CN13
                    CATCHMENT>     HEIGHT=   59 M  LENGTH= 2.281 KM
                    MASS RAINFALL= -RAIN ADJ13
PRINT HYD            ID=2           PEAK VOL CODE=+1
*
ADD HYD             ID=6  COMBINED HYDROGRAPH NO= 113
                       ADD HYROGRAPH FROM ID=1  AND ID=2
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #14
COMPUTE HYD         ID=5      HYD UNIT NO=314    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA= 1.61 SQ KM      CURVE NO=CN14
                    CATCHMENT>     HEIGHT= 105. M  LENGTH= 2.375 KM
                    MASS RAINFALL= -RAIN ADJ14
                                                                               *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 5 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
COMPUTE RATING CURVE ID= 1 VALLEY SECTION= 5.1 WHICH IS DIVIDED INTO 3 SECTIONS
                     ELEVATION>  MIN =98.269M     MAX =100.245 M
                     SLOPE>      CHANNEL=0.0054   FLOODPLAIN=0.0054
                     N=0.025 DIST=105.5 N=-.025 DIST=106.5 N=0.025 DIST=111.6
                      DIST      ELEV      DIST      ELEV      DIST      ELEV
                      100.0     100.0     104.4      98.402   105.5      98.269
                      106.5      98.394   111.6     100.245
*
COMPUTE RATING CURVE  ID=2 VALLEY SECTION= 5.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION>  MIN =98.208M     MAX =100.     M
                      SLOPE >     CHANNEL=.0063    FLOODPLAIN=.0063
                      N=0.05 DIST=10.0 N=-.03  DIST=14.7 N=0.05  DIST= 25.9
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                      0.0       100.0      7.4      99.248    10.0      98.344
                     12.0        98.208   13.3      98.266    14.7      98.673
                     25.9        99.381
*                                                                              *
COMPUTE TRAVEL TIME ID=3      REACH NO =5   NO OF VALLEY SECTIONS= 2
                    LENGTH= 1938  M         SLOPE=.030
*                                                                              *
ROUTE               ID=3       HYD NO=14          INFLOW HYD ID= 5
                    TIME INTERVAL=TRTI
PRINT HYD           ID=3    +1
ADD HYD              ID=4    COMBINED HYDROGRAPH NO =  114
                          ADD HYROGRAPH FROM ID=6 AND ID=3
*                                                                              *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 6 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
COMPUTE RATING CURVE  ID=1  VALLEY SECTION= 6.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =98.275M     MAX =100.5    M
                      SLOPE        CHANNEL=0.003    FLOODPLAIN=0.003
                      N=0.07 DIST=102. N=-.05 DIST=108.5 N=0.07  DIST=134.
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       100.0     100.1     100.8      99.115   102.0      98.698
                       105.0      98.275   106.4      98.370   108.5      98.635
                       109.5      99.186   130.5      99.640   134.0     100.0
```

```
*                                                                              *
COMPUTE RATING CURVE  ID=2  VALLEY SECTION= 6.3 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN =97.802M     MAX =100.0    M
                      SLOPE        CHANNEL=0.0032   FLOODPLAIN=0.0032
                      N=0.07 DIST=109. N=-.05 DIST=117.7 N=0.07  DIST=120.
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                       100.0      100.0      103.0       98.765    109.0       98.145
                       109.8       97.910    113.0       97.803    115.7       97.802
                       117.7       98.090    118.1       98.520    120.0       99.450
*                                                                              *
COMPUTE TRAVEL TIME ID=3      REACH NO =6    NO OF VALLEY SECTIONS=2
                    LENGTH= 2375  M          SLOPE=.017
*                                                                              *
ROUTE               ID=3       HYD NO=6              INFLOW HYD ID= 4
                    TIME INTERVAL=TRTI
PRINT HYD           ID=3    +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #15                                   *
COMPUTE HYD         ID=5      HYD UNIT NO=315     TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=3.294 SQ KM       CURVE NO= CN15
                    CATCHMENT>      HEIGHT=92     M  LENGTH= 1.625 KM
                    MASS RAINFALL= -RAIN ADJ15
ADD HYD             ID= 2 COMBINED HYDROGRAPH NO= 115
                       ADD HYROGRAPH FROM ID= 3 AND ID= 5
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #16                                   *
COMPUTE HYD         ID=1      HYD UNIT NO=316     TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA= .842 SQ KM       CURVE NO=CN16
                    CATCHMENT>      HEIGHT=40.5   M  LENGTH=2.375   KM
                    MASS RAINFALL= -RAIN ADJ16
ADD HYD                ID=6  COMBINED HYDROGRAPH NO= 116
                          ADD HYROGRAPHS FROM ID= 1 AND 2
PRINT HYD              ID=6 +1
*                                                                              *
*
*                  ---------------------------------------
*                   WATERFORD RIVER URBAN HYDROLOGY STUDY
*                  ---------------------------------------
*
*                         SOUTH BROOK TRIBUTARY
*
*
*
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #20                                   *
COMPUTE HYD         ID=5      HYD UNIT NO=320     TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=5.473 SQ KM       CURVE NO = CN20
                    CATCHMENT>     HEIGHT=   48 M  LENGTH= 3.375 KM
                    MASS RAINFALL= -RAIN ADJ20
*                                                                              *
*
PRINT HYD           ID=  5         PEAK VOL CODE=+1
*                                                                              *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 20  >>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
* HEAVY TREE ROAD ABOVE OLD BRIDGE STUCTURE
COMPUTE RATING CURVE  ID=1 VALLEY SECTION=20.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.933M     MAX=100.5    M
                      SLOPE >      CHANNEL=0.0169   FLOODPLAIN=0.0169
                      N=0.05 DIST=102.6 N=-.035 DIST=106.4 N=0.05  DIST=115.
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                                                                     98.        101.
                       100.0      100.0      102.2       99.403    102.6       99.114
                       103.4       98.933    104.1       99.111    106.4       99.399
                       111.0       99.473    112.0       99.770    115.     100.5
* BELOW PEARLTOWN ROAD BRIDGE                                                 *
COMPUTE RATING CURVE  ID=2 VALLEY SECTION=20.3 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.885M     MAX=100.0    M
                      SLOPE >      CHANNEL=0.021    FLOODPLAIN=0.021
                      N=.05 DIST=101.  N=-.04 DIST=106.4  N=0.05  DIST=113.4
                       DIST       ELEV       DIST       ELEV       DIST       ELEV
                        96.5       99.98     100.0       99.438    100.2       99.178
                       101.0       99.066    103.5       98.885    105.2       99.005
                       106.0       99.175    106.1       99.427    112.5       99.826
                       113.4      100.0
```

```
*ABOVE CONFLUENCE WITH STREAM FROM OLD BAY BULLS RD (ABOVE  HARBOUR ARTERIAL)  *
COMPUTE RATING CURVE  ID=3 VALLEY SECTION=20.4 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=97.512M     MAX=98.682  M
                      SLOPE >      CHANNEL=0.009    FLOODPLAIN=0.009
                      N=0.05 DIST=120.6 N=-.035 DIST=125.6 N=0.05  DIST=132.
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       100.0      98.682   105.0      98.397   112.3      98.172
                       116.6      98.280   119.0      97.985   120.6      97.567
                       122.3      97.539   124.2      97.512   125.6      97.624
                       129.0      98.347   132.0      99.200
*
COMPUTE TRAVEL TIME ID=4      REACH NO =20  NO OF VALLEY SECTIONS= 3
                    LENGTH= 4187            SLOPE= .016
* ROUTE HYDROGRAPH 320 DOWN REACH 20
ROUTE               ID= 4      HYD NO=120          INFLOW HYD ID=5
                    TIME INTERVAL=TRTI
PRINT HYD           ID=4    +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #21                                    *
COMPUTE HYD         ID=1      HYD UNIT NO=321    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=5.153 SQ KM        CURVE NO= CN21
                    CATCHMENT>     HEIGHT= 66   M  LENGTH= 4.187KM
                    MASS RAINFALL= -RAIN ADJ21
*
PRINT HYD               ID=1  +1
*
ADD HYD             ID=5  COMBINED HYDROGRAPH NO=121
                     ADD HYROGRAPH FROM ID= 1 AND ID=4
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #22                                    *
COMPUTE HYD         ID=1      HYD UNIT NO=322    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=1.090 SQ KM        CURVE NO=CN22
                    CATCHMENT>     HEIGHT=  25  M  LENGTH=1.938 KM
                    MASS RAINFALL= -RAIN ADJ22
PRINT HYD           ID=1  +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #23                                    *
COMPUTE HYD         ID=2      HYD UNIT NO=323    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=2.218 SQ KM        CURVE NO= CN23
                    CATCHMENT>     HEIGHT=  97  M  LENGTH=2.913 KM
                    MASS RAINFALL= -RAIN ADJ23
*
PRINT HYD            ID=2 +1
*                                                                              *
ADD HYD             ID=4  COMBINED HYDROGRAPH NO=123
                     ADD HYROGRAPH FROM ID=1  AND ID=2
*                                                                              *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 21 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
* DOWNSTREAM OF BAY BULLS ROAD
COMPUTE RATING CURVE  ID=1 VALLEY SECTION=21.1 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.48 M     MAX=100.0   M
                      SLOPE >      CHANNEL=0.0125   FLOODPLAIN=0.0125
                       N=0.04  DIST=101.3 N=-.03  DIST=103.6 N=0.04  DIST=106.8
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       100.0      99.579   101.0      99.319   101.3      98.573
                       103.2      98.48    103.6      98.547   103.9      99.368
                       106.0      99.559   106.8     100.0
* AT CREST GAUGE BELOW OLD BAY BULLS RD BRIDGE                                 *
COMPUTE RATING CURVE  ID=2 VALLEY SECTION=21.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=97.832M     MAX= 99.0   M
                      SLOPE >      CHANNEL=0.02667  FLOODPLAIN=0.02667
                       N=0.015 DIST=101.  N=-.03  DIST=106.  N=0.015 DIST=106.4
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       100.6      99.982   101.0      98.264   102.8      97.923
                       105.0      97.832   106.0      97.924   106.4     100.0
*                                                                              *
COMPUTE TRAVEL TIME ID=3      REACH NO = 21 NO OF VALLEY SECTIONS=2
                    LENGTH= 1662            SLOPE= .017
* ROUTE HYDROGRAPHS 322 AND 323 DOWN REACH  21
ROUTE               ID=3       HYD NO= 121          INFLOW HYD ID=4
                    TIME INTERVAL=TRTI
PRINT HYD           ID=3   +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT  #24                                   *
COMPUTE HYD         ID=2      HYD UNIT NO=324    TIME INTERVAL=RTI HOURS
                    DRAINAGE AREA=1.753 SQ KM        CURVE NO=CN24
                    CATCHMENT>     HEIGHT=   28 M  LENGTH= 1.662 KM
                    MASS RAINFALL= -RAIN ADJ24
```

```
*
PRINT HYD            ID=2  +1
* ADD ALL HYDROGRAPHS TO THE OUTLET OF 324                                    *
ADD HYD              ID= 1 COMBINED HYDROGRAPH NO=221
                      ADD HYROGRAPH FROM ID=2  AND ID=3
*
PRINT HYD            ID=1            PEAK VOL CODE=+1
* HYD221 (OUTFLOW AT OLD BAY BULLS)  '0' AND HYD220 SOUTH BROOK '+'           *
PLOT HYD             ID=1  AND  ID=5
* ADD ALL HYDROGRAPHS DOWN TO THE CONFLUENCE OF 321 AND 324                   *
ADD HYD              ID=4  COMBINED HYDROGRAPH NO= 224
                      ADD HYROGRAPH FROM ID=1  AND ID= 5
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #25                                  *
COMPUTE HYD          ID=1      HYD UNIT NO=325    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA=1.355 SQ KM        CURVE NO=CN25
                     CATCHMENT>     HEIGHT=  84  M  LENGTH= 3.563 KM
                     MASS RAINFALL= -RAIN ADJ25
*
PRINT HYD              ID=1  +1
*ADD HYROGRAPHS DOWN TO THE CONFLUENCE OF UNIT #25                            *
ADD HYD              ID= 5 COMBINED HYDROGRAPH NO= 125
                      ADD HYROGRAPH FROM ID= 1 AND ID= 4
*
PRINT HYD             ID=5
*                                                                            *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 22 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
* UPPER END OF BOWRING PARK NEAR END OF STORMDRAIN R.O.W.
COMPUTE RATING CURVE  ID=1 VALLEY SECTION= 221 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.984M     MAX=100.5    M
                      SLOPE >      CHANNEL=0.0096   FLOODPLAIN=0.0096
                       N=0.05  DIST=107.6 N=-.03  DIST=112.1 N=0.04  DIST=120.
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                                                              95.       100.5
                       100.0      99.923   105.5      99.303   106.0      99.139
                       107.6      99.059   109.1      99.007   110.4      98.984
                       112.1      99.055   113.9      99.354   118.0     100.0
                       120.      100.5
* BELOW SECOND FALLS  FROM WHERE SOUTH BROOK COMES UNDER THE HARBOUR ARTERIAL  *
COMPUTE RATING CURVE  ID=2 VALLEY SECTION= 222 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.778M     MAX=100.5    M
                      SLOPE >      CHANNEL=0.0193   FLOODPLAIN=0.0193
                       N=0.05  DIST=102.  N=-.045 DIST=108.7 N=0.04  DIST=120.
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       100.0      99.693   102.0      99.158   102.3      98.786
                       104.4      98.778   106.0      98.861   107.3      98.903
                       108.7      99.324   117.1      99.506   120.0     100.0
*IN OLD SWIMMING POND (ABONDONNED)  ABOVE COBBLED ARCHED BRIDGE                *
COMPUTE RATING CURVE  ID=3 VALLEY SECTION=22.3 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION >  MIN=98.825M     MAX=100.838 M
                      SLOPE >      CHANNEL=0.0082   FLOODPLAIN=0.0082
                       N=0.05  DIST=100.8 N=-.04  DIST=114.6 N=0.05  DIST=116.7
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                       100.0     100.838   100.4     100.573   100.8     100.186
                       100.9      99.810   106.5      98.962   110.7      98.883
                       112.5      98.825   113.7      98.851   114.6      99.184
                       114.7     100.0     116.7     100.778
*                                                                            *
COMPUTE TRAVEL TIME ID=4      REACH NO =22  NO OF VALLEY SECTIONS=3
                    LENGTH= 2625 M          SLOPE= .018
* ROUTE COMBINED HYDROGRAPH 125 DOWN REACH 22
ROUTE                ID= 4      HYD NO= 122          INFLOW HYD ID= 5
                     TIME INTERVAL=TRTI
PRINT HYD            ID=4    +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #26                                  *
COMPUTE HYD          ID=1      HYD UNIT NO=326    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA= 3.061 SQ KM    CURVE NO=CN26
                     CATCHMENT>     HEIGHT=173   M  LENGTH= 3.000 KM
                     MASS RAINFALL= -RAIN ADJ26
PRINT HYD             ID=1 +1
```

```
*                                                                              *
ADD HYD              ID=5  COMBINED HYDROGRAPH NO=222
                      ADD HYROGRAPH FROM ID= 4 AND ID=1
PRINT HYD            ID=5            PEAK VOL CODE=+1
* SOUTH BROOK OUTFLOW '0'  AND WATERFORD (BOATLAKE ) OUTFLOW '+'              *
PLOT HYD                  ID=5  AND ID=6
* ADD THE SIMULATED DISCHARGE FROM SOUTH BROOK TO WATERFORD BELOW BOATLAKE    *
ADD HYD                   ID=4 COMBINED HYDROGRAPH  NO=226
                             ADD HYROGRAPHS FROM ID=5 AND ID=6

*                                                                              *
*<<<<<<<<<<<<<<<<<<<<<<<<<<<<< ROUTING REACH 7 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
COMPUTE RATING CURVE  ID=1  VALLEY SECTION= 7.1 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION>  MIN=31.599M     MAX=34.879  M
                      SLOPE >     CHANNEL=0.01026  FLOODPLAIN=0.01026
                      N=0.015 DIST=0.1  N=-.04 DIST=7.925 N=0.07 DIST=21.031
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                                                             0.0     34.4
                         0.1     31.599     2.134    31.662     3.962    31.678
                         6.096   31.796     7.925    31.982     8.230    32.360
                        11.278   33.568    14.326    33.805    17.374    33.945
                        20.726   34.348    21.031    34.352
*                                                                              *
COMPUTE RATING CURVE  ID=2  VALLEY SECTION= 7.2 WHICH IS DIVIDED INTO 3 SECTIONS
                      ELEVATION>  MIN=30.519M     MAX=34.358  M
                      SLOPE >     CHANNEL=0.0044   FLOODPLAIN=0.0044
                     N=0.07 DIST=110.058 N=-.04 DIST=127.432 N=0.02 DIST=132.004
                       DIST      ELEV      DIST      ELEV      DIST      ELEV
                                                             99.0      34.4
                       100.000   33.257   101.219    33.331   102.743   33.080
                       105.182   32.868   107.620    32.708   110.058   31.885
                       112.497   31.602   114.935    31.177   116.764   30.771
                       118.898   30.675   120.422    30.629   122.250   30.536
                       123.470   30.519   124.689    30.602   125.298   30.811
                       125.603   30.997   127.432    31.652   128.956   32.430
                       130.480   33.413   132.004    34.358
COMPUTE TRAVEL TIME ID=3      REACH NO = 7  NO OF VALLEY SECTIONS= 2
                    LENGTH= 313 M            SLOPE=.008
*                                                                              *
ROUTE                ID=3       HYD NO=126          INFLOW HYD ID=4
                     TIME INTERVAL=TRTI
PRINT HYD            ID=3    +1
* COMPUTE HYDROGRAPH FOR HYDROLOGIC UNIT #27                                   *
COMPUTE HYD          ID=1       HYD UNIT NO=327    TIME INTERVAL=RTI HOURS
                     DRAINAGE AREA=0.413 SQ KM      CURVE NO= CN27
                     CATCHMENT>     HEIGHT= 173.5M  LENGTH=1.219 KM
                     MASS RAINFALL= -RAIN ADJ27
PRINT HYD            ID=1    +1
ADD HYD              ID=2  COMBINED  HYDROGRAPH NO =227
                       ADD HYROGRAPHS FROM ID=1 AND 3
PRINT HYD            ID=2         +1
STORE HYD            ID=1 ESTIMATED BASE FLOW HYD=198 DT=24 DA=0.01
                     BASEQC BASEQC BASEQC BASEQC
ADD HYD              ID=4 SIMULATED PLUS ESTIMATED BASEFLOW HYDROGRAPHS
                     COMBINED HYD NO=229 INPUTS= 2 AND 1
PRINT HYD            ID=4    +1
*>>>>>>>>>>>>>>>>>>                                                           *
* GAUGE AT KILBRIDE
*<<<<<<<<<<<<<<<<<<
PRINT HYD               ID=3  +1
*HYD227 (SIMULATED PLUS BASE FLOW) '0' AND HYD27 (MEASURED)  '+'              *
PLOT HYD                ID=4   AND  3
*                                                                              *
ERROR ANALYSIS                ID=4 AND 3
FINISH
```

APPENDIX J

DATA FILES FOR CALIBRATION AND VERIFICATION EVENTS

```
C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> JUNE10,1981/
C/00.00/08.00/
C/AMC 1/AMC I/
C/=RTI/=0.166667/*
L/(CDA)/
I19
```

0.0	0.3	0.8	1.3	1.5	1.8	2.0	2.3	2.5	2.8
2.8	3.0	3.3	3.5	3.8	4.3	4.3	4.5	4.8	5.3
5.5	5.8	6.0	6.3	6.5	6.5	6.8	7.0	7.3	7.5
7.5	7.8	7.8	8.0	8.5	9.3	10.3	11.8	13.5	14.3
14.5	15.8	17.6	18.6	19.8	20.8	21.3	22.1	23.1	23.6
24.3	24.8	25.6	26.3	26.6	26.8	27.1	27.3	27.8	27.8
28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
28.1	28.3	28.3	28.3	28.3	28.3	28.6	28.6	28.6	28.6
28.6	28.6	28.6	28.6	28.6	28.6	28.8	28.8	28.8	28.8
29.1	29.1	29.1	29.1	29.3	29.3	29.6	29.6	29.6	29.6
29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.8
29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	30.1
30.1	30.1	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3
30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.6	30.6
30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
30.6	30.6	30.8	30.8	0.0					

```
C/CN1/+76/
C/RAIN ADJ1/1.178/
C/CN2/+82/
C/RAIN ADJ2/1.209/
C/CN3/+88/
C/RAIN ADJ3/1.209/
C/CN4/+87/
C/RAIN ADJ4/1.164/
C/CN5/+93/
C/RAIN ADJ5/1.209/
C/CN6/+87/
C/RAIN ADJ6/1.148/
C/CN7/+91/
C/RAIN ADJ7/1.125/
C/CN8/+93/
C/RAIN ADJ8/0.918/
C/CN9/+88/
C/RAIN ADJ9/1.057/
C/CN10/+96/
C/RAIN ADJ10/1.003/
C/CN11/+85/
C/RAIN ADJ11/1.060/
C/CN12/+91/
C/RAIN ADJ12/1.005/
C/CN13/+88/
C/RAIN ADJ13/1.000/
C/CN14/+84/
C/RAIN ADJ14/1.067/
C/CN15/+94/
C/RAIN ADJ15/1.033/
C/CN16/+91/
C/RAIN ADJ16/0.999/
C/CN20/+78/
C/RAIN ADJ20/1.081/
C/CN21/+87/
C/RAIN ADJ21/1.001/
C/CN22/+91/
C/RAIN ADJ22/0.998/
C/CN23/+88/
C/RAIN ADJ23/0.998/
C/CN24/+91/
C/RAIN ADJ24/0.998/
C/CN25/+83/
C/RAIN ADJ25/1.000/
C/CN26/+84/
C/RAIN ADJ26/0.998/
C/CN27/+75/
C/RAIN ADJ27/0.998/
T
```

```
L/CATCHMENT/
D
IB
                    K=-107.100    TP=-11.520
L/CATCHMENT/
D
IB
                    K=-29.898     TP=-6.816
L/CATCHMENT/
D
IB
                    K=-12.816     TP=-4.624
L/CATCHMENT/
D
IB
                    K=-10.782     TP=-3.832
L/CATCHMENT/
D
IB
                    K=-15.444     TP=-5.600
L/CATCHMENT/
D
IB
                    K=-8.010      TP=-2.792
L/CATCHMENT/
D
IB
                    K=-7.362      TP=-2.832
L/CATCHMENT/
D
IB
                    K=-7.434      TP=-3.048
L/CATCHMENT/
D
IB
                    K=-8.982      TP=-2.904
L/CATCHMENT/
D
IB
                    K=-3.510      TP=-1.936
L/CATCHMENT/
D
IB
                    K=-11.682     TP=-4.112
L/CATCHMENT/
D
IB
                    K=-3.672      TP=-1.920
L/CATCHMENT/
D
IB
                    K=-16.056     TP=-5.184
L/CATCHMENT/
D
IB
                    K=-7.362      TP=-2.912
L/CATCHMENT/
D
IB
                    K=-5.958      TP=-2.888
L/CATCHMENT/
D
IB
                    K=-14.382     TP=-3.744
L/CATCHMENT/
D
IB
                    K=-22.068     TP=-7.672
L/CATCHMENT/
D
IB
                    K=-21.366     TP=-7.616
```

```
L/CATCHMENT/
D
IB
                    K=-17.460     TP=-4.344
L/CATCHMENT/
D
IB
                    K=-9.972      TP=-3.840
L/CATCHMENT/
D
IB
                    K=-14.382     TP=-4.232
L/CATCHMENT/
D
IB
                    K=-13.014     TP=-4.120
L/CATCHMENT/
D
IB
                    K=-6.786      TP=-3.304
L/CATCHMENT/
D
IB
                    K=-2.178      TP=-0.960
T
C/TRTI/.25/*
C/BASEQA/.136/
L/DONOVANS GAUGE/
I45
STORE HYD           ID=1      HYD=55    DT=.25    DA=11.4
      DISCHARGE MEASURED FROM HYDROMETRIC STATION NEAR DONOVVANS
                      .146      .149      .151      .154      .157
                .160  .162      .165      .169      .173      .182
                .190  .200      .209      .219      .228      .238
                .248  .258      .267      .272      .278      .283
                .289  .314      .377      .444      .527      .620
                .712  .806      .908     1.040     1.160     1.240
               1.330 1.420     1.520     1.610     1.630     1.640
               1.640 1.650     1.660     1.660     1.670     1.680
               1.680 1.690     1.700     1.700     1.700     1.680
               1.670 1.660     1.650     1.630     1.620     1.610
               1.600 1.590     1.570     1.560     1.550     1.540
               1.520 1.510     1.500     1.490     1.470     1.460
               1.450 1.440     1.430     1.410     1.400     1.390
               1.380 1.380     1.370     1.360     1.350     1.340
               1.330 1.320     1.310     1.310     1.300     1.290
               1.280 1.270     1.270     1.260     1.250     1.240
               1.230 1.230     1.220     1.210     1.200     1.200
               1.190 1.180     1.170     1.160     1.160     1.150
               1.140 1.140     1.130     1.130     1.120     1.120
               1.110 1.110     1.100     1.100     1.090     1.090
               1.080 1.070     1.070     1.060     1.050     1.040
               1.030 1.020     1.020     1.010     1.000      .993
                .985  .977      .971      .966      .961      .956
                .951  .946      .942      .938      .934      .930
                .926  .921      .917      .913      .909      .905
                .901  .898      .894      .890      .886      .882
                .878  .874      .870      .866      .862      .858
                .854  .850      .847      .843      .839      .836
                .832  .828      .824      .821      .817      .814
                .810  .807      .804      .800      .797      .794
                .790  .787      .784      .781      .778      .775
                .771  .768      .765      .762      .759      .756
                .753  .749      .748      .753      .757      .750
                .742  .733      .724      .716      .707      .702
                .702  .697      .693      .688      .683      .678
                .674  .669      .664      .659      .654      .649
                .644  .639      .634      .629      .624      .619
                .614  .609      .604      .599      .594      .589
                .584  .579      .574      .569      .564      .559
                .554  .549      .545      .540      .535      .530
                .526  .521      .516      .512      .507      .503
                .499  .494      .490      .486      .481      .477
                .473  .468      .464      .460      .456      .452
```

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L/STORE HYD            ID=1 ESTIMATED BASE FLOW/
D14
IB3
*NO DATA AVAILABLE FOR MOUNT PEARL'S GAUGE
* COMPUTED HYDROGRAPH DOWN TO MOUNT PEARL
PLOT HYD
C/BASEQC/1.020/
L/GAUGE AT KILBRIDE/
I90
STORE HYD          ID=3      HYD=27     DT=.25     DA=52.7
                MEASURED DISCHARGE  FROM HYDROMETRIC STATION AT KILBRIDE
                          1.020      1.020      1.020      1.020      1.020
                1.030     1.040      1.050      1.050      1.070      1.100
                1.230     1.360      1.490      1.570      1.650      1.730
                1.810     1.890      1.990      2.090      2.250      2.420
                2.580     2.750      2.920      3.100      3.280      3.480
                3.690     3.900      4.120      4.360      4.620      4.870
                5.130     5.360      5.530      5.720      5.900      6.090
                6.210     6.340      6.460      6.570      6.640      6.720
                6.800     6.870      6.910      6.910      6.920      6.920
                6.930     6.930      6.940      6.940      6.950      6.950
                6.960     6.960      6.960      6.930      6.900      6.870
                6.830     6.800      6.760      6.720      6.680      6.640
                6.590     6.560      6.520      6.480      6.440      6.400
                6.350     6.300      6.240      6.190      6.140      6.080
                6.030     5.980      5.930      5.900      5.860      5.830
                5.800     5.760      5.730      5.690      5.660      5.630
                5.590     5.560      5.530      5.490      5.460      5.430
                5.400     5.360      5.330      5.300      5.270      5.230
                5.200     5.170      5.140      5.100      5.070      5.040
                5.010     4.980      4.940      4.910      4.880      4.850
                4.810     4.780      4.750      4.720      4.680      4.650
                4.620     4.590      4.550      4.520      4.490      4.460
                4.430     4.410      4.390      4.370      4.350      4.330
                4.310     4.290      4.260      4.240      4.220      4.200
                4.180     4.160      4.140      4.120      4.100      4.070
                4.050     4.030      4.010      3.990      3.970      3.950
                3.930     3.900      3.880      3.860      3.840      3.820
                3.800     3.780      3.760      3.740      3.720      3.700
                3.670     3.650      3.630      3.610      3.600      3.600
                3.590     3.580      3.570      3.560      3.550      3.550
                3.540     3.530      3.520      3.510      3.500      3.500
                3.490     3.480      3.470      3.460      3.450      3.450
                3.440     3.430      3.420      3.410      3.400      3.390
                3.380     3.370      3.360      3.350      3.340      3.330
                3.320     3.310      3.300      3.290      3.280      3.270
                3.260     3.250      3.240      3.220      3.210      3.200
                3.190     3.180      3.160      3.150      3.140      3.130
                3.120     3.100      3.090      3.080      3.070      3.050
                3.040     3.030      3.020      3.010      3.000      2.990
                2.980     2.960      2.950      2.940      2.920      2.910
                2.900     2.880      2.870      2.860      2.840      2.830
                2.820     2.800      2.790      2.780      2.760      2.750
                2.740     2.720      2.710      2.700      2.690      2.680
                2.670     2.660      2.650      2.640      2.630      2.620
                2.610     2.600      2.590      2.580      2.570      2.560
                2.550     2.540      2.530      2.520      2.510      2.500
                2.490     2.480      2.470      2.460      2.450      2.440
                2.430     2.420      2.410      2.400      2.400      2.390
                2.380     2.370      2.360      2.350      2.340      2.330
                2.320     2.310      2.300      2 300      2.290      2.280
                2.270     2.260      2.250      2.240      2.230      2.220
                2.210     2.210      2.200      2.190      2.180      2.170
```

2.160	2.150	2.140	2.140	2.130	2.120
2.110	2.100	2.090	2.080	2.070	2.060
2.060	2.050	2.040	2.030	2.020	2.010
2.000	1.990	1.980	1.970	1.960	1.950
1.940	1.930	1.920	1.910	1.900	1.900
1.890	1.880	1.870	1.860	1.850	1.840
1.830	1.820	1.820	1.820	1.820	1.820
1.820	1.820	1.820	1.820	1.820	1.820
1.820	1.810	1.810	1.810	1.810	1.810
1.810	1.810	1.810	1.800	1.800	1.800
1.790	1.790	1.790	1.780	1.780	1.780
1.770	1.770	1.770	1.760	1.760	1.760
1.750	1.740	1.730	1.720	1.710	1.700
1.680	1.670	1.660	1.650	1.640	1.630
1.620	1.610	1.600	1.590	1.580	1.570
1.560	1.550	1.540	1.530	1.520	1.510
1.500	1.500	1.490	1.490	1.480	1.480
1.470	1.470	1.470	1.460	1.460	1.460
1.450	1.450	1.450	1.450	1.450	1.450
1.450	1.450	1.440	1.440	1.420	1.410
1.410	1.400	1.390	1.380	1.380	1.380
1.370	1.370	1.370	1.370	1.370	1.360
1.360	1.360	1.350	1.350	1.340	1.330
1.330	1.320	1.320	1.310	1.300	1.300
1.290	1.280	1.280	1.270	1.260	1.260
1.260	1.260	1.260	1.260	1.260	1.260
1.260	1.260	1.260	1.260	1.260	1.260
1.260	1.260	1.260	1.250	1.250	1.250
1.240	1.240	1.230	1.230	1.220	1.220
1.210	1.210	1.200	1.200	1.190	1.190
1.180	1.180	1.170	1.170	1.160	1.160
1.150	1.150	1.140	1.140	1.140	1.140
1.140	1.130	1.130	1.130	1.130	1.130
1.130	1.120	1.120	1.120	1.120	1.120
1.110	1.110	1.110	1.110	1.110	1.110
1.100	1.100	1.100	1.100	1.100	1.100
1.090	1.090	1.090	1.090	1.090	1.090

Q,,R

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C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> JULY 8,1981/
C/00.00/23.50/
C/AMC &/AMC I/
C/=RTI/=0.166667/*
L/(CDA)/
I10
                      0.0   0.0   0.0   1.2   2.0   2.6   2.8   3.0   3.2   3.4
                      3.8   3.8   3.8   3.8   3.8   3.8   3.8   3.8   4.4   4.6
                      4.6   4.8   5.0   5.4   6.0   6.2   6.2   6.3   6.3   6.7
                      9.7   9.7   9.7   9.9  10.1  10.5  10.7  10.9  11.1  11.5
                     12.1  13.1  17.1  23.2  24.6  26.8  28.4  29.0  30.0  30.4
                     30.8  31.1  31.9  32.5  32.9  32.9  32.9  32.9  32.9  33.1
                     33.1  33.3  33.3  33.7  34.3  34.9  35.3  35.9  36.5  37.1
                     37.5  38.3  39.5  40.7  42.1  43.3  43.8  44.6  45.0  45.4
                     46.0  46.2  46.6  46.6  46.8  46.8  47.0   0.0
PRINT HYD           ID=5    +1
C/CN1/+76/
C/RAIN ADJ1/0.985/
C/CN2/+82/
C/RAIN ADJ2/1.033/
C/CN3/+88/
C/RAIN ADJ3/1.033/
C/CN4/+87/
C/RAIN ADJ4/0.974/
C/CN5/+93/
C/RAIN ADJ5/1.033/
C/CN6/+87/
C/RAIN ADJ6/1.006/
C/CN7/+91/
C/RAIN ADJ7/0.891/
C/CN8/+93/
C/RAIN ADJ8/0.942/
C/CN9/+88/
C/RAIN ADJ9/0.773/
C/CN10/+96/
C/RAIN ADJ10/0.971/
C/CN11/+85/
C/RAIN ADJ11/0.764/
C/CN12/+91/
C/RAIN ADJ12/0.945/
C/CN13/+88/
C/RAIN ADJ13/1.000/
C/CN14/+84/
C/RAIN ADJ14/0.738/
C/CN15/+94/
C/RAIN ADJ15/0.888/
C/CN16/+91/
C/RAIN ADJ16/1.046/
C/CN20/+78/
C/RAIN ADJ20/0.925/
C/CN21/+87/
C/RAIN ADJ21/1.000/
C/CN22/+91/
C/RAIN ADJ22/1.076/
C/CN23/+88/
C/RAIN ADJ23/1.076/
C/CN24/+91/
C/RAIN ADJ24/1.076/
C/CN25/+83/
C/RAIN ADJ25/0.998/
C/CN26/+84/
C/RAIN ADJ26/1.076/
C/CN27/+75/
C/RAIN ADJ27/1.076/
T
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```
L/CATCHMENT/
D
IB
                    K=-107.100    TP=-11.520
L/CATCHMENT/
D
IB
                    K=-29.898     TP=-6.816
L/CATCHMENT/
D
IB
                    K=-12.816     TP=-4.624
L/CATCHMENT/
D
IB
                    K=-10.782     TP=-3.832
L/CATCHMENT/
D
IB
                    K=-15.444     TP=-5.600
L/CATCHMENT/
D
IB
                    K=-8.010      TP=-2.792
L/CATCHMENT/
D
IB
                    K=-7.362      TP=-2.832
L/CATCHMENT/
D
IB
                    K=-7.434      TP=-3.048
L/CATCHMENT/
D
IB
                    K=-8.982      TP=-2.904
L/CATCHMENT/
D
IB
                    K=-3.510      TP=-1.936
L/CATCHMENT/
D
IB
                    K=-11.682     TP=-4.112
L/CATCHMENT/
D
IB
                    K=-3.672      TP=-1.920
L/CATCHMENT/
D
IB
                    K=-16.056     TP=-5.184
L/CATCHMENT/
D
IB
                    K=-10.602     TP=-3.304
L/CATCHMENT/
D
IB
                    K=-7.362      TP=-2.912
L/CATCHMENT/
D
IB
                    K=-5.958      TP=-2.888
L/CATCHMENT/
D
IB
                    K=-14.382     TP=-3.744
L/CATCHMENT/
D
IB
                    K=-22.068     TP=-7.672
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L/CATCHMENT/
D
IB
                    K=-21.366     TP=-7.616
L/CATCHMENT/
D
IB
                    K=-17.460     TP=-4.344
L/CATCHMENT/
D
IB
                    K=-9.972      TP=-3.840
L/CATCHMENT/
D
IB
                    K=-14.382     TP=-4.232
L/CATCHMENT/
D
IB
                    K=-13.014     TP=-4.120
L/CATCHMENT/
D
IB
                    K=-6.786      TP=-3.304
L/CATCHMENT/
D
IB
                    K=-2.178      TP=-0.960
T
C/TRTI/.25/*
C/BASEQA/.157/
L/DONOVANS GAUGE/
I51
STORE HYD           ID=1      HYD=55    DT=.25     DA=11.4
          DISCHARGE MEASUED FROM HYDROMETRIC STATION NEAR DONOVANS
                                                .157      .157      .172
                    .186      .203      .209      .211      .212      .214
                    .216      .218      .220      .222      .224      .238
                    .256      .275      .294      .315      .338      .363
                    .381      .395      .409      .424      .746     1.200
                   1.440     1.610     1.780     1.950     2.140     2.280
                   2.320     2.360     2.400     2.440     2.470     2.510
                   2.550     2.610     2.700     2.790     2.880     2.970
                   3.090     3.240     3.400     3.560     3.710     3.790
                   3.830     3.870     3.910     3.950     3.980     3.970
                   3.960     3.950     3.940     3.930     3.920     3.910
                   3.870     3.810     3.760     3.700     3.650     3.590
                   3.540     3.490     3.440     3.380     3.330     3.280
                   3.220     3.170     3.130     3.090     3.050     3.010
                   2.970     2.930     2.890     2.850     2.820     2.780
                   2.740     2.710     2.670     2.630     2.600     2.560
                   2.520     2.490     2.450     2.410     2.370     2.340
                   2.300     2.260     2.230     2.200     2.180     2.150
                   2.120     2.090     2.060     2.030     2.000     1.980
                   1.950     1.920     1.890     1.860     1.830     1.810
                   1.780     1.760     1.730     1.710     1.680     1.650
                   1.630     1.600     1.580     1.550     1.530     1.500
                   1.480     1.470     1.450     1.430     1.410     1.390
                   1.380     1.360     1.340     1.320     1.310     1.290
                   1.280     1.260     1.240     1.230     1.210     1.200
                   1.180     1.170     1.150     1.140     1.120     1.110
                   1.090     1.080     1.060     1.040     1.020     1.000
                    .979      .965      .952      .940      .928      .915
                    .903      .891      .880      .871      .861      .851
                    .842      .833      .824      .816      .810      .801
                    .790      .785      .780      .775      .769      .764
                    .759      .754      .749      .743      .737      .730
                    .724      .717      .710      .704      .697      .691
                    .684      .678      .671      .665      .658      .652
                    .645      .638      .632      .625      .619      .612
                    .606      .599      .593      .586      .580      .573
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                .566      .560      .553      .547      .540      .534
                .527      .521      .514      .508      .502      .499
                .495      .491      .487      .484      .480      .476
                .472      .469      .465      .461      .458      .455
                .451      .448      .445      .441      .438      .434
                .431      .428      .424      .421      .418      .415
                .412      .409      .406      .403      .400      .397
                .394      .391      .388      .385      .382      .379
                .377      .376      .374      .372      .370      .368
                .366      .364      .363      .361      .359      .357
                .355      .353      .351      .350      .348      .346
                .344      .342      .340      .339      .337      .335
                .334      .332
C/BASEQB/.423/
L/MOUNT PEARL GAUGE/
I51
STORE HYD          ID=1      HYD=58    DT=.25    DA=16.6
          MEASURED DISCHARGE  FROM HYDROMETRIC STATION AT MOUNT PEARL
                                        .425      .437      .456
                .463      .475      .487      .499      .512      .524
                .537      .549      .562      .576      .589      .603
                .620      .647      .674      .700      .728      .755
                .784      .813      .884      .966     1.060     1.400
               1.800     2.240     2.690     2.870     3.060     3.240
               3.410     3.390     3.370     3.360     3.340     3.330
               3.310     3.290     3.350     3.490     3.640     3.800
               3.970     4.140     4.320     4.550     4.790     5.020
               5.250     5.290     5.330     5.380     5.330     5.290
               5.250     5.200     5.160     5.120     5.040     4.960
               4.870     4.790     4.700     4.620     4.530     4.450
               4.370     4.280     4.200     4.120     4.040     3.950
               3.870     3.790     3.710     3.640     3.570     3.520
               3.460     3.410     3.370     3.320     3.260     3.210
               3.160     3.110     3.060     3.010     2.970     2.920
               2.870     2.820     2.770     2.720     2.680     2.630
               2.590     2.540     2.500     2.460     2.430     2.400
               2.380     2.350     2.320     2.290     2.270     2.240
               2.220     2.190     2.170     2.150     2.120     2.100
               2.070     2.050     2.030     2.010     1.980     1.960
               1.930     1.910     1.890     1.860     1.840     1.820
               1.800     1.770     1.750     1.730     1.710     1.690
               1.680     1.660     1.650     1.640     1.630     1.620
               1.600     1.590     1.580     1.570     1.550     1.540
               1.530     1.510     1.500     1.490     1.470     1.460
               1.450     1.440     1.420     1.410     1.400     1.390
               1.380     1.370     1.360     1.350     1.340     1.330
               1.310     1.300     1.290     1.280     1.270     1.250
               1.240     1.230     1.220     1.210     1.190     1.180
               1.170     1.160     1.150     1.150     1.140     1.140
               1.130     1.130     1.120     1.120     1.110     1.110
               1.100     1.100     1.090     1.090     1.080     1.080
               1.070     1.070     1.060     1.060     1.050     1.040
               1.040     1.030     1.030     1.020     1.020     1.010
               1.010     1.000      .998      .992      .987      .982
                .977      .972      .966      .961      .956      .951
                .946      .942      .937      .933      .928      .924
                .919      .914      .909      .904      .899      .893
                .888      .883      .877      .872      .867      .861
                .856      .851      .846      .840      .835      .830
                .825      .820      .815      .810      .805      .800
                .795      .790      .785      .780      .775      .770
                .766      .761      .756      .751      .747      .742
                .737      .732      .727      .723      .718      .713
                .709      .704      .700      .699      .698      .698
                .697      .697      .696      .696      .695      .695
                .695      .694      .694      .693      .693      .692
                .692      .691      .691      .691      .690      .690
^/BASEQC/0.902/
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C/B
L/GAUGE AT KILBRIDE/
I51
STORE HYD          ID=3 HYD=27  DT=.25     DA=52.7
                MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE
                                                .915       .913       .911
                    .909       .907       .906       .904       .902       .933
                    .968      1.000      1.040      1.070      1.110      1.140
                   1.180      1.220      1.260      1.300      1.340      1.370
                   1.410      1.560      1.760      1.970      2.200      2.430
                   2.660      2.900      3.160      3.590      4.020      4.480
                   4.960      5.440      5.960      6.440      6.940      7.450
                   7.980      8.500      8.800E     9.100E     9.400      9.630
                   9.870     10.100     10.300     10.600     10.800     11.100
                  11.300     11.600     11.800     12.000     12.200     12.400
                  12.600     12.800     13.000     13.200     13.400     13.500
                  13.500     13.600     13.600     13.600     13.600     13.600
                  13.600     13.500     13.300     13.100     12.900     12.700
                  12.500     12.300     12.100     11.900     11.700     11.500
                  11.300     11.100     11.000     10.800     10.600     10.400
                  10.200     10.000      9.850      9.680      9.500      9.330
                   9.150      8.980      8.800      8.630      8.450      8.270
                   8.100      7.920      7.750      7.630      7.530      7.440
                   7.340      7.240      7.140      7.040      6.940      6.840
                   6.740      6.650      6.550      6.460      6.360      6.270
                   6.180      6.090      5.990      5.910      5.820      5.730
                   5.650      5.560      5.470      5.390      5.310      5.230
                   5.170      5.110      5.060      5.000      4.940      4.890
                   4.830      4.780      4.720      4.670      4.610      4.560
                   4.500      4.440      4.390      4.340      4.280      4.230
                   4.180      4.120      4.070      4.020      3.960      3.910
                   3.860      3.810      3.760      3.710      3.670      3.620
                   3.570      3.520      3.480      3.450      3.430      3.400
                   3.370      3.350      3.320      3.300      3.270      3.240
                   3.220      3.190      3.170      3.140      3.110      3.090
                   3.060      3.040      3.010      2.990      2.970      2.940
                   2.920      2.890      2.870      2.850      2.820      2.800
                   2.770      2.750      2.730      2.700      2.680      2.650
                   2.630      2.610      2.580      2.560      2.540      2.520
                   2.490      2.470      2.460      2.450      2.430      2.420
                   2.410      2.400      2.380      2.370      2.360      2.340
                   2.330      2.320      2.310      2.290      2.280      2.270
                   2.250      2.240      2.230      2.220      2.200      2.190
                   2.180      2.170      2.150      2.140      2.130      2.110
                   2.100      2.090      2.080      2.060      2.050      2.040
                   2.020      2.010      2.000      1.990      1.970      1.960
                   1.950      1.930      1.920      1.910      1.900      1.880
                   1.870      1.860      1.850      1.830      1.820      1.810
                   1.810      1.800      1.790      1.780      1.770      1.770
                   1.760      1.750      1.740      1.740      1.730      1.720
                   1.710      1.710      1.700      1.690      1.680      1.680
                   1.670      1.660      1.650      1.650      1.640      1.630
                   1.620      1.620      1.610      1.600      1.590      1.590
                   1.580      1.570      1.560      1.560      1.560
Q,,R
```

```
C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> SEPT11,1981/
C/00.00/08.00/
C/AMC 2/AMC I/
C/*RTI/=0.166667/*
L/(CDA)/
I17
                    0.0   0.0   0.0    .2    .2    .2    .2    .2    .2    .2
                     .2    .2    .4    .9   1.1   1.3   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5
                   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.7
                   2.2   2.2   2.2   2.2   2.2   3.7   4.5   5.8   7.3   9.3
                  11.0  11.9  12.5  13.8  15.3  16.6  19.2  22.5  23.3  24.6
                  25.9  26.6  27.2  28.3  29.4  30.2  30.5  30.5  30.5  30.5
                  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5  30.5
                  30.5  30.5  30.7  30.7  30.7  30.9  30.9  30.9  30.9  30.9
                  30.9  30.9  31.3  31.3  31.3  31.3  31.3  31.3  31.3  31.7
                  32.5  32.9  32.9  32.9  32.9  32.9  32.9  32.9  32.9  33.3
                   0.0
C/CN1/+76/
C/RAIN ADJ1/1.082/
C/CN2/+82/
C/RAIN ADJ2/0.989/
C/CN3/+88/
C/RAIN ADJ3/0.989/
C/CN4/+87/
C/RAIN ADJ4/1.099/
C/CN5/+93/
C/RAIN ADJ5/0.989/
C/CN6/+87/
C/RAIN ADJ6/1.021/
C/CN7/+91/
C/RAIN ADJ7/1.015/
C/CN8/+93/
C/RAIN ADJ8/1.094/
C/CN9/+88/
C/RAIN ADJ9/1.026/
C/CN10/+96/
C/RAIN ADJ10/1.047/
C/CN11/+85/
C/RAIN ADJ11/1.021/
C/CN12/+91/
C/RAIN ADJ12/1.089/
C/CN13/+88/
C/RAIN ADJ13/1.002/
C/CN14/+84/
C/RAIN ADJ14/1.023/
C/CN15/+94/
C/RAIN ADJ15/1.051/
C/CN16/+91/
C/RAIN ADJ16/1.094/
C/CN20/+78/
C/RAIN ADJ20/1.171/
C/CN21/+87/
C/RAIN ADJ21/1.084/
C/CN22/+91/
C/RAIN ADJ22/1.156/
C/CN23/+88/
C/RAIN ADJ23/1.156/
C/CN24/+91/
C/RAIN ADJ24/1.156/
C/CN25/+83/
C/RAIN ADJ25/1.017/
C/CN26/+84/
C/RAIN ADJ26/1.156/
C/CN27/+75/
C/RAIN ADJ27/1.156/
T
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```
L/CATCHMENT/
D
IB
                    K=-107.100   TP=-11.520
L/CATCHMENT/
D
IB
                    K=-29.898    TP=-6.816
L/CATCHMENT/
D
IB
                    K=-12.816    TP=-4.624
L/CATCHMENT/
D
IB
                    K=-10.782    TP=-3.832
L/CATCHMENT/
D
IB
                    K=-15.444    TP=-5.600
L/CATCHMENT/
D
IB
                    K=-8.010     TP=-2.792
L/CATCHMENT/
D
IB
                    K=-7.362     TP=-2.832
L/CATCHMENT/
D
IB
                    K=-7.434     TP=-3.048
L/CATCHMENT/
D
IB
                    K=-8.982     TP=-2.904
L/CATCHMENT/
D
IB
                    K=-3.510     TP=-1.936
L/CATCHMENT/
D
IB
                    K=-11.682    TP=-4.112
L/CATCHMENT/
D
IB
                    K=-3.672     TP=-1.920
L/CATCHMENT/
D
IB
                    K=-16.056    TP=-5.184
L/CATCHMENT/
D
IB
                    K=-10.602    TP=-3.304
L/CATCHMENT/
D
IB
                    K=-7.362     TP=-2.912
L/CATCHMENT/
D
IB
                    K=-5.958     TP=-2.888
L/CATCHMENT/
D
IB
                    K=-14.382    TP=-3.744
L/CATCHMENT/
D
IB
                    K=-22.068    TP=-7.672
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L/CATCHMENT/
D
IB
                    K=-21.366    TP=-7.616
L/CATCHMENT/
D
IB
                    K=-17.460   TP=-4.344
L/CATCHMENT/
D
IB
                    K=-9.972    TP=-3.840
L/CATCHMENT/
D
IB
                    K=-14.382    TP=-4.232
L/CATCHMENT/
D
IB
                    K=-13.014    TP=-4.120
L/CATCHMENT/
D
IB
                    K=-6.786    TP=-3.304
L/CATCHMENT/
D
IB
                    K=-2.178    TP=-0.960
T
C/TRTI/.25/*
C/BASEQA/.215/
L/DONOVANS GAUGE/
I87
STORE HYD          ID=1      HYD=55    DT=.25     DA=11.4
DISCHARGE MEASURED FROM HYDROMETRIC STATION NEAR DONOVANS
                    .223      .223      .223      .224      .224
.224      .224      .225      .225      .225      .225
.226      .226      .226      .226      .226      .227
.227      .227      .227      .228      .228      .228
.228      .229      .229      .229      .229      .229
.230      .230      .230      .230      .230      .230
.229      .228      .227      .227      .226      .225
.225      .224      .223      .222      .222      .221
.220      .219      .219      .218      .217      .217
.217      .217      .216      .216      .216      .216
.216      .216      .215      .215      .216      .255
.437      .659      .917     1.250     1.560     1.810
2.080     2.370     2.690     2.970     3.120     3.270
3.440     3.540     3.530     3.520     3.450     3.380
3.310     3.240     3.170     3.100     3.040     2.970
2.910     2.840     2.780     2.720     2.660     2.600
2.540     2.480     2.470     2.460     2.450     2.440
2.430     2.420     2.410     2.400     2.390     2.380
2.370     2.360     2.350     2.340     2.330     2.330
2.320     2.310     2.300     2.290     2.270     2.240
2.220     2.200     2.170     2.150     2.120     2.100
2.070     2.050     2.030     2.000     1.980     1.950
1.930     1.910     1.890     1.870     1.840     1.820
1.800     1.780     1.760     1.740     1.710     1.690
1.670     1.650     1.630     1.610     1.590     1.580
1.560     1.540     1.530     1.510     1.490     1.480
1.460     1.440     1.430     1.410     1.390     1.380
1.360     1.340     1.330     1.310     1.290     1.280
1.260     1.250     1.230     1.220     1.210     1.190
1.180     1.160     1.150     1.130     1.120     1.100
1.090     1.070     1.060     1.040     1.030     1.020
1.000      .988      .975      .961      .954      .946
 .939      .932      .926      .919      .913      .907
 .900      .894      .887      .881      .875      .869
 .863      .857      .851      .845      .839      .833
 .827      .821      .815      .809      .803      .797
 .791      .785      .779      .773      .767      .761
```

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 .755    .749    .743    .737    .731    .725
 .721    .718    .714    .710    .707    .703
 .699    .695    .692    .688    .684    .680
 .677    .673    .670    .666    .663    .659
 .656    .652    .649    .646    .642    .639
 .635    .632    .628    .625    .621    .618
 .615    .611    .608    .604    .604    .604
 .603    .603    .603    .602    .602    .602
 .601    .601    .601    .601    .600    .600
 .600    .599    .599    .599    .598    .599
 .599    .599    .600    .600    .600    .601
 .652    .704    .760    .805    .845    .872
 .869    .866    .862    .859    .856    .852
 .849    .846    .842    .839    .834    .829
 .824    .819    .813    .808    .803    .798
 .793    .788    .783    .778    .772    .767
 .762    .757    .752    .747    .742    .737
 .732    .726    .721    .716    .712    .707
 .703    .699    .695    .691    .687    .683
 .679    .676    .672    .668    .664    .661
 .657    .653    .650    .646    .643    .638
 .634    .629    .625    .620    .616    .612
 .605    .597    .590    .583    .576    .569
 .562    .555    .549    .542    .535    .528
 .521    .514    .507    .503    .502    .501
 .501    .500    .499    .499    .498    .497
 .497    .496    .495    .495    .494    .493
 .493    .492    .491    .491    .490    .489
 .489    .488    .487    .487    .486    .485
 .485    .484    .483    .483    .482    .481
 .481    .480    .479    .479    .477    .474
 .472    .469    .466    .464    .461    .458
 .456    .453    .450    .448    .445    .443
 .440    .437    .435    .432    .430    .427
 .425    .422    .419    .417    .414    .412
 .409    .407    .404    .402    .400    .397
 .395    .392    .390    .388    .385    .383
 .380    .378    .376    .374    .373    .372
 .371    .369    .368    .367    .365    .364
 .363    .362    .360    .359    .358    .356
 .355    .354    .353    .351    .350    .349
 .347    .346    .345    .344    .342    .341
 .340    .338    .337    .336    .335    .333
 .332    .331    .330    .330    .329    .329
 .328    .328    .327    .327    .326    .326
 .325    .324    .324    .323    .323    .322
 .322    .321    .321    .320    .320    .319
 .319    .318    .318    .317    .316    .316
C/BASEQB/.268/
L/MOUNT PEARL GAUGE/
I90
STORE HYD          ID=1      HYD=58     DT=.25      DA=16.6
      MEASURED DISCHARGE  FROM HYDROMETRIC STATION AT MOUNT PEARL
                  .268    .268    .268    .269    .269
 .269    .270    .270    .270    .270    .271
 .271    .271    .271    .285    .304    .323
 .341    .358    .366    .375    .380    .378
 .375    .373    .370    .368    .366    .363
 .361    .358    .356    .354    .352    .349
 .347    .345    .342    .340    .338    .336
 .333    .331    .329    .327    .327    .326
 .326    .326    .325    .325    .324    .324
 .323    .323    .322    .322    .322    .321
 .321    .320    .320    .319    .319    .318
 .318    .318    .317    .317    .402    .512
 .630    .757    .899   1.120   1.370   1.640
1.940   2.270   2.640   3.090   3.600   4.150
4.700   5.050   5.220   5.080   4.940   4.800
4.670   4.540   4.410   4.290   4.170   4.060
```

3.940	3.830	3.720	3.610	3.510	3.400
3.300	3.250	3.200	3.150	3.110	3.060
3.010	2.970	2.920	2.880	2.830	2.790
2.750	2.700	2.670	2.640	2.610	2.570
2.540	2.520	2.490	2.460	2.430	2.400
2.370	2.340	2.320	2.290	2.270	2.240
2.210	2.190	2.160	2.130	2.110	2.080
2.060	2.030	2.000	1.980	1.950	1.930
1.900	1.870	1.850	1.820	1.800	1.780
1.760	1.740	1.720	1.700	1.690	1.670
1.650	1.640	1.620	1.600	1.590	1.570
1.550	1.530	1.510	1.500	1.480	1.470
1.450	1.430	1.420	1.400	1.390	1.380
1.360	1.350	1.330	1.310	1.300	1.280
1.270	1.250	1.230	1.220	1.200	1.190
1.170	1.160	1.140	1.130	1.120	1.100
1.090	1.070	1.060	1.050	1.040	1.040
1.030	1.020	1.020	1.010	1.000	.996
.989	.982	.976	.971	.965	.959
.953	.947	.941	.935	.929	.924
.918	.912	.906	.900	.894	.888
.882	.877	.871	.865	.859	.853
.848	.842	.836	.831	.825	.819
.814	.808	.802	.797	.792	.787
.781	.776	.775	.773	.772	.771
.770	.768	.767	.766	.764	.763
.762	.760	.759	.758	.756	.755
.754	.753	.751	.750	.749	.747
.746	.745	.743	.742	.741	.739
.738	.737	.736	.734	.733	.732
.730	.729	.728	.727	.728	.729
.730	.731	.732	.733	.734	.735
.737	.738	.739	.740	.741	.814
.895	.978	1.030	1.060	1.100	1.120
1.110	1.100	1.100	1.090	1.080	1.080
1.070	1.060	1.050	1.050	1.040	1.030
1.030	1.020	1.010	1.000	.995	.987
.979	.973	.966	.959	.952	.945
.939	.932	.925	.918	.911	.905
.898	.891	.884	.877	.870	.864
.857	.850	.844	.837	.833	.829
.825	.821	.816	.812	.808	.804
.800	.796	.792	.788	.784	.780
.776	.772	.768	.764	.760	.756
.752	.749	.745	.741	.737	.733
.729	.725	.721	.717	.713	.709
.705	.701	.697	.693	.689	.685
.682	.678	.674	.670	.666	.664
.661	.658	.656	.653	.650	.648
.645	.643	.640	.638	.635	.633
.630	.628	.625	.622	.620	.617
.615	.612	.610	.607	.605	.602
.600	.597	.595	.592	.590	.587
.585	.583	.580	.578	.575	.573
.570	.568	.566	.563	.561	.558
.556	.554	.551	.549	.546	.544
.541	.540	.539	.537	.536	.535
.534	.533	.531	.530	.529	.528
.527	.525	.524	.523	.522	.521
.519	.518	.517	.516	.515	.514
.512	.511	.510	.509	.508	.506
.505	.504	.503	.502	.500	.499
.498	.497	.496	.494	.493	.492
.491	.490	.489	.487	.486	.485
.484	.483	.482	.481	.479	.478
.478	.478	.478	.477	.477	.477
.477	.477	.477	.477	.476	.476
.476	.476	.476	.476	.476	.475
.475	.475	.475	.475	.475	.475
.474	.474	.474	.474	.474	.474
.474	.473	.473	.473	.473	.473
.473	.472	.472	.472	.472	.472

C/BASEQC/0.660/

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L/GAUGE AT KILBRIDE/
I90
STORE HYD          ID=3 HYD=27  DT=.25    DA=52.7
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MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE

.657	.660	.662	.664	.667	.669
.671	.673	.676	.678	.680	.683
.685	.687	.690	.692	.699	.709
.718	.728	.737	.747	.757	.766
.776	.785	.791	.797	.804	.810
.816	.823	.829	.835	.842	.848
.852	.854	.855	.857	.858	.860
.861	.862	.864	.865	.867	.868
.870	.871	.872	.871	.871	.870
.869	.869	.868	.867	.867	.866
.866	.865	.864	.864	.863	.862
.862	.862	.862	.862	.861	.861
.861	.916	1.120	1.500	1.900	2.340
2.870	3.460	4.120	4.850	5.640	6.440
6.890	7.250	7.620	8.030	8.320	8.470
8.610	8.760	8.890	8.990	9.110	9.210
9.030	8.840	8.660	8.480	8.310	8.130
7.950	7.770	7.630	7.510	7.390	7.270
7.140	7.020	6.900	6.780	6.650	6.550
6.520	6.500	6.450	6.350	6.250	6.140
6.030	5.910	5.820	5.720	5.620	5.530
5.440	5.350	5.260	5.170	5.090	5.000
4.920	4.840	4.750	4.670	4.590	4.510
4.430	4.380	4.340	4.300	4.250	4.210
4.170	4.130	4.080	4.040	4.000	3.960
3.920	3.880	3.840	3.800	3.760	3.730
3.690	3.650	3.610	3.570	3.540	3.500
3.460	3.430	3.390	3.360	3.320	3.280
3.250	3.220	3.190	3.160	3.140	3.110
3.080	3.060	3.030	3.000	2.980	2.950
2.920	2.890	2.870	2.840	2.810	2.790
2.760	2.730	2.710	2.680	2.660	2.630
2.610	2.580	2.560	2.540	2.510	2.490
2.470	2.440	2.420	2.400	2.380	2.360
2.340	2.320	2.300	2.290	2.280	2.270
2.250	2.240	2.230	2.220	2.210	2.210
2.200	2.190	2.180	2.170	2.160	2.150
2.140	2.130	2.120	2.110	2.100	2.090
2.090	2.080	2.070	2.060	2.050	2.040
2.030	2.020	2.010	2.000	1.990	1.980
1.970	1.970	1.960	1.960	1.950	1.950
1.940	1.930	1.930	1.920	1.920	1.910
1.900	1.900	1.890	1.890	1.880	1.880
1.870	1.860	1.860	1.850	1.850	1.840
1.840	1.830	1.820	1.820	1.820	1.820
1.810	1.810	1.810	1.810	1.800	1.800
1.800	1.790	1.790	1.790	1.790	1.780
1.780	1.780	1.780	1.770	1.770	1.770
1.770	1.760	1.760	1.760	1.760	1.760
1.760	1.790	1.980	2.170	2.210	2.210
2.210	2.210	2.210	2.210	2.220	2.240
2.260	2.280	2.300	2.320	2.340	2.330
2.320	2.300	2.290	2.270	2.260	2.240
2.230	2.210	2.200	2.190	2.170	2.160
2.150	2.130	2.120	2.110	2.100	2.090
2.080	2.060	2.050	2.040	2.030	2.020
2.010	1.990	1.980	1.970	1.960	1.950
1.940	1.930	1.910	1.900	1.890	1.880
1.870	1.860	1.840	1.830	1.820	1.810
1.800	1.790	1.780	1.780	1.770	1.770
1.760	1.760	1.750	1.750	1.740	1.740
1.730	1.730	1.720	1.720	1.710	1.710
1.700	1.700	1.690	1.690	1.680	1.680
1.670	1.670	1.660	1.660	1.650	1.640
1.640	1.630	1.630	1.620	1.620	1.610
1.610	1.600	1.600	1.590	1.590	1.580
1.580	1.570	1.570	1.560	1.560	1.550
1.550	1.540	1.540	1.540	1.530	1.530
1.520	1.520	1.520	1.510	1.510	1.500
1.500	1.500	1.490	1.490	1.480	1.480
1.480	1.470	1.470	1.460	1.460	1.450

	1.450	1.450	1.440	1.440	1.430	1.430
	1.430	1.420	1.420	1.410	1.410	1.410
	1.400	1.400	1.390	1.390	1.390	1.380
	1.380	1.370	1.370	1.370	1.360	1.360
	1.350	1.350	1.350	1.340	1.340	1.330
	1.330	1.330	1.320	1.320	1.320	1.310
	1.310	1.310	1.300	1.300	1.300	1.300
	1.290	1.290	1.290	1.290	1.280	1.280
	1.280	1.270	1.270	1.270	1.270	1.260
	1.260	1.260	1.250	1.250	1.250	1.250
	1.240	1.240	1.240	1.230	1.230	1.230
	1.230	1.220	1.220	1.220	1.220	1.210
	1.210	1.210	1.200	1.200	1.200	1.200
	1.190	1.190	1.190	1.180	1.180	1.180
	1.180	1.180	1.180	1.180	1.180	1.180
	1.180	1.180	1.180	1.180	1.180	1.180
	1.180	1.180	1.180	1.180	1.180	1.180

Q,,R

```
C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> SEPT23,1981/
C/00.00/22.5/
C/AMC $/AMC I/
C/=RTI/=0.166667/*
L/(CDA)/
I20
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0.0	0.0	.2	.2	.5	.5	1.0	1.2	1.5	1.7
2.2	2.2	2.5	2.7	3.0	3.0	3.2	3.7	4.2	4.7
5.5	6.0	6.7	7.5	8.2	8.7	8.9	9.4	9.7	10.2
10.4	10.7	11.2	11.4	11.7	11.9	11.9	11.9	12.2	12.4
12.4	12.7	12.9	13.2	13.4	13.7	13.9	14.2	14.4	14.9
15.4	15.6	15.9	16.1	16.1	16.4	16.6	16.9	17.1	17.6
18.1	18.1	18.9	19.1	19.4	20.1	20.6	20.9	21.1	21.4
21.6	21.9	22.1	22.4	22.6	23.1	23.6	23.8	23.8	23.8
24.3	25.3	26.3	27.1	27.8	28.8	29.3	29.6	29.8	29.8
29.8	30.1	30.1	30.3	30.3	30.3	30.3	30.3	30.6	30.6
30.6	30.8	31.0	31.0	31.5	31.8	31.8	32.0	32.5	32.5
32.8	33.0	33.8	34.8	35.5	35.8	35.8	36.0	36.3	36.5
36.8	36.8	37.3	37.8	37.8	37.8	37.8	37.8	37.8	37.8
38.0	38.0	38.0	38.0	38.0	38.0	38.3	38.3	38.3	38.3
38.3	38.3	38.3	38.3	38.5	38.8	39.0	39.5	40.2	40.7
41.5	42.0	42.5	42.7	43.2	44.0	44.5	44.7	45.2	45.5
46.0	46.2	46.7	47.2	47.7	47.9	48.2	48.4	49.2	49.9
50.4	50.9	51.2	51.7	51.9	52.4	52.7	52.9	53.2	53.2
53.4	53.4	53.4	53.7	53.7	0.0				

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PRINT HYD          ID=5    +1

C/CN1/+76/
C/RAIN ADJ1/0.991/
C/CN2/+82/
C/RAIN ADJ2/1.009/
C/CN3/+88/
C/RAIN ADJ3/1.009/
C/CN4/+87/
C/RAIN ADJ4/0.985/
C/CN5/+93/
C/RAIN ADJ5/1.009/
C/CN6/+87/
C/RAIN ADJ6/0.984/
C/CN7/+91/
C/RAIN ADJ7/0.859/
C/CN8/+93/
C/RAIN ADJ8/0.926/
C/CN9/+88/
C/RAIN ADJ9/0.736/
C/CN10/+96/
C/RAIN ADJ10/0.963/
C/CN11/+85/
C/RAIN ADJ11/0.726/
C/CN12/+91/
C/RAIN ADJ12/0.930/
C/CN13/+88/
C/RAIN ADJ13/0.999/
C/CN14/+84/
C/RAIN ADJ14/0.695/
C/CN15/+94/
C/RAIN ADJ15/0.914/
C/CN16/+91/
C/RAIN ADJ16/1.159/
C/CN20/+78/
C/RAIN ADJ20/0.949/
C/CN21/+87/
C/RAIN ADJ21/1.050/
C/CN22/+91/
C/RAIN ADJ22/1.265/
C/CN23/+88/
C/RAIN ADJ23/1.265/
C/CN24/+91/
C/RAIN ADJ24/1.265/
C/CN25/+83/
C/RAIN ADJ25/1.006/
C/CN26/+84/
C/RAIN ADJ26/1.265/
C/CN27/+75/
C/RAIN ADJ27/1.265/
T
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L/CATCHMENT/
D
IB
                K=-107.100    TP=-11.520
L/CATCHMENT/
D
IB
                K=-29.898     TP=-6.816
L/CATCHMENT/
D
IB
                K=-12.816     TP=-4.624
L/CATCHMENT/
D
IB
                K=-10.782     TP=-3.832
L/CATCHMENT/
D
IB
                K=-15.444     TP=-5.600
L/CATCHMENT/
D
IB
                K=-8.010      TP=-2.792
L/CATCHMENT/
D
IB
                K=-7.362      TP=-2.832
L/CATCHMENT/
D
IB
                K=-7.434      TP=-3.048
L/CATCHMENT/
D
IB
                K=-8.982      TP=-2.904
L/CATCHMENT/
D
IB
                K=-3.510      TP=-1.936
L/CATCHMENT/
D
IB
                K=-11.682     TP=-4.112
L/CATCHMENT/
D
IB
                K=-3.672      TP=-1.920
L/CATCHMENT/
D
IB
                K=-16.056     TP=-5.184
L/CATCHMENT/
D
IB
                K=-10.602     TP=-3.304
L/CATCHMENT/
D
IB
                K=-7.362      TP=-2.912
L/CATCHMENT/
D
IB
                K=-5.958      TP=-2.888
L/CATCHMENT/
D
IB
                K=-14.382     TP=-3.744
L/CATCHMENT/
D
IB
                K=-22.068     TP=-7.672
```

```
L/CATCHMENT/
D
IB
                    K=-21.366     TP=-7.616
L/CATCHMENT/
D
IB
                    K=-17.460     TP=-4.344
L/CATCHMENT/
D
IB
                    K=-9.972      TP=-3.840
L/CATCHMENT/
D
IB
                    K=-14.382     TP=-4.232
L/CATCHMENT/
D
IB
                    K=-13.014     TP=-4.120
L/CATCHMENT/
D
IB
                    K=-6.786      TP=-3.304
L/CATCHMENT/
D
IB
                    K=-2.178      TP=-0.960
T
C/TRTI/.25/*
L/STORE HYD            ID=1 ESTIMATED BASE FLOW/
D14
IB3
*  NO DATA AVAILABLE FOR DONOVAN'S GAUGE
*  COMPUTED HYDROGRAPH DOWN TO DONOVANS
PLOT HYD             IDI=5
C/BASEQB/.425/
L/MOUNT PEARL GAUGE/
I68
STORE HYD          ID=1      HYD=58     DT=.25     DA=16.6
                MEASURED DISCHARGE  FROM HYDROMETRIC STATION AT MOUNT PEARL
                                                                      .425
                    .426      .428      .430      .431      .433      .435
                    .436      .438      .439      .441      .449      .476
                    .505      .533      .562      .591      .621      .651
                    .682      .713      .735      .750      .766      .781
                    .797      .813      .829      .846      .862      .886
                    .914      .942      .970     1.000     1.030     1.060
                   1.100     1.130     1.160     1.200     1.230     1.270
                   1.320     1.360     1.410     1.450     1.500     1.560
                   1.610     1.660     1.710     1.770     1.820     1.880
                   1.970     2.050     2.130     2.210     2.290     2.370
                   2.410     2.430     2.440     2.460     2.480     2.490
                   2.510     2.520     2.540     2.540     2.540     2.540
                   2.530     2.530     2.530     2.530     2.530     2.670
                   2.820     2.910     2.950     2.990     3.040     3.080
                   3.120     3.120     3.110     3.090     3.080     3.060
                   3.050     3.030     3.020     3.010     2.990     2.980
                   2.960     2.950     2.930     2.910     2.900     2.900
                   2.950     3.000     3.060     3.110     3.160     3.210
                   3.260     3.320     3.370     3.430     3.490     3.540
                   3.600     3.660     3.700     3.730     3.760     3.780
                   3.810     3.840     3.820     3.780     3.740     3.710
                   3.670     3.630     3.590     3.550     3.520     3.480
                   3.440     3.400     3.360     3.310     3.270     3.230
                   3.190     3.150     3.110     3.070     3.030     3.000
                   2.960     2.920     2.880     2.840     2.800     2.770
                   2.730     2.690     2.660     2.620     2.580     2.550
                   2.510     2.480     2.450     2.410     2.380     2.350
                   2.330     2.300     2.280     2.260     2.240     2.220
                   2.200     2.180     2.160     2.140     2.120     2.100
                   2.080     2.060     2.030     2.010     1.990     1.970
                   1.950     1.940     1.950     1.960     1.970     1.970
```

1.970	1.970	1.960	1.950	1.950	1.940
1.930	1.930	1.910	1.900	1.880	1.870
1.850	1.840	1.830	1.810	1.800	1.790
1.770	1.760	1.750	1.730	1.720	1.710
1.690	1.680	1.670	1.650	1.640	1.630
1.620	1.610	1.600	1.580	1.570	1.560
1.540	1.530	1.520	1.510	1.490	1.480
1.470	1.460	1.450	1.440	1.430	1.420
1.410	1.410	1.400	1.390	1.380	1.370
1.360	1.350	1.340	1.330	1.320	1.310
1.300	1.290	1.280	1.270	1.260	1.250
1.240	1.230	1.220	1.210	1.200	1.190
1.180	1.170	1.160	1.160	1.150	1.140
1.130	1.120	1.110	1.100	1.100	1.090
1.090	1.090	1.080	1.080	1.070	1.070
1.060	1.060	1.060	1.050	1.050	1.040
1.040	1.030	1.030	1.030	1.020	1.020
1.010	1.010	1.000	1.000	.996	.992
.988	.984	.980	.976	.972	.969
.965	.961	.957	.954	.950	.946
.943	.939	.935	.932	.928	.924
.920	.917	.913	.909	.906	.902
.898	.894	.891	.887	.883	.879
.875	.871	.867	.863	.859	.855
.852	.848	.844	.840	.836	.832
.829	.825	.821	.817	.813	.809
.806	.802	.798	.795	.791	.788
.784	.781	.777	.773	.770	.766
.763	.759	.756	.752	.748	.745
.741	.738	.734	.731	.727	.724
.720	.716	.713	.709	.706	.702
.699	.695	.691	.688	.684	.681
.677	.674	.670	.668	.665	.663
.660	.658	.655	.653	.651	.648

C/BASEQC/1.280/

L/GAUGE AT KILBRIDE/

I96

STORE HYD ID=3 HYD=27 DT=.25 DA=52.7

MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE

					1.280
1.280	1.280	1.280	1.280	1.290	1.300
1.310	1.310	1.320	1.330	1.370	1.420
1.470	1.520	1.570	1.650	1.740	1.840
1.950	2.020	2.070	2.120	2.160	2.210
2.260	2.320	2.370	2.420	2.470	2.530
2.580	2.640	2.700	2.760	2.820	2.890
2.960	3.070	3.170	3.280	3.380	3.490
3.610	3.740	3.870	4.010	4.150	4.260
4.350	4.460	4.570	4.690	4.780	4.840
5.040	5.250	5.460	5.680	5.920	6.150
6.230	6.270	6.320	6.360	6.410	6.450
6.500	6.550	6.590	6.640	6.690	6.730
6.780	6.820	6.900	7.000	7.100	7.200
7.300	7.400	7.500	7.600	7.670	7.690
7.710	7.730	7.750	7.780	7.800	7.820
7.790	7.740	7.690	7.650	7.610	7.570
7.540	7.520	7.510	7.500	7.640	7.820
8.000	8.170	8.350	8.530	8.710	8.910
9.120	9.350	9.570	9.790	10.000	10.200
10.200	10.500	10.900	11.400	11.900	12.300
12.500	12.500	12.400	12.300	12.200	12.100
12.000	11.900	11.700	11.500	11.400	11.200
11.100	10.900	10.600	10.400	10.200	10.000
9.820	9.640	9.460	9.280	9.090	8.920
8.760	8.600	8.430	8.270	8.110	7.990
7.870	7.750	7.630	7.530	7.420	7.320
7.210	7.100	7.000	6.890	6.790	6.680
6.600	6.520	6.450	6.370	6.290	6.220
6.140	6.060	5.970	5.880	5.790	5.700
5.610	5.570	5.530	5.490	5.450	5.410
5.370	5.340	5.310	5.280	5.260	5.230
5.210	5.180	5.150	5.130	5.110	5.080
5.060	5.030	5.010	4.980	4.960	4.930

4.910	4.880	4.860	4.830	4.800	4.770
4.740	4.710	4.680	4.640	4.610	4.580
4.550	4.520	4.490	4.450	4.420	4.390
4.360	4.330	4.300	4.260	4.230	4.200
4.170	4.140	4.110	4.070	4.040	4.020
4.010	3.990	3.970	3.960	3.940	3.930
3.910	3.900	3.880	3.860	3.850	3.830
3.820	3.800	3.790	3.770	3.760	3.740
3.730	3.710	3.700	3.690	3.670	3.650
3.630	3.610	3.590	3.570	3.550	3.530
3.510	3.490	3.470	3.450	3.430	3.410
3.390	3.370	3.350	3.330	3.320	3.300
3.280	3.260	3.240	3.220	3.210	3.190
3.170	3.150	3.130	3.120	3.100	3.080
3.070	3.050	3.030	3.010	3.000	2.980
2.960	2.940	2.930	2.910	2.890	2.870
2.860	2.850	2.840	2.830	2.820	2.800
2.790	2.780	2.770	2.760	2.750	2.740
2.730	2.720	2.710	2.700	2.690	2.680
2.670	2.660	2.650	2.640	2.630	2.620
2.610	2.590	2.590	2.580	2.570	2.560
2.550	2.540	2.530	2.520	2.510	2.500
2.490	2.480	2.470	2.460	2.450	2.440
2.430	2.420	2.410	2.390	2.380	2.370
2.360	2.350	2.340	2.320	2.310	2.300
2.290	2.280	2.260	2.250	2.240	2.230
2.220	2.210	2.200	2.180	2.170	2.160
2.150	2.140	2.130	2.120	2.110	2.100
2.100	2.090	2.090	2.080	2.080	2.080
2.070	2.070	2.060	2.060	2.050	2.050
2.040	2.040	2.030	2.030	2.020	2.020
2.010	2.010	2.000	2.000	1.990	1.990
1.980	1.980	1.980	1.970	1.970	1.960
1.960	1.950	1.950	1.940	1.940	1.930
1.930	1.920	1.920	1.920	1.910	1.910
1.900	1.900	1.890	1.890	1.880	1.880
1.870	1.870	1.860	1.860	1.860	1.850
1.850	1.840	1.840	1.840	1.830	1.830
1.820	1.820	1.820	1.810	1.810	1.810
1.800	1.800	1.790	1.790	1.790	1.780
1.780	1.780	1.770	1.770	1.770	1.760
1.760	1.760	1.750	1.750	1.750	1.740
1.740	1.740	1.730	1.730	1.730	1.730
1.720	1.720	1.720	1.710	1.710	1.710
1.700	1.700	1.700	1.700	1.690	1.690
1.690	1.690	1.690	1.680	1.680	1.680
1.680	1.680	1.670	1.670	1.670	1.670
1.670	1.660	1.660	1.660	1.660	1.660
1.650	1.650	1.650	1.650	1.650	1.640
1.640	1.640	1.640	1.640	1.630	1.630
1.630	1.630	1.630	1.620	1.620	1.620
1.620	1.620	1.620	1.610	1.610	1.610
1.610	1.610	1.600	1.600	1.600	1.600
1.600	1.590	1.590	1.590	1.590	1.590
1.580	1.580	1.580	1.580	1.580	1.580
1.570	1.570	1.570	1.570	1.570	1.570
1.560	1.560	1.560	1.560	1.560	1.560
1.560	1.560	1.560	1.560	1.560	1.550
1.550	1.550	1.550	1.550	1.550	1.550
1.550	1.550	1.550	1.540	1.540	1.540

```
C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> OCT.10,1981/
C/00.00/01.5/
C/AMC 1/AMC III/
C/=RTI/=0.166667/*
L/(CDA)/
I27
                          0.0   0.0    .2    .2    .2    .2    .2    .5    .7    .9
                           .9   1.2   1.2   1.4   1.4   1.6   2.1   2.3   2.8   3.3
                          3.7   4.2   5.3   6.3   7.0   7.2   7.4   7.7   7.9   8.4
                          8.8   9.3   9.5   9.8  10.2  10.5  10.7  10.9  11.4  12.5
                         13.7  14.6  15.6  17.2  18.6  19.8  21.4  24.2  26.0  27.2
                         29.1  31.6  33.5  35.6  37.2  39.5  42.3  43.5  45.3  46.0
                         46.5  46.7  46.9  47.2  47.4  47.9  48.1  48.3  48.6  48.8
                         49.3  49.5  49.7  50.2  50.7  51.1  51.6  52.1  52.3  52.5
                         52.8  52.8  52.8  53.2  53.5  53.7  54.1  54.1  54.1  54.4
                         54.8  55.8  56.2  56.7  56.9  57.2  57.6  57.9  57.9  57.9
                         57.9  57.9  57.9  57.9  57.9  58.1  58.1  58.1  58.1  58.1
                         58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1
                         58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1
                         58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1  58.1
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3  58.3
                         58.3  58.3  58.3  58.3  58.3  58.3  58.5  58.8  58.8  58.8
                         58.8  59.0  59.0  59.0  59.0  59.2  59.2  59.2  59.2  59.2
                         59.2  59.2  59.2  59.2  59.2  59.4  59.6  59.6  60.2  60.5
                         60.5  61.9  63.2   0.0
PRINT HYD               ID=5    +1
C/CN1/+87/
C/RAIN ADJ1/0.887/
C/CN2/+92/
C/RAIN ADJ2/0.802/
C/CN3/+92/
C/RAIN ADJ3/0.802/
C/CN4/+92/
C/RAIN ADJ4/0.908/
C/CN5/+98/
C/RAIN ADJ5/0.863/
C/CN6/+95/
C/RAIN ADJ6/0.802/
C/CN7/+98/
C/RAIN ADJ7/0.997/
C/CN8/+98/
C/RAIN ADJ8/1.005/
C/CN9/+92/
C/RAIN ADJ9/1.161/
C/CN10/+99/
C/RAIN ADJ10/1.003/
C/CN11/+96/
C/RAIN ADJ11/1.170/
C/CN12/+96/
C/RAIN ADJ12/1.005/
C/CN13/+95/
C/RAIN ADJ13/1.000/
C/CN14/+95/
C/RAIN ADJ14/1.189/
C/CN15/+98/
C/RAIN ADJ15/1.132/
C/CN16/+95/
C/RAIN ADJ16/1.088/
C/CN20/+89/
C/RAIN ADJ20/1.012/
C/CN21/+96/
C/RAIN ADJ21/1.046/
C/CN22/+97/
C/RAIN ADJ22/1.147/
C/CN23/+97/
C/RAIN ADJ23/1.147/
```

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C/CN24/+98/
C/RAIN ADJ24/1.147/
C/CN25/+95/
C/RAIN ADJ25/1.008/
C/CN26/+95/
C/RAIN ADJ26/1.147/
C/CN27/+92/
C/RAIN ADJ27/1.147/
T
L/CATCHMENT/
D
IB
                    K=-47.600   TP=-10.080
L/CATCHMENT/
D
IB
                    K=-13.288   TP=-5.964
L/CATCHMENT/
D
IB
                    K=-5.696    TP=-4.046
L/CATCHMENT/
D
IB
                    K=-4.792    TP=-3.353
L/CATCHMENT/
D
IB
                    K=-6.864    TP=-4.900
L/CATCHMENT/
D
IB
                    K=-3.560    TP=-2.443
L/CATCHMENT/
D
IB
                    K=-3.272    TP=-2.478
L/CATCHMENT/
D
IB
                    K=-3.304    TP=-2.667
L/CATCHMENT/
D
IB
                    K=-3.992    TP=-2.541
L/CATCHMENT/
D
IB
                     K=-1.560   TP=-1.694
L/CATCHMENT/
D
IB
                     K=-5.192   TP=-3.598
L/CATCHMENT/
D
IB
                     K=-1.632   TP=-1.680
L/CATCHMENT/
D
IB
                     K=-7.136   TP=-4.536
L/CATCHMENT/
D
IB
                     K=-4.712   TP=-2.891
L/CATCHMENT/
D
IB
                     K=-3.272   TP=-2.548
L/CATCHMENT/
D
IB
                     K=-2.648   TP=-2.527
L/CATCHMENT/
D
IB
                     K=-6.392   TP=-3.276
```

```
L/CATCHMENT/
D
IB
                    K=-9.808    TP=-6.713
L/CATCHMENT/
D
IB
                    K=-9.496    TP=-6.664
L/CATCHMENT/
D
IB
                    K=-7.760    TP=-3.801
L/CATCHMENT/
D
IB
                    K=-4.432    TP=-3.360
L/CATCHMENT/
D
IB
                    K=-6.392    TP=-3.703
L/CATCHMENT/
D
IB
                    K=-5.784    TP=-3.605
L/CATCHMENT/
D
IB
                    K=-3.016    TP=-2.891
L/CATCHMENT/
D
IB
                    K=-0.968    TP=-0.840
T
C/TRTI/.25/*
C/BASEQA/0.491/
  DONOVANS GAUGE/
I31
STORE HYD           ID=1      HYD=55    DT=.25     DA=11.4
          DISCHARGE MEASUED FROM HYDROMETRIC STATION NEAR DONOVANS
                                                                  .507
                    .505      .503      .500      .498      .496  .494
                    .491      .493      .517      .540      .564  .587
                    .612      .637      .661      .687      .714  .753
                    .793      .833      .873      .916      .962 1.010
                   1.070     1.120     1.170     1.230     1.320 1.550
                   1.780     2.040     2.320     2.630     2.950 3.570
                   4.250     4.970     5.760     6.270     6.430 6.590
                   6.770     6.950     7.130     7.250     7.330 7.420
                   7.500     7.590     7.670     7.760     7.820 7.830
                   7.830     7.830     7.840     7.840     7.840 7.830
                   7.760     7.700     7.640     7.580     7.520 7.460
                   7.400     7.330     7.270     7.210     7.150 7.090
                   7.000     6.890     6.770     6.660     6.550 6.440
                   6.340     6.230     6.120     6.020     5.910 5.810
                   5.710     5.600     5.500     5.400     5.300 5.210
                   5.120     5.020     4.930     4.850     4.760 4.670
                   4.590     4.520     4.440     4.370     4.300 4.220
                   4.150     4.070     4.000     3.930     3.860 3.800
                   3.730     3.660     3.590     3.520     3.450 3.390
                   3.320     3.250     3.190     3.130     3.070 3.010
                   2.950     2.890     2.830     2.770     2.730 2.690
                   2.660     2.620     2.590     2.550     2.520 2.480
                   2.440     2.410     2.370     2.340     2.310 2.270
                   2.240     2.210     2.180     2.140     2.110 2.080
                   2.050     2.010     1.980     1.950     1.920 1.890
                   1.860     1.830     1.820     1.800     1.790 1.780
                   1.760     1.750     1.730     1.720     1.700 1.690
                   1.680     1.660     1.650     1.640     1.620
    $EQB/.760/
```

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L/MOUNT PEARL GAUGE/
I31
STORE HYD          ID=1      HYD=58    DT=.25     DA=16.6
                MEASURED DISCHARGE  FROM HYDROMETRIC STATION AT MOUNT PEARL
                                                                      .790
                    .788      .786      .784      .782      .780      .778
                    .776      .774      .772      .770      .768      .766
                    .764      .762      .760      .761      .813      .869
                    .927      .985     1.050     1.120     1.210     1.300
                   1.390     1.480     1.580     1.680     1.780     2.190
                   2.790     3.500     4.330     5.230     5.740     6.240
                   6.750     7.260     7.850     8.530     9.210     9.800
                  10.100    10.400    10.800    11.200    11.600    11.600
                  11.600    11.600    11.600    11.600    11.600    11.600
                  11.600    11.600    11.600    11.500    11.500    11.500
                  11.500    11.500    11.500    11.500    11.500    11.500
                  11.500    11.400    11.200    11.000    10.800    10.600
                  10.400    10.300    10.100     9.950     9.790     9.630
                   9.470     9.300     9.130     8.950     8.780     8.610
                   8.430     8.260     8.080     7.910     7.750     7.590
                   7.430     7.290     7.160     7.020     6.890     6.760
                   6.630     6.520     6.420     6.320     6.220     6.120
                   6.020     5.920     5.820     5.730     5.630     5.530
                   5.430     5.340     5.250     5.150     5.060     4.970
                   4.880     4.790     4.710     4.620     4.540     4.450
                   4.360     4.280     4.190     4.110     4.030     3.940
                   3.860     3.790     3.730     3.690     3.640     3.600
                   3.560     3.520     3.470     3.430     3.390     3.350
                   3.300     3.260     3.230     3.190     3.150     3.110
                   3.070     3.030     2.990     2.950     2.910     2.880
                   2.840     2.800     2.760     2.730     2.690     2.660
                   2.620     2.580     2.550     2.510     2.480     2.460
                   2.450     2.440     2.430     2.410     2.400
    QC/2.600/
L/GAUGE AT KILBRIDE/
I31
STORE HYD          ID=3 HYD=27  DT=.25     DA=52.7
                MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE
                                                                      2.670
                   2.650     2.640     2.630     2.620     2.600     2.590
                   2.580     2.580     2.580     2.570     2.570     2.570
                   2.560     2.560     2.560     2.690     2.820     2.960
                   3.100     3.250     3.420     3.610     3.800     4.000
                   4.220     4.430     4.650     4.870     5.180     5.960
                   6.680     7.390     8.480     9.950    11.500    13.200
                  15.400    18.100    22.100    25.000    27.300    31.800
                  35.700    37.400    39.100    39.700    39.500    39.200
                  38.900    38.600    38.300    37.900    37.600    37.200
                  36.900    36.500    36.000    35.500    35.100    34.900
                  34.200    33.500    32.700    32.000    31.600    31.200
                  30.900    30.500    30.100    29.700    29.200    28.800
                  28.400    27.900    27.500    27.100    26.600    26.200
                  25.700    25.100    24.600    24.000    23.500    22.900
                  22.400    21.800    21.300    20.800    20.300    19.800
                  19.400    19.000    18.500    18.100    17.700    17.300
                  16.900    16.500    16.100    15.700    15.300    15.000
                  14.600    14.300    14.100    13.800    13.500    13.300
                  13.000    12.700    12.500    12.200    12.000    11.800
                  11.500    11.300    11.000    10.800    10.600    10.400
                  10.300    10.100     9.990     9.860     9.740     9.610
                   9.480     9.350     9.220     9.090     8.960     8.850
                   8.730     8.620     8.500     8.380     8.270     8.150
                   8.030     7.950     7.880     7.810     7.740     7.680
                   7.610     7.550     7.490     7.430     7.370     7.310
                   7.250     7.190     7.130     7.070     7.010     6.950
                   6.890     6.830     6.770     6.710     6.670     6.630
                   6.590     6.550     6.510     6.470     6.430     6.400
D,,R
```

```
C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> OCT.11,1981/
C/00.00/19.5/
C/AMC %/AMC III/
C/=RTI/=0.166667/*
L/(CDA)/
I15
                          .4   1.3   2.3   2.3   3.2   3.6   4.4   5.1   5.3   5.5
                         5.5   5.7   7.0   8.3   9.3  10.8  12.1  13.3  14.6  16.3
                        17.6  19.1  20.3  21.4  22.5  23.7  24.6  25.2  26.3  27.1
                        28.0  28.8  30.3  31.3  32.6  34.1  34.3  34.7  34.9  34.9
                        35.2  35.4  35.8  36.2  36.4  36.4  36.6  36.9  36.9  36.9
                        36.9  36.9  37.1  37.3  37.5  37.5  37.7  37.7  37.7  37.9
                        37.9  37.9  37.9  37.9  37.9  37.9  37.9  37.9  37.9  38.1
                        38.1  38.3  38.3  38.3  38.3  38.3  38.7  38.7  38.7  38.7
                        38.7  38.7  38.7  38.7  38.7  38.7  38.7  38.7  38.7  38.7
                        38.7  38.7  38.7  38.7  39.0  39.0  39.0  39.0  39.0  39.0
                        39.0  39.0  39.0  39.3  39.3  39.3  39.3  39.6  39.6  39.9
                        39.9  39.9  39.9  39.9  39.9  39.9  40.2  40.2  40.2  40.5
                        40.5  40.5  40.8  41.2  41.5  41.8  41.8  41.8  41.8  41.8
                        42.1  42.1   0.0
PRINT HYD             ID=5    +1
C/CN1/+87/
C/RAIN ADJ1/0.887/
C/CN2/+92/
C/RAIN ADJ2/0.802/
C/CN3/+92/
C/RAIN ADJ3/0.802/
C/CN4/+92/
C/RAIN ADJ4/0.908/
C/CN5/+98/
C/RAIN ADJ5/0.863/
C/CN6/+95/
C/RAIN ADJ6/0.802/
C/CN7/+98/
C/RAIN ADJ7/0.997/
C/CN8/+98/
C/RAIN ADJ8/1.005/
C/CN9/+92/
C/RAIN ADJ9/1.161/
C/CN10/+99/
C/RAIN ADJ10/1.003/
C/CN11/+96/
C/RAIN ADJ11/1.170/
C/CN12/+96/
C/RAIN ADJ12/1.005/
C/CN13/+95/
C/RAIN ADJ13/1.000/
C/CN14/+95/
C/RAIN ADJ14/1.189/
C/CN15/+98/
C/RAIN ADJ15/1.132/
C/CN16/+95/
C/RAIN ADJ16/1.088/
C/CN20/+89/
C/RAIN ADJ20/1.012/
C/CN21/+96/
C/RAIN ADJ21/1.046/
C/CN22/+97/
C/RAIN ADJ22/1.147/
C/CN23/+97/
C/RAIN ADJ23/1.147/
C/CN24/+98/
C/RAIN ADJ24/1.147/
C/CN25/+95/
C/RAIN ADJ25/1.008/
C/CN26/+95/
C/RAIN ADJ26/1.147/
C/CN27/+92/
C/RAIN ADJ27/1.147/
T
```

```
L/CATCHMENT/
D
IB
                    K=-47.600   TP=-10.080
L/CATCHMENT/
D
IB
                    K=-13.288   TP=-5.964
L/CATCHMENT/
D
IB
                    K=-5.696    TP=-4.046
L/CATCHMENT/
D
IB
                    K=-4.792    TP=-3.353
L/CATCHMENT/
D
IB
                    K=-6.864    TP=-4.900
L/CATCHMENT/
D
IB
                    K=-3.560    TP=-2.443
L/CATCHMENT/
D
IB
                    K=-3.272    TP=-2.478
L/CATCHMENT/
D
IB
                    K=-3.304    TP=-2.667
L/CATCHMENT/
D
IB
                    K=-3.992    TP=-2.541
L/CATCHMENT/
D
IB
                    K=-1.560    TP=-1.694
L/CATCHMENT/
D
IB
                    K=-5.192    TP=-3.598
L/CATCHMENT/
D
IB
                    K=--1.632    TP=-1.680
L/CATCHMENT/
D
IB
                     K=-7.136    TP=-4.536
L/CATCHMENT/
D
IB
                    K=-4.712    TP=-2.891
L/CATCHMENT/
D
IB
                    K=-3.272    TP=-2.548
L/CATCHMENT/
D
IB
                    K=-2.648    TP=-2.527
L/CATCHMENT/
D
IB
                    K=-6.392    TP=-3.276
L/CATCHMENT/
D
IB
                    K=-9.808    TP=-6.713
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L/CATCHMENT/
D
IB
                    K=-9.496    TP=-6.664
L/CATCHMENT/
D
IB
                    K=-7.760    TP=-3.801
L/CATCHMENT/
D
IB
                    K=-4.432    TP=-3.360
L/CATCHMENT/
D
IB
                    K=-6.392    TP=-3.703
L/CATCHMENT/
D
IB
                      K=-5.784    TP=-3.605
L/CATCHMENT/
D
IB
                     K=-3.016    TP=-2.891
L/CATCHMENT/
D
IB
                    K=-0.968    TP=-0.840
T
C/TRTI/.25/*
C/BASEQA/1.640/
L/DONOVANS GAUGE/
I68
STORE HYD           ID=1      HYD=55    DT=.25     DA=11.4
          DISCHARGE MEASURED FROM HYDROMETRIC STATION NEAR DONOVANS
                                                                  1.630
                    1.640     1.640     1.650     1.720     1.830     1.940
                    2.070     2.190     2.310     2.440     2.580     2.710
                    2.850     2.990     3.150     3.330     3.510     3.700
                    3.900     4.090     4.300     4.500     4.710     4.910
                    5.130     5.240     5.320     5.390     5.460     5.530
                    5.570     5.560     5.540     5.530     5.520     5.500
                    5.490     5.480     5.470     5.440     5.370     5.300
                    5.230     5.170     5.100     5.040     4.980     4.920
                    4.850     4.790     4.730     4.670     4.610     4.550
                    4.490     4.430     4.380     4.340     4.290     4.250
                    4.200     4.150     4.110     4.060     4.020     3.980
                    3.930     3.890     3.850     3.810     3.760     3.720
                    3.680     3.640     3.590     3.550     3.510     3.470
                    3.430     3.380     3.340     3.310     3.270     3.240
                    3.210     3.180     3.150     3.120     3.090     3.060
                    3.030     3.000     2.970     2.940     2.920     2.890
                    2.860     2.830     2.800     2.770     2.740     2.710
                    2.670     2.640     2.620     2.600     2.58E     2.56E
                    2.54E     2.52E     2.51E     2.49E     2.47E     2.45E
                    2.43E     2.41E     2.39E     2.37E     2.36E     2.34E
                    2.32E     2.30E     2.28E     2.26E     2.24E     2.22E
                    2.20E     2.19E     2.17E     2.15E     2.13E     2.11E
                    2.09E     2.07E     2.05E     2.03E     2.02E     2.00E
                    2.00E     1.98E     1.96E     1.94E     1.92E     1.90E
                    1.88E     1.86E     1.85E     1.83E     1.81E     1.79E
                    1.77E     1.75E     1.73E     1.71E     1.70E     1.68E
                    1.66E     1.64E     1.62E     1.60E     1.58E     1.56E
                    1.55E     1.53E     1.50E     1.470     1.460     1.450
                    1.440     1.430     1.420     1.410     1.400     1.390
                    1.370     1.360     1.350     1.340     1.330     1.320
                    1.310     1.300     1.290     1.280     1.270     1.260
                    1.250     1.240     1.230     1.220     1.210     1.200
                    1.200     1.190     1.180     1.170     1.160     1.150
                    1.140     1.130     1.120     1.120     1.110     1.100
                    1.090     1.080     1.070     1.060     1.050     1.040
                    1.040     1.030     1.020     1.010     1.000      .992
                     .984      .976      .969      .964      .959      .955
                     .950      .945      .941      .936      .932      .928
                     .924      .920      .916      .912      .908      .904
```

.900	.896	.892	.888	.883	.879
.876	.872	.868	.864	.861	.857
.853	.849	.845	.841	.837	.833
.829	.825	.822	.818	.814	.810
.806	.802	.797	.791	.786	.774E
.762E	.750E	.739	.733	.728	.722
.717	.712	.710	.707	.704	.701
.698	.695	.692	.689	.685	.682
.679	.676	.673	.670	.667	.664
.661	.658	.655	.652	.649	.64-
.644	.641	.638	.635	.632	.629
.626	.623	.620	.617	.614	.611
.608	.606	.603	.600	.597	.594
.591	.588	.585	.582	.579	.576
.574	.572	.572	.571	.570	.569
.569	.568	.567	.566	.566	.565
.564	.563	.563	.562	.561	.561
.560	.559	.558	.558	.557	.556
.555	.555	.554	.553	.552	.552
.551	.550	.549	.549	.548	.547
.546	.546	.545	.544	.543	.543
.542	.541	.540	.540	.539	.538
.537	.537	.536	.535	.534	.533
.530	.527	.525	.522	.519	.516
.513	.510	.507	.504	.501	.499
.496	.493				

C/BASEQB/2.330/
L/MOUNT PEARL GAUGE/
I71
STORE HYD ID=1 HYD=58 DT=.25 DA=16.6
MEASURED DISCHARGE FROM HYDROMETRIC STATION AT MOUNT PEARL

					2.390
2.380	2.360	2.350	2.340	2.330	2.370
2.490	2.620	2.760	2.900	3.040	3.180
3.330	3.490	3.720	4.020	4.340	4.660
4.990	5.340	5.700	6.070	6.440	6.810
7.190	7.510	7.830	8.170	8.520	8.850
8.890	8.920	8.950	8.850	8.750	8.660
8.560	8.460	8.360	8.260	8.160	8.070
7.970	7.870	7.780	7.690	7.600	7.510
7.430	7.350	7.270	7.190	7.120	7.030
6.930	6.840	6.740	6.640	6.550	6.450
6.350	6.260	6.160	6.070	5.970	5.870
5.780	5.680	5.580	5.490	5.400	5.310
5.220	5.150	5.110	5.060	5.020	4.970
4.930	4.890	4.840	4.800	4.760	4.720
4.670	4.630	4.590	4.550	4.510	4.470
4.420	4.380	4.340	4.300	4.260	4.220
4.180	4.140	4.090	4.050	4.010	3.970
3.930	3.890	3.860	3.820	3.780	3.740
3.710	3.670	3.640	3.600	3.570	3.530
3.500	3.460	3.430	3.390	3.360	3.320
3.290	3.260	3.230	3.200	3.160	3.130
3.100	3.070	3.040	3.010	2.980	2.950
2.910	2.880	2.850	2.820	2.790	2.760
2.730	2.700	2.670	2.650	2.620	2.590
2.560	2.530	2.500	2.480	2.460	2.450
2.430	2.420	2.400	2.390	2.380	2.360
2.350	2.340	2.320	2.310	2.300	2.280
2.280	2.280	2.270	2.270	2.270	2.270
2.260	2.260	2.260	2.260	2.250	2.250
2.250	2.250	2.240	2.230	2.210	2.190
2.160	2.140	2.120	2.100	2.080	2.050
2.030	2.010	1.990	1.970	1.950	1.930
1.920	1.900	1.880	1.860	1.850	1.830
1.810	1.800	1.780	1.770	1.750	1.730
1.720	1.700	1.690	1.670	1.660	1.640
1.630	1.620	1.610	1.600	1.590	1.580
1.570	1.560	1.560	1.550	1.540	1.530
1.520	1.510	1.500	1.490	1.480	1.470
1.470	1.460	1.450	1.440	1.430	1.420

```
                1.420     1.410     1.400     1.390     1.380     1.370
                1.360     1.350     1.340     1.330     1.320     1.330
                1.340     1.350     1.430     1.520     1.510     1.490
                1.470     1.460     1.440     1.420     1.410     1.390
                1.380     1.370     1.350     1.330     1.320     1.310
                1.300     1.290     1.280     1.270     1.260     1.250
                1.240     1.230     1.220     1.220     1.210     1.200
                1.190     1.180     1.170     1.160     1.150     1.140
                1.130     1.120     1.120     1.110     1.100     1.090
                1.090     1.080     1.080     1.080     1.080     1.070
                1.070     1.070     1.060     1.060     1.060     1.050
                1.050     1.050     1.040     1.040     1.030     1.020
                1.010     1.010     1.000      .997      .993      .988
                 .984      .979      .975      .971      .967      .963
                 .959      .955      .951      .947      .943      .939
                 .935      .931      .927      .923      .919      .915
                 .911      .907      .903      .899      .895      .891
                 .887      .883      .881      .879      .877      .875
                 .873      .871      .869      .867      .865      .863
                 .861      .859      .857      .855      .853      .851
                 .849      .847      .845      .844      .842      .840
                 .838      .836      .834      .832      .830      .828
                 .826      .824      .822      .821      .819      .817
                 .815      .813      .811      .809      .807      .805
                 .803      .802      .800      .798      .796      .794
                 .793      .791      .789      .787      .786      .784
                 .782      .780      .778      .777      .775      .773
                 .771      .769      .768      .766      .764      .762
                 .761      .759
C/BASEQC/6.390/

L/GAUGE AT KILBRIDE/
I82
STORE HYD          ID=3 HYD=27  DT=.25     DA=52.7
                MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE
                                                                  6.400
                6.400     6.390     6.390     6.650     6.920     7.180
                7.440     7.710     8.010     8.310     8.600     9.180
                9.970    10.800    11.600    12.400    13.300    14.700
               16.300    18.000    19.800    21.300    22.800    24.400
               26.000    27.400    28.700    29.900    31.000    31.900
               32.800    33.400    33.800    34.100    34.200    34.100
               34.000    33.500    32.700    31.900    31.200    30.700
               30.100    29.600    29.000    28.400    27.900    27.300
               26.700    26.200    25.600    25.000    24.200    23.200
               22.200    21.300    20.900    20.500    20.100    19.700
               19.300    18.900    18.600    18.200    17.800    17.400
               17.000    16.600    16.200    15.800    15.400    15.100
               14.700    14.400    14.000    13.800    13.600    13.500
               13.300    13.100    13.000    12.800    12.600    12.500
               12.300    12.200    12.000    11.900    11.700    11.600
               11.500    11.400    11.300    11.200    11.000    10.900
               10.800    10.700    10.600    10.500    10.400    10.200
               10.100    10.000     9.900     9.800     9.720     9.630
                9.550     9.460     9.380     9.290     9.210     9.120
                9.040     8.960     8.880     8.810     8.730     8.650
                8.580     8.500     8.430     8.350     8.270     8.200
                8.120     8.050     7.970     7.890     7.820     7.750
                7.700     7.650     7.600     7.550     7.510     7.460
                7.410     7.360     7.320     7.270     7.220     7.170
                7.130     7.080     7.030     6.990     6.940     6.890
                6.840     6.790     6.730     6.680     6.620     6.570
                6.510     6.460     6.450     6.440     6.430     6.420
                6.410     6.400     6.390     6.370     6.340     6.310
                6.280     6.250     6.220     6.190     6.160     6.130
                6.100     6.070     6.030     6.000     5.960     5.930
                5.890     5.850     5.820     5.790     5.760     5.730
                5.700     5.670     5.640     5.620     5.590     5.560
                5.540     5.510     5.480     5.460     5.430     5.400
                5.380     5.350     5.330     5.300     5.270     5.250
                5.220     5.190     5.170     5.140     5.120     5.090
                5.070     5.040     5.020     4.990     4.970     4.940
                4.920     4.890     4.870     4.850     4.830     4.810
                4.790     4.770     4.750     4.730     4.720     4.700
```

4.680	4.660	4.640	4.620	4.610	4.590
4.570	4.550	4.530	4.510	4.500	4.480
4.460	4.440	4.420	4.400	4.390	4.370
4.350	4.330	4.310	4.290	4.280	4.260
4.240	4.220	4.200	4.180	4.170	4.150
4.130	4.120	4.100	4.090	4.070	4.060
4.040	4.030	4.010	4.000	3.980	3.970
3.960	3.940	3.930	3.910	3.900	3.880
3.870	3.860	3.840	3.830	3.810	3.800
3.790	3.770	3.760	3.750	3.730	3.720
3.710	3.690	3.680	3.670	3.650	3.640
3.630	3.610	3.600	3.600	3.590	3.580
3.540	3.530	3.520	3.520	3.510	3.500
3.500	3.490	3.490	3.480	3.470	3.470
3.460	3.450	3.450	3.440	3.430	3.430
3.420	3.420	3.410	3.400	3.400	3.390
3.380	3.380	3.370	3.370	3.360	3.350
3.350	3.340	3.330	3.330	3.320	3.320
3.310	3.300	3.290	3.290	3.280	3.270
3.270	3.260	3.250	3.240	3.240	3.230
3.220	3.210	3.210	3.200	3.190	3.180
3.180	3.170	3.160	3.160	3.150	3.140
3.140	3.130	3.120	3.110	3.110	3.100
3.090	3.090	3.080	3.070	3.070	3.060
3.050	3.050	3.040	3.030	3.020	3.020
3.010	3.000	3.000	2.990	2.980	2.980
2.970	2.960	2.950	2.950	2.940	2.930
2.930	2.920	2.910	2.910	2.900	2.890
2.890	2.880	2.880	2.870	2.860	2.860
2.850	2.840	2.840	2.830	2.820	2.820
2.810	2.800	2.800	2.790	2.780	2.780
2.770	2.760	2.760	2.750	2.750	2.740
2.730	2.730	2.720	2.710	2.710	2.700
2.700	2.690	2.680	2.680	2.670	2.670
2.670	2.670	2.670	2.660	2.660	2.660
2.660	2.660	2.660	2.660	2.660	2.660
2.660	2.650	2.650	2.650	2.650	2.650
2.650	2.650	2.650	2.650	2.650	2.650
2.640	2.640	2.640	2.640	2.640	2.640
2.640	2.640	2.640	2.640	2.640	2.640

```
C/>>>>>/>>> CALIBRATION/
C/>>>>>/>>> OCT.16,1981/
C/00.00/16.5/
C/AMC 2/AMC III/
C/=RTI/=0.166667/*
L/(CDA)/
I30
                          .2    .2    .2    .7   1.6   2.0   2.7   3.4   3.8   4.5
                         4.9   5.1   5.4   6.0   6.3   6.5   7.2   7.6   7.8   7.8
                         8.0   8.0   8.3   8.5   9.2   9.8   9.8   9.8   9.8   9.8
                        10.1  10.1  10.1  10.1  10.1  10.1  10.1  10.3  10.7  11.2
                        11.6  12.5  12.7  12.7  13.0  13.0  13.0  13.0  13.0  13.0
                        13.0  13.0  13.0  13.0  13.0  13.0  13.2  14.8  15.0  15.0
                        16.3  16.5  16.5  16.8  17.2  19.2  19.7  20.3  21.7  24.1
                        25.3  26.6  27.1  27.3  27.3  27.3  27.3  27.3  27.3  27.5
                        27.5  27.5  27.5  27.7  30.2  30.2  30.2  30.4  30.7  30.9
                        30.9  30.9  30.9  30.9  30.9  30.9  30.9  30.9  30.9  30.9
                        30.9  31.2  31.7  31.9  31.9  32.2  32.2  32.2  32.2  32.2
                        32.4  32.4  32.4  34.1  36.1  37.9  39.3  43.1  44.5  48.3
                        49.7  50.5  51.0  51.5  52.0  52.2  52.5  52.5  52.5  52.5
                        52.5  53.2  53.5  53.7  54.0  54.2  54.2  54.2  54.2  54.2
                        54.2  54.7  54.7  54.7  54.7  54.7  54.7  54.7  54.7  54.7
                        54.7  54.7  54.7  54.7  54.7  54.7  54.7  54.7  54.7  54.7
                        54.7  54.7  54.7  54.9  54.9  54.9  55.2  55.2  55.2  55.2
                        55.4  55.4  55.4  55.4  55.4  55.4  55.4  55.4  55.4  55.9
                        56.4  56.9  57.2  57.2  57.2  57.2  57.2  57.2  57.2  57.2
                        57.2  57.4  57.4  57.7  57.9  57.9  57.9  57.9  57.9  58.4
                        58.7  58.9  58.9  58.9  59.9  61.4  61.6  61.6  61.6  61.6
                        61.9  62.1  62.1  62.4  62.4  62.6  62.6  62.6  62.6  62.9
                        62.9  62.9  63.1  63.1  63.1  63.1  63.1  63.1  63.1  63.1
                        63.1  63.4  63.4  63.4  63.6  63.6  63.9  64.1  64.4  64.6
                        64.8  65.1  65.3  65.6  65.8  65.8  66.1  66.3  66.6  66.6
                        66.8  67.1  67.1  67.1  67.3  67.3  67.6  67.8  68.1  68.1
                        68.1  68.3  68.3  68.3  68.6  68.6  69.3  69.6  69.6  69.6
                        69.6  69.6  69.8  69.8  69.8  69.8  69.8  69.8  69.8  70.0
                        70.0  70.3   0.0
PRINT HYD              ID=5    +1
C/CN1/+87/
C/RAIN ADJ1/0.854/
C/CN2/+92/
C/RAIN ADJ2/0.923/
C/CN3/+92/
C/RAIN ADJ3/0.923/
C/CN4/+92/
C/RAIN ADJ4/0.851/
C/CN5/+98/
C/RAIN ADJ5/0.923/
C/CN6/+95/
C/RAIN ADJ6/0.951/
C/CN7/+98/
C/RAIN ADJ7/0.979/
C/CN8/+98/
C/RAIN ADJ8/1.018/
C/CN9/+92/
C/RAIN ADJ9/1.024/
C/CN10/+99/
C/RAIN ADJ10/1.009/
C/CN11/+96/
C/RAIN ADJ11/1.024/
C/CN12/+96/
C/RAIN ADJ12/1.017/
C/CN13/+95/
C/RAIN ADJ13/1.000/
C/CN14/+95/
C/RAIN ADJ14/1.027/
C/CN15/+98/
C/RAIN ADJ15/0.994/
C/CN16/+95/
C/RAIN ADJ16/0.954/
C/CN20/+89/
C/RAIN ADJ20/0.857/
C/CN21/+96/
```

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C/RAIN ADJ21/0.984/
C/CN22/+97/
C/RAIN ADJ22/0.924/
C/CN23/+97/
C/RAIN ADJ23/0.924/
C/CN24/+98/
C/RAIN ADJ24/0.924/
C/CN25/+95/
C/RAIN ADJ25/0.998/
C/CN26/+95/
C/RAIN ADJ26/0.924/
C/CN27/+92/
C/RAIN ADJ27/0.924/
T
  CATCHMENT/
D
IB
                        K=-47.600    TP=-10.080
L/CATCHMENT/
D
IB
                        K=-13.288    TP=-5.964
L/CATCHMENT/
D
IB
                        K=-5.696     TP=-4.046
L/CATCHMENT/
D
IB
                        K=-4.792     TP=-3.353
L/CATCHMENT/
D
IB
                        K=-6.864     TP=-4.900
L/CATCHMENT/
D
IB
                        K=-3.560     TP=-2.443
L/CATCHMENT/
D
IB
                        K=-3.272     TP=-2.478
L/CATCHMENT/
D
IB
                        K=-3.304     TP=-2.667
L/CATCHMENT/
D
IB
                        K=-3.992     TP=-2.541
L/CATCHMENT/
D
IB
                         K=-1.560    TP=-1.694
L/CATCHMENT/
D
IB
                         K=-5.192    TP=-3.598
L/CATCHMENT/
D
IB
                         K=-1.632    TP=-1.680
L/CATCHMENT/
D
IB
                         K=-7.136    TP=-4.536
L/CATCHMENT/
D
IB
                         K=-4.712    TP=-2.891
```

```
L/CATCHMENT/
D
IB
                          K=-3.272    TP=-2.548
L/CATCHMENT/
D
IB
                           K=-2.648    TP=-2.527
L/CATCHMENT/
D
IB
                           K=-6.392    TP=-3.276
L/CATCHMENT/
D
IB
                           K=-9.808    TP=-6.713
L/CATCHMENT/
D
IB
                           K=-9.496    TP=-6.664
L/CATCHMENT/
D
IB
                           K=-7.760    TP=-3.801
L/CATCHMENT/
D
IB
                           K=-4.432    TP=-3.360
L/CATCHMENT/
D
IB
                           K=-6.392    TP=-3.703
L/CATCHMENT/
D
IB
                           K=-5.784    TP=-3.605
L/CATCHMENT/
D
IB
                           K=-3.016    TP=-2.891
L/CATCHMENT/
D
IB
                           K=-0.968    TP=-0.840
T
C/TRTI/.25/*
C/BASEQA/.334/
L/DONOVANS GAUGE/
/I56
STORE HYD          ID=1      HYD=55     DT=.25     DA=11.4
          MEASURED DISCHARGE FROM HYDROMETRIC STATION NEAR DONOVANS
                                                                  .334
                    .347      .360       .373       .385       .398       .411
                    .426      .440       .455       .470       .486       .501
                    .516      .532       .547       .562       .578       .593
                    .609      .626       .642       .659       .676       .694
                    .713      .731       .747       .757       .768       .779
                    .795      .815       .834       .854       .876       .949
                   1.030     1.120      1.210      1.320      1.450      1.580
                   1.710     1.860      2.010      2.100      2.170      2.250
                   2.320     2.390      2.470      2.590      2.730      2.870
                   3.020     3.280      3.560      3.700      3.760      3.810
                   3.870     3.930      3.990      4.040      4.100      4.170
                   4.240     4.410      4.580      4.750      4.930      5.100
                   5.280     5.480      5.740      6.060      6.380      6.710
                   7.070     7.310      7.450      7.600      7.740      7.880
                   7.920     7.950      7.980      7.890      7.800      7.710
                   7.620     7.530      7.440      7.350      7.260      7.160
                   7.070     6.980      6.890      6.800      6.710      6.620
                   6.540     6.460      6.380      6.290      6.210      6.130
```

6.050	5.960	5.880	5.800	5.720	5.640
5.560	5.490	5.410	5.340	5.280	5.220
5.170	5.110	5.060	5.000	4.950	4.900
4.850	4.790	4.740	4.690	4.640	4.590
4.530	4.480	4.430	4.380	4.330	4.270
4.220	4.170	4.120	4.080	4.050	4.020
3.990	3.960	3.930	3.900	3.880	3.850
3.820	3.790	3.760	3.730	3.700	3.680
3.650	3.620	3.590	3.560	3.530	3.510
3.480	3.450	3.420	3.400	3.370	3.340
3.310	3.290	3.260	3.230	3.210	3.180
3.160	3.130	3.100	3.070	3.050	3.020
3.000	2.970	2.940	2.920	2.890	2.870
2.840	2.820	2.790	2.760	2.740	2.720
2.690	2.670	2.640	2.620	2.590	2.570
2.540	2.520	2.490	2.470	2.440	2.420
2.400	2.370	2.350	2.320	2.300	2.280
2.260	2.230	2.210	2.190	2.170	2.140
2.120	2.100	2.070	2.050	2.030	2.010
1.980	1.960	1.940	1.920	1.900	1.880
1.860	1.840	1.820	1.800	1.780	1.760
1.740	1.720	1.690	1.680	1.660	1.640
1.630	1.610	1.600	1.590	1.580	1.560
1.550	1.540	1.530	1.510	1.500	1.490
1.480	1.460	1.450	1.440	1.420	1.410
1.400	1.390	1.370	1.360	1.350	1.340
1.320	1.310	1.300	1.280	1.270	1.260
1.250	1.240	1.230	1.220	1.210	1.200
1.190	1.180	1.170	1.170	1.160	1.150
1.140	1.140	1.130	1.120	1.110	1.100
1.100	1.090	1.080	1.070	1.070	1.060
1.050	1.040	1.040	1.030	1.020	1.010
1.010	.998	.991	.984	.977	.970
.963	.956	.949	.942	.936	.929
.924	.920	.915	.911	.906	.902

C/RASFQB/.662/

L/MOUNT PEARL GAUGE/
I56
STORE HYD ID=1 HYD=58 DT=.25 DA=16.6
MEASURED DISCHARGE FROM HYDROMETRIC STATION AT MOUNT PEARL

					.663
.663	.663	.663	.662	.662	.662
.662	.662	.673	.707	.741	.775
.809	.845	.882	.920	.958	.979
.991	1.000	1.020	1.030	1.040	1.060
1.070	1.080	1.100	1.110	1.120	1.130
1.160	1.200	1.240	1.280	1.320	1.360
1.380	1.400	1.410	1.430	1.450	1.630
1.830	2.040	2.270	2.500	2.760	3.040
3.190	3.310	3.440	3.580	3.720	3.860
3.970	4.050	4.130	4.210	4.290	4.510
4.810	5.120	5.440	5.530	5.520	5.510
5.510	5.500	5.490	5.490	5.480	5.480
5.620	5.870	6.120	6.370	6.520	6.670
6.810	6.960	7.360	7.840	8.380	8.910
9.450	9.940	10.400	10.900	11.200	11.600
11.900	12.200	12.500	12.600	12.800	12.600
12.400	12.200	12.000	11.800	11.600	11.400
11.200	11.000	10.800	10.500	10.400	10.200
10.000	9.830	9.660	9.480	9.300	9.110
8.920	8.720	8.530	8.340	8.170	8.040
7.900	7.780	7.660	7.530	7.410	7.310
7.200	7.100	6.990	6.890	6.790	6.690
6.590	6.490	6.390	6.290	6.190	6.110
6.050	5.980	5.920	5.850	5.790	5.720
5.660	5.600	5.530	5.470	5.410	5.350
5.290	5.230	5.180	5.150	5.110	5.070
5.040	5.000	4.970	4.930	4.890	4.860
4.820	4.790	4.760	4.720	4.690	4.650
4.620	4.590	4.550	4.520	4.490	4.450
4.420	4.380	4.350	4.320	4.280	4.250

```
4.220   4.180   4.150   4.120   4.080   4.04(
4.010   3.970   3.930   3.890   3.860   3.820
3.790   3.760   3.720   3.690   3.650   3.620
3.580   3.550   3.520   3.480   3.450   3.420
3.380   3.350   3.320   3.290   3.250   3.220
3.190   3.160   3.130   3.100   3.070   3.040
3.010   2.980   2.950   2.920   2.890   2.860
2.830   2.800   2.770   2.740   2.710   2.690
2.670   2.650   2.630   2.620   2.600   2.580
2.560   2.540   2.530   2.510   2.490   2.470
2.460   2.440   2.420   2.400   2.390   2.370
2.350   2.340   2.320   2.300   2.290   2.270
2.260   2.240   2.230   2.210   2.190   2.180
2.160   2.150   2.130   2.120   2.110   2.090
2.080   2.070   2.060   2.050   2.030   2.020
2.010   2.000   1.990   1.970   1.960   1.950
1.940   1.940   1.930   1.920   1.950   1.950
1.940   1.920   1.900   1.890   1.870   1.860
1.840   1.830   1.820   1.800   1.790   1.780
1.760   1.750   1.740   1.730   1.720   1.710
1.700   1.690   1.680   1.670   1.660   1.650
1.640   1.630   1.620   1.610   1.600   1.590
1.580   1.570   1.560   1.550   1.540   1.530
C/BASEQC/2.64/
L/GAUGE AT KILBRIDE/
I64
STORE HYD          ID=3 HYD=27  DT=.25     DA=52.7
                MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE
                                                        2.640
2.640   2.640   2.640   2.640   2.640   2.640
2.690   2.800   2.900   3.000   3.110   3.210
3.320   3.430   3.550   3.670   3.780   3.890
3.970   4.050   4.140   4.230   4.310   4.400
4.450   4.490   4.540   4.590   4.630   4.680
4.730   4.780   4.840   4.890   4.950   5.000
5.050   5.100   5.150   5.200   5.260   5.750
6.250   6.710   7.180   7.640   8.160   8.690
9.240   9.680  10.000  10.400  10.700  10.800
10.900  10.900  11.000  11.100  11.600  12.100
12.600  12.800  12.900  13.000  13.000  13.100
13.100  13.100  13.200  13.200  13.200  13.200
13.200  13.100  13.100  13.500  15.100  16.900
18.700  20.600  22.600  24.700  26.800  28.300
29.200  29.500  29.500  29.500  29.500  29.500
29.500  29.400  29.400  29.100  28.900  28.600
28.300  28.100  27.800  27.500  26.900  26.300
25.800  25.200  24.600  24.100  23.500  22.900
22.400  21.800  21.300  20.800  20.300  19.800
19.300  18.900  18.500  18.200  17.900  17.600
17.300  17.000  16.700  16.300  16.000  15.700
15.400  15.200  15.000  14.800  14.500  14.400
14.300  14.200  14.200  14.200  14.200  14.100
14.100  14.100  14.100  14.100  13.900  13.800
13.700  13.600  13.400  13.300  13.200  13.100
12.900  12.800  12.700  12.600  12.500  12.400
12.400  12.300  12.200  12.100  12.000  11.900
11.800  11.800  11.700  11.600  11.600  11.500
11.400  11.400  11.300  11.300  11.200  11.100
11.100  11.000  11.000  10.900  10.800  10.800
10.700  10.600  10.500  10.500  10.400  10.300
10.200  10.200  10.100  10.000   9.930   9.850
 9.780   9.700   9.620   9.550   9.470   9.390
 9.320   9.230   9.140   9.050   8.960   8.880
 8.800   8.720   8.640   8.550   8.470   8.390
 8.310   8.230   8.150   8.070   7.990   7.910
 7.830   7.740   7.670   7.620   7.570   7.520
 7.480   7.430   7.380   7.330   7.290   7.240
 7.190   7.140   7.100   7.050   7.000   6.950
```

	6.910	6.860	6.810	6.760	6.720	6.670
	6.620	6.580	6.530	6.480	6.430	6.390
	6.340	6.300	6.250	6.220	6.190	6.160
	6.130	6.100	6.070	6.030	6.000	5.960
	5.930	5.890	5.850	5.810	5.780	5.740
	5.700	5.660	5.620	5.580	5.550	5.510
	5.480	5.440	5.410	5.370	5.340	5.310
	5.280	5.250	5.230	5.200	5.170	5.150
	5.120	5.090	5.070	5.040	5.010	4.990
	4.960	4.940	4.910	4.880	4.860	4.830
	4.810	4.780	4.750	4.730	4.710	4.690
	4.680	4.660	4.640	4.630	4.610	4.590
	4.580	4.560	4.540	4.530	4.510	4.490
	4.480	4.460	4.440	4.430	4.410	4.400
	4.380	4.360	4.350	4.330	4.310	4.300
	4.280	4.260	4.250	4.230	4.210	4.200
	4.180	4.170	4.160	4.150	4.140	4.130
	4.120	4.110	4.100	4.090	4.090	4.080
	4.070	4.060	4.050	4.040	4.030	4.020
	4.010	4.000	3.990	3.980	3.970	3.960
	3.950	3.940	3.940	3.930	3.920	3.910
	3.910	3.900	3.890	3.880	3.880	3.870

Q,,R

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C/>>>>>/>>> VERIFICATION/
C/>>>>>/>>> NOV.26,1981/
C/00.00/04.5/
C/AMC %/AMC III/
C/=RTI/=0.166667/*
L/(CDA)/
I10
                      0.0   0.0    .2    .2    .2    .2    .4    .4    .6    .6
                       .9   1.1   1.3   1.5   2.2   2.6   3.2   3.9   4.5   5.4
                      6.0   6.9   7.6   8.4   9.7  10.6  11.6  12.7  13.8  14.8
                     16.1  17.0  18.0  19.1  20.2  21.2  22.7  24.4  25.9  28.1
                     29.5  31.5  33.4  35.3  37.2  39.6  41.7  43.2  44.9  46.6
                     48.1  50.0  51.9  53.6  54.9  56.4  58.3  59.6  61.1  62.0
                     63.2  64.5  66.9  68.8  70.9  72.6  74.1  75.6  77.1  78.8
                     80.3  80.9  81.6  82.4  82.8  83.5  83.7  84.1  84.3  84.8
                     85.0  85.4  85.8  86.3  86.9  87.1  87.3  87.5  87.5  87.8
                     88.0   0.0
C/CN1/+87/
C/RAIN ADJ1/0.935/
C/CN2/+92/
C/RAIN ADJ2/1.048/
C/CN3/+92/
C/RAIN ADJ3/1.048/
C/CN4/+92/
C/RAIN ADJ4/0.912/
C/CN5/+98/
C/RAIN ADJ5/1.048/
C/CN6/+95/
C/RAIN ADJ6/0.998/
C/CN7/+98/
C/RAIN ADJ7/0.985/
C/CN8/+98/
C/RAIN ADJ8/0.879/
C/CN9/+92/
C/RAIN ADJ9/0.944/
C/CN10/+99/
C/RAIN ADJ10/0.939/
C/CN11/+96/
C/RAIN ADJ11/0.949/
C/CN12/+96/
C/RAIN ADJ12/0.885/
C/CN13/+95/
C/RAIN ADJ13/1.000/
C/CN14/+95/
C/RAIN ADJ14/0.944/
C/CN15/+98/
C/RAIN ADJ15/1.009/
C/CN16/+95/
C/RAIN ADJ16/1.088/
C/CN20/+89/
C/RAIN ADJ20/0.811/
C/CN21/+96/
C/RAIN ADJ21/0.996/
C/CN22/+99/
C/RAIN ADJ22/0.765/
C/CN23/+97/
C/RAIN ADJ23/0.765/
C/CN24/+98/
C/RAIN ADJ24/0.765/
C/CN25/+95/
C/RAIN ADJ25/0.995/
C/CN26/+95/
C/RAIN ADJ26/0.765/
C/CN27/+92/
C/RAIN ADJ27/0.765/
T
```

```
L/CATCHMENT/
D
IB
                                K=-47.600    TP=-10.080
L/CATCHMENT/
D
IB
                                K=-13.288    TP=-5.964
L/CATCHMENT/
D
IB
                                K=-5.696     TP=-4.046
L/CATCHMENT/
D
IB
                                K=-4.792     TP=-3.353
L/CATCHMENT/
D
IB
                                K=-6.864     TP=-4.900
L/CATCHMENT/
D
IB
                                K=-3.560     TP=-2.443
L/CATCHMENT/
D
IB
                                K=-3.272     TP=-2.478
L/CATCHMENT/
D
IB
                                K=-3.304     TP=-2.667
L/CATCHMENT/
D
IB
                                K=-3.992     TP=-2.541
L/CATCHMENT/
D
IB
                                K=-1.560     TP=-1.694
L/CATCHMENT/
D
IB
                                K=-5.192     TP=-3.598
L/CATCHMENT/
D
IB
                                K=-1.632     TP=-1.680
L/CATCHMENT/
D
IB
                                K=-7.136     TP=-4.536
L/CATCHMENT/
D
IB
                                K=-4.712     TP=-2.891
L/CATCHMENT/
D
IB
                                K=-3.272     TP=-2.548
L/CATCHMENT/
D
IB
                                K=-2.648     TP=-2.527
L/CATCHMENT/
D
IB
                                K=-6.392     TP=-3.276
L/CATCHMENT/
D
IB
                                K=-9.808     TP=-6.713
L/CATCHMENT/
D
IB
                                K=-9.496     TP=-6.664
L/CATCHMENT/
D
IB
                                K=-7.760     TP=-3.801
```

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L/CATCHMENT/
D
IB
                        K=-4.432     TP=-3.360
L/CATCHMENT/
D
IB
                        K=-6.392     TP=-3.703
T
L/CATCHMENT/
D
IB
                        K=-5.784     TP=-3.605
L/CATCHMENT/
D
IB
                        K=-3.016     TP=-2.891
L/CATCHMENT/
D
IB
                        K=-0.968     TP=-0.840
T
C/TRTI/.25/*

C/BASEQA/.243/
L/DONOVANS GAUGE/
/I40
STORE HYD           ID=1      HYD=55     DT=.25      DA=11.4
          DISCHARGE SIMULATED BY PRORATING MT.PEARL VALUES
                    .2    .2    .2    .2    .2    .2    .2    .2    .2    .3
                    .3    .4    .5    .5    .6    .7    .8   1.0   1.2   1.4
                   1.6   1.8   2.1   2.3   2.7   3.0   3.3   3.8   4.2   4.6
                   5.1   5.5   6.0   6.4   6.8   7.2   7.7   8.2   8.7   9.1
                   9.4   9.7  10.1  10.3  10.6  10.8  11.0  11.2  11.0  10.7
                  10.5  10.3  10.1   9.9   9.6   9.4   9.2   8.9   8.7   8.5
                   8.2   8.0   7.8   7.6   7.4   7.2   7.0   6.8   6.6   6.3
                   6.0   5.8   5.5   5.3   5.0   4.8   4.5   4.3   4.1   4.0
                   3.8   3.7   3.6   3.4   3.3   3.2   3.1   3.0   2.9   2.8
                   2.7   2.6   2.6   2.5   2.5   2.4   2.4   2.4   2.3   2.3
                   2.3   2.2   2.2   2.1   2.1   2.1   2.1   2.0   2.0   2.0
                   2.0   1.9   1.9   1.9   1.9   1.8   1.8   1.8   1.7   1.7
                   1.7   1.7   1.6   1.6   1.6   1.5   1.5   1.5   1.5   1.4
                   1.4   1.4   1.3   1.3   1.3   1.3   1.2   1.2   1.2   1.2
                   1.2   1.2   1.1   1.1   1.1   1.1   1.1   1.0   1.0   1.0
                   1.0   1.0   1.0   1.0   1.0    .9    .9    .9    .9    .9
                    .9    .9    .9    .9    .9    .9    .9    .8    .8    .8
                    .8    .8    .8    .8    .8    .8    .8    .8    .7    .7
                    .7    .7    .7    .7    .7    .7    .7    .7    .7    .7
                    .7    .7    .7    .7    .7    .7    .7    .6    .6    .6
                    .6    .6    .6    .6    .6    .6    .6    .6    .6    .6
                    .6    .6    .6    .6    .6    .6    .6    .6    .6    .6
                    .6    .5    .5    .5    .5    .5    .5    .5    .5    .5
                    .5    .5    .5    .5    .5    .5    .5    .5    .5    .5
                    .5    .5    .5    .5    .5    .5    .5    .5    .5    .5
                    .5    .5    .4    .4    .4    .4    .4    .4    .4    .4
                    .4    .4    .4    .4    .4    .4    .4    .4    .4    .4
                    .4    .4    .4    .4    .4    .4    .4    .4    .4    .4
                    .4    .4    .4    .4    .4    .4    .4    .4    .4    .4
                    .4    .4    .4    .3    .3    .3    .3    .3    .3    .3
                    .3    .3    .3    .3    .3    .3    .3    .3    .3    .3
                    .3    .3    .3    .3    .3    .3    .3    .3    .3    .3
                    .3    .3    .3    .3    .3    .3    .3    .3    .3    .3
                    .3    .3    .3    .3    .3    .3    .3    .3    .3    .3
                    .3    .3    .3    .3    .3    .3    .3    .3    .3    .3
                    .3    .3    .3    .3    .3    .3    .3
*END DISCH
```

```
C/BASEQB/.575/
L/MOUNT PEARL GAUGE/
I64
STORE HYD          ID=1      HYD=58     DT=.25     DA=16.6
                MEASURED DISCHARGE  FROM HYDROMETRIC STATION AT MOUNT PEARL
                                                                      .578
                  .578      .577       .576       .575       .574      .573
                  .574      .581       .674       .795       .926     1.070
                 1.230     1.400      1.650      1.990      2.350     2.770
                 3.230     3.740      4.300      4.890      5.520     6.270
                 7.010     7.870      8.880      9.850     10.800    12.000
                13.100    14.100     15.100     16.100     17.100    18.200
                19.300    20.500     21.400     22.200     23.000    23.800
                24.400    25.000     25.500     26.100     26.500    25.900
                25.400    24.900     24.400     23.800     23.300    22.800
                22.300    21.700     21.100     20.500     20.000    19.400
                18.900    18.400     18.000     17.500     17.000    16.600
                16.100    15.600     15.000     14.300     13.700    13.100
                12.500    11.900     11.300     10.700     10.200     9.700
                 9.400     9.080      8.760      8.440      8.120     7.800
                 7.510     7.240      6.990      6.750      6.510     6.270
                 6.150     6.060      5.960      5.870      5.770     5.680
                 5.590     5.500      5.410      5.320      5.230     5.140
                 5.060     5.000      4.930      4.870      4.800     4.740
                 4.680     4.620      4.560      4.500      4.440     4.380
                 4.320     4.260      4.200      4.130      4.060     3.980
                 3.910     3.840      3.770      3.700      3.630     3.560
                 3.490     3.430      3.360      3.290      3.230     3.170
                 3.100     3.040      3.000      2.950      2.910     2.860
                 2.810     2.770      2.730      2.680      2.640     2.590
                 2.550     2.510      2.470      2.430      2.390     2.350
                 2.320     2.300      2.280      2.260      2.230     2.210
                 2.190     2.170      2.150      2.130      2.110     2.090
                 2.070     2.050      2.030      2.010      1.990     1.970
                 1.950     1.920      1.900      1.880      1.860     1.840
                 1.820     1.810      1.790      1.770      1.750     1.730
                 1.710     1.690      1.680      1.670      1.660     1.650
                 1.640     1.630      1.620      1.610      1.600     1.590
                 1.580     1.570      1.560      1.550      1.530     1.520
                 1.510     1.500      1.490      1.480      1.470     1.460
                 1.450     1.440      1.430      1.420      1.410     1.400
                 1.390     1.380      1.380      1.370      1.360     1.350
                 1.340     1.330      1.320      1.310      1.300     1.290
                 1.280     1.270      1.260      1.250      1.240     1.230
                 1.220     1.210      1.200      1.200      1.190     1.180
                 1.180     1.170      1.160      1.160      1.150     1.140
                 1.130     1.130      1.120      1.110      1.110     1.100
                 1.090     1.090      1.080      1.070      1.070     1.060
                 1.050     1.050      1.040      1.030      1.030     1.020
                 1.010     1.010      1.000       .995       .988      .982
                  .976      .970       .964       .958       .953      .947
                  .941      .935       .930       .924       .918      .912
                  .906      .901       .895       .889       .883      .877
                  .872      .866       .861       .857       .852      .848
                  .844      .840       .835       .831       .827      .823
                  .818      .814       .810       .806       .802      .798
                  .794      .790       .786       .782       .778      .774
                  .770      .766       .762       .758       .754      .750
                  .746      .743       .739       .735       .731      .727
                  .723      .719       .715       .711       .707      .703
                  .699      .695       .691       .687       .683      .679
                  .675      .672       .668       .664       .660      .656
                  .652      .648       .646       .644       .642      .640
                  .638      .637       .635       .633       .631      .629
                  .628      .626       .624       .622       .620      .619
                  .617      .615       .613       .611       .610      .608
                  .606      .604       .602       .601       .599      .597
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C/BASEQC/2.460/
L/GAUGE AT KILBRIDE/
I65
STORE HYD          ID=3 HYD=27  DT=.25     DA=52.7
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MEASURED DISCHARGE FROM HYDROMETRIC GAUGE AT KILBRIDE

					2.460
2.460	2.460	2.460	2.460	2.510	2.570
2.650	2.980	3.320	3.680	4.080	4.500
4.930	5.380	5.870	6.360	6.870	7.380
7.920	8.490	9.070	10.400	11.700	13.100
15.900	19.200	22.100	25.500	28.900	31.300
33.200	34.700	36.900	39.200	41.600	45.100
47.100	48.200	49.400	50.600	52.700	54.800
57.000	58.900	60.500	62.100	63.700	65.300
63.300	60.500	60.300	61.200	59.400	57.900
57.400	56.500	55.700	54.900	54.000	53.100
52.000	50.800	49.700	48.600	47.500	46.400
45.400	44.300	43.300	42.200	41.100	40.000
38.900	37.900	36.800	36.000	35.100	34.000
32.900	31.800	30.700	29.500	28.300	27.000
25.800	24.600	23.400	22.700	22.200	21.700
21.200	20.700	20.200	19.800	19.300	18.800
18.400	18.000	17.500	17.100	16.800	16.400
16.100	15.700	15.400	15.100	14.800	14.500
14.200	14.000	13.700	13.400	13.100	12.800
12.600	12.300	12.100	11.900	11.700	11.400
11.200	11.000	10.800	10.600	10.400	10.200
10.200	10.100	9.970	9.880	9.790	9.690
9.600	9.510	9.420	9.320	9.230	9.120
9.010	8.900	8.800	8.690	8.580	8.470
8.380	8.280	8.180	8.090	7.990	7.890
7.790	7.700	7.600	7.500	7.410	7.310
7.210	7.120	7.020	6.960	6.890	6.820
6.750	6.680	6.620	6.550	6.480	6.420
6.360	6.310	6.260	6.200	6.150	6.090
6.040	5.990	5.930	5.880	5.820	5.770
5.720	5.660	5.610	5.550	5.500	5.450
5.390	5.340	5.300	5.270	5.230	5.200
5.160	5.130	5.090	5.060	5.020	4.980
4.940	4.900	4.850	4.830	4.800	4.780
4.750	4.730	4.700	4.680	4.650	4.630
4.600	4.580	4.550	4.530	4.500	4.480
4.450	4.430	4.410	4.390	4.370	4.340
4.320	4.290	4.270	4.240	4.220	4.190
4.170	4.150	4.130	4.100	4.080	4.060
4.040	4.020	3.990	3.970	3.950	3.930
3.910	3.890	3.870	3.860	3.840	3.820
3.800	3.780	3.760	3.740	3.730	3.710
3.690	3.670	3.650	3.630	3.610	3.590
3.580	3.560	3.550	3.530	3.510	3.500
3.480	3.470	3.460	3.450	3.440	3.430
3.420	3.410	3.400	3.390	3.380	3.380
3.370	3.350	3.340	3.320	3.310	3.300
3.280	3.270	3.260	3.250	3.230	3.220
3.210	3.190	3.180	3.170	3.160	3.140
3.130	3.120	3.110	3.090	3.080	3.070
3.050	3.040	3.030	3.020	3.000	2.990
2.980	2.970	2.950	2.940	2.930	2.920
2.900	2.890	2.880	2.860	2.850	2.840
2.830	2.810	2.800	2.790	2.780	2.770
2.760	2.760	2.750	2.740	2.740	2.730
2.720	2.720	2.710	2.700	2.700	2.690
2.680	2.680	2.670	2.670	2.660	2.650
2.650	2.640	2.640	2.630	2.620	2.620
2.610	2.610	2.600	2.590	2.590	2.580
2.580	2.570	2.560	2.560	2.550	2.550
2.540	2.530	2.530	2.520	2.510	2.510
2.500	2.500	2.490	2.480	2.480	2.470

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Q,,R
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APPENDIX K

MAPS