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SALT RIVER CHANNEL

Tempe Bridge to Indian Bend Wash

DIGITAL HYDRAULIC MODEL

LIBRARY

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Southwest Computing Service, Inc.

January 1973

W-11

HOFFMAN-MILLER ENGINEERS, INC.

Investigations — Reports — Design — Supervision

LLOYD W. MILLER
A. KNOX MATTER
NORMAN T. STEWART

1110 EAST McDOWELL
P. O. BOX 5363
PHOENIX, ARIZONA 85010

PHONES: 254-9569 – 254-7791

BRIDGES
HIGHWAYS
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FLOOD CONTROL
FOUNDATIONS
DRILLING
PIPE LINES
SURVEYS

April 3, 1973

APR 1973
RECEIVED
FLOOD CONTROL
DISTRICT

Maricopa County Flood Control District
3325 West Durango
Phoenix, Arizona 85009

Attention: Mr. John C. Lowry, Chief Engineer

Gentlemen:

Re: Salt River Low Flow Channel
Mill Avenue to Hayden Road
Contract FCD 72-2

We are attaching herewith a copy of a Hydraulic Report we had prepared relative to the above captioned proposed low flow channel. Since the location of the channel has been moved north slightly since we had this study prepared, it was necessary to determine whether the criteria utilized in this study would be affected by the new location.

You will note a 600 ft. bottom width channel is required to maintain flow of water so that no additional head of water is required when compared to existing conditions. In other words, we cannot raise the water level above Scottsdale Road.

We are including herewith two sets of preliminary plans indicating the location of the channel. It is our understanding that a re-alignment of this channel at the lower end will probably be required. However, we see no particular problem in making this adjustment. Of particular interest are the dikes that are required above Scottsdale Road. The north dike can be located so as to minimize right-of-way problems; therefore, exact location can be considered flexible.

In conjunction with this submission, we are also submitting two copies of a very preliminary layout of the proposed bridge at Scottsdale Road. Since this must accommodate the future low flow channel of the Salt River, the geometrics should be reviewed and approved by you and the Corps of Engineers. We are quite certain that the length of this bridge is adequate; however, the gradeline as indicated may not meet future criteria. We would also be interested in determining the bottom of the future channel so that pier footings can be located accordingly.

We ask that you review the above information and if there are any questions please contact us.

Very truly yours,

HOFFMAN-MILLER ENGINEERS, INC.

Lloyd W. Miller

LLOYD W. MILLER

LWM:el

Enclosures

cc: Maricopa County HIghway Dept.

HOFFMAN-MILLER ENGINEERS, INC.

Investigations — Reports — Design — Supervision

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LWM:el

Enclosures

cc: Maricopa County HIghway Dept.

HOFFMAN-MILLER ENGINEERS, INC.

Investigations — Reports — Design — Supervision

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FOUNDATIONS
DRILLING
PIPE LINES
SURVEYS

April 3, 1973

Mr. R. C. Esterbrooks, County Engineer
Maricopa County Highway Department
3325 West Durango
Phoenix, Arizona 85009

Attention: Mr. Francis Lathrop,
Assistant County Engineer

Gentlemen:

Re: Bridge over Salt River
on Scottsdale Road

We are submitting herewith two copies of preliminary plans for your review, together with preliminary plans of the low flow channel. You will note that we are submitting identical materials to the Maricopa County Flood Control District with questions relative to geometrics required for the future flood channel. I am sure answers to these questions will be forthcoming shortly.

It is our opinion that this material should not be submitted to the Arizona Highway Department until depth of footings can be established and approval obtained from the Army Engineers as to the elevation of the bridge.

We ask that you review the above information and would appreciate any comments you have regarding the material submitted.

Very truly yours,

HOFFMAN-MILLER ENGINEERS, INC.

L. W. M.

LLOYD W. MILLER

LWM:el

Enclosures

cc: Maricopa County Flood Control.

SOUTHWEST COMPUTING SERVICE, INC. • 635 W. INDIAN SCHOOL RD • SUITE 205 • PHOENIX, ARIZONA 85013

APR 1973
RECEIVED
FLOOD CONTROL
DISTRICT

January 19, 1973

Mr. Lloyd W. Miller
Hoffman & Miller Engineers, Inc.
1110 East McDowell Road
Phoenix, Arizona 85010

Re: Scottsdale Road Bridge
Hydraulic Design

Dear Mr. Miller:

Respectfully submitted herewith is our report according to our agreement dated 11-29-72, on the above referenced project.

This report was prepared to provide design stages, channel widths and dyke locations for the bridge and low flow channel on the Salt River in the vicinity of Scottsdale Road.

Engineers working on this report were the following:

Geza E. Kmetty,P.E.
James M. Malone,P.E
Gregory L. Allen,E.I.T.

Please call us if any further information is required.

Very truly yours,
SOUTHWEST COMPUTING SERVICE, INC.

Geza E. Kmetty

Geza E. Kmetty,P.E.
President

SCS

TABLE OF CONTENTS

	Page
REPORT	1
PHOTOGRAPHS	6
COMPUTER PRINTOUTS-EXISTING CONDITIONS	9
COMPUTER PRINTOUTS-DESIGNED CONDITIONS	51
CALIBRATION RESULTS - 15,000 c.f.s.	93
CALIBRATION RESULTS - 65,000 c.f.s.	94
LOCATION PLAN - CHANNEL AND DYKES	95
WATER SURFACE PROFILES AND TYPICAL SECTIONS	96
DYKE PROFILES	97

WATER SURFACE PROFILE ANALYSIS ON THE SALT RIVER CHANNEL NEAR SCOTTSDALE ROAD PHOENIX, ARIZONA

This report is a summary presentation of a water surface profile analysis on the Salt River channel. A computer program written by the Soil Conservation Service was modified to run on Sperry Rand's Univac 1108 computer. The program employs the principles of conservation of mass and conservation of energy between cross sections. Energy loss is computed between cross sections and an energy balance is maintained throughout the program. Water surface profiles are computed from the lowest cross section in the reach to the highest.

Basic Data

Topographic maps dated 9-29-72 (Mill Avenue to Tempe Butte) and 1-6-67 (Tempe Butte to Indian Bend Wash) were the primary source of data for the cross section information. These maps had been compiled from aerial mapping techniques for Maricopa County by Aerial Mapping Co. of Phoenix. The original plates were located and the digitizing

of the cross section data was done by Aerial Mapping Co. in a format used by the computer program. Cross sections averaging 4,000 ft. in width were digitized approximately every 100 ft. from 300 ft. down stream of the Tempe RR bridge upstream to a location 1,500 ft. upstream from the Indian Bend tributary to the Salt River.

Channel Model

A digital model was made of the channel from the cross section data compiled on cards. Since some shifting of the channel had occurred between 1-6-67 and December 1972 the accuracy of the model is limited to the accuracy of the topographic information. This loss of accuracy does not appear to have much effect on flows studied in this analysis. Watersurface profiles were computed for discharges of 10,000; 20,000; 35,000; 40,000; and 65,000 cubic ft. per second.

Field Investigations

Surveys were made of the three bridges over the Salt River at Tempe. After an initial pass through the computer it was noted the Bridge Griders would be above the 65,000 cfs figure and they were removed from the watersurface profile computations. A cross

section along Mill Ave. was inserted and roughness coefficients were adjusted to account for pier losses on the bridges.

Calibrating the Model

Aerial photographs were available from the US Geological Survey of the February 19,1968 flood on the Salt River. This flood was estimated at 65,000 cfs by the USGS. Aerial photos were also available from Fairchild Aeromaps, Inc. of the June 1972 flood on the Salt River. The photos taken by Fairchild were taken the day after the flood and interpretations were made from color tones on the photo where the limits of flooding occurred. The 1972 flood represented a flow of approximately 15000 cfs. These two floods were plotted on the topographic maps; that is the outer boundaries of the floods were plotted on the maps since no elevation information was available on the watersurface.

A computer analysis was then made and the outer boundaries of the flood limits for discharges of 15,000, and 65,000 cfs were compared to those taken from the photos. The model was adjusted until reasonably close agreement was obtained in the flood limits. At this time the model was considered calibrated.

Channel Design

A low flow channel was designed to shift the flow of water for discharges up to 35,000 cfs north to a centerline specified by Hoffman and Miller Engineers. The channel was designed with a straight alignment. The watersurface elevation at cross sections above Scottsdale was maintained at an elevation lower than that obtained in the existing channel for flows up to 35,000 cfs. Dikes were located upstream from Scottsdale Road to direct the water to the new channel. It is our understanding that a Bridge will be constructed over Scottsdale Road at the new channel location. The top of the dike elevations shown on the plans are the same elevation as the watersurface from the computer analysis of the modified sections.

New Channel Model

The cross section data used in the first model was modified to reflect the channel design and dike designs. Water surface profiles were computed for the same discharge amounts as the original model representing existing conditions in the Salt River Channel. A Mannings "n" value of .042 resulted in good calibration of the condition of the existing channel. Construction of a new low flow channel with a 600 ft. bottom width and 2:1 side slopes will result in a

roughness coefficient of about .030 immediately after construction. However, to insure not creating backwater higher than that under existing conditions an "n" value of .042 was used in the final analysis of future conditions with the new channel. In effect, this leaves some latitude in the maintenance program of the new channel.

Scottsdale Road Profile

When a bridge is constructed over Scottsdale Road it should have a girder elevation above 1157.44. We understand that the profile of Scottsdale Road is to be maintained at or as near to its present elevation as possible. The water surface elevation at cross section 32 is 1152.30 for 35,000 cfs. This is the cross section where water will leave the newly constructed low flow channel and enter the old low flow channel. This water surface elevation is 3.6 feet above the present elevation of 1158.7 where the old flow channel crosses Scottsdale Road. Water could back up the old channel and inundate the road even though no water was flowing over the road.

Old Scottsdale Road Bridge looking East

Old Scottsdale Road Bridge looking East

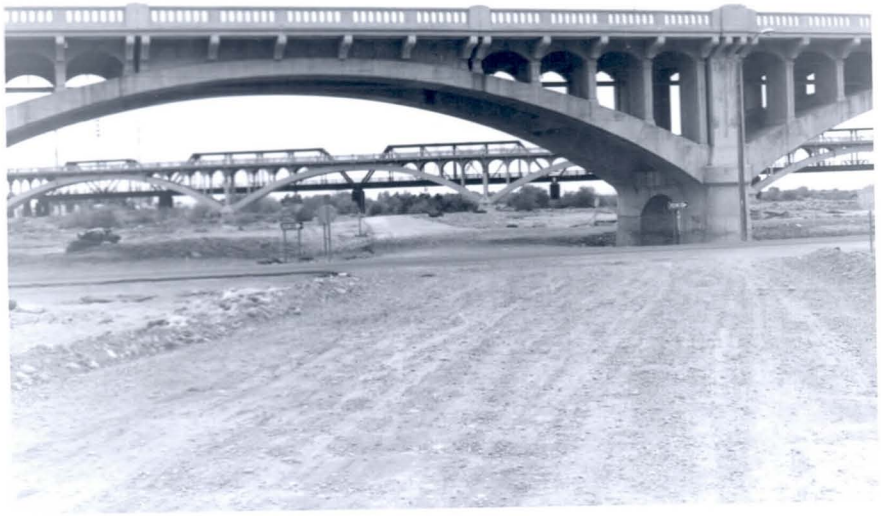
Date	Photographer
12-30-72	J. Malone

Salt River Channel, standing on Old Scottsdale Road Bridge looking East

Salt River Channel looking West from A.S.U. practice field fill

Date
12-30-72

Photographer
J. Malone



Salt River Channel, looking West across
Mill Avenue

Salt River Channel, looking South at
Mill Avenue Bridge Southbound lanes

Date	Photographer
12-30-72	J. Malone

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

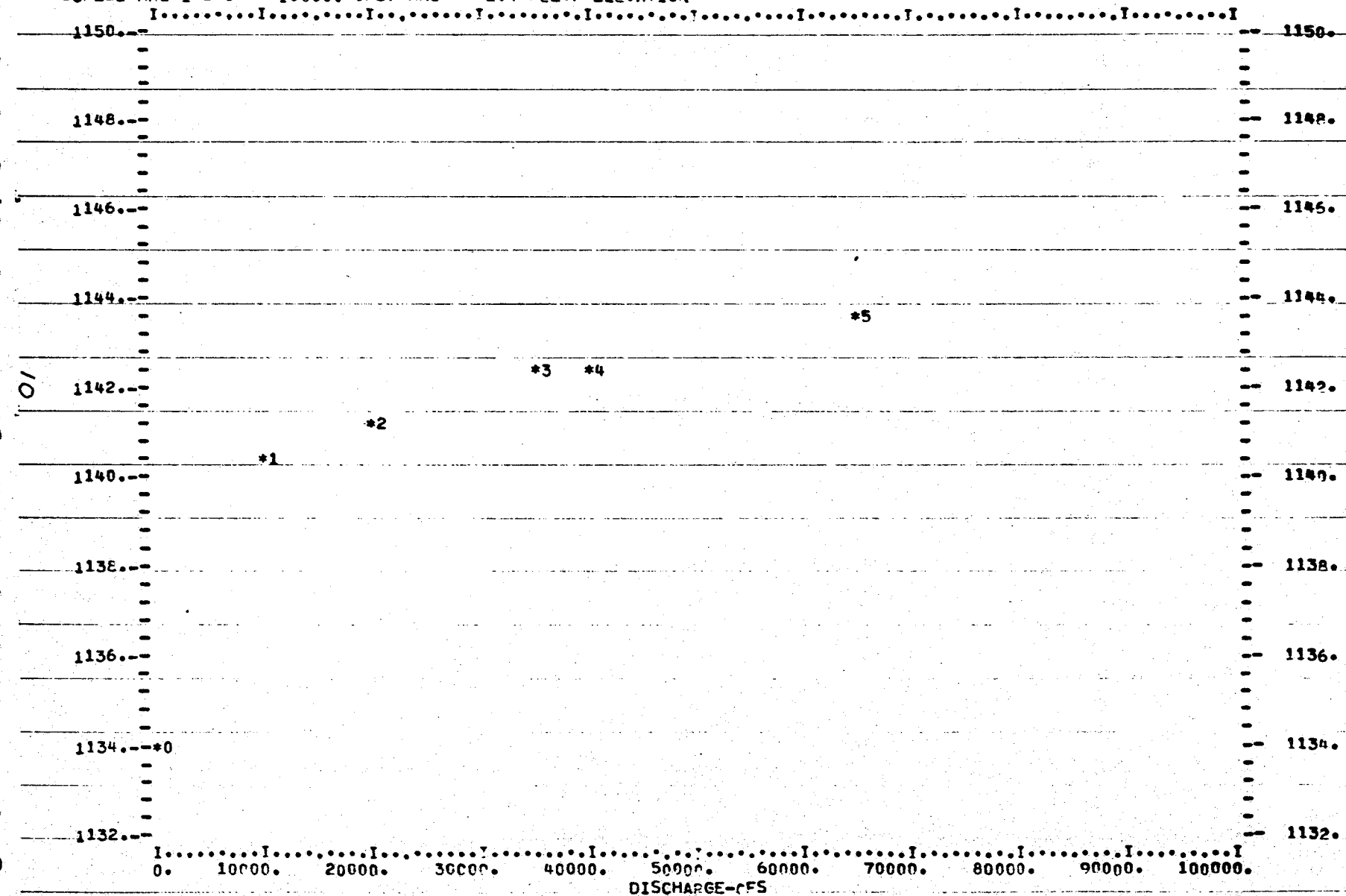
CROSS SECTION STA

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1134.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1140.24	2034.50	10000.00	.00	2.68	.00	10000.00	1139.40
2	1141.20	3248.49	20000.00	.00	3.10	.00	20000.00	1140.64
3	1142.22	4672.95	35000.00	.00	3.26	.00	35000.00	1141.55
4	1142.51	5079.19	40000.00	.00	3.27	.00	40000.00	1141.82
5	1143.70	6779.90	65000.00	.00	3.29	.00	65000.00	1142.96

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

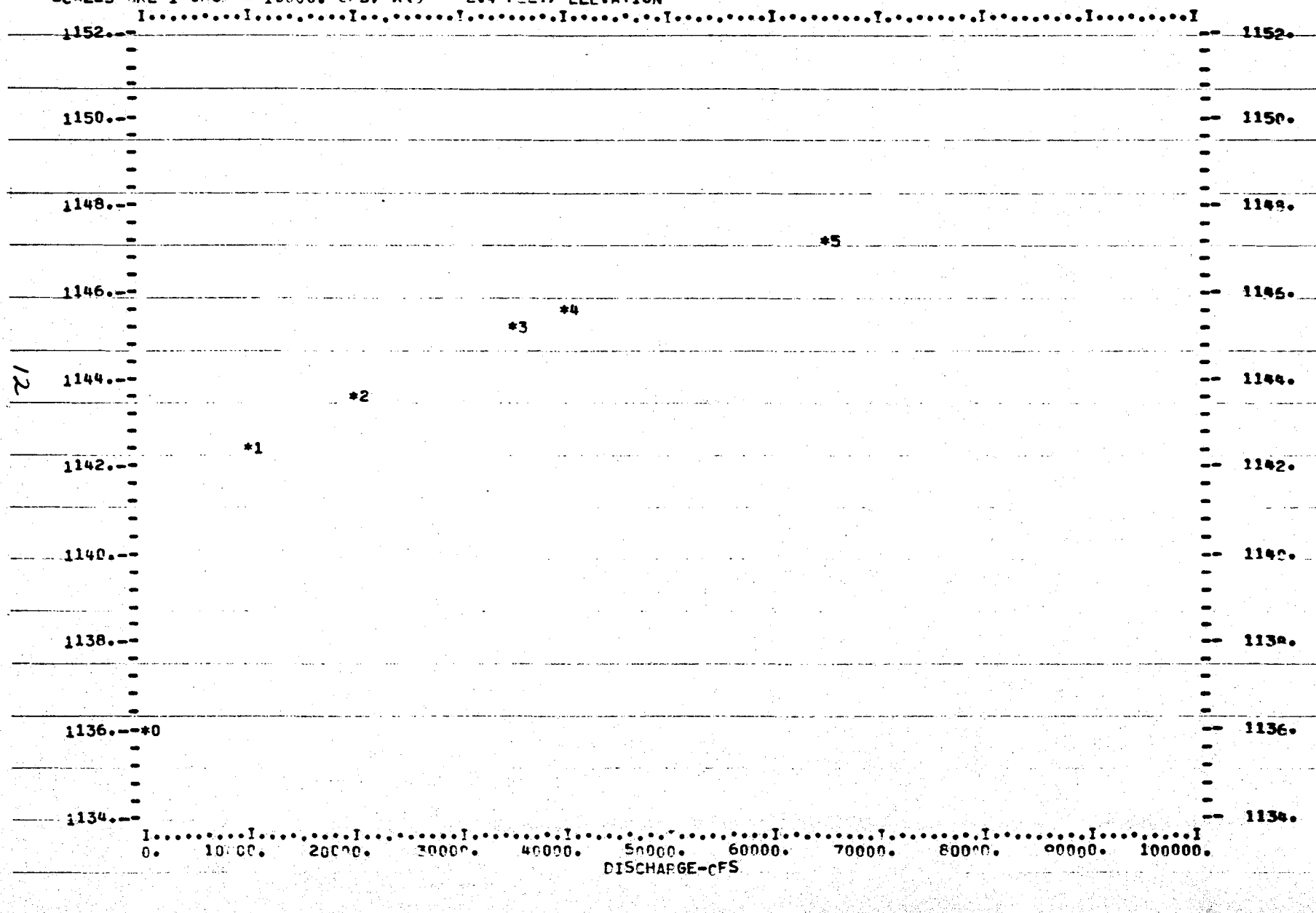
CROSS SECTION STA 5

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1136.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1142.44	2713.81	10000.00	.00	2.20	.00	10000.00	1140.32
2	1143.59	4071.21	20000.00	.00	2.29	.00	20000.00	1141.88
3	1145.05	5628.45	35000.00	.00	2.46	.00	35000.00	1143.13
4	1145.44	6100.84	40000.00	.00	2.53	.00	40000.00	1143.43
5	1147.08	8209.60	65000.00	.00	2.82	.00	65000.00	1144.82

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA5

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



12

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA11

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1145.95	4280.54	10000.00	.00	2.48	.00	10000.00	1142.66
2	1147.36	5998.82	20000.00	.00	2.66	.00	20000.00	1143.85
3	1149.02	8111.01	35000.00	.00	3.29	.00	35000.00	1145.00
4	1149.53	8836.75	40000.00	.00	3.55	.00	40000.00	1145.33
ZERO DAMG	1150.00	9603.04	45935.84	.00	3.83	.00		
5	1151.61	12746.16	65000.00	.00	4.63	.00	65000.00	1146.76

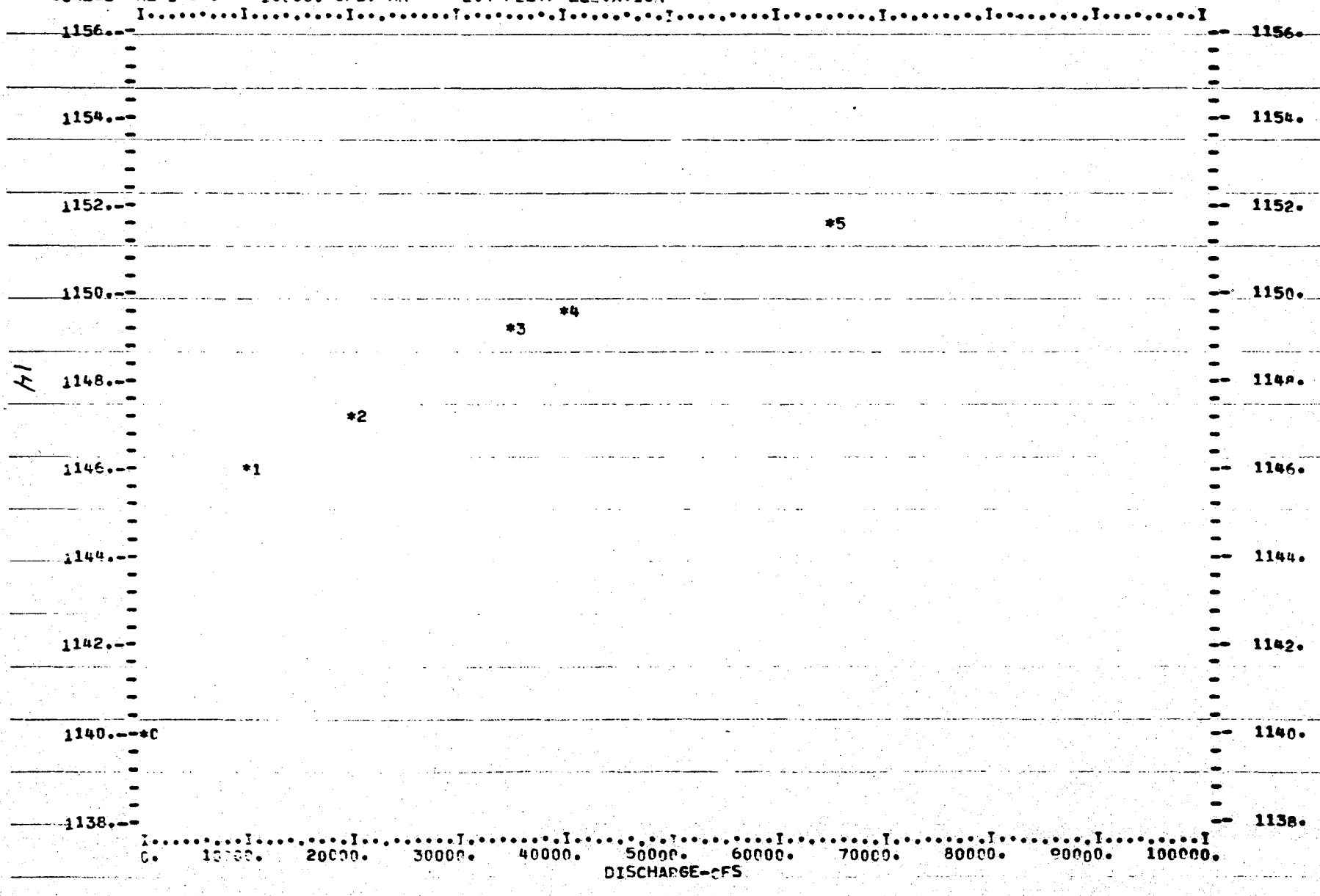
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

13

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA11

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION: STA15

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.70	0.00	0.00	0.00	0.00	0.00	0.00	
1	1146.18	3182.51	10000.00	.00	1.30	.00	10000.00	1144.15
2	1147.74	4742.87	20000.00	.00	1.45	.00	20000.00	1145.14
3	1149.39	6522.46	35000.00	.00	1.51	.00	35000.00	1146.32
4	1149.85	7035.53	40000.00	.00	1.52	.00	40000.00	1146.66
ZERO DAMG	1150.00	7196.67	41636.51	.00	1.52	.00		
5	1152.07	10134.03	65000.00	.00	2.43	.00	65000.00	1148.17

**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

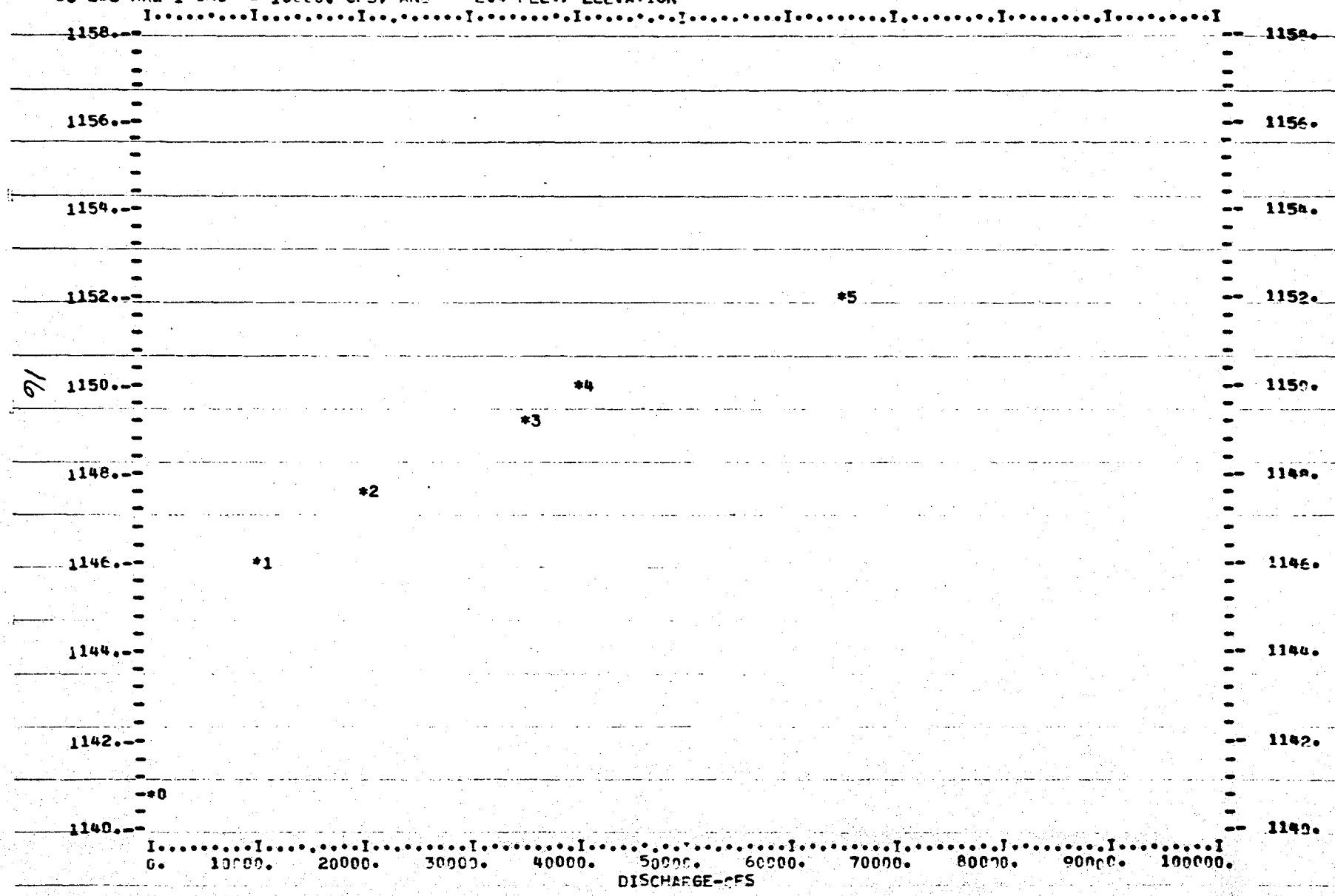
15

WSP2 XEQ [illegible]
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION: STA15

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



16

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA20

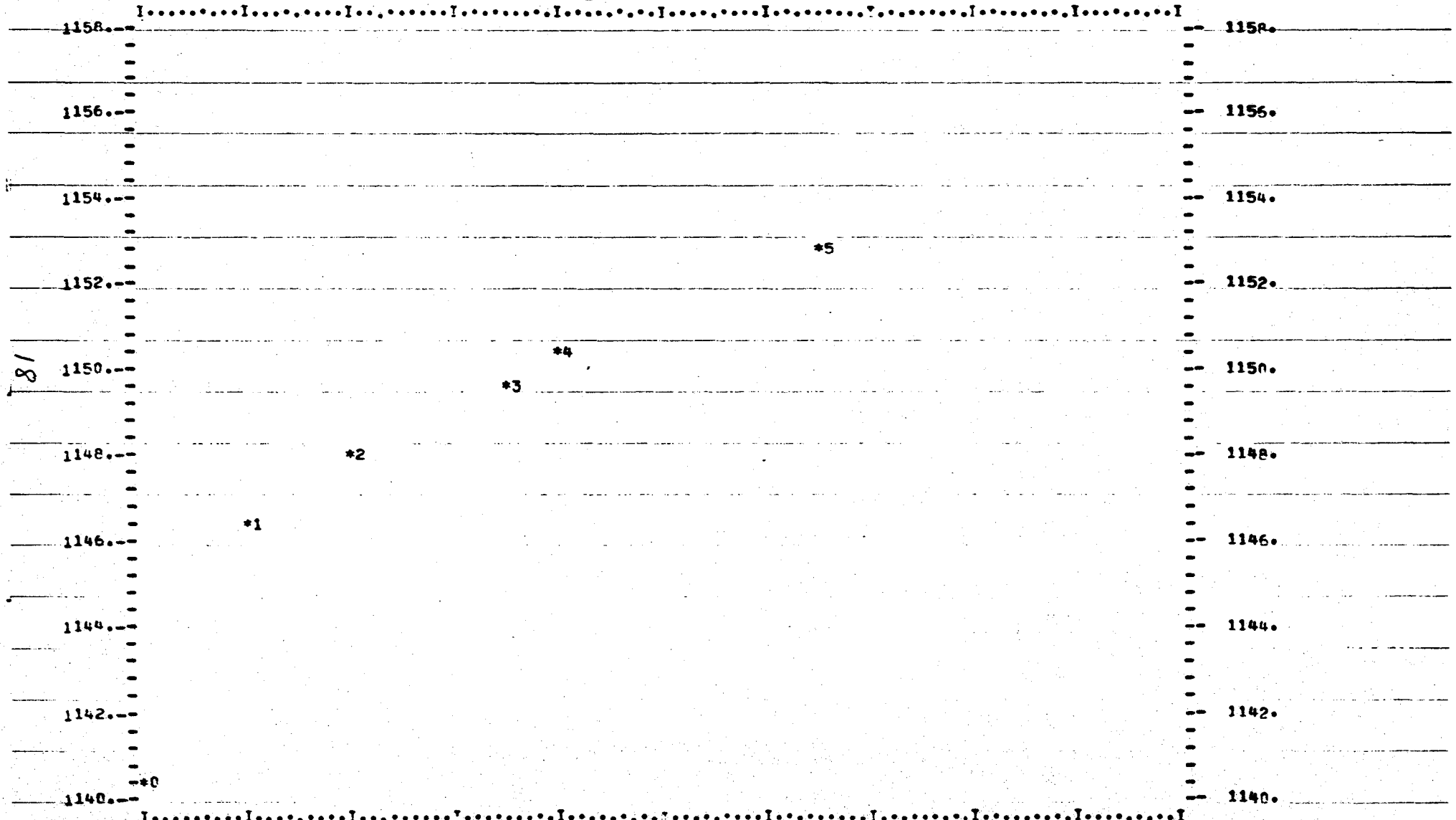
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.40	0.00	0.00	0.00	0.00	0.00	0.00	
1	1146.60	2552.06	10000.00	.00	.80	.00	10000.00	1144.65
2	1148.15	3652.45	20000.00	.00	.82	.00	20000.00	1145.84
3	1149.78	4842.14	35000.00	.00	.87	.00	35000.00	1147.22
4	1150.28	5221.75	40000.00	.00	.89	.00	40000.00	1147.63
5	1152.83	6077.03	65000.00	.00	1.71	.00	65000.00	1149.45

17

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INC. BEND WASH

CROSS SECTION STA20

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



*****SECT.STA21 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1151.70 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA25

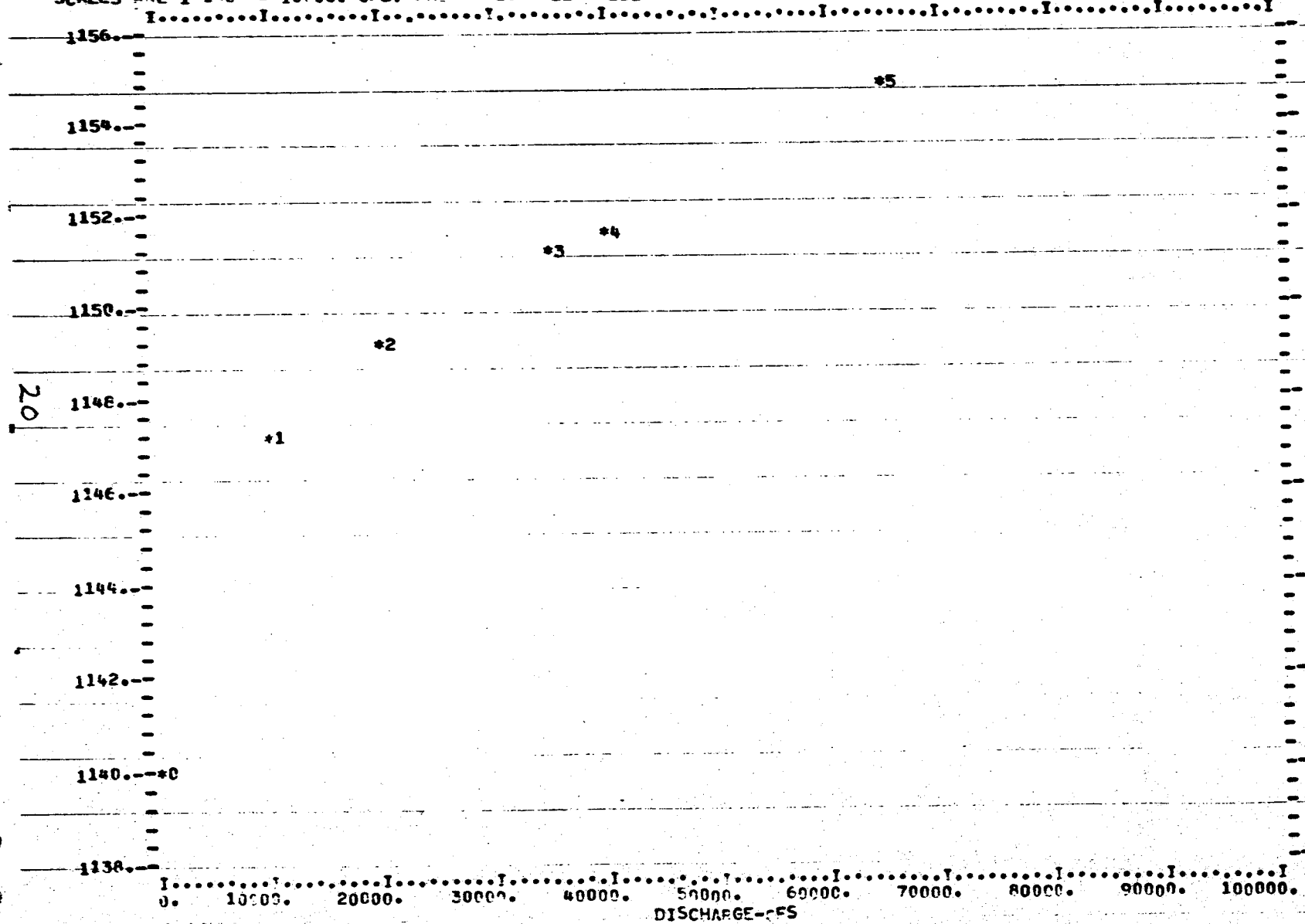
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.22	2991.20	10000.00	.00	1.47	.00	10000.00	1143.76
2	1149.03	4183.76	20000.00	.00	1.55	.00	20000.00	1145.53
3	1151.02	5580.26	35000.00	.00	1.72	.00	35000.00	1147.05
4	1151.71	6135.42	40000.00	.00	2.06	.00	40000.00	1147.50
5	1154.64	9627.76	65000.00	.00	3.79	.00	65000.00	1149.45

61

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INC. BEND WASH

CROSS SECTION STA25

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



20

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA27

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.40	3320.54	10000.00	.00	1.44	.00	10000.00	1143.80
2	1149.32	4564.55	20000.00	.00	1.53	.00	20000.00	1145.10
3	1151.44	6028.20	35000.00	.00	1.65	.00	35000.00	1146.65
4	1152.14	6587.05	40000.00	.00	1.81	.00	40000.00	1147.11
5	1155.31	10718.43	65000.00	.00	3.78	.00	65000.00	1149.12

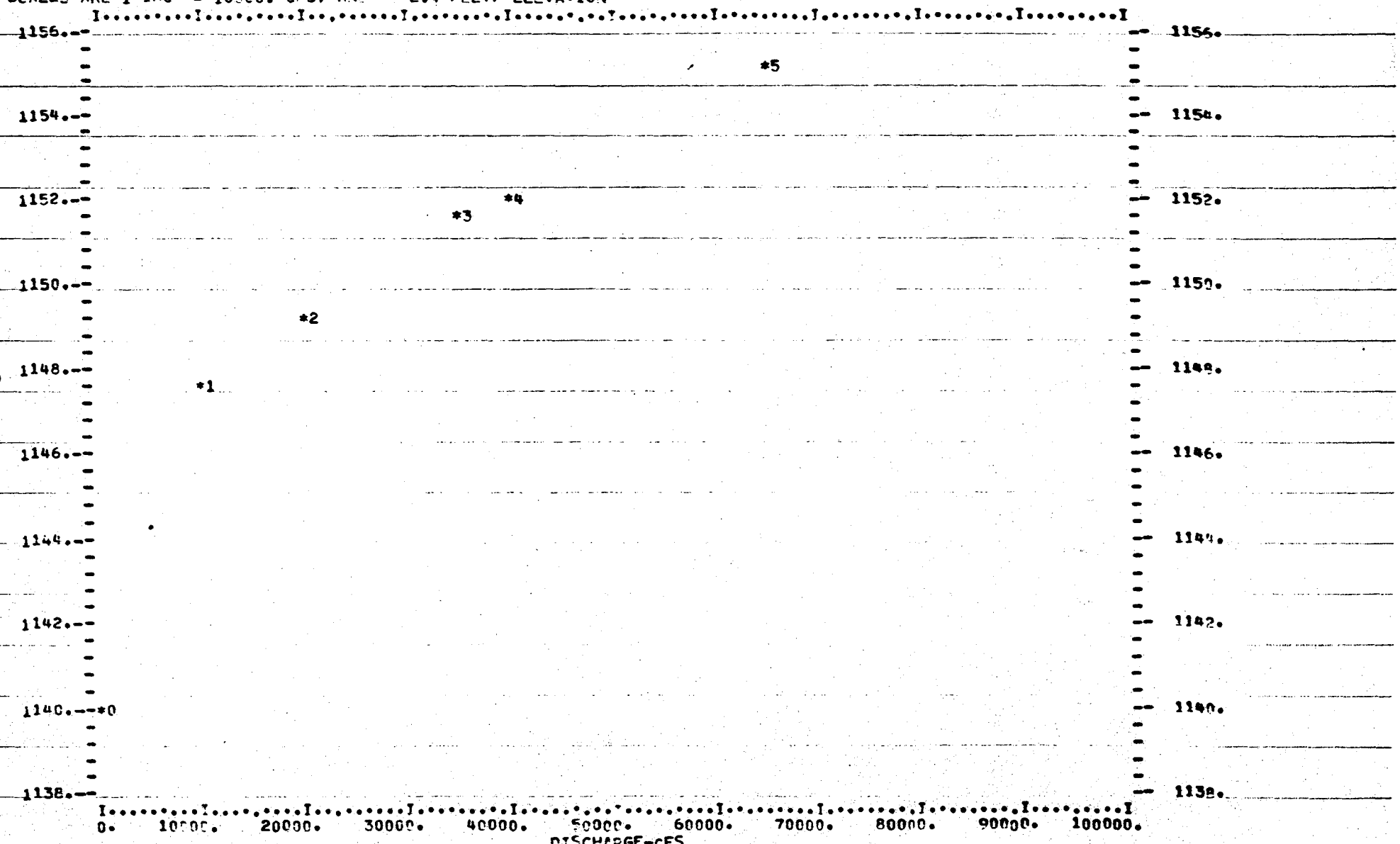
21

WSP2 XEQ 0000000
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA27

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



*****SECT.STA2? KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1153.20 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

22

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA32

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1139.40	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.96	3160.94	10000.00	.00	1.70	.00	10000.00	1144.85
2	1150.02	4741.84	20000.00	.00	1.80	.00	20000.00	1146.30
3	1152.30	6560.52	35000.00	.00	1.87	.00	35000.00	1147.78
4	1153.13	7314.26	40000.00	.00	2.39	.00	40000.00	1148.20
5	1156.52	12484.61	65000.00	.00	4.70	.00	65000.00	1149.94

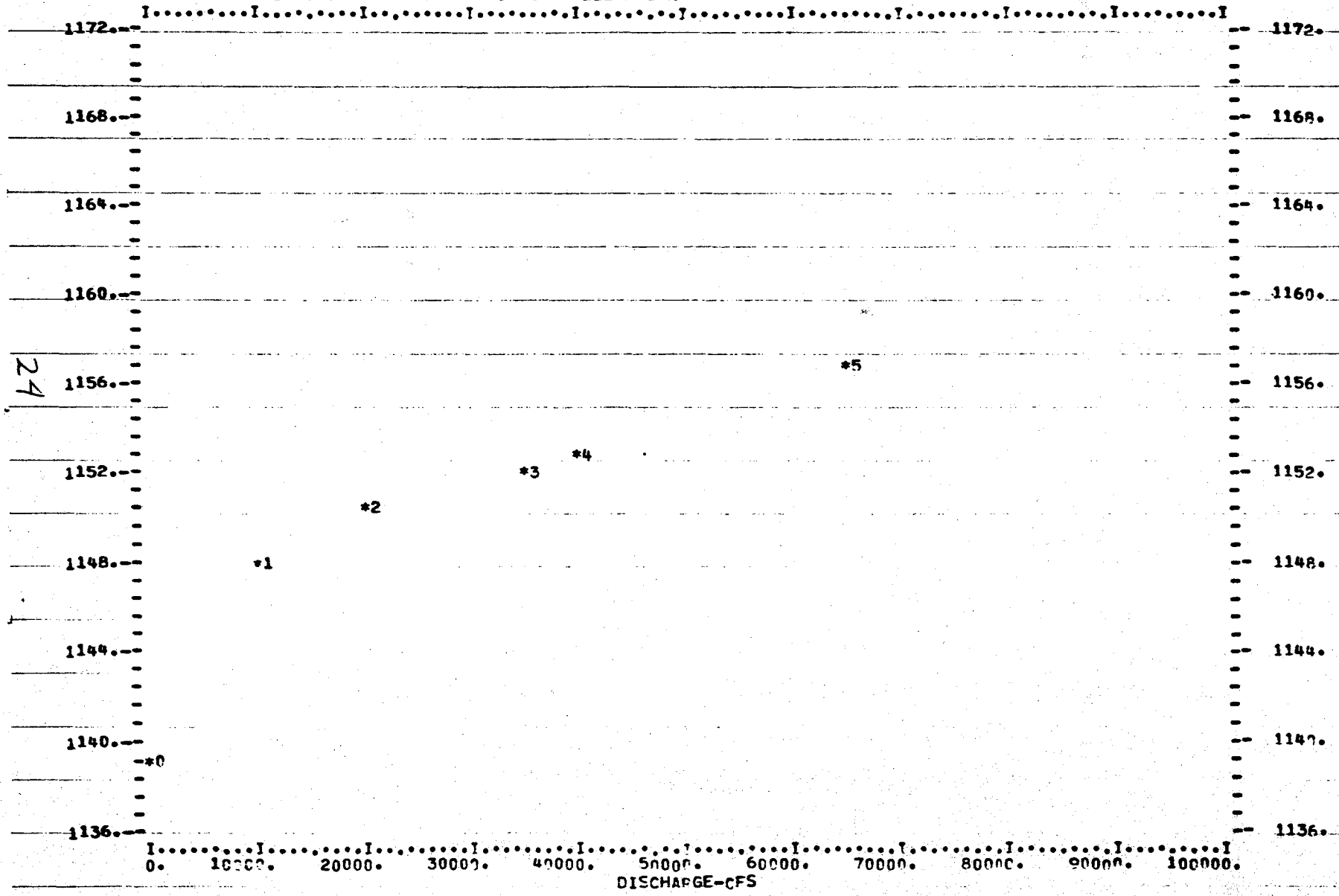
23

WSP2 XEQ 99999999
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA32

SCALES ARE 1 INCH = 10000. CFS, AND 4.2 FEET/ ELEVATION



24

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INC. BEND WASH

RATING TABLE

CROSS SECTION STA35

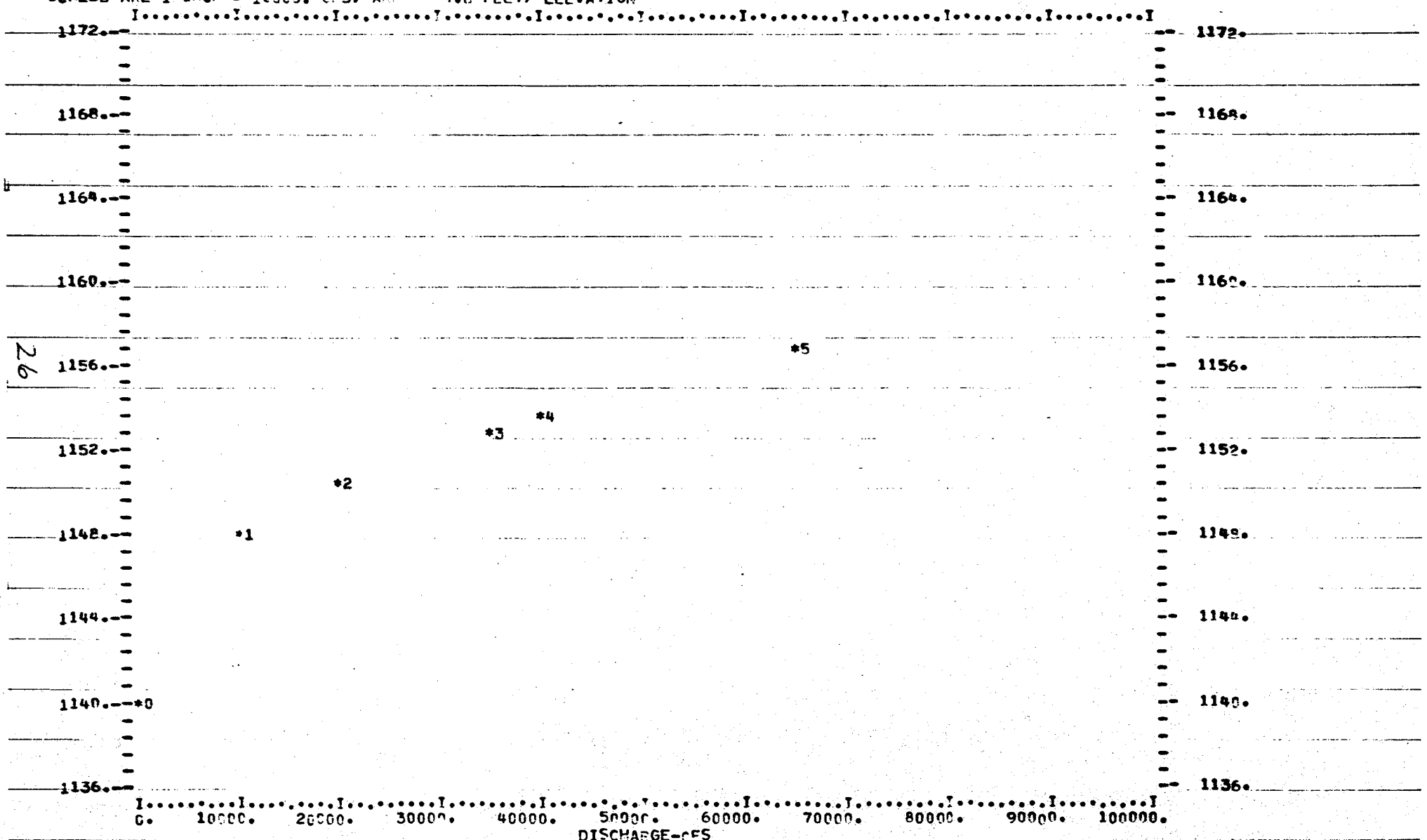
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1139.90	0.00	0.00	0.00	0.00	0.00	0.00	
1	1148.24	5081.98	10000.00	.00	2.07	.00	10000.00	1143.41
2	1150.39	7095.96	20000.00	.00	2.22	.00	20000.00	1144.77
3	1152.81	9517.19	35000.00	.00	2.37	.00	35000.00	1146.02
4	1153.69	10666.45	40000.00	.00	3.34	.00	40000.00	1146.40
5	1157.09	18107.73	65000.00	.00	5.93	.00	65000.00	1149.03

25

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA35

SCALES ARE 1 INCH = 10000. CFS. AND 4.8 FEET/ ELEVATION



*****SECT.STA36 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1154.40 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

26

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION ST-40

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.50	0.00	0.00	0.00	0.00	0.00	0.00	
1	1142.41	4560.02	10000.00	.00	2.65	.00	10000.00	1145.31
2	1150.61	7342.89	20000.00	.00	3.09	.00	20000.00	1146.33
3	1153.08	10751.36	35000.00	.00	3.25	.00	35000.00	1147.40
4	1153.97	12049.37	40000.00	.00	3.53	.00	40000.00	1147.72
5	1157.41	20053.30	65000.00	.00	6.92	.00	65000.00	1149.14

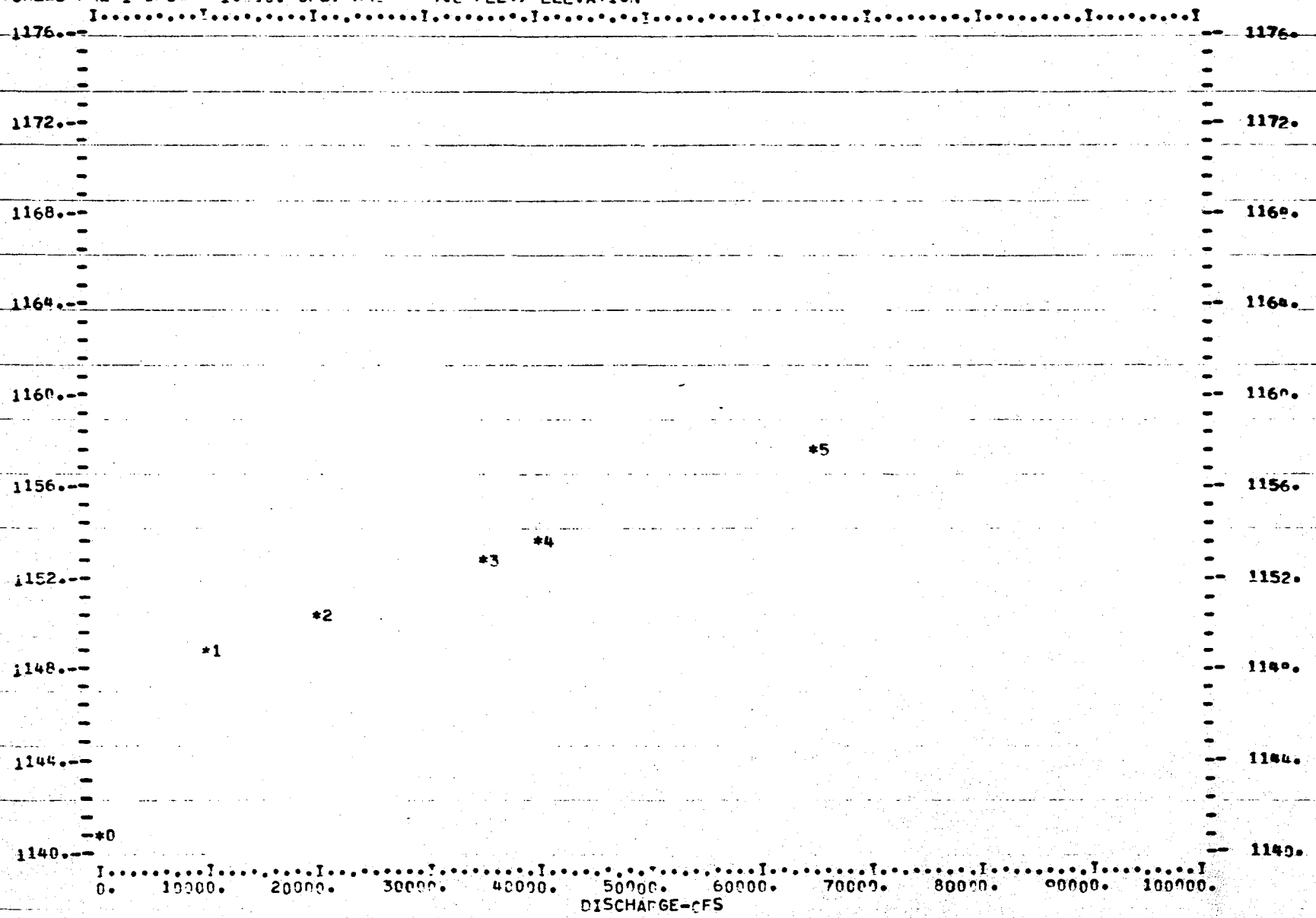
27

WSP2 XEQ 88888888
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA40

SCALES ARE 1 INCH = 10000. CFS, AND 4.8 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA45

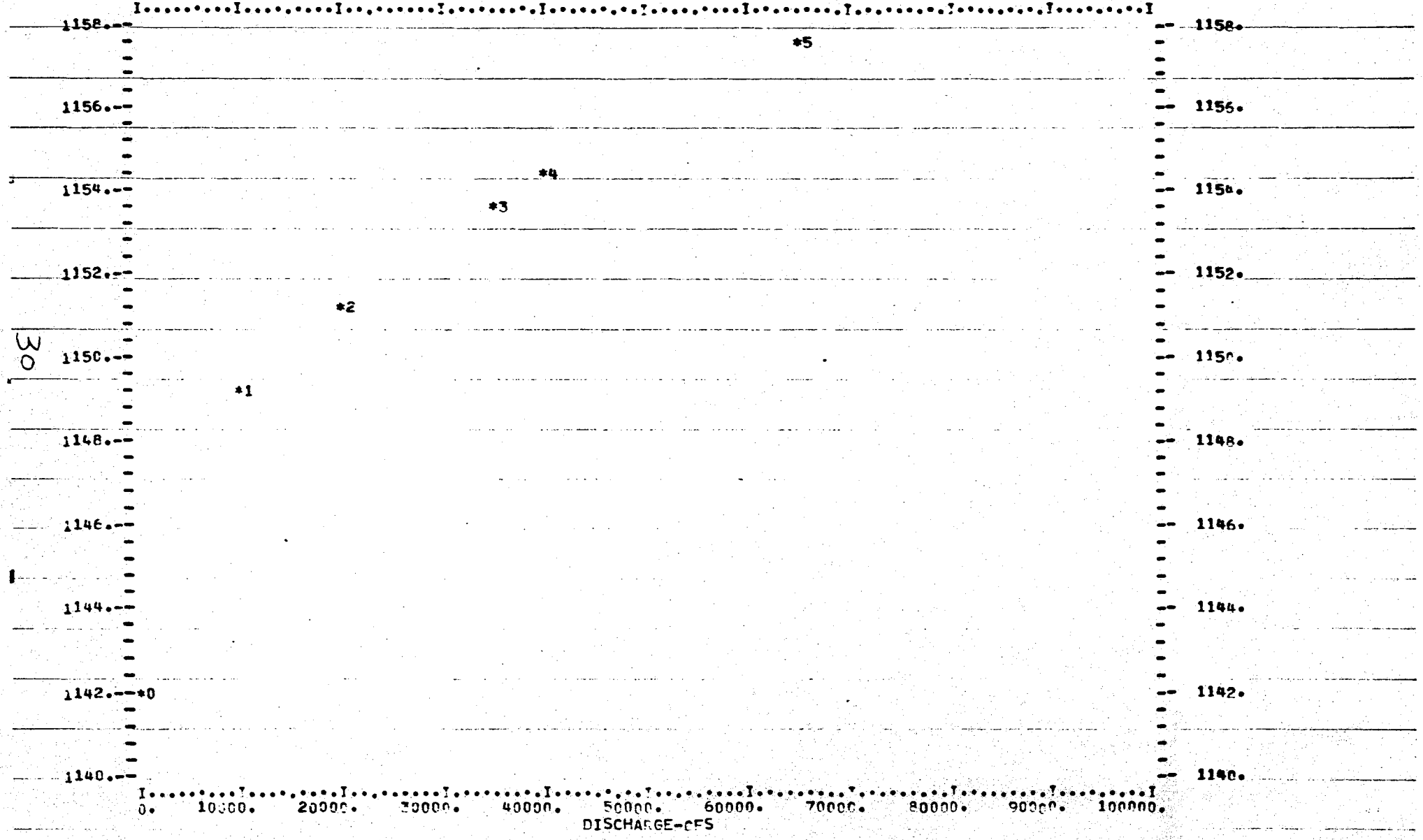
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1142.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1149.01	3176.93	10000.00	.00	2.51	.00	10000.00	1146.77
2	1151.13	5765.79	20000.00	.00	3.10	.00	20000.00	1148.12
3	1153.47	9201.92	35000.00	.00	3.57	.00	35000.00	1149.29
4	1154.31	10519.36	40000.00	.00	3.64	.00	40000.00	1149.59
5	1157.74	16607.47	65000.00	.00	5.44	.00	65000.00	1151.01

29

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA45

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



30

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA50

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1144.20	0.00	0.00	0.00	0.00	0.00	0.00	
1	1150.22	2214.60	10000.00	.00	2.21	.00	10000.00	1148.85
2	1152.24	4444.43	20000.00	.00	3.02	.00	20000.00	1150.37
3	1154.03	7154.17	35000.00	.00	3.22	.00	35000.00	1151.43
4	1154.77	8209.14	40000.00	.00	3.30	.00	40000.00	1151.70
5	1156.39	13371.12	65000.00	.00	4.23	.00	65000.00	1152.91

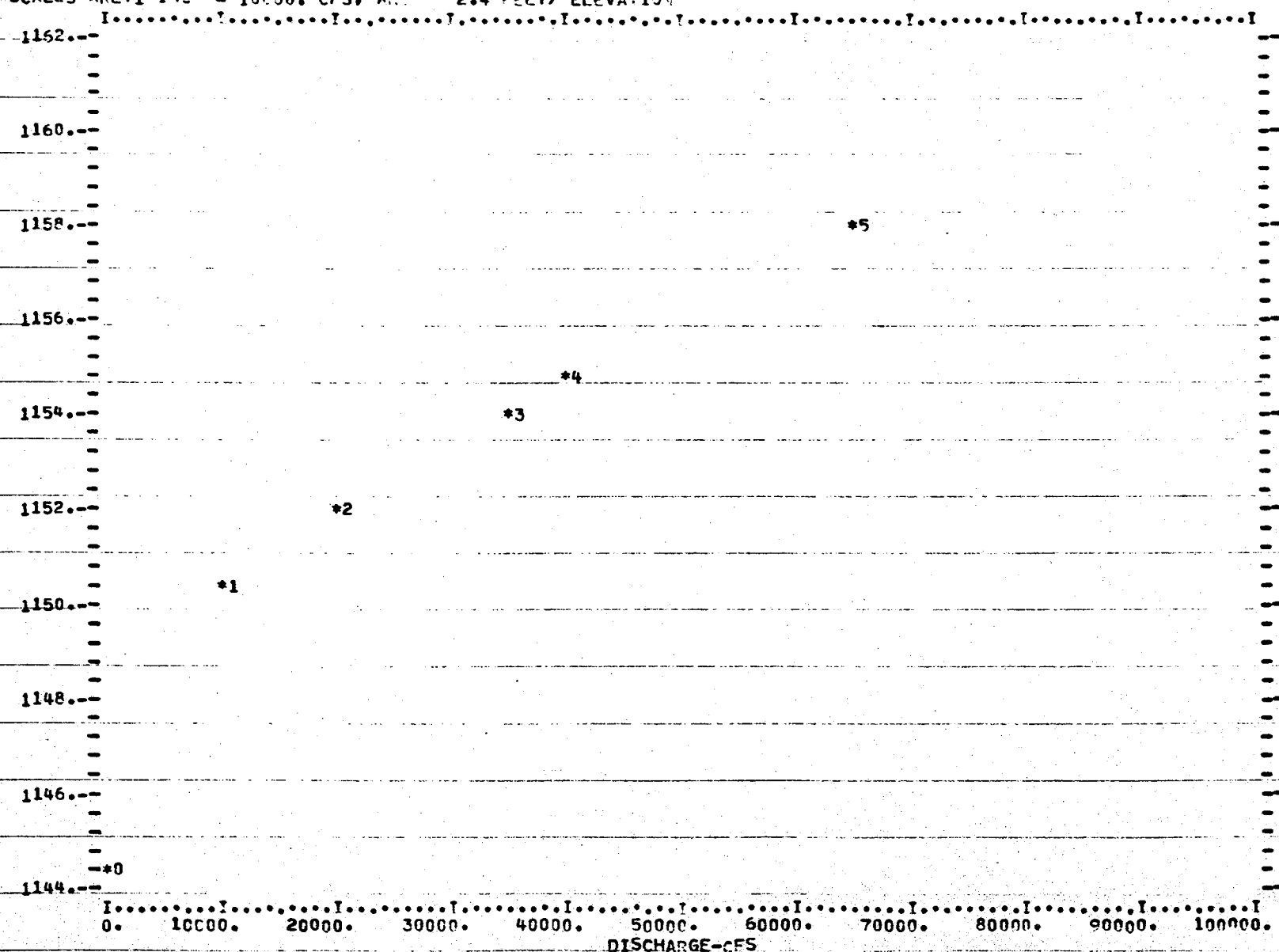
31

WSP2 XEQ 09570090
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INC. BEND WASH

CROSS SECTION ST150

SCALES ARE 1 INC = 10000. CFS, AND 2.4 FEET/ ELEVATION



32

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INC. BEND WASH

RATING TABLE

CROSS SECTION STATS

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1149.20	0.00	0.00	0.00	0.00	0.00	0.00	
1	1153.62	3623.21	10000.00	.00	3.00	.00	10000.00	1151.61
2	1154.96	5487.48	20000.00	.00	3.30	.00	20000.00	1152.66
3	1156.55	8127.58	35000.00	.00	5.01	.00	35000.00	1153.66
4	1157.01	9154.62	40000.00	.00	5.16	.00	40000.00	1153.95
5	1159.46	16186.35	65000.00	.00	7.99	.00	65000.00	1155.12

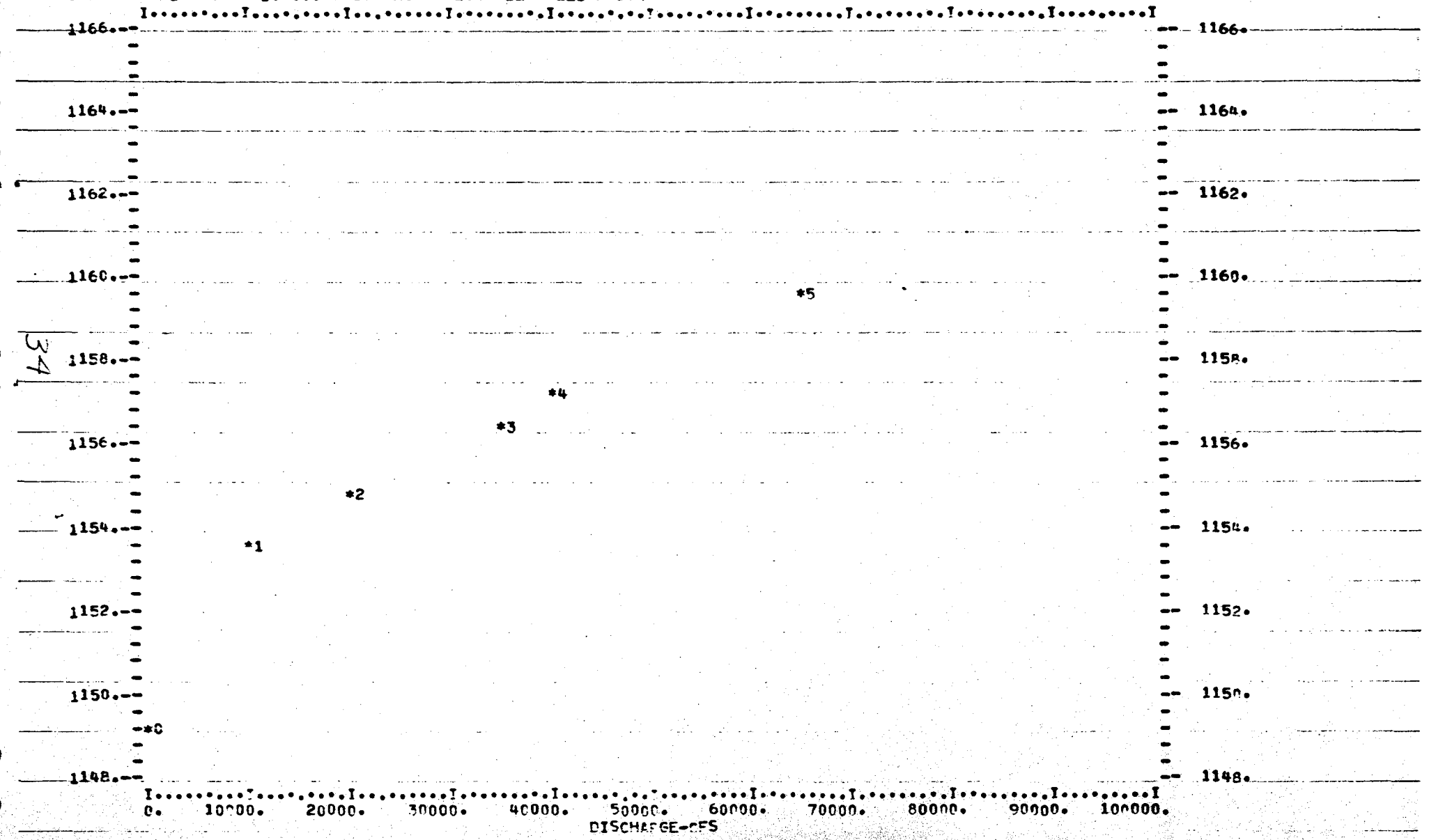
33

WSP2 XEQ PROCESS
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION ST455

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



34

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA60

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1148.90	0.00	0.00	0.00	0.00	0.00	0.00	
1	1154.04	2683.55	10000.00	.00	1.85	.00	10000.00	1151.89
2	1155.73	4461.24	20000.00	.00	3.07	.00	20000.00	1157.17
3	1157.44	7243.04	35000.00	.00	4.49	.00	35000.00	1154.83
4	1157.94	8249.46	40000.00	.00	5.26	.00	40000.00	1155.31
5	1160.25	14477.93	65000.00	.00	7.36	.00	65000.00	1156.70

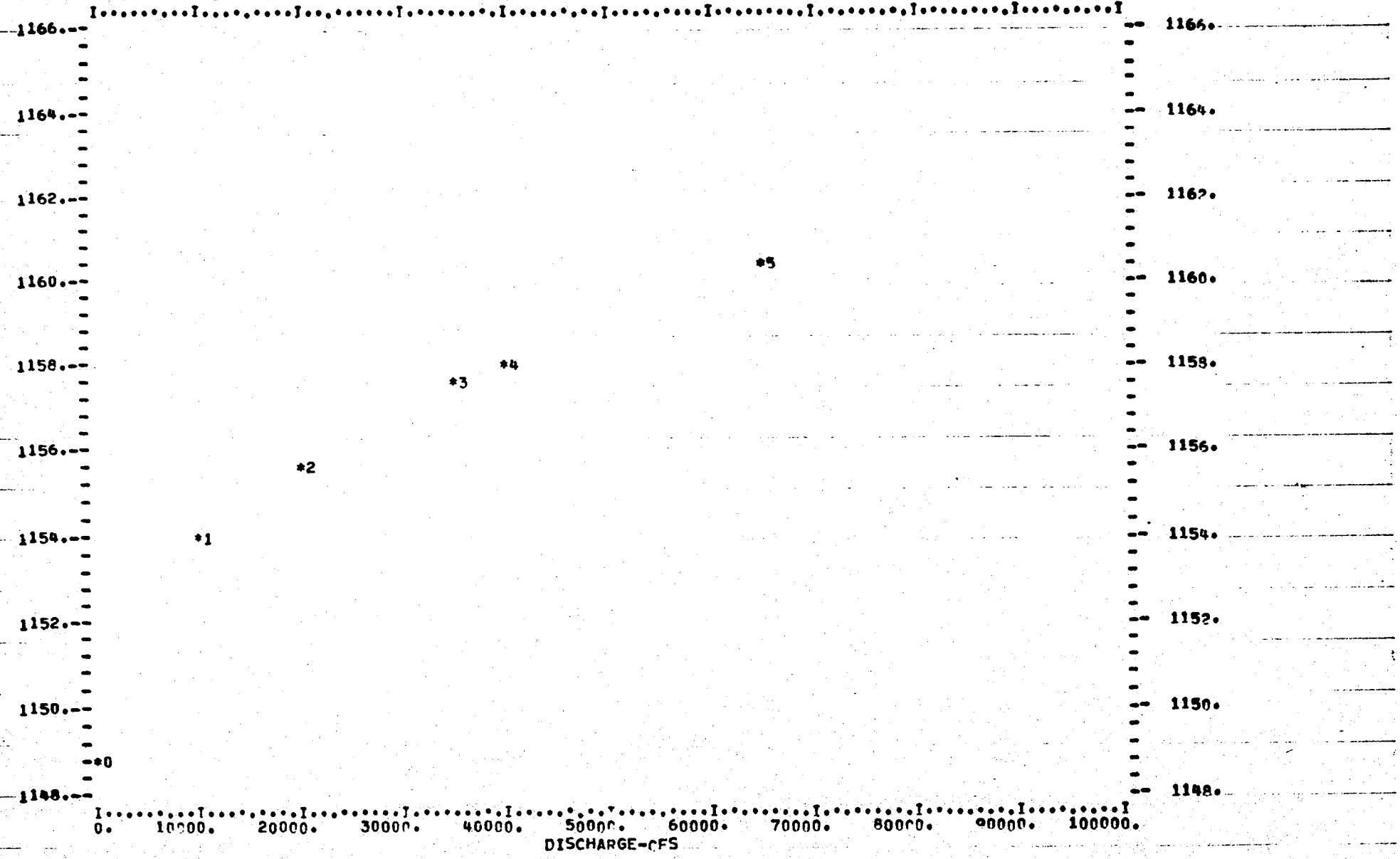
35

WSP2 XEQ 09070600
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION ST460

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



36

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA65

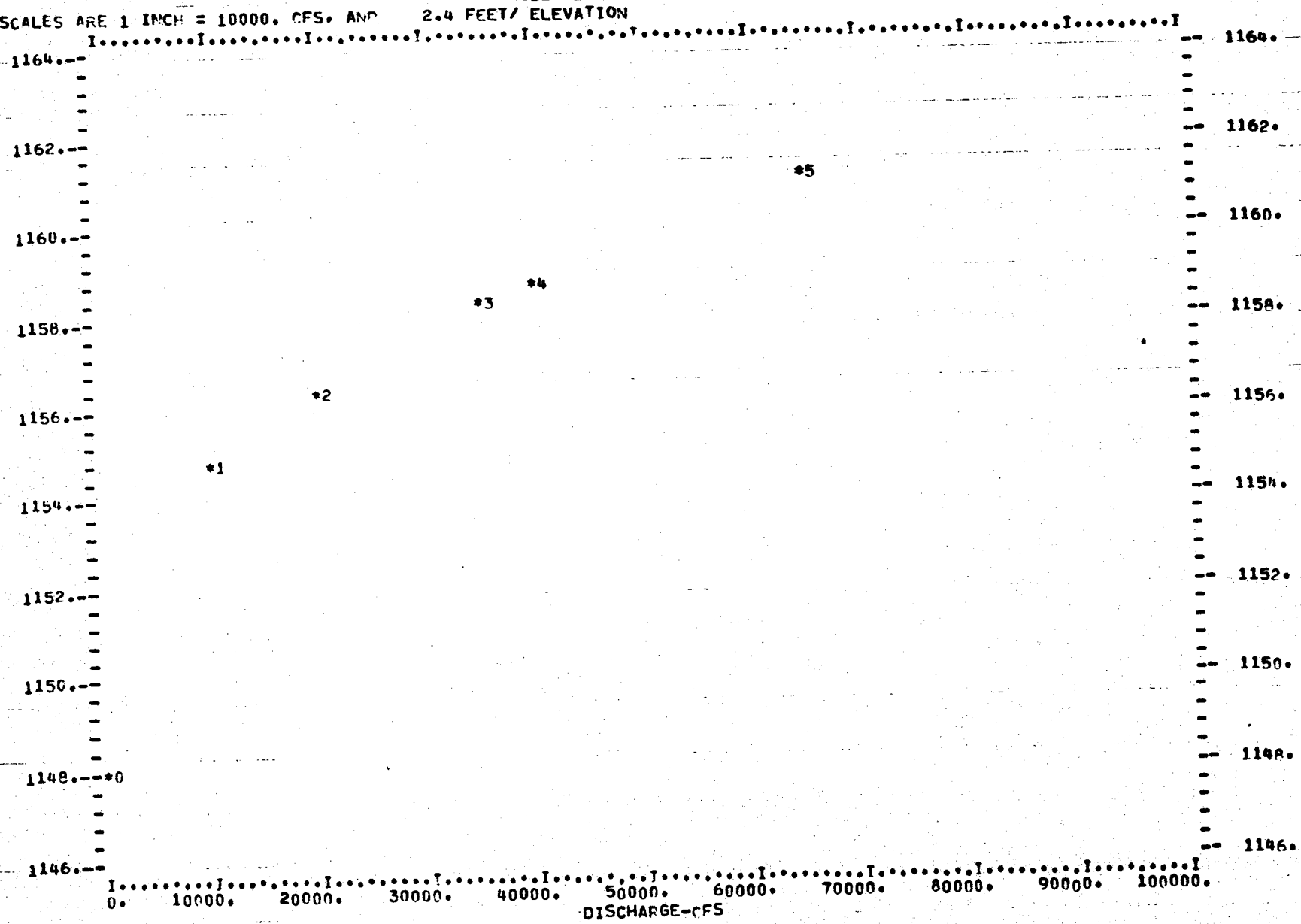
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1148.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1154.79	3994.14	10000.00	.00	2.41	.00	10000.00	1150.97
2	1156.55	6079.80	20000.00	.00	3.04	.00	20000.00	1152.91
3	1158.46	9213.14	35000.00	.00	4.34	.00	35000.00	1154.18
4	1158.96	10217.42	40000.00	.00	4.98	.00	40000.00	1154.53
5	1161.13	16409.11	65000.00	.00	8.59	.00	65000.00	1155.96

37

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA65

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA70

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1146.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1155.12	4083.19	10000.00	.00	1.99	.00	10000.00	1151.09
2	1157.02	5897.87	20000.00	.00	2.47	.00	20000.00	1152.32
3	1158.12	8883.67	35000.00	.00	4.25	.00	35000.00	1153.80
4	1159.68	9963.56	40000.00	.00	4.54	.00	40000.00	1154.42
ZERO DAMG	1160.00	10594.49	43566.77	.00	4.71	.00		
5	1161.95	16282.08	65000.00	.00	7.69	.00	65000.00	1156.04

**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

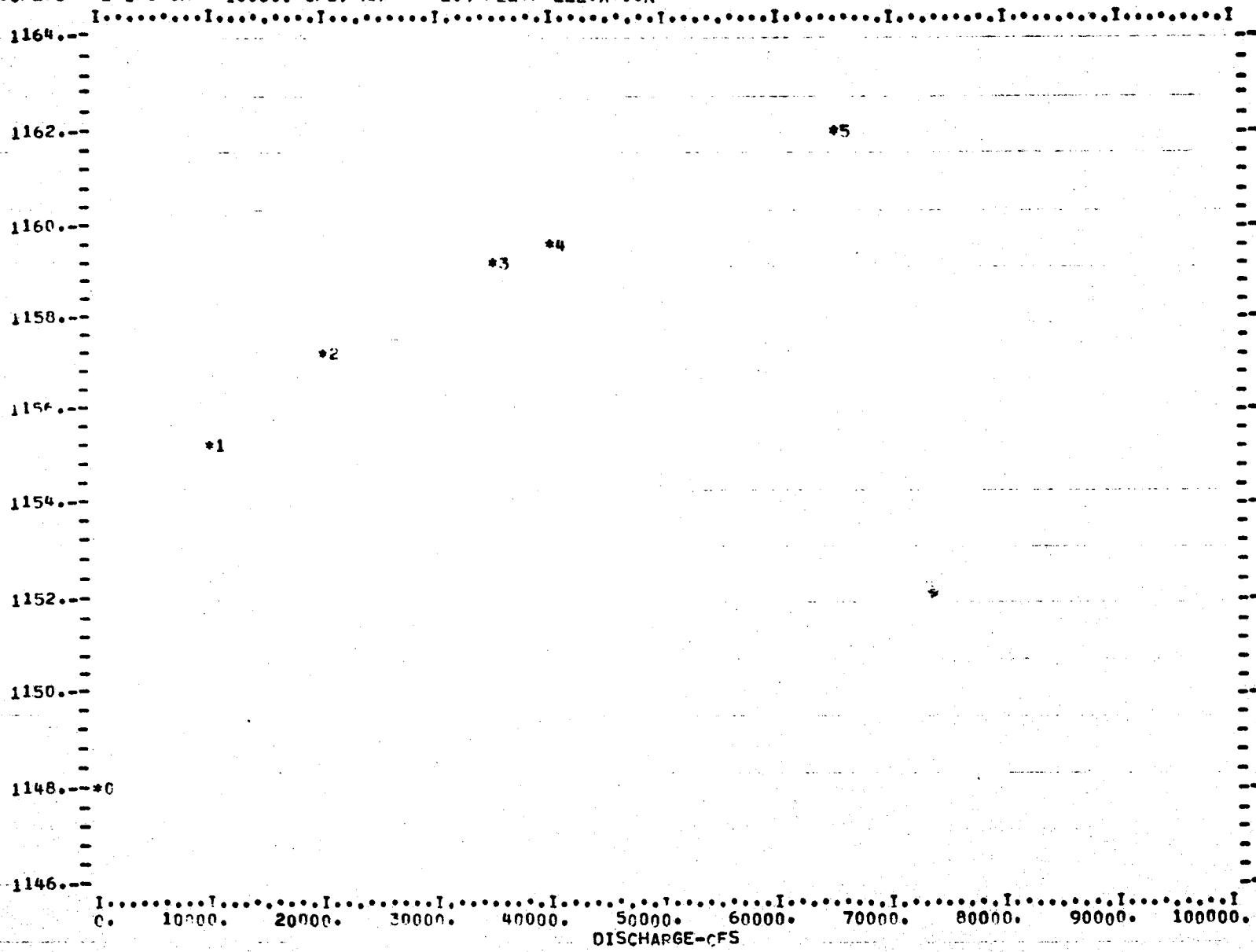
391

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION: STA70

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO BEND WASH

RATING TABLE

CROSS SECTION STA75

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1155.61	2846.62	10000.00	.00	2.44	.00	10000.00	1154.22
2	1157.54	5107.72	20000.00	.00	2.95	.00	20000.00	1155.11
3	1159.80	8449.52	35000.00	.00	4.04	.00	35000.00	1156.20
4	1160.36	9535.28	40000.00	.00	4.45	.00	40000.00	1156.52
5	1162.63	14870.03	65000.00	.00	6.12	.00	65000.00	1157.90

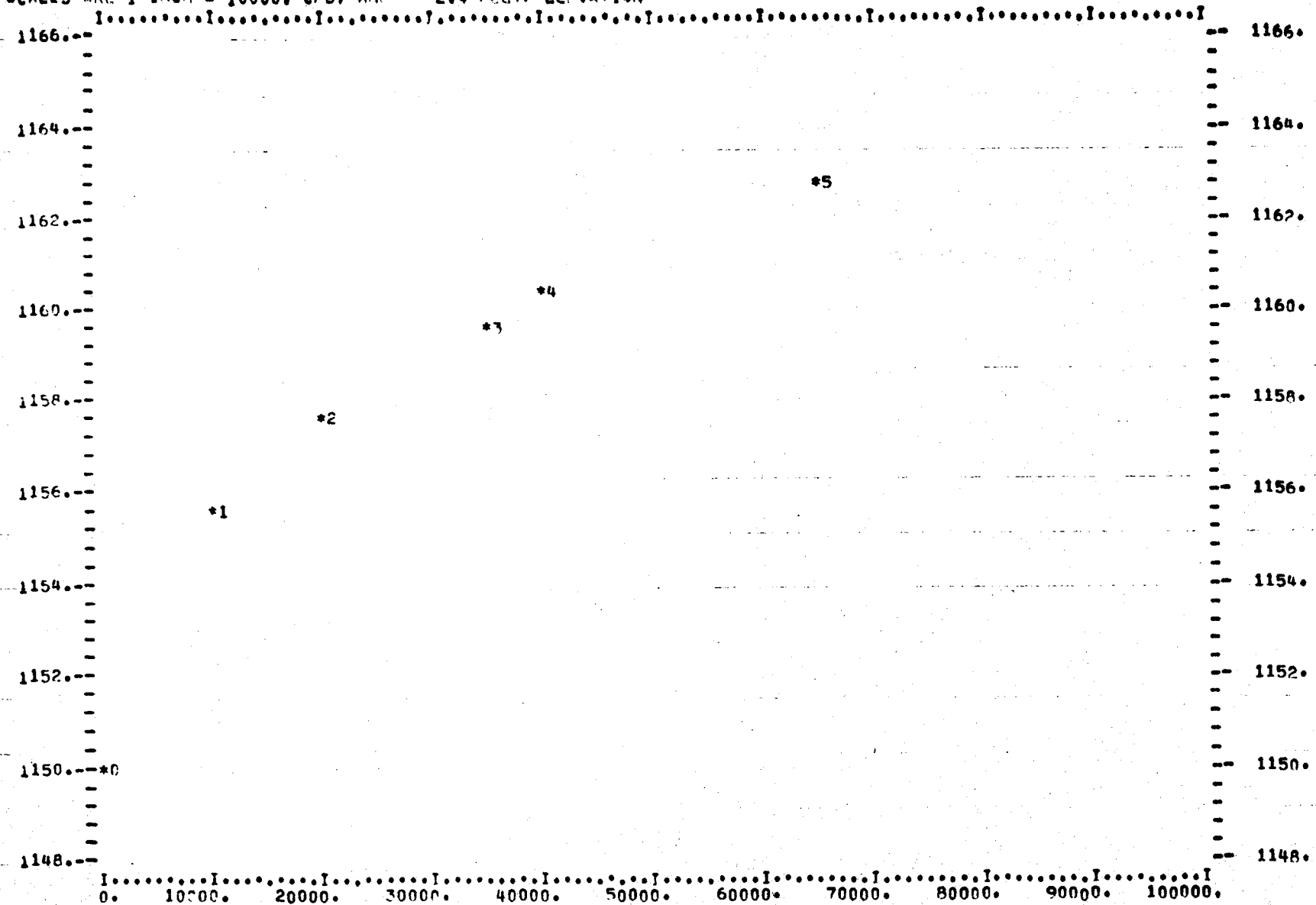
41

WSP2 XEQ WWW0000
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA75

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA80

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1149.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1156.61	3633.22	10000.00	.00	2.91	.00	10000.00	1158.02
2	1158.31	5850.62	20000.00	.00	3.09	.00	20000.00	1155.14
3	1160.39	8791.63	35000.00	.00	3.48	.00	35000.00	1156.61
4	1160.96	9663.42	40000.00	.00	3.74	.00	40000.00	1156.89
5	1163.23	14349.36	65000.00	.00	5.72	.00	65000.00	1158.11

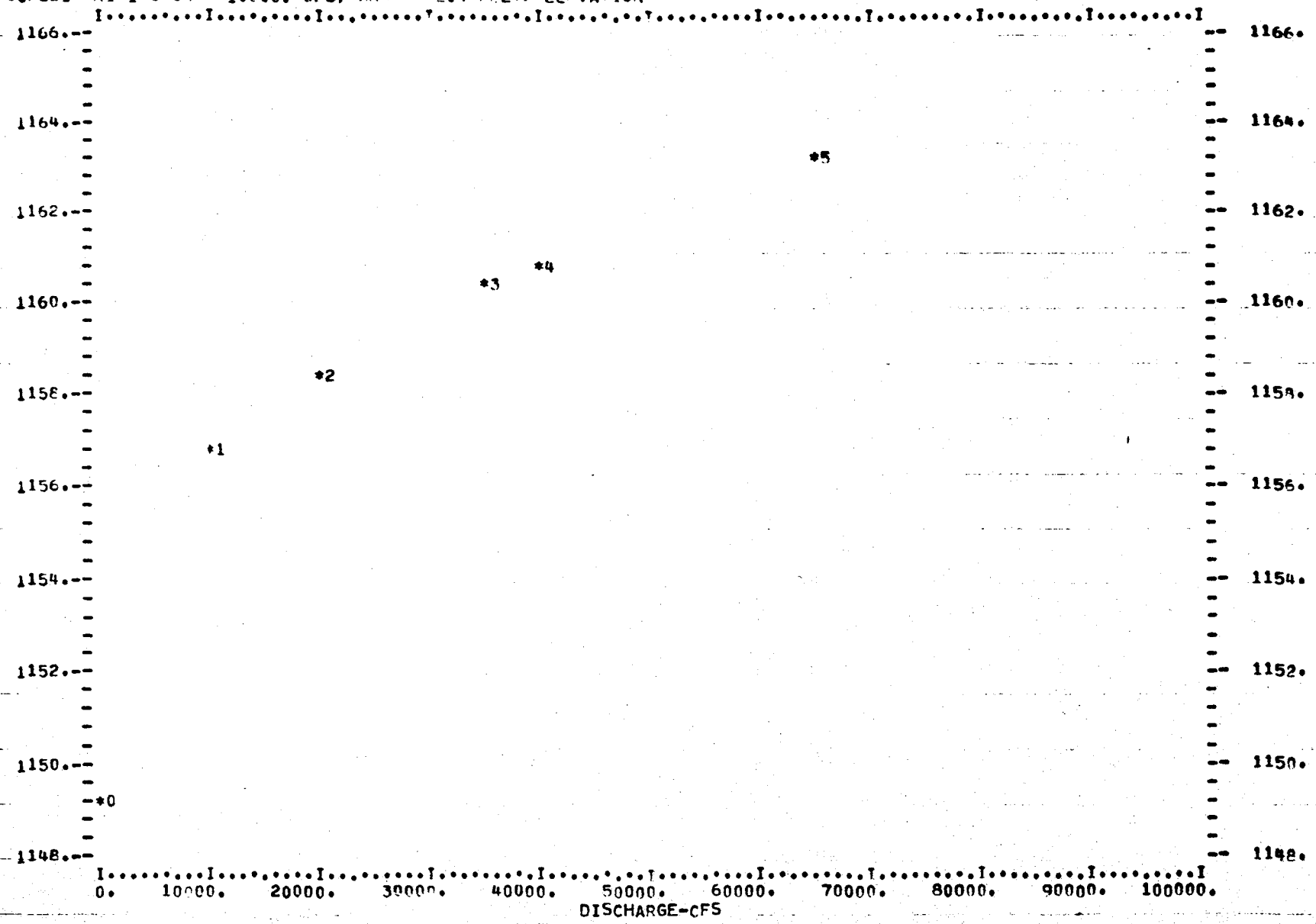
43

WSP2 XEQ 6888888
REV 02/25/72

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA80

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA85

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1157.70	2683.21	10000.00	.00	2.11	.00	10000.00	1155.03
2	1159.24	4410.94	20000.00	.00	2.45	.00	20000.00	1156.91
3	1161.32	7427.71	35000.00	.00	4.21	.00	35000.00	1158.14
4	1161.87	8475.60	40000.00	.00	4.47	.00	40000.00	1158.49
ZERO DAMG	1164.00	13348.11	63552.95	.00	5.73	.00		
5	1164.13	13664.48	65000.00	.00	5.80	.00	65000.00	1160.13

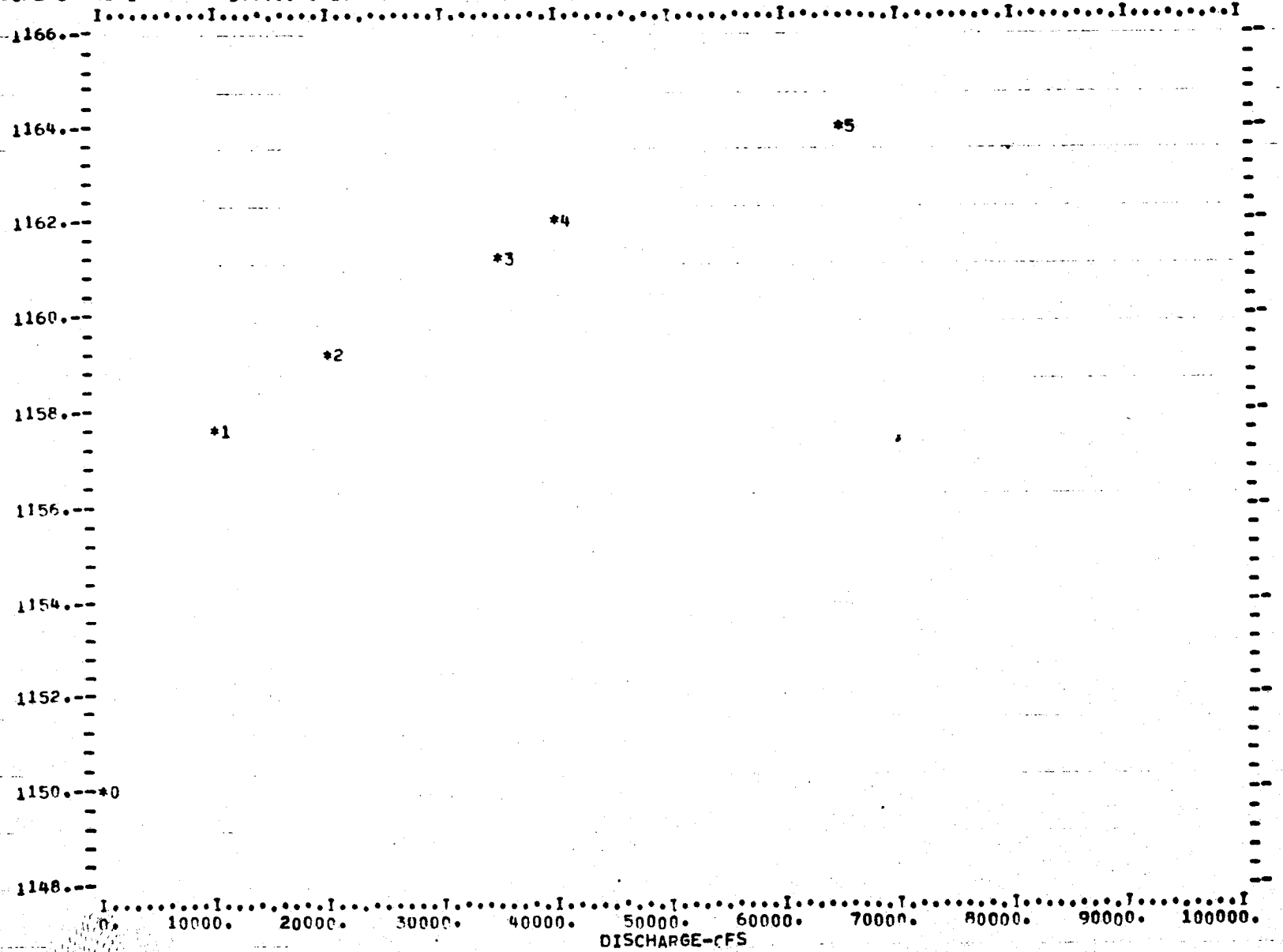
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

76

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA85

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



46

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA90

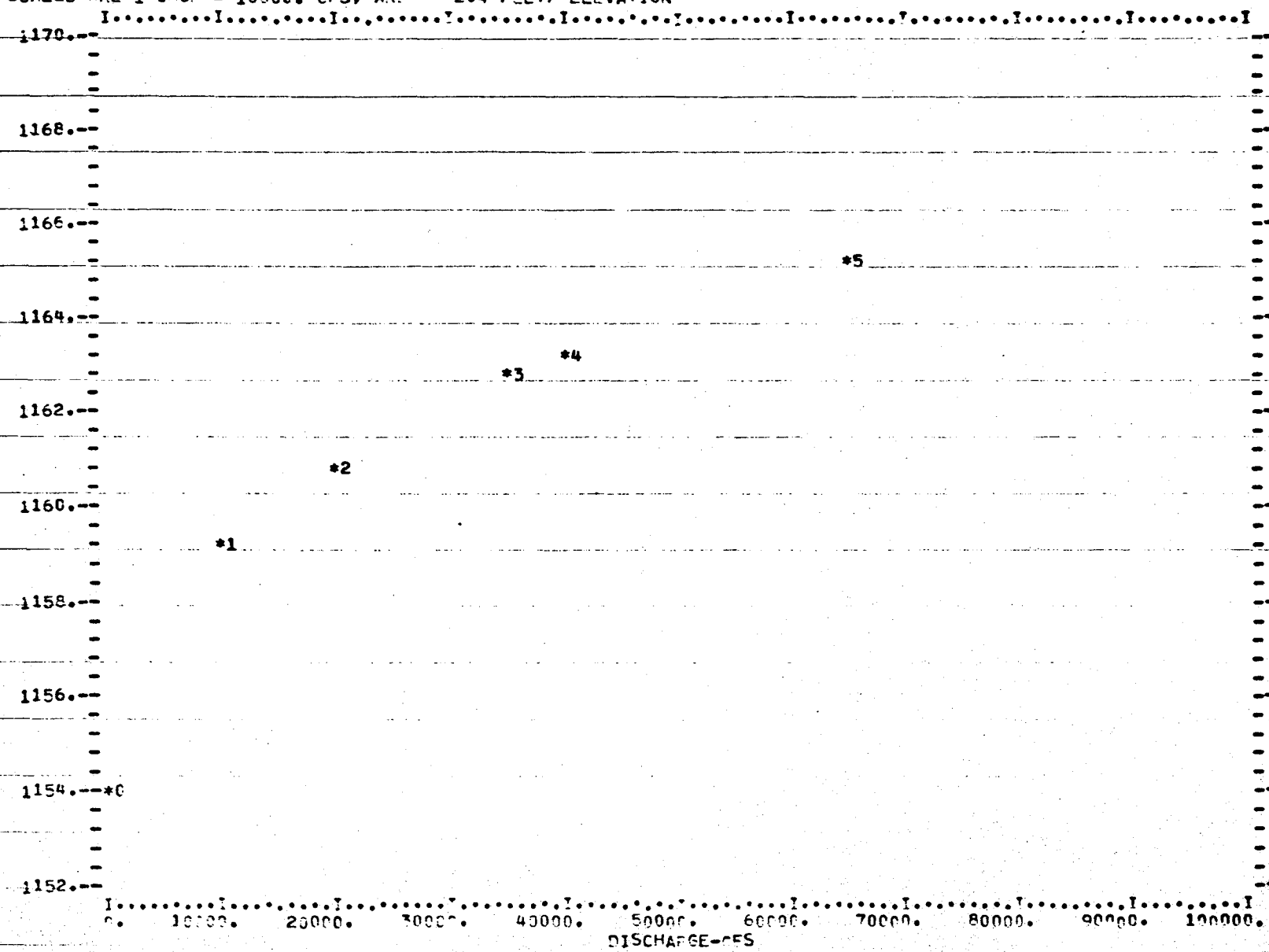
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1154.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1159.14	3089.21	10000.00	.00	2.78	.00	10000.00	1156.47
2	1160.79	6467.95	20000.00	.00	4.45	.00	20000.00	1157.65
3	1162.64	10289.25	35000.00	.00	4.99	.00	35000.00	1158.86
4	1163.12	11367.99	40000.00	.00	5.16	.00	40000.00	1159.16
ZERO DAMG	1164.50	14652.44	57439.31	.00	5.70	.00		
5	1165.10	16201.68	65000.00	.00	6.11	.00	65000.00	1160.71

**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA90

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



48

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION ST195

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1154.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1159.67	3583.96	10000.00	.00	2.63	.00	10000.00	1157.12
2	1161.33	5660.37	20000.00	.00	2.84	.00	20000.00	1159.48
3	1163.19	8047.96	35000.00	.00	3.05	.00	35000.00	1159.52
4	1163.68	8703.94	40000.00	.00	3.11	.00	40000.00	1159.82
ZERO DAMG	1164.50	9827.80	50516.59	.00	3.16	.00		
5	1165.63	11396.62	65000.00	.00	3.19	.00	65000.00	1161.15

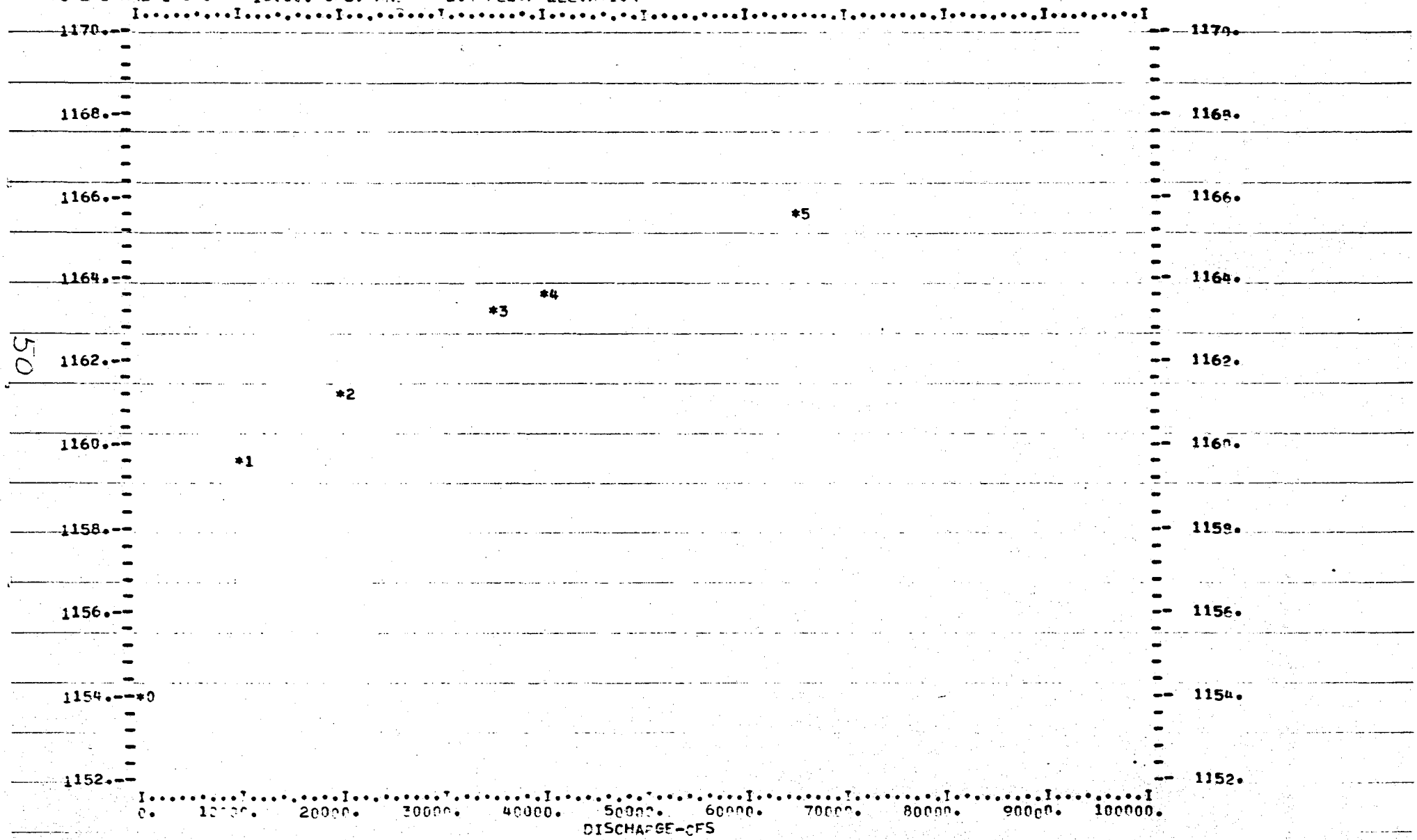
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

49

BACKWATER ANALYSIS OF EXISTING CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA95

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1134.00	0.00	0.00	0.00	0.00	0.00	0.00	1139.40
1	1140.24	2034.50	10000.00	.00	2.68	.00	10000.00	1140.64
2	1141.20	3248.49	20000.00	.00	3.10	.00	20000.00	1141.55
3	1142.22	4672.95	35000.00	.00	3.26	.00	35000.00	1141.82
4	1142.51	5079.19	40000.00	.00	3.27	.00	40000.00	1142.96
5	1143.70	6779.90	65000.00	.00	3.29	.00	65000.00	

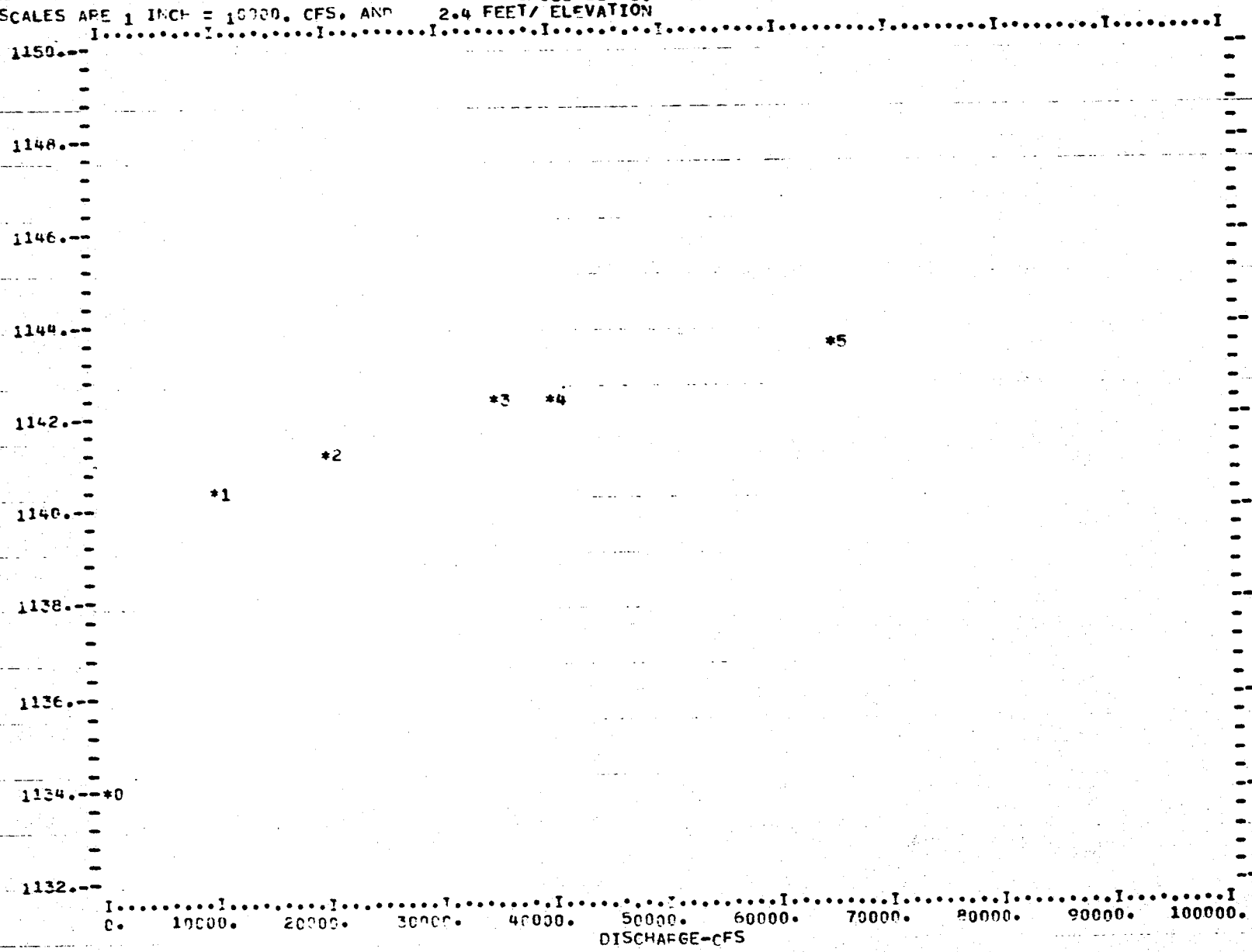
51

WSP2 XEG 99999999
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



52

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA5

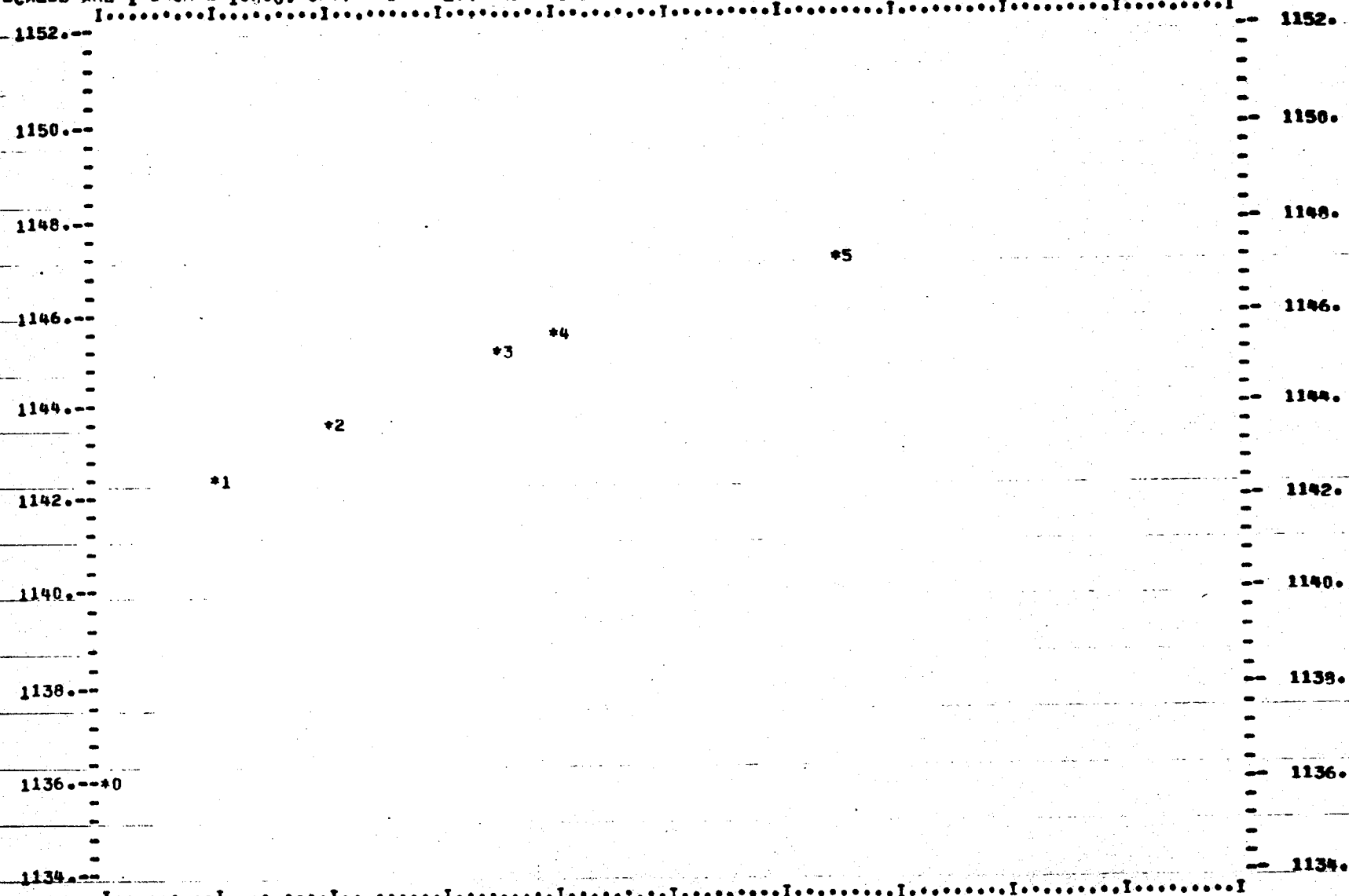
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1136.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1142.44	2713.81	10000.00	.00	2.20	.00	10000.00	1140.32
2	1143.69	4071.21	20000.00	.00	2.29	.00	20000.00	1141.88
3	1145.05	5628.45	35000.00	.00	2.46	.00	35000.00	1143.13
4	1145.44	6100.84	40000.00	.00	2.53	.00	40000.00	1143.43
5	1147.08	8209.60	65000.00	.00	2.82	.00	65000.00	1144.82

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA5

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



54

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA11

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1145.85	4280.54	10000.00	.00	2.48	.00	10000.00	1142.66
2	1147.38	5998.82	20000.00	.00	2.66	.00	20000.00	1143.85
3	1149.02	8111.01	35000.00	.00	3.29	.00	35000.00	1145.00
4	1149.50	8836.75	40000.00	.00	3.55	.00	40000.00	1145.33
ZERO DAMG	1150.00	9603.04	45935.84	.00	3.83	.00		
5	1151.61	12746.16	65000.00	.00	4.63	.00	65000.00	1146.76

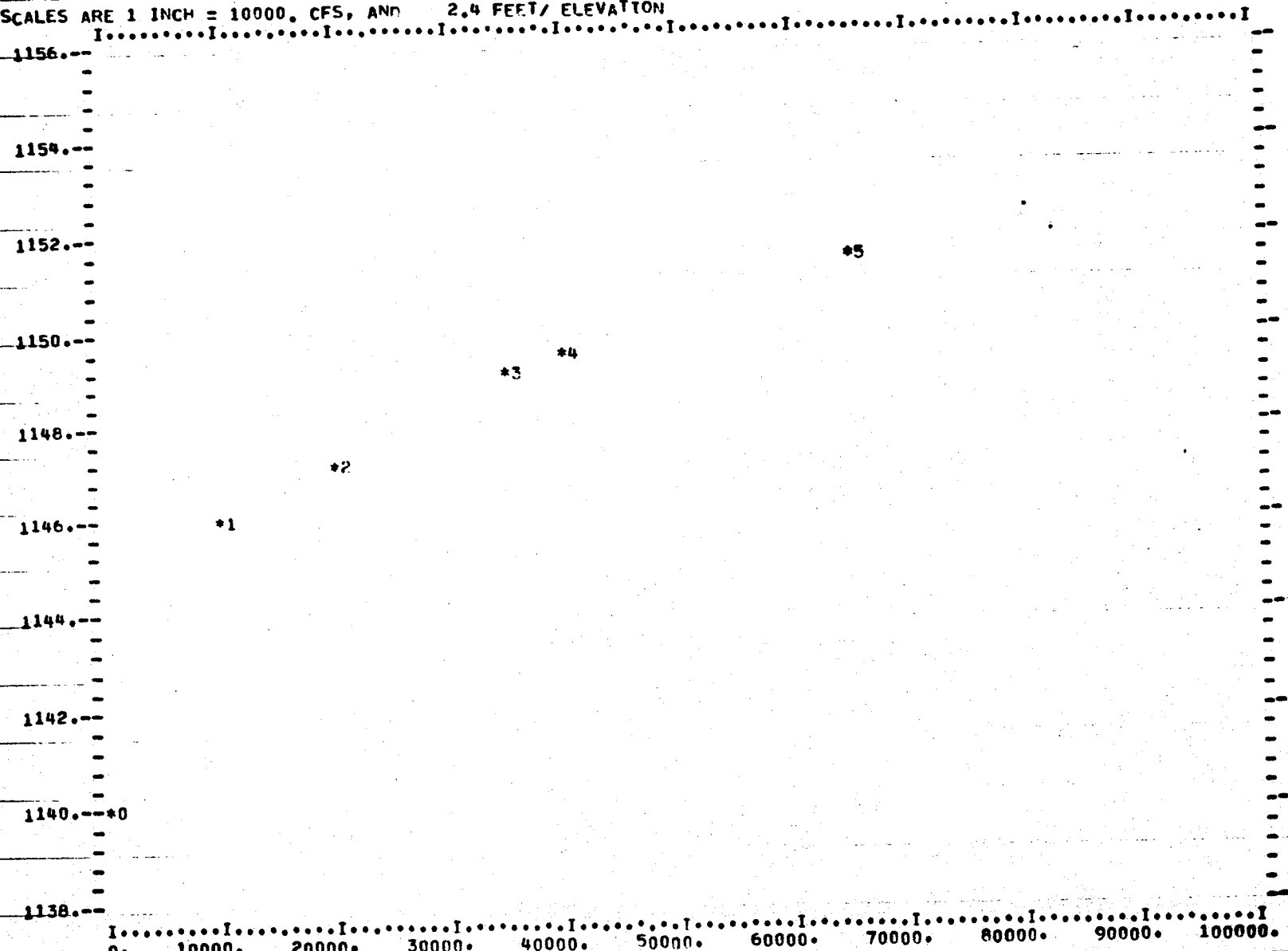
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

55

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA11

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



T95

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA15

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.70	0.00	0.00	0.00	0.00	0.00	0.00	
1	1146.18	3182.51	10000.00	.00	1.30	.00	10000.00	1144.15
2	1147.74	4742.87	20000.00	.00	1.45	.00	20000.00	1145.14
3	1149.39	6522.46	35000.00	.00	1.51	.00	35000.00	1146.32
4	1149.85	7035.53	40000.00	.00	1.52	.00	40000.00	1146.66
ZERO DAMG	1150.00	7196.67	41636.51	.00	1.52	.00		
5	1152.07	10134.03	65000.00	.00	2.43	.00	65000.00	1148.17

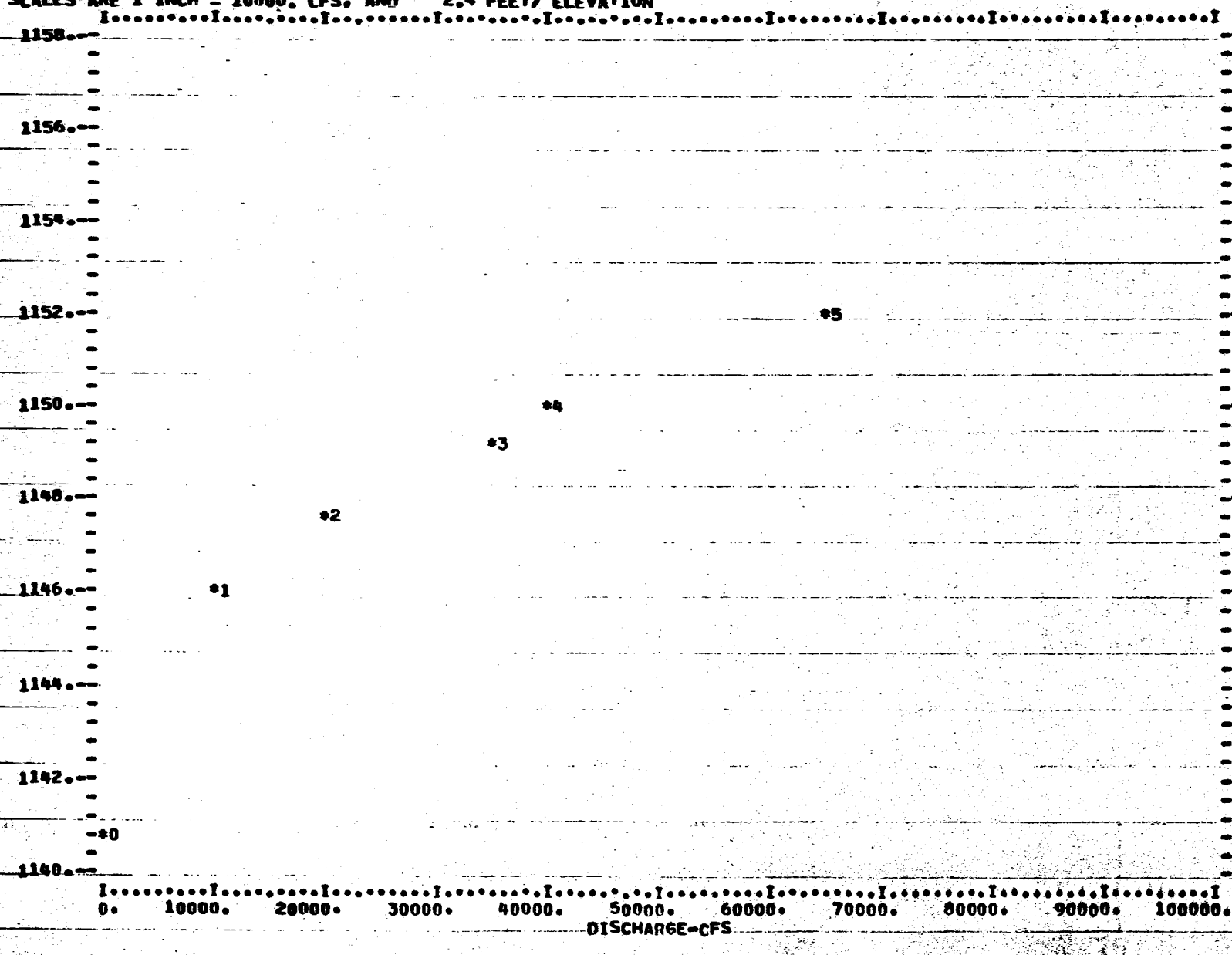
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA15

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA20

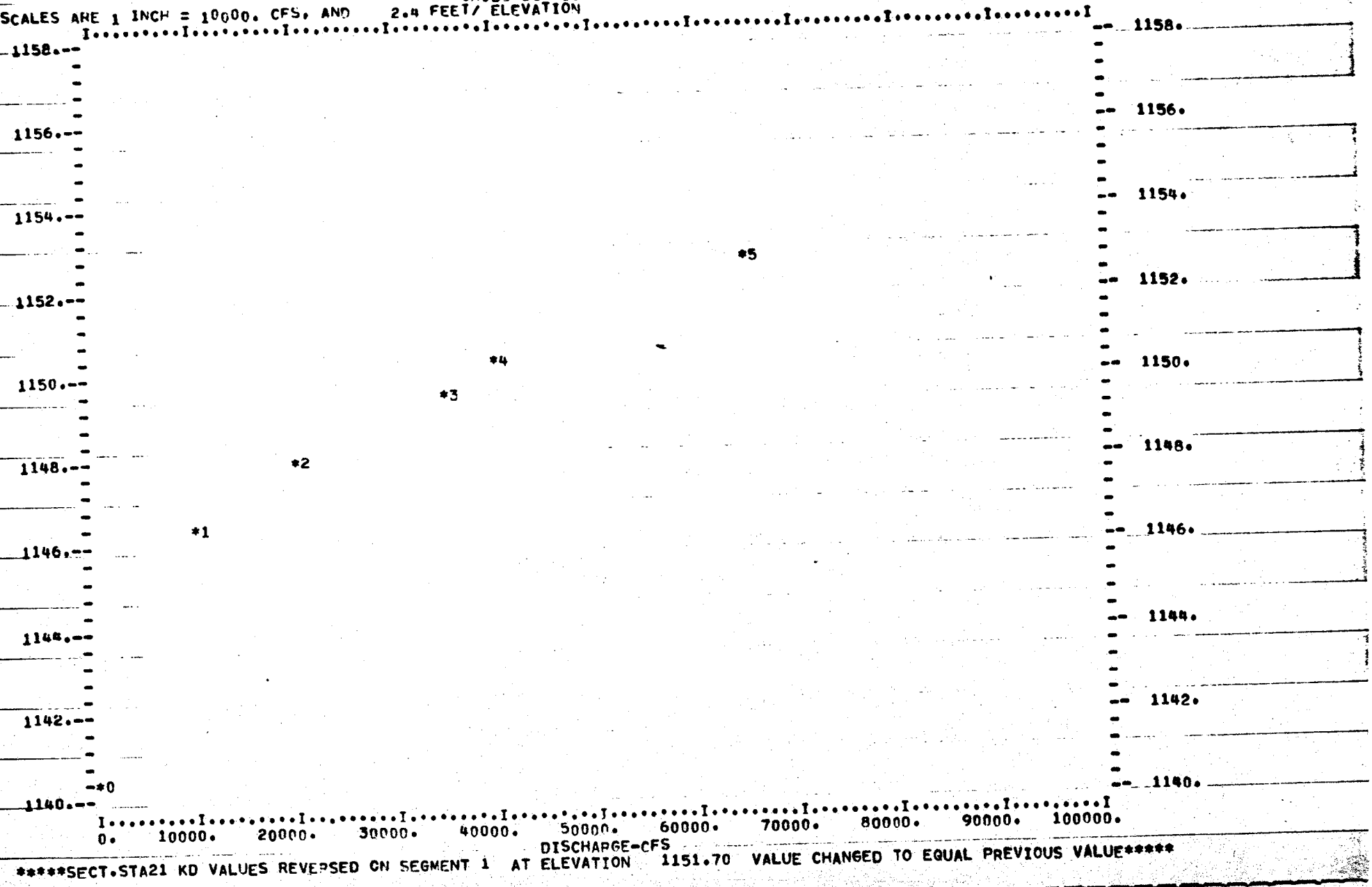
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.40	0.00	0.00	0.00	0.00	0.00	0.00	
1	1146.60	2552.06	10000.00	.00	.80	.00	10000.00	1144.65
2	1148.15	3652.45	20000.00	.00	.82	.00	20000.00	1145.84
3	1149.78	4842.14	35000.00	.00	.87	.00	35000.00	1147.22
4	1150.28	5221.75	40000.00	.00	.89	.00	40000.00	1147.63
5	1152.83	8077.03	65000.00	.00	1.71	.00	65000.00	1149.45

59

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA20

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



*****SECT.STA21 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1151.70 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA25

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.22	2991.20	10000.00	.00	1.47	.00	10000.00	1143.76
2	1149.03	4183.76	20000.00	.00	1.55	.00	20000.00	1145.53
3	1151.02	5580.26	35000.00	.00	1.72	.00	35000.00	1147.05
4	1151.71	6135.42	40000.00	.00	2.06	.00	40000.00	1147.50
5	1154.64	9627.76	65000.00	.00	3.79	.00	65000.00	1149.45

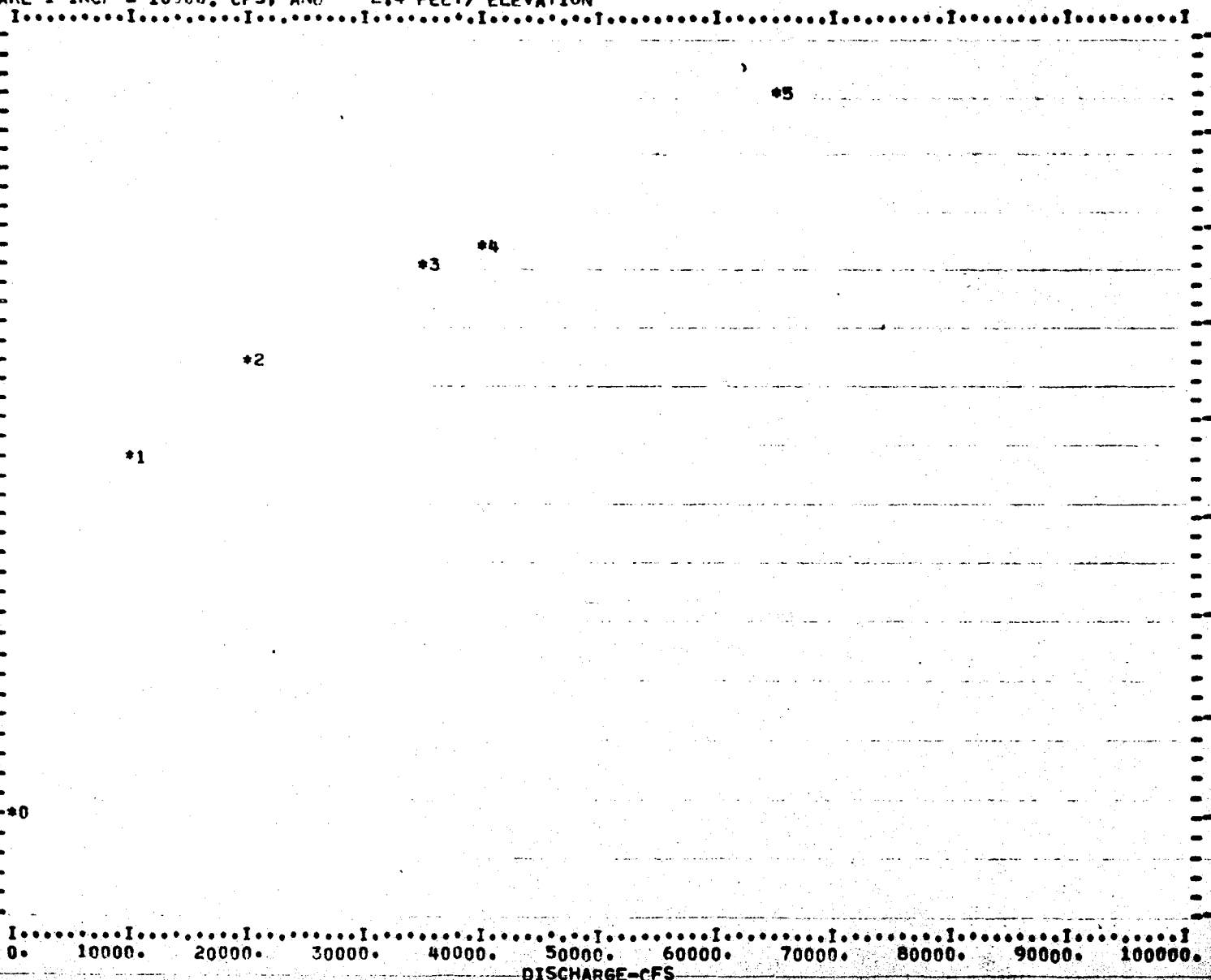
19

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA25

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



62

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INC. BEND WASH

RATING TABLE

CROSS SECTION STA27

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1138.52	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.44	6008.45	10000.00	.00	1.71	.00	10000.00	1140.56
2	1149.42	7509.25	20000.00	.00	1.76	.00	20000.00	1141.80
3	1151.63	9249.77	35000.00	.00	1.87	.00	35000.00	1143.25
4	1152.36	9952.62	40000.00	.00	2.25	.00	40000.00	1143.65
5	1155.41	13982.11	65000.00	.00	3.93	.00	65000.00	1145.46

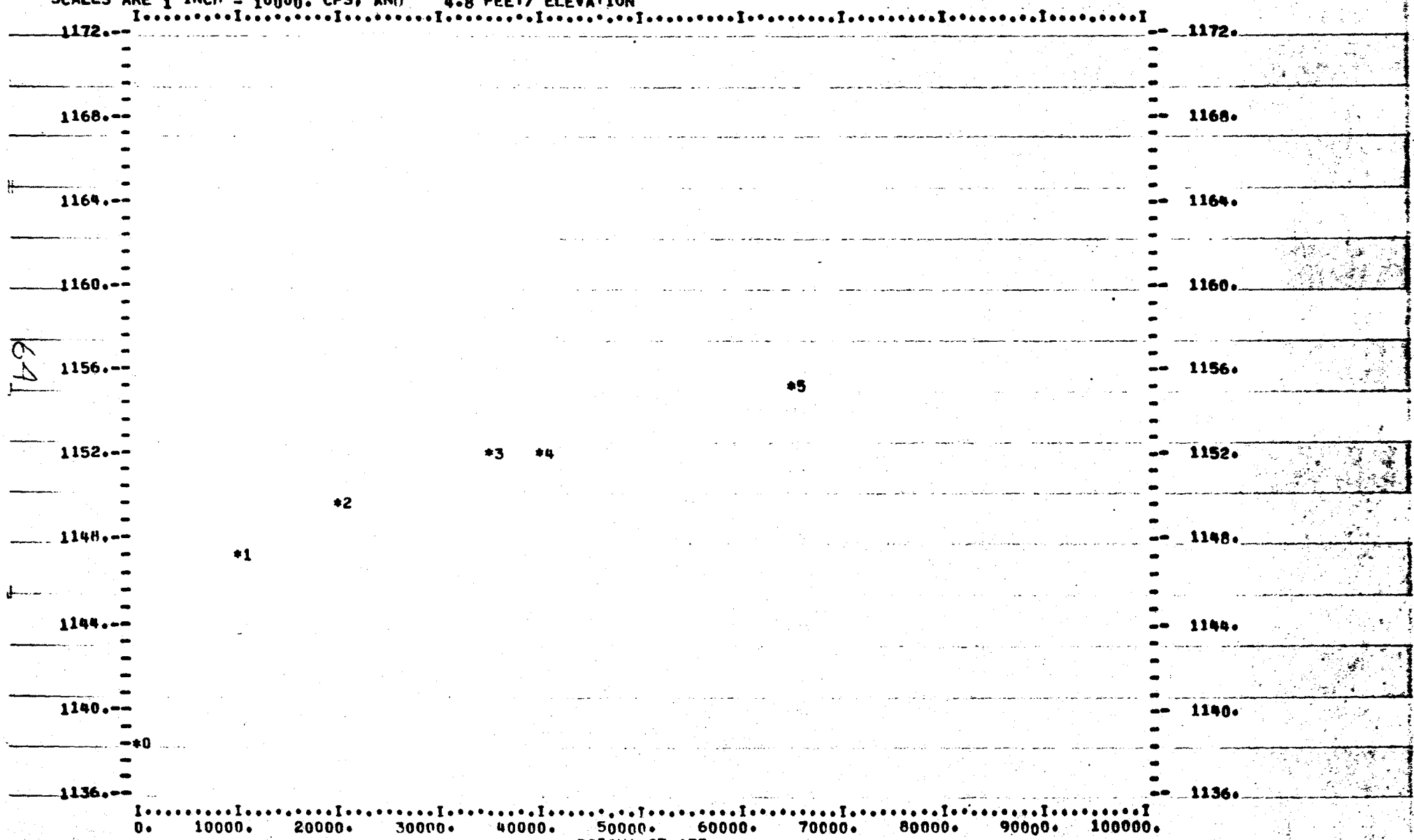
63

WSP2 XFG 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA27

SCALES ARE 1 INCH = 10000. CFS, AND 4.8 FEET/ ELEVATION



*****SECT.STA32 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1153.80 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

64

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA32

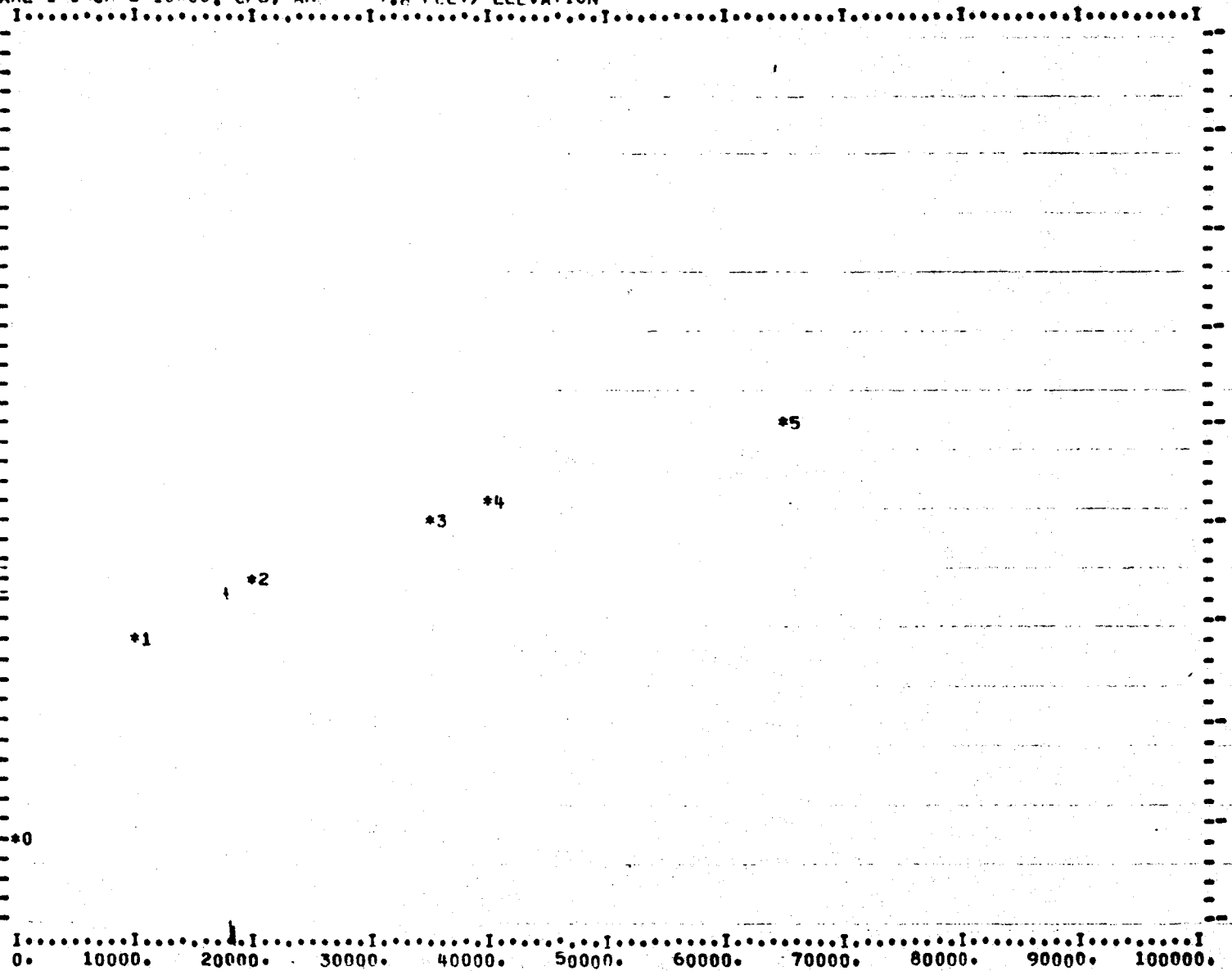
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1139.40	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.52	6812.40	10000.00	.00	11.60	.00	10000.00	1141.81
2	1149.57	8905.69	20000.00	.00	11.84	.00	20000.00	1142.89
3	1151.86	11291.38	35000.00	.00	11.96	.00	35000.00	1144.06
4	1152.62	12079.69	40000.00	.00	12.07	.00	40000.00	1144.38
5	1155.84	17066.17	65000.00	.00	22.17	.00	65000.00	1145.80

65

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA32

SCALES ARE 1 INCH = 10000. CFS, AND 4.8 FEET/ ELEVATION



*****SECT.STA35 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1153.82 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

99

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION: STA35

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1140.62	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.57	4264.39	10000.00	.00	4.32	.00	10000.00	1142.66
2	1149.62	5559.73	20000.00	.00	4.38	.00	20000.00	1143.86
3	1151.88	7005.93	35000.00	.00	4.44	.00	35000.00	1145.32
4	1152.61	7478.96	40000.00	.00	4.46	.00	40000.00	1145.75
ZERO DAM6	1153.00	7776.56	42716.92	.00	5.69	.00		
5	1156.20	12350.47	65000.00	.00	13.44	.00	65000.00	1147.70

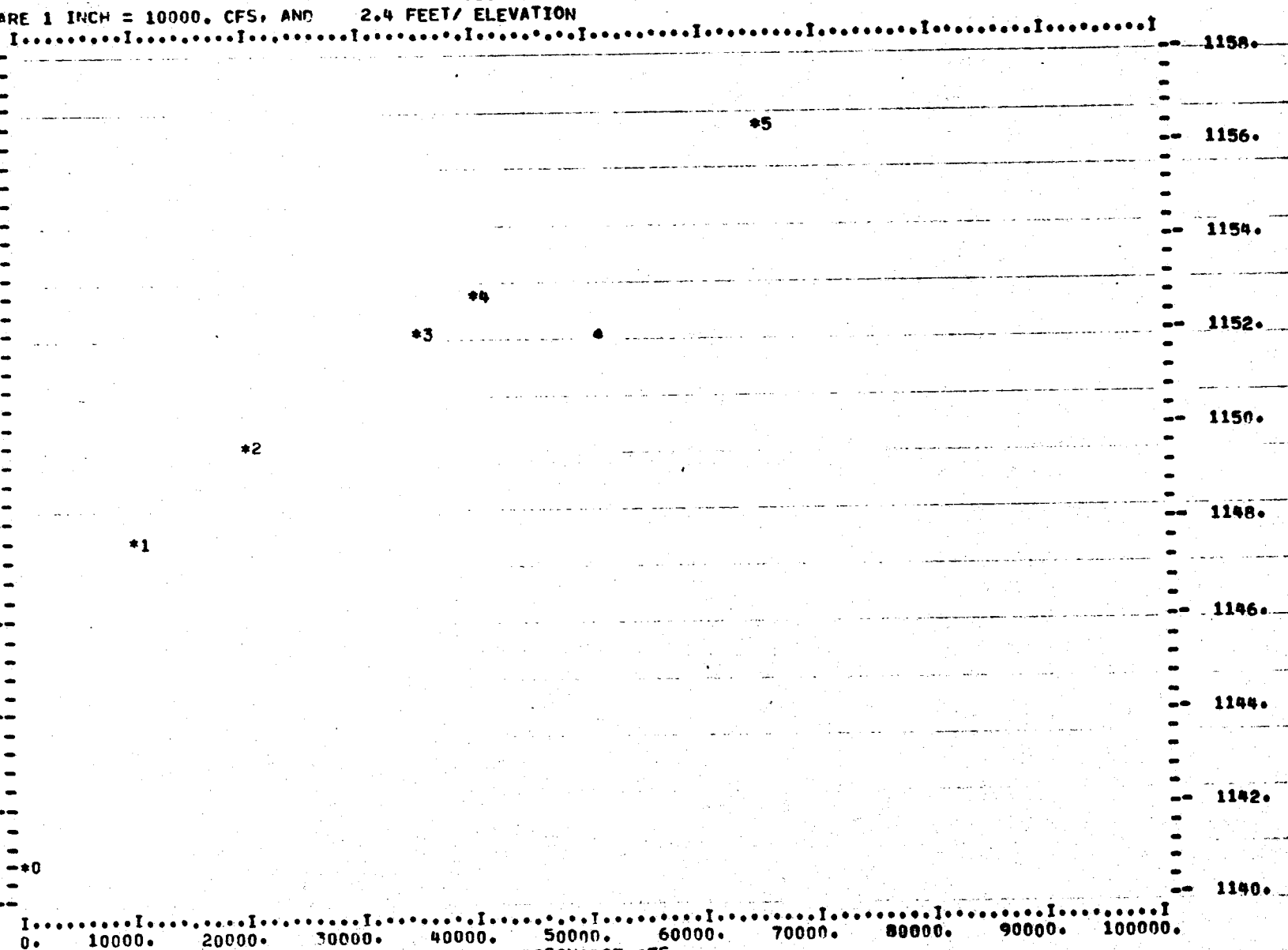
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

67

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA35

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



*****SECT.STA40 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1155.13 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

68

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA40

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1141.93	0.00	0.00	0.00	0.00	0.00	0.00	
1	1147.84	3613.18	10000.00	.00	7.15	.00	10000.00	1143.97
2	1149.99	4959.69	20000.00	.00	7.24	.00	20000.00	1145.17
3	1152.36	6462.54	35000.00	.00	7.34	.00	35000.00	1146.63
4	1153.10	6941.96	40000.00	.00	7.37	.00	40000.00	1147.06
ZERO DAMC	1154.00	7537.53	45514.85	.00	7.91	.00		
5	1157.17	12183.05	65000.00	.00	23.22	.00	65000.00	1149.02

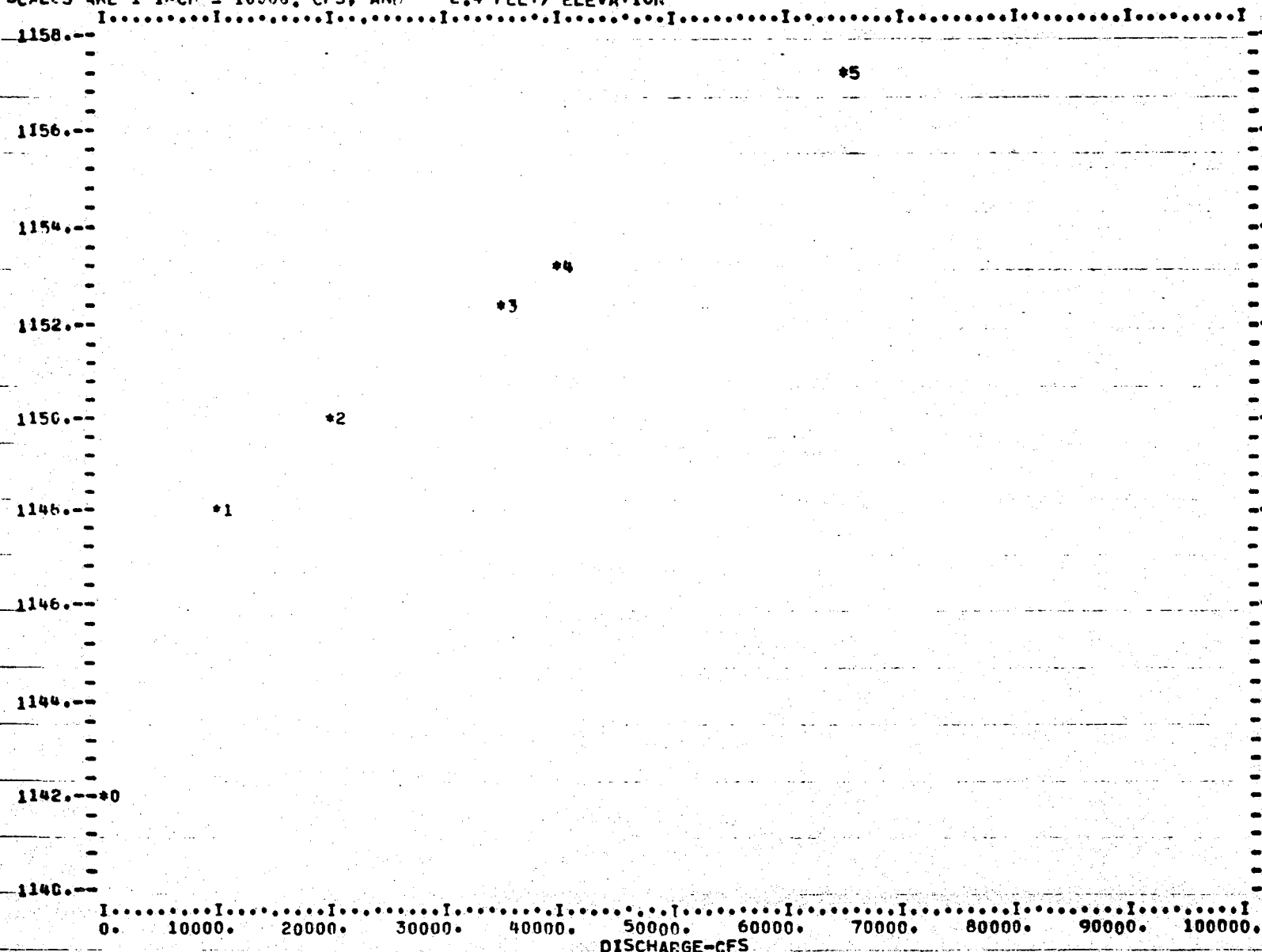
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

69

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA40

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



*****SECT.STA45 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1157.64 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA45

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1143.24	0.00	0.00	0.00	0.00	0.00	0.00	
1	1148.30	3086.96	10000.00	.00	7.12	.00	10000.00	1145.28
2	1150.53	4478.37	20000.00	.00	7.22	.00	20000.00	1146.48
3	1152.98	6031.64	35000.00	.00	7.33	.00	35000.00	1147.94
4	1153.76	6543.08	40000.00	.00	7.69	.00	40000.00	1148.37
ZERO DAMG	1154.00	6697.43	41370.80	.00	7.84	.00		
5	1158.06	10402.76	65000.00	.00	17.57	.00	65000.00	1150.32

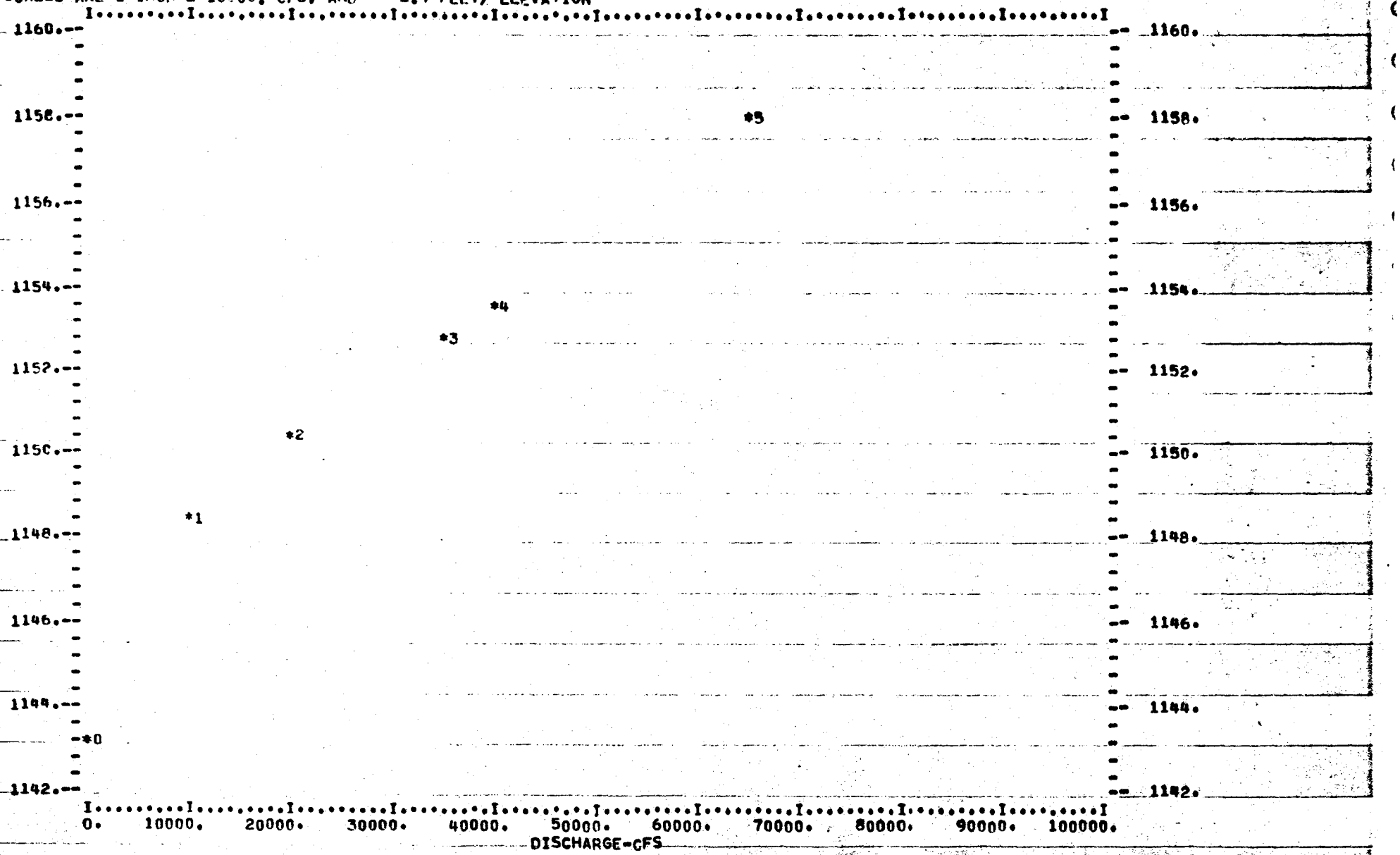
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

WSP2 XFG 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA45

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO. BEND WASH

RATING TABLE

CROSS SECTION STA80

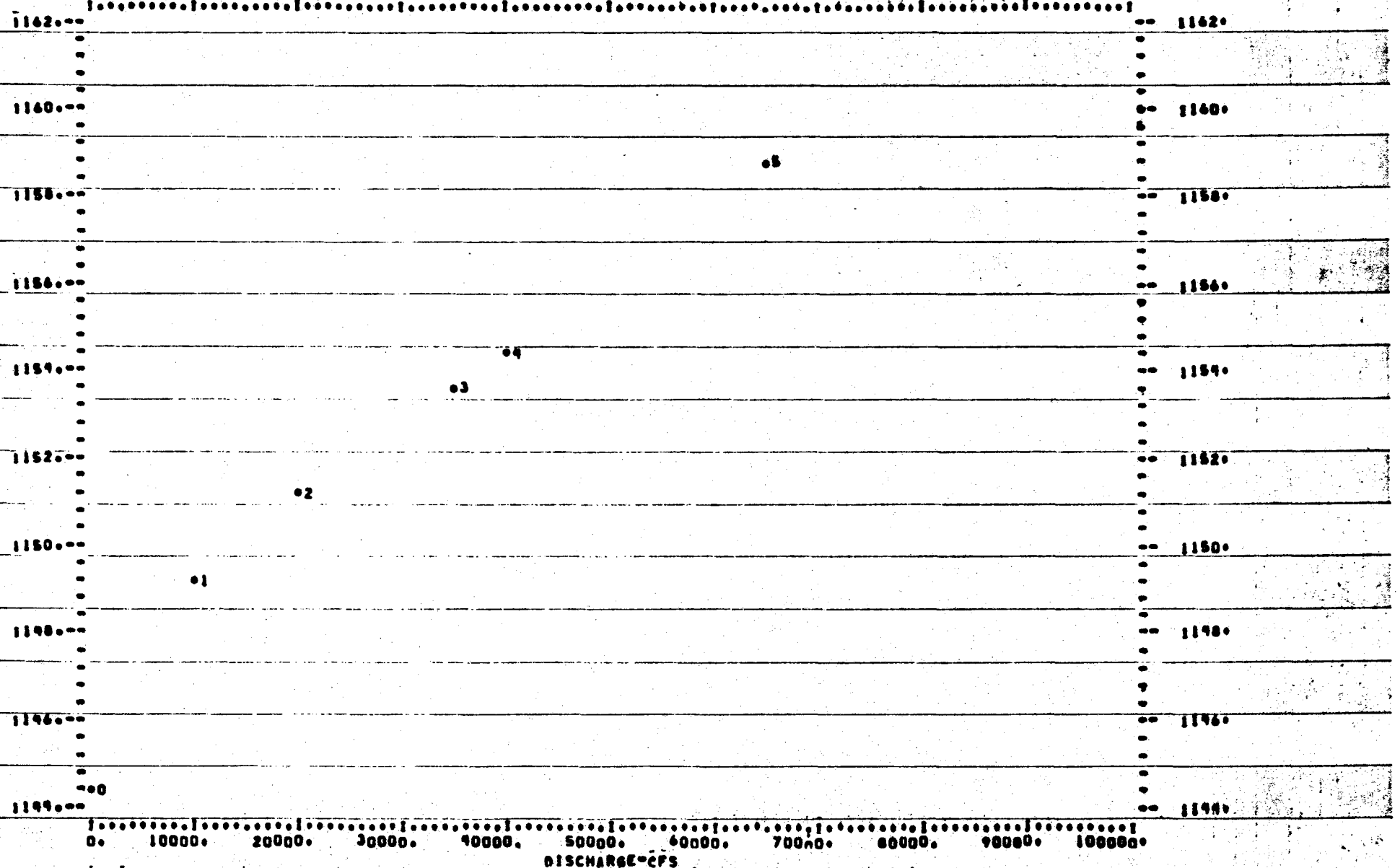
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1144.56	0.00	0.00	0.00	0.00	0.00	0.00	
1	1149.00	2701.03	10000.00	.00	7.05	.00	10000.00	1146.60
2	1151.24	4093.59	20000.00	.00	7.13	.00	20000.00	1147.79
3	1153.76	5649.92	35000.00	.00	7.21	.00	35000.00	1149.26
4	1154.52	6135.62	40000.00	.00	7.24	.00	40000.00	1149.69
5	1158.88	9296.10	65000.00	.00	12.59	.00	65000.00	1151.65

73

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA50

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



****SECT.STA50 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1156.86 VALUE CHANGED TO EQUAL PREVIOUS VALUE****

74

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STABS

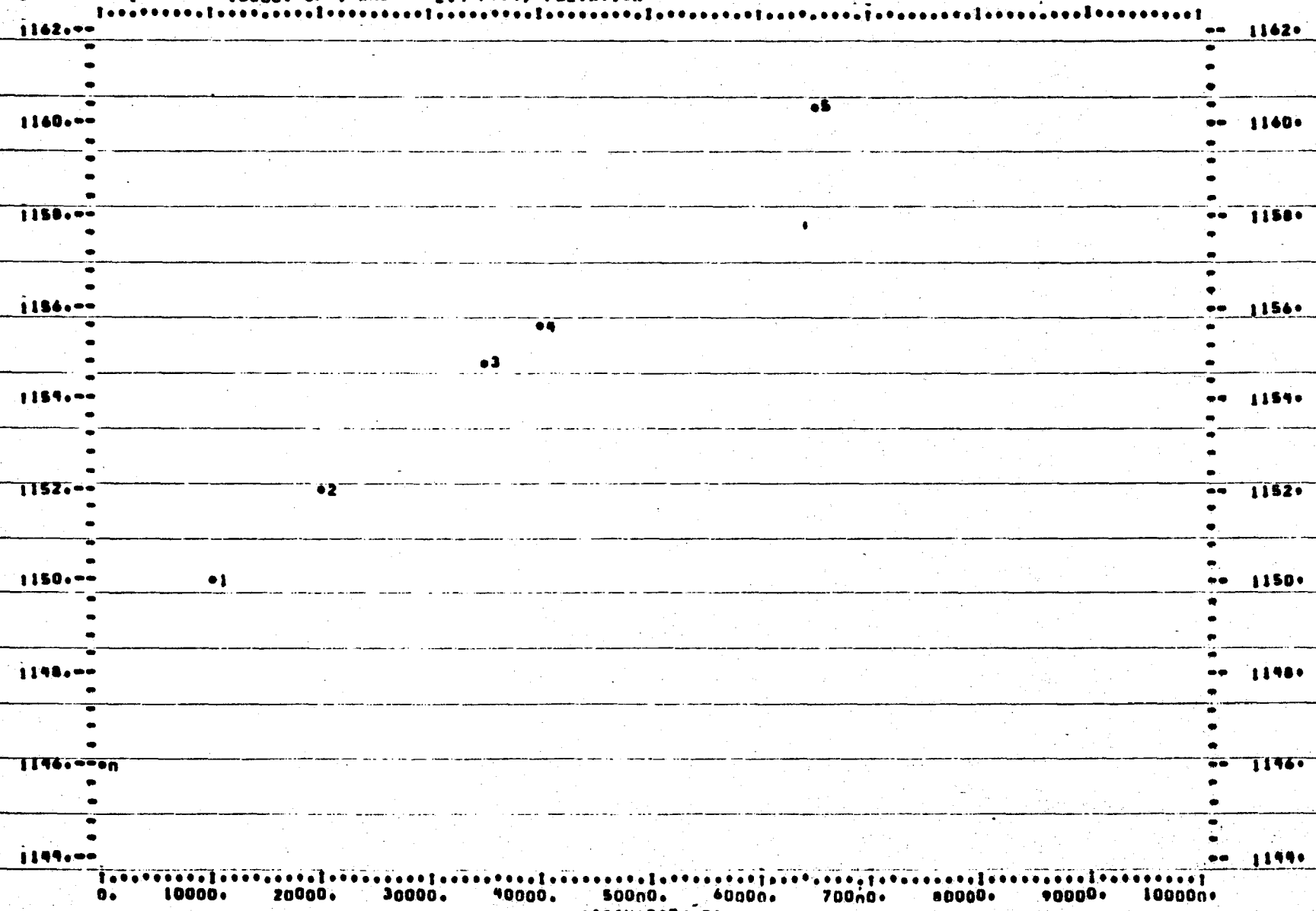
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1145.86	0.00	0.00	0.00	0.00	0.00	0.00	
1	1149.95	2983.57	10000.00	.00	7.06	.00	10000.00	1147.90
2	1152.19	3870.98	20000.00	.00	7.16	.00	20000.00	1149.10
ZERO DAMG	1154.00	5016.60	30633.65	.00	7.35	.00		
3	1154.74	5533.68	35000.00	.00	8.00	.00	35000.00	1150.56
4	1155.52	6078.02	40000.00	.00	8.12	.00	40000.00	1150.99
5	1160.26	15108.35	65000.00	.00	35.15	.00	65000.00	1152.95

******************************PROFILE NO 3 EXCEEDS SURVEY DATA******************************
******************************PROFILE NO 4 EXCEEDS SURVEY DATA******************************
******************************PROFILE NO 5 EXCEEDS SURVEY DATA******************************

75

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO. BEND WASH

CROSS SECTION STASS
SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



*****SECT.STA60 KO VALUES REVERSED ON SEGMENT 1 AT ELEVATION 1147.48 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

76

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO. BEND WASH

RATING TABLE

CROSS SECTION STA60

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1147.48	0.00	0.00	0.00	0.00	0.00	0.00	
1	1151.27	2302.93	10000.00	.00	7.06	.00	10000.00	1149.52
2	1153.33	3576.21	20000.00	.00	7.16	.00	20000.00	1150.72
ZERO DAMG	1155.50	4943.66	32727.06	.00	7.29	.00		
3	1155.89	5226.69	35000.00	.00	7.98	.00	35000.00	1152.18
4	1156.94	6107.00	40000.00	.00	12.27	.00	40000.00	1152.61
5	1161.24	14974.85	65000.00	.00	34.13	.00	65000.00	1154.56

**********PROFILE NO 3 EXCEEDS SURVEY DATA**********
**********PROFILE NO 4 EXCEEDS SURVEY DATA**********
**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

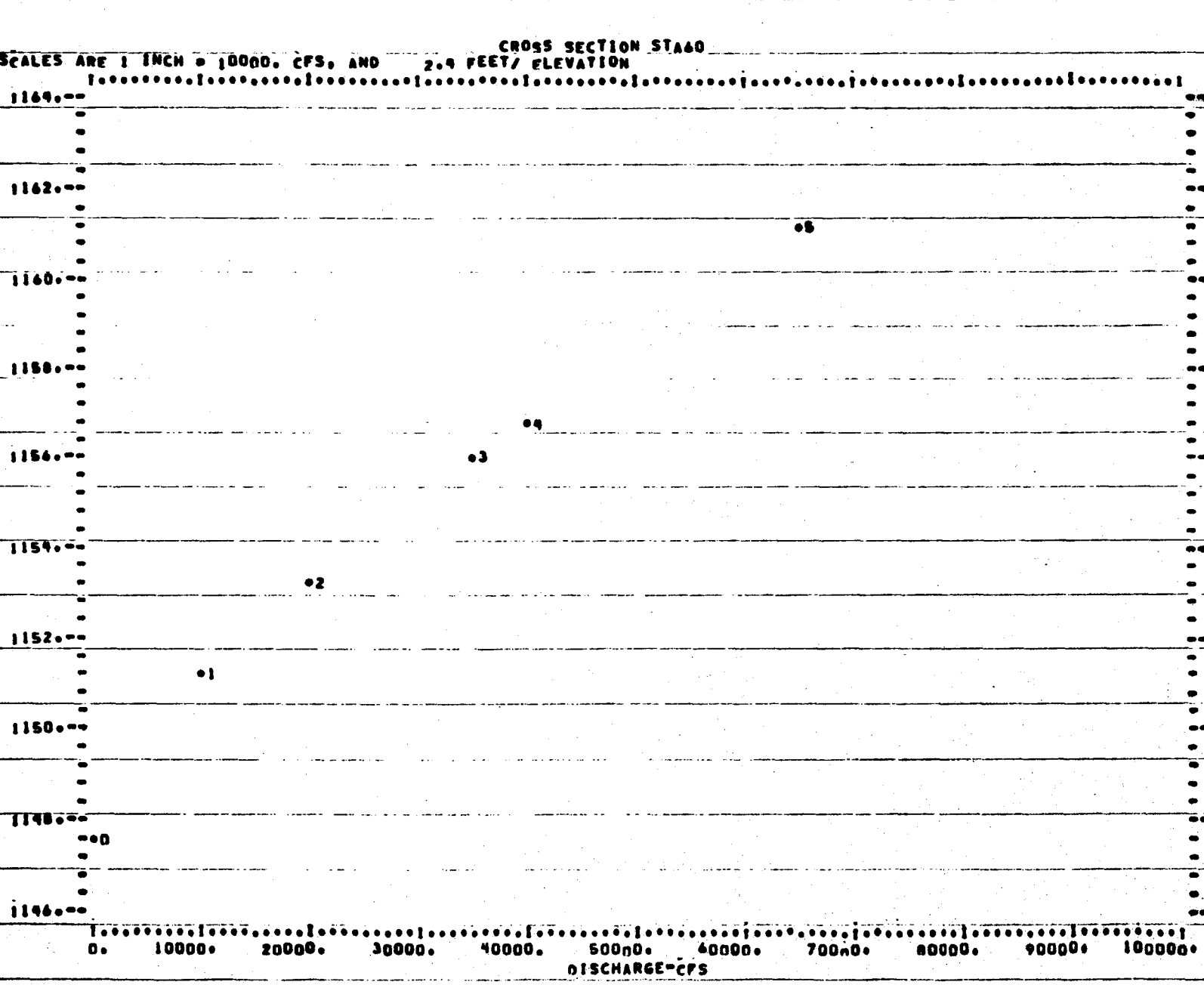
77

WSP2 1E0 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INN. BEND WASH

CROSS SECTION STA60

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



78

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

RATING TABLE

CROSS SECTION STA65

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	OSM	CRITICAL ELEV
0	1148.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1152.12	3611.66	10000.00	.00	8.75	.00	10000.00	1149.82
2	1154.21	5608.32	20000.00	.00	8.80	.00	20000.00	1150.71
3	1156.91	8465.57	35000.00	.00	11.31	.00	35000.00	1151.80
4	1157.88	9674.08	40000.00	.00	11.53	.00	40000.00	1152.12
5	1161.63	14386.02	65000.00	.00	11.53	.00	65000.00	1153.58

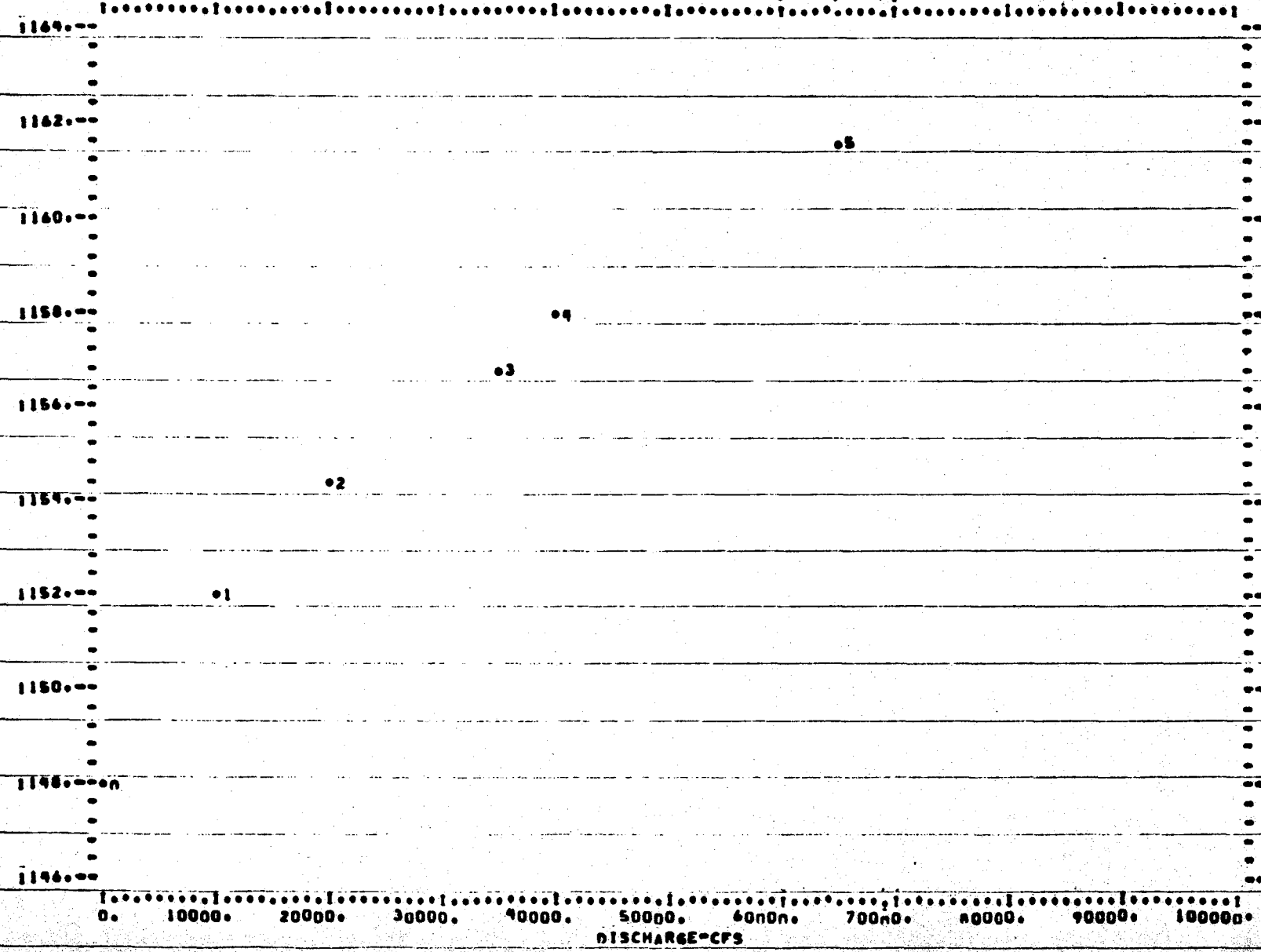
79

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STAGS

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



80

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO. BEND WASH

RATING TABLE

CROSS SECTION STA70

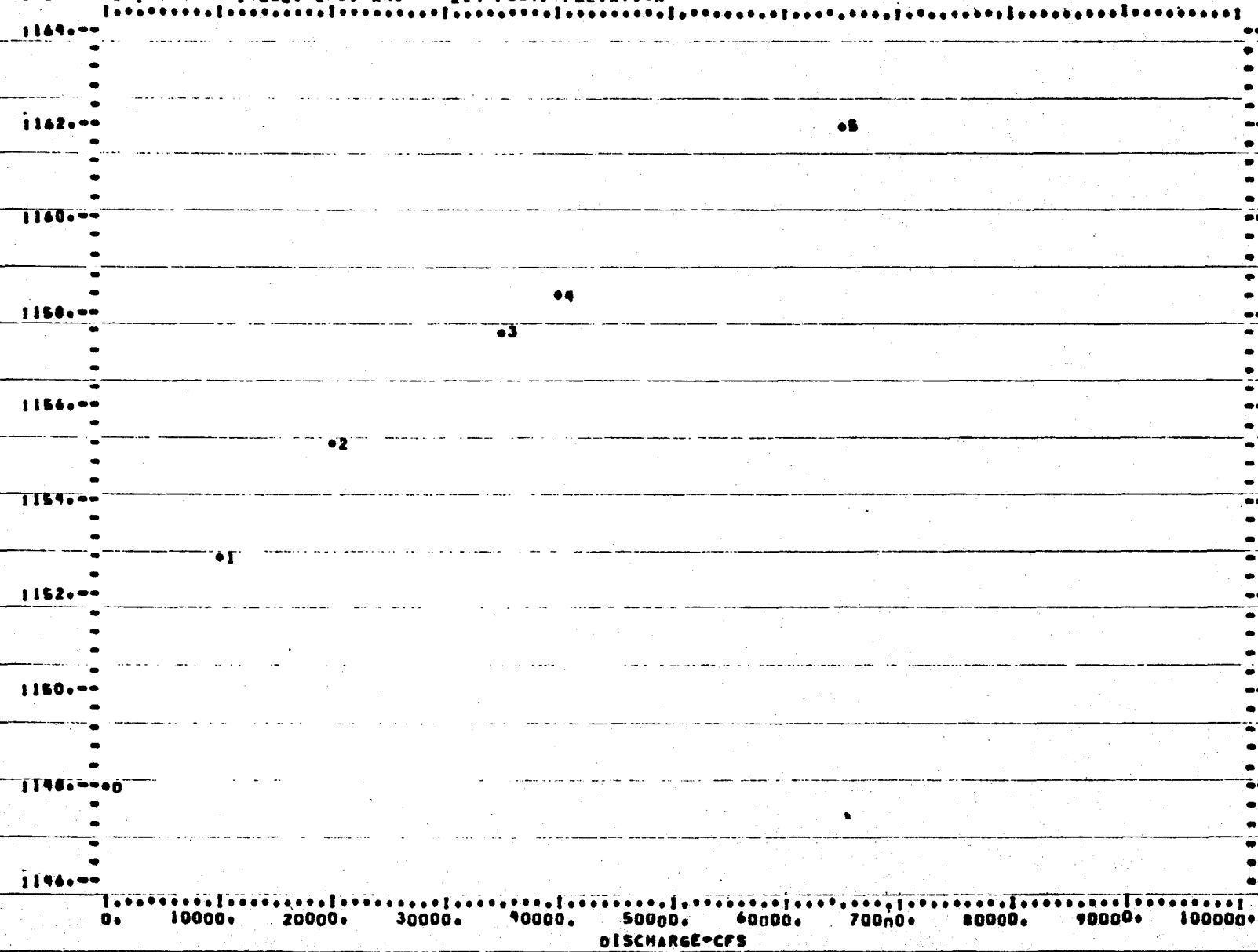
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	BSH	CRITICAL ELEV
0	1148.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1152.93	2672.94	10000.00	.00	1.80	.00	10000.00	1151.10
2	1155.10	4593.41	20000.00	.00	2.25	.00	20000.00	1152.22
3	1157.59	7101.56	35000.00	.00	2.40	.00	35000.00	1153.48
4	1158.48	8136.90	40000.00	.00	2.68	.00	40000.00	1153.95
5	1162.06	13677.18	65000.00	.00	4.05	.00	65000.00	1155.56

81

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA70

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO BEND WASH

RATING TABLE

CROSS SECTION STATS

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1154.60	1935.49	10000.00	.00	1.93	.00	10000.00	1153.86
2	1156.34	3516.00	20000.00	.00	2.28	.00	20000.00	1154.92
3	1158.60	6130.21	35000.00	.00	3.00	.00	35000.00	1156.14
4	1159.42	7263.85	40000.00	.00	3.37	.00	40000.00	1156.61
5	1162.69	12812.77	65000.00	.00	4.02	.00	65000.00	1158.09

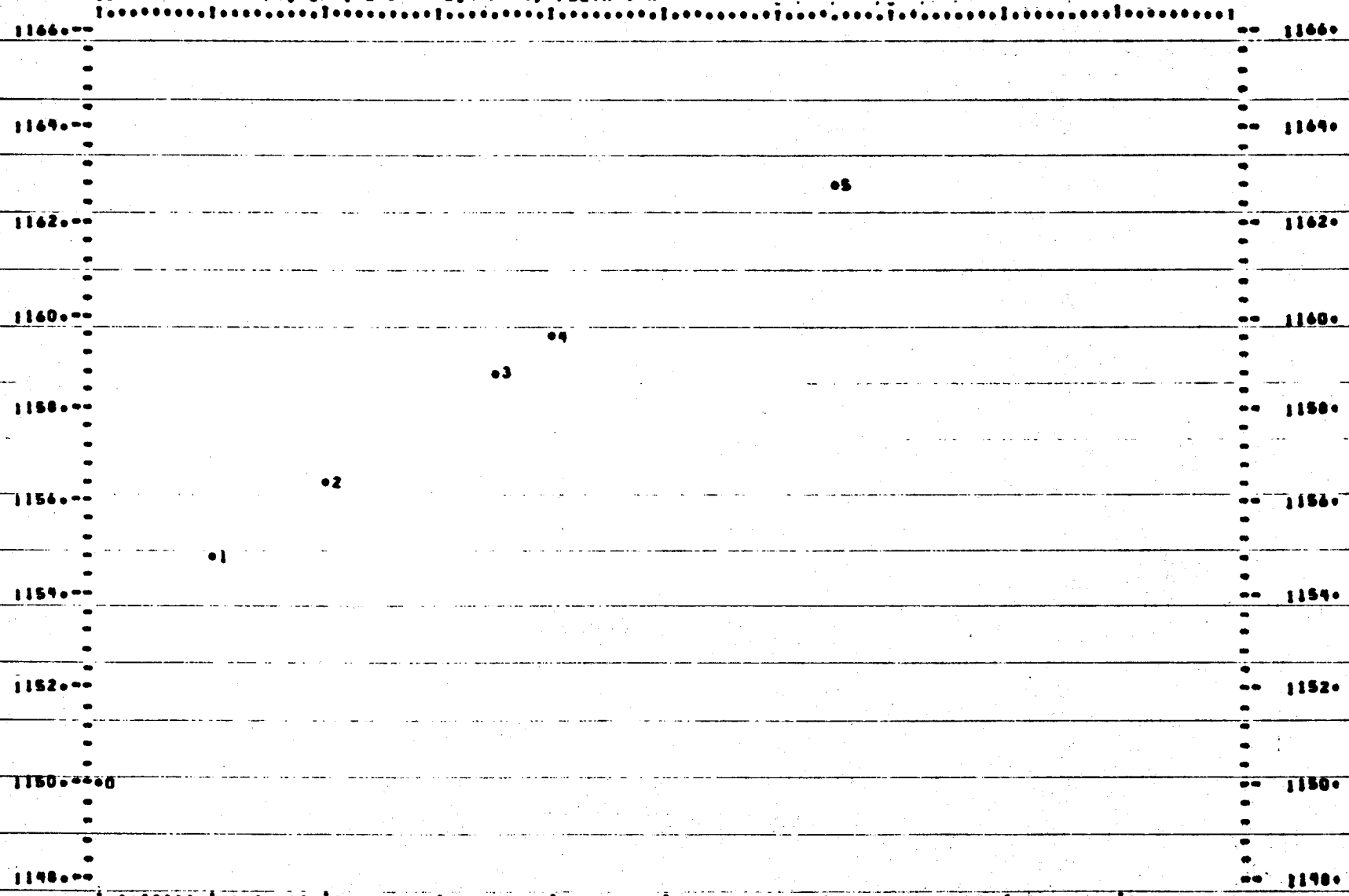
83

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDIAN BEND WASH

CROSS SECTION STA75

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



84

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDIAN BEND WASH

RATING TABLE

CROSS SECTION STA00

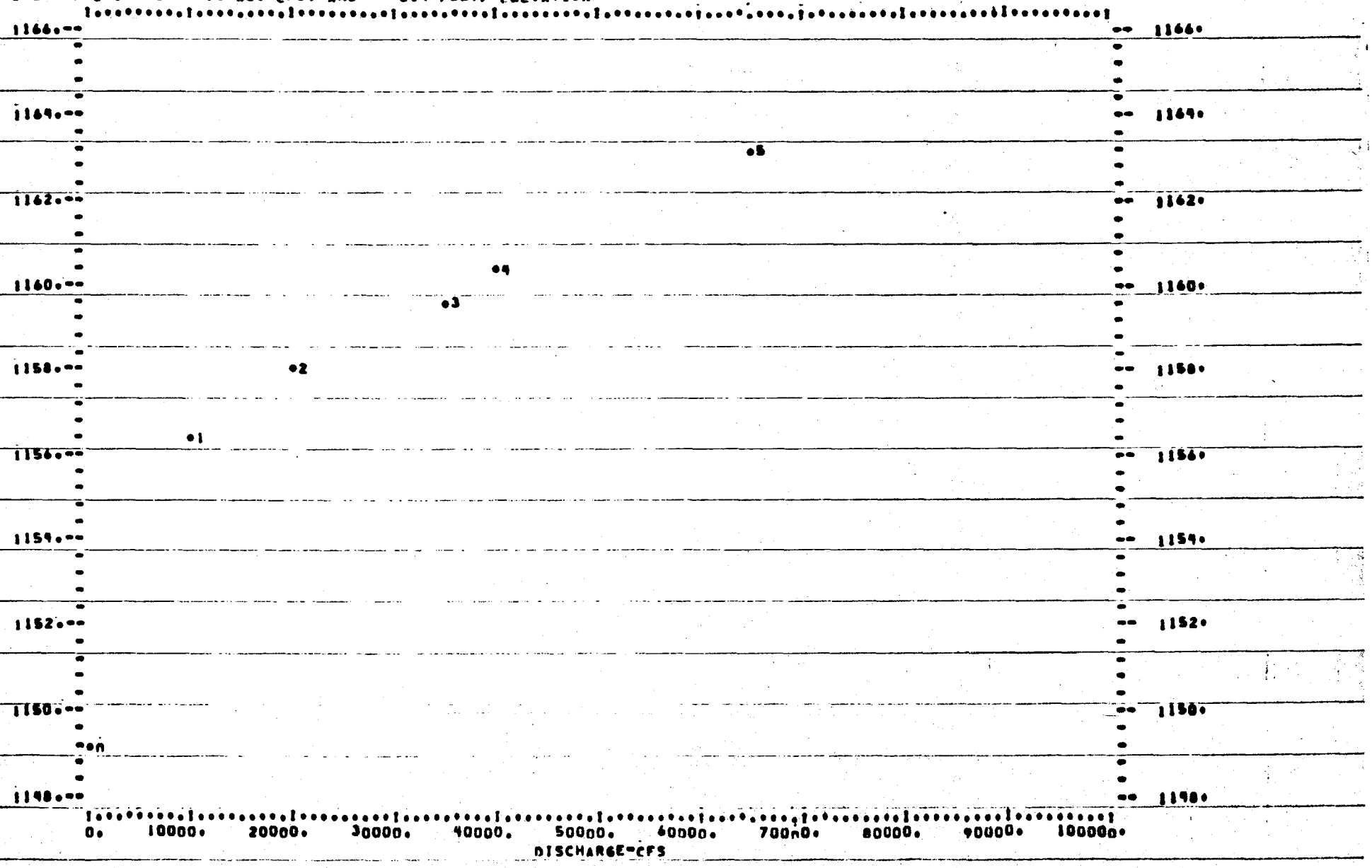
NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1149.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1156.24	3162.74	10000.00	.00	2.88	.00	10000.00	1154.02
2	1157.86	5252.55	20000.00	.00	3.04	.00	20000.00	1155.14
3	1159.48	7748.96	35000.00	.00	3.25	.00	35000.00	1156.61
4	1160.34	8707.95	40000.00	.00	3.45	.00	40000.00	1156.89
5	1163.34	14617.11	65000.00	.00	5.81	.00	65000.00	1158.11

85

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO. BEND WASH

CROSS SECTION STA80

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



98

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO BEND WASH

RATING TABLE

CROSS SECTION STABS

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRITICAL ELEV
0	1150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1157.60	2798.65	10000.00	.00	2.10	.00	10000.00	1155.03
2	1159.06	4217.35	20000.00	.00	2.40	.00	20000.00	1156.91
3	1160.87	6611.85	35000.00	.00	3.88	.00	35000.00	1158.14
4	1161.51	7791.58	40000.00	.00	4.30	.00	40000.00	1158.49
ZERO DAMG	1164.00	13349.11	63114.35	.00	5.73	.00		
5	1164.20	13839.21	65000.00	.00	5.84	.00	65000.00	1160.13

**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

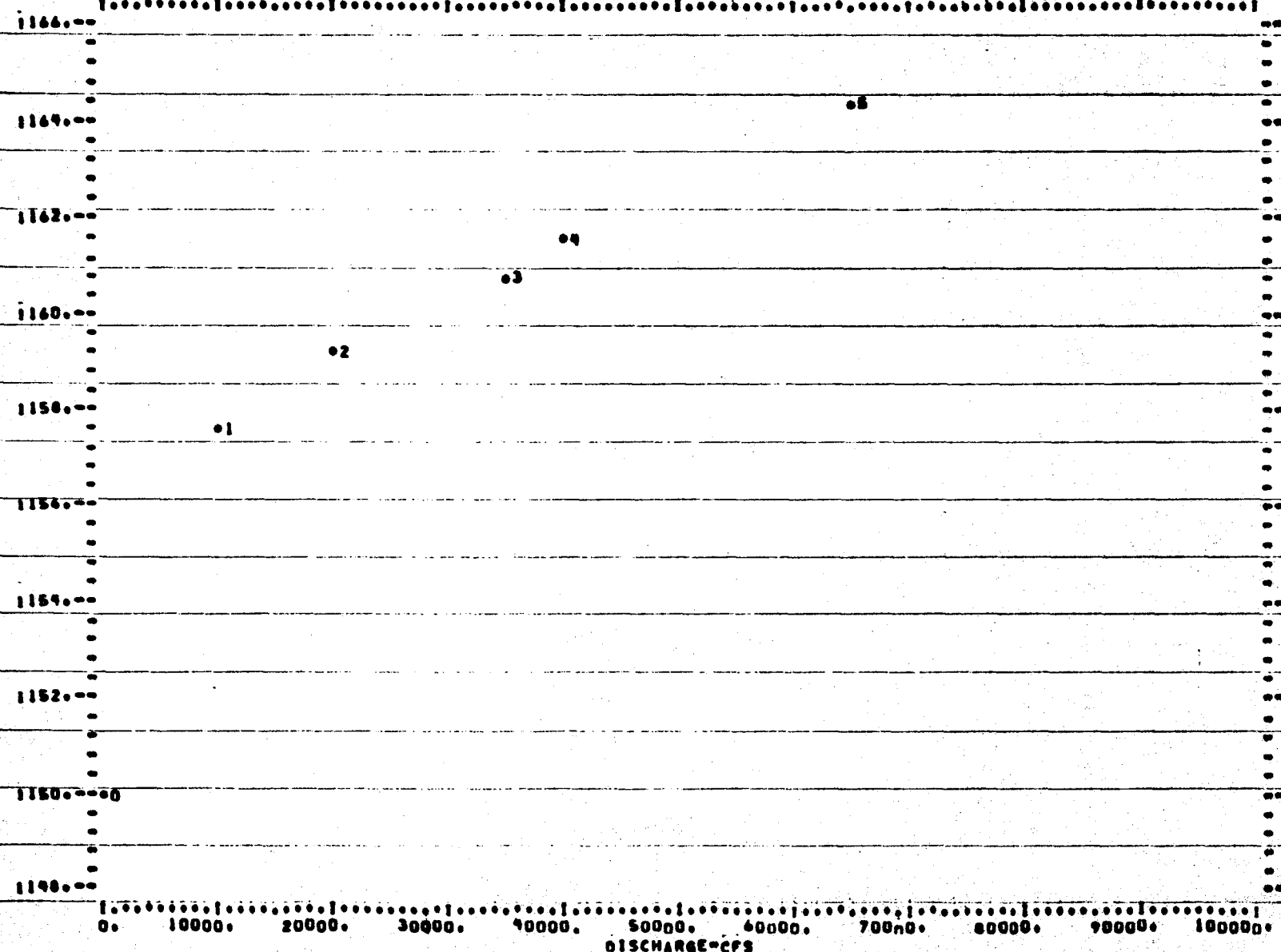
87

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STABS

SCALES ARE 1 INCH = 10000. CFS. AND 2.4 FEET/ ELEVATION



BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDIAN BEND WASH

RATING TABLE

CROSS SECTION STA90

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1154.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1159.11	3854.49	10000.00	.00	2.77	.00	10000.00	1156.97
2	1160.74	6375.29	20000.00	.00	4.44	.00	20000.00	1157.66
3	1162.47	9921.83	35000.00	.00	4.92	.00	35000.00	1158.86
4	1162.98	11052.48	40000.00	.00	5.13	.00	40000.00	1159.16
ZERO DAMG	1164.50	14652.49	57584.29	.00	5.70	.00		
5	1165.14	16315.50	65000.00	.00	6.12	.00	65000.00	1160.71

**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

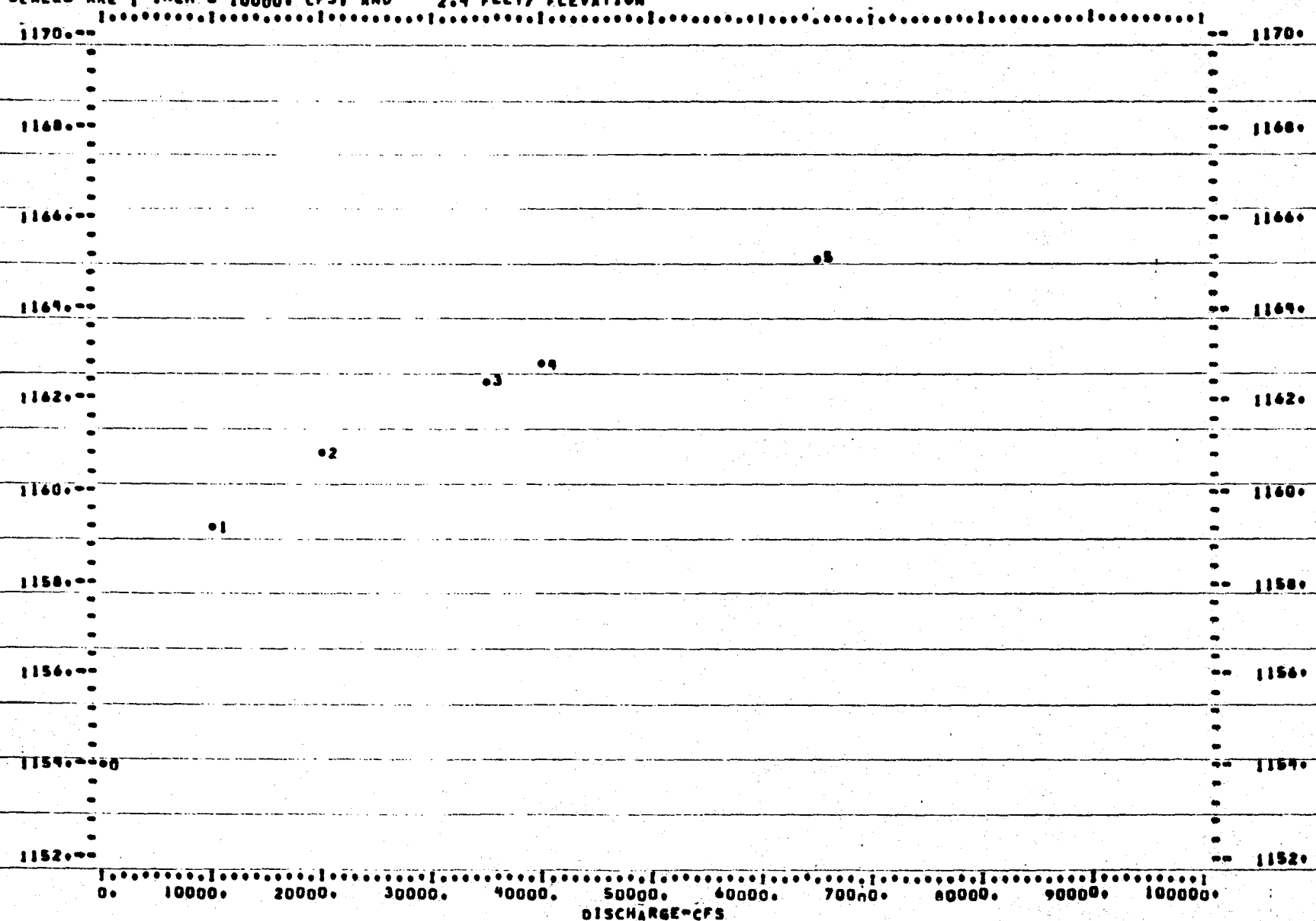
68

WSP2 XEQ 00000000
REV 02/25/72

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND IND. BEND WASH

CROSS SECTION STA90

SCALES ARE 1 INCH = 10000. CFS, AND 2.4 FEET/ ELEVATION



90

Moore Business Forms, Inc.

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INN. BEND WASH

RATING TABLE

CROSS SECTION STA95

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRITICAL ELEV
0	1154.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	1159.66	3664.84	10000.00	.00	2.63	.00	10000.00	1157.12
2	1161.30	5621.14	20000.00	.00	2.83	.00	20000.00	1158.48
3	1163.04	7877.16	35000.00	.00	3.04	.00	35000.00	1159.52
4	1163.58	8577.02	40000.00	.00	3.10	.00	40000.00	1159.82
ZERO DAMG	1164.50	9827.80	50988.11	.00	3.16	.00		
5	1165.67	11946.98	65000.00	.00	3.19	.00	65000.00	1161.15

**********PROFILE NO 5 EXCEEDS SURVEY DATA**********

Moore Business Forms, Inc.

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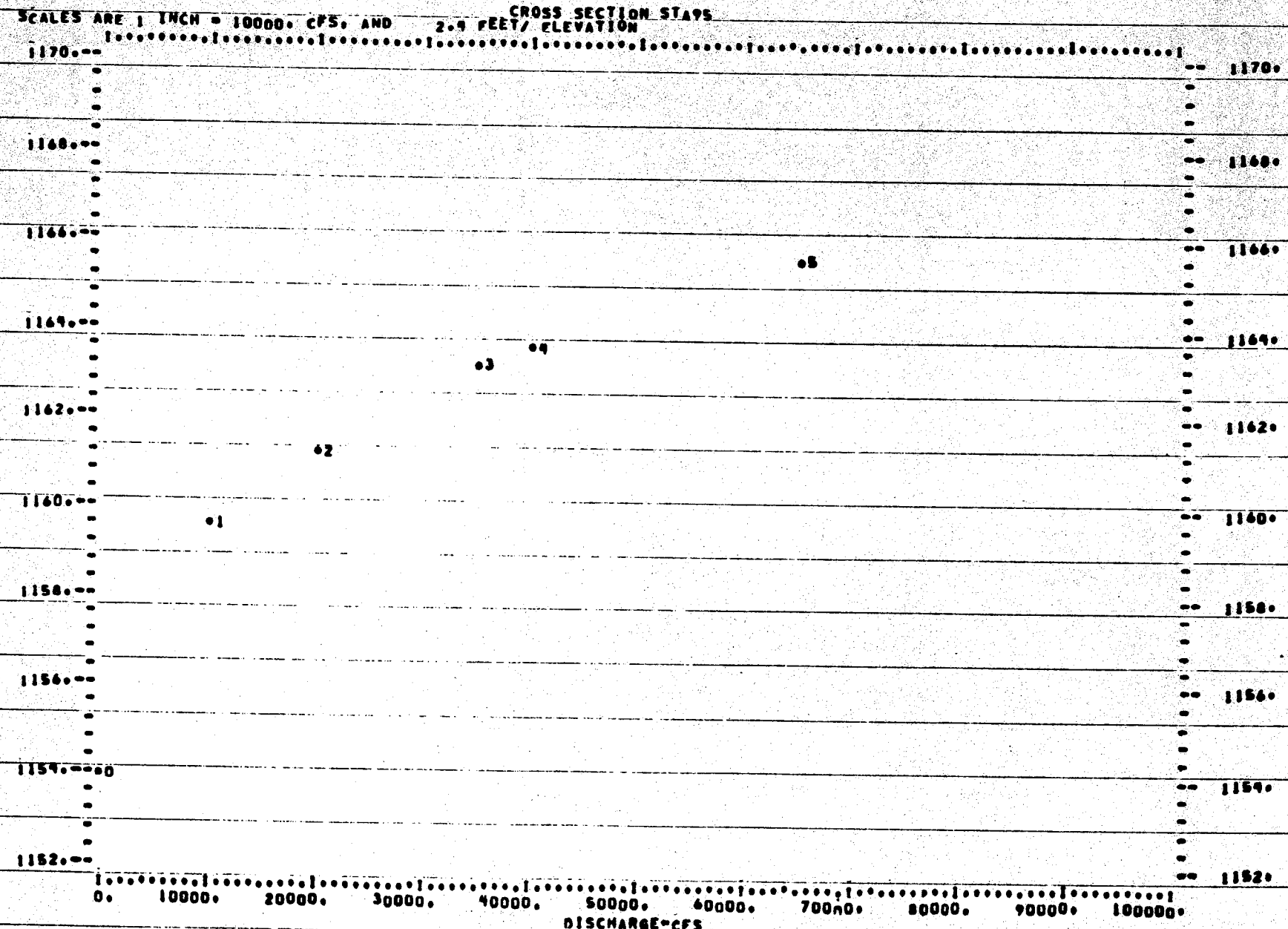
REV 02/25/72

PAGE 96P

BACKWATER ANALYSIS OF DESIGNED CONDITIONS ON THE SALT RIVER
BETWEEN THE TEMPE BRIDGE AND INDO. BEND WASH

SCALES ARE 1 INCH = 10000. CFS. AND 2.0 FEET/ ELEVATION



92

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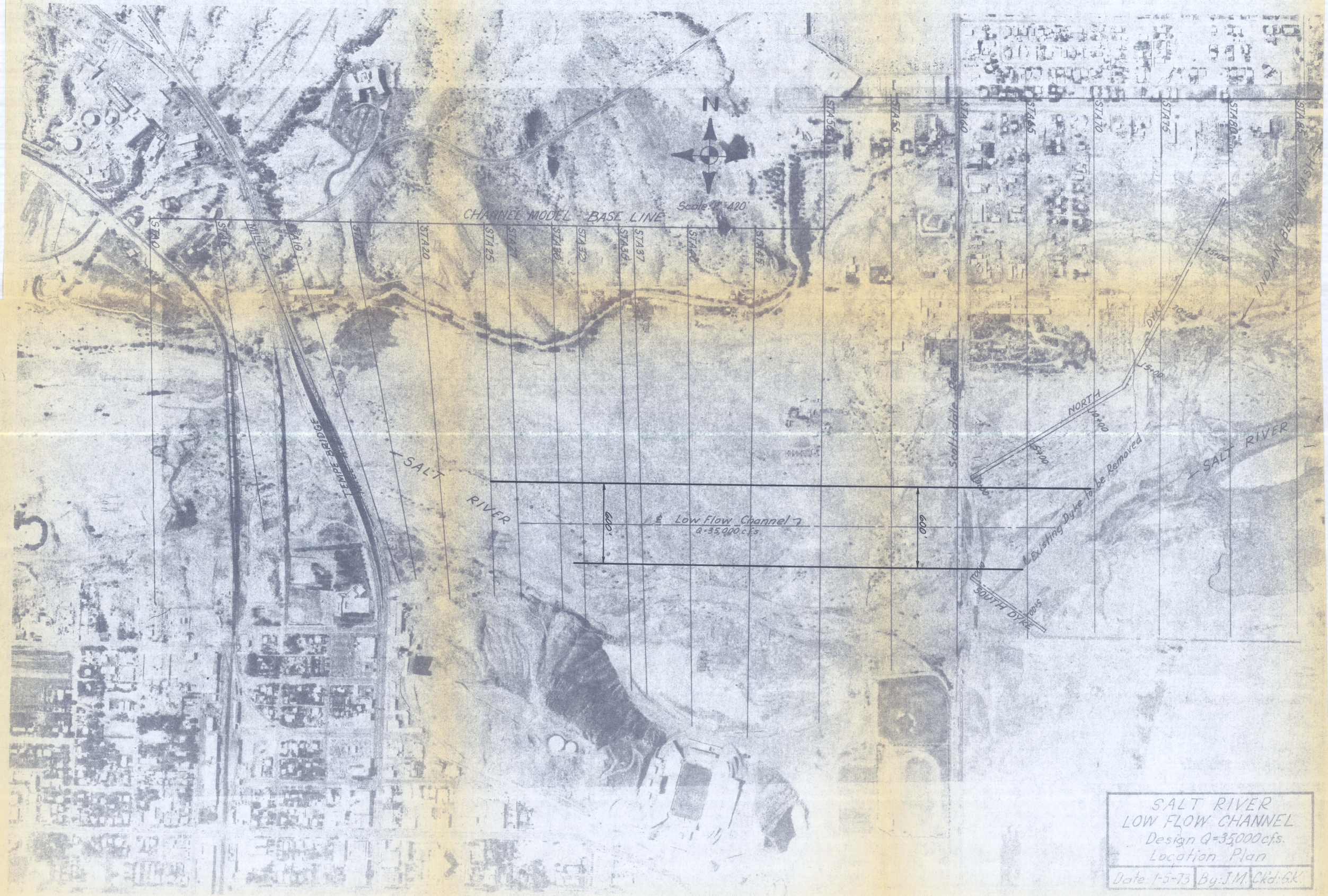
SALT RIVER CHANNEL
HYDRAULIC MODEL
15,000 c.f.s.
Calibration Results

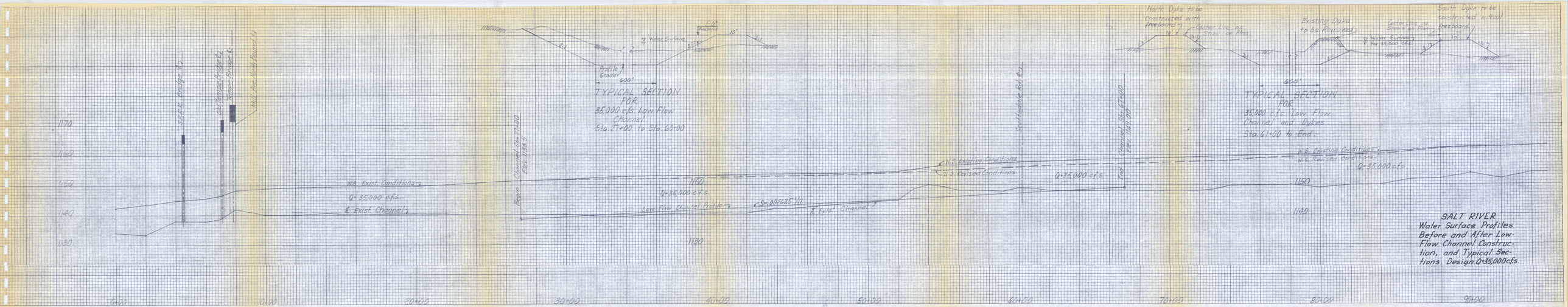
Date: 1-5-73	By: J.M.	Ck'd: G.K.

N
Scale 1" = 420'
CHANNEL MODEL BASE LINE
STA 0
STA 5
STA 10
STA 15
STA 20
STA 25
STA 30
STA 32
STA 35
STA 37
STA 40
STA 45
STA 50
STA 55
STA 60
STA 65
STA 70
STA 75
STA 80
STA 85
Flood Limit From December 31,
Flood Limit From Computer Model
65,000 c.f.s.
Wall Avenue
SALT RIVER
INDIAN BEND WASH
SALT RIVER
65,000 c.f.s. Flood Limit From Computer Model
65,000 c.f.s. Flood Limit From December 31, 1965 Photo
SALT RIVER CHANNEL
HYDRAULIC MODEL
65,000 c.f.s.
Calibration Results
Date: 1-5-73
By: J.M.
Ck'd: G.K.

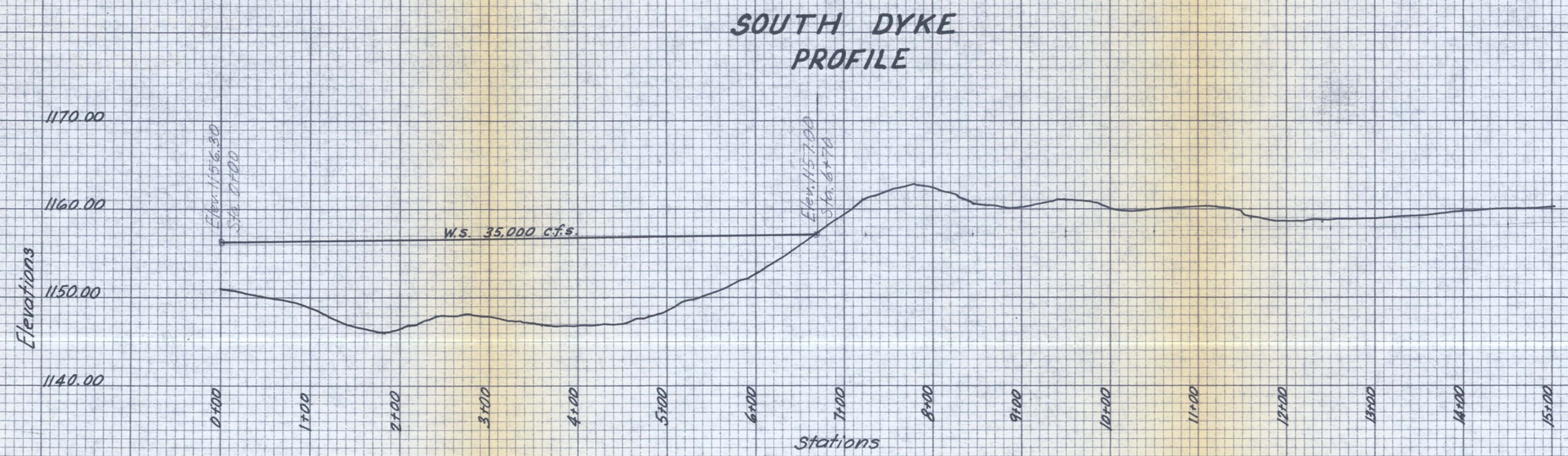


SALT RIVER
LOW FLOW CHANNEL
Design Q=35,000 c.f.s.
Location Plan

Date: 1-5-73	By: J.M.	Ckd: G.K.



SALT RIVER
Water Surface Profiles Before and After Low-Flow Channel Construction, and Typical Sections. Design Q=35,000cfs.



SOUTH DYKE
Water Surface Profile
for 35,000 c.f.s. along
the South Dyke align-

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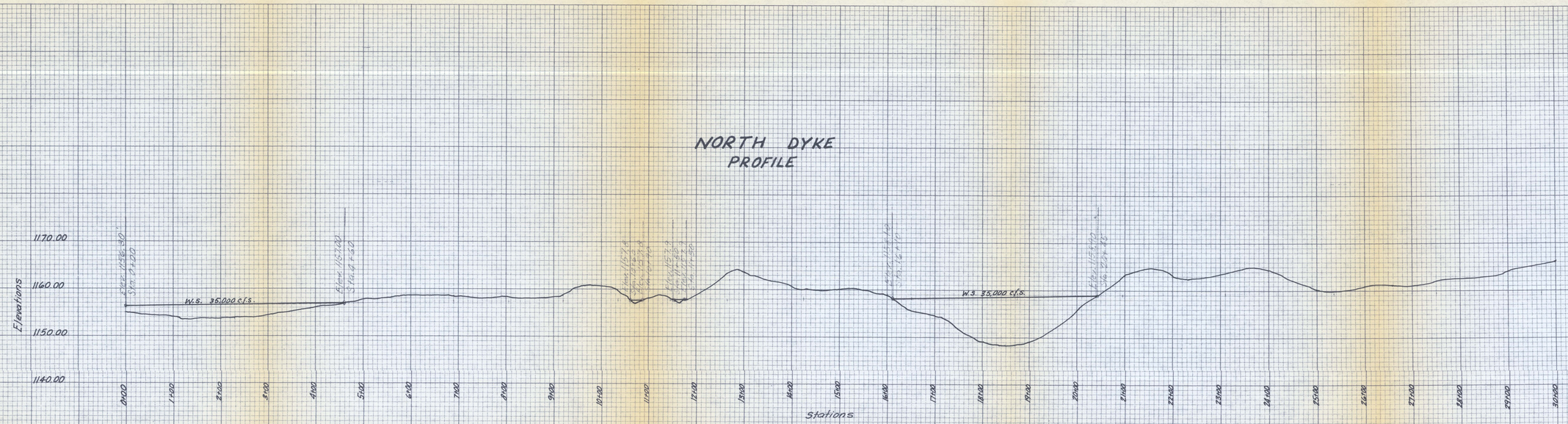
ENGINEER DIETZGEN CO.
10 X 10 — ONE INCH
PERFECT. CROSS SECTION



NORTH DYKE
Water Surface Profile for 35,000 c.f.s. along the North Dyke alignment.

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PERFECT. CROSS SECTION