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MILITARY HYDROLOGY

RESEARCH & DEVELOPMENT BRANCH

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SECURITY INFORMATION

SPECIAL STUDY S-51-4

WESER RIVER SYSTEM

HYDRAULIC EFFECTS OF DEMOLITION

OF EDER DAM

VOLUME II

Prepared by
Military Hydrology R & D Branch
Engineering Division
Washington District Corps of Engineers
Washington, D. C.
March 1952

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SECURITY INFORMATION

SECURITY INFORMATION

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SECURITY INFORMATION

HYDROLOGIC TERMS A-D ABBREVIATIONS FROM GER. LANGUAGE

(See Jahrbuch fur De Gewassarkunde Der Deutschen Reiche (Berlin, 1937)

	Water levels as given in centimeters			Discharge		Water temperatures as given in degrees centigrade	Remarks
	Other than tide water regions	In Tide Water Regions: Tide-high water	Tide low water	Amount as given in cubic meters per second	Discharge as given in liters per second per sq. kilometer		
	(W)	(Thw)	(Tnw)	(q)	(q)	(T)	
a. The highest high value (HH) ever known or encountered. (The absolute maximum).	HHW	HHThw	HHTnw	HHq	HHq	HHT	a. The highest value ever known or encountered in the area (1-37). For example, HHT is the highest water temperature that has ever been measured at any one spot.
b. The highest value (H) encountered in the space of time covered.	HW	HThw	HTnw	Hq	Hq	HT	b. As compared to HH in column a, which has no time limit, the symbol in this column has a definite time limit. It stands for the highest value encountered during a period of a month, a year, or a number of years. Whatever the case may be. It can also stand for the highest value found in any one single month over a period of years. Unless otherwise stated the whole year in question is meant. For example: HW 1926/1935 means that the given figure represents the highest water level encountered during the years from 1926 to 1935. Another example: HW 1926/1-3 means that the given figure represents the highest water level encountered in all the winters between 1926 and 1935. Another example: HW 1926/1-1 means that the given figure represents the highest water level encountered in all of the January months between 1926 and 1935.
c. The mean high value (MH) in the space of time covered	MHW	MHThw	MHTnw	MHq	MHq	MHT	c. The mean high value or the average high value as derived by adding the highest values of each of the years or months, of the series of years or months in question and dividing this sum by the number of years or months, as the case may be. Unless otherwise stated the whole year (every month in the year) in a series of years is meant. For example, MHq 1926/1935 stands for the mean or average figure for all the highest discharges encountered between 1926 and 1935. Another example: Feb MHq 1926/1935 stands for the mean or average discharge for all the February months between 1926 and 1935.
d. The mean value (M) (average) in the space of time covered.	MW	MThw	MTnw	MQ	Mq	MT	d. The mean value or the average value of all measurements taken over a period of time at any one gauging station. For example: MT 1937 stands for the average temperature as derived from the 365 observations taken in 1937. Another example: MT 1926/1935 on the other hand, stands for the mean or average of all the mean water temperature readings taken between 1926 and 1935. Another example: So. MT 1926/1935 stands for the mean or average of all the mean summer water temperatures between 1926 and 1935. Another example: Mars MT 1926/1-35 stands for the mean water temperature as derived from the mean water temperature of all the March months between 1926 and 1935.
e. The mean low value (MN) (mean minimum) in the space of time covered.	MNW	MNThw	MNTnw	MNQ	MNq	MNT	e. Refer to explanation in column a.
f. The lowest value (N) encountered in the space of time covered.	NW	NThw	NTnw	NQ	Nq	NT	f. Refer to explanation in column b.
g. The lowest low value (NN) ever known or encountered. (The absolute minimum).	NNW	NNThw	NNTnw	NNq	NNq	NNT	g. Refer to explanation in column a.

Exhibit 1

WESER & EMS RIVER BASIN

GENERAL MAP

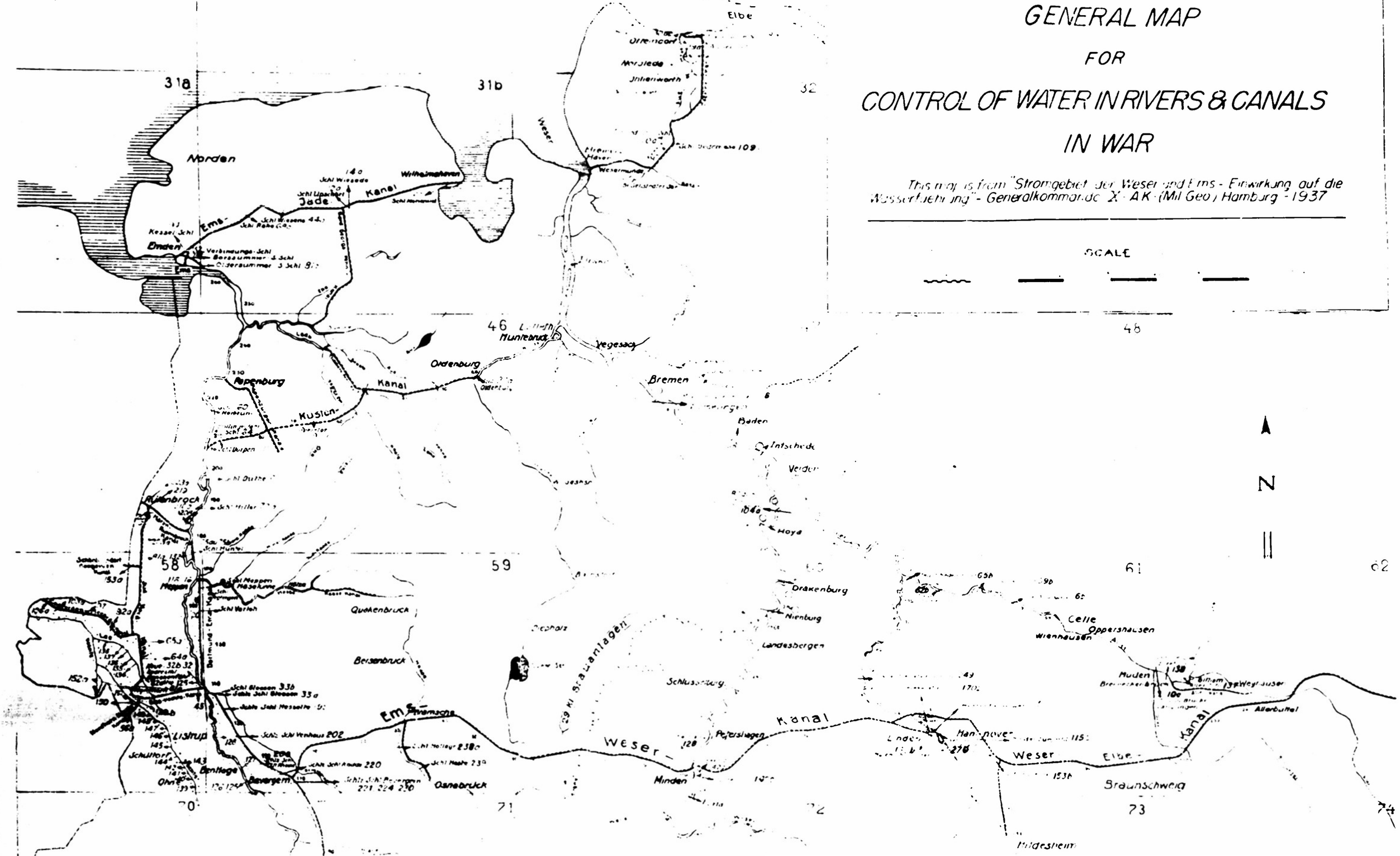
FOR

CONTROL OF WATER IN RIVERS & CANALS

IN WAR

This map is from "Stromgebiet der Weser und Ems - Einwirkung auf die Wasserführung" - Generalkommando X. AK. (Mil Geo) Hamburg - 1937

SCALE



Flutwelle a. d. Diemeltalsperre	Floodwave from Diemel Valley Dam
Schl	Lock
Schls. Schl.	Lock for long tows
Staust	Dam
29 St	29 small control structures

LEGEND

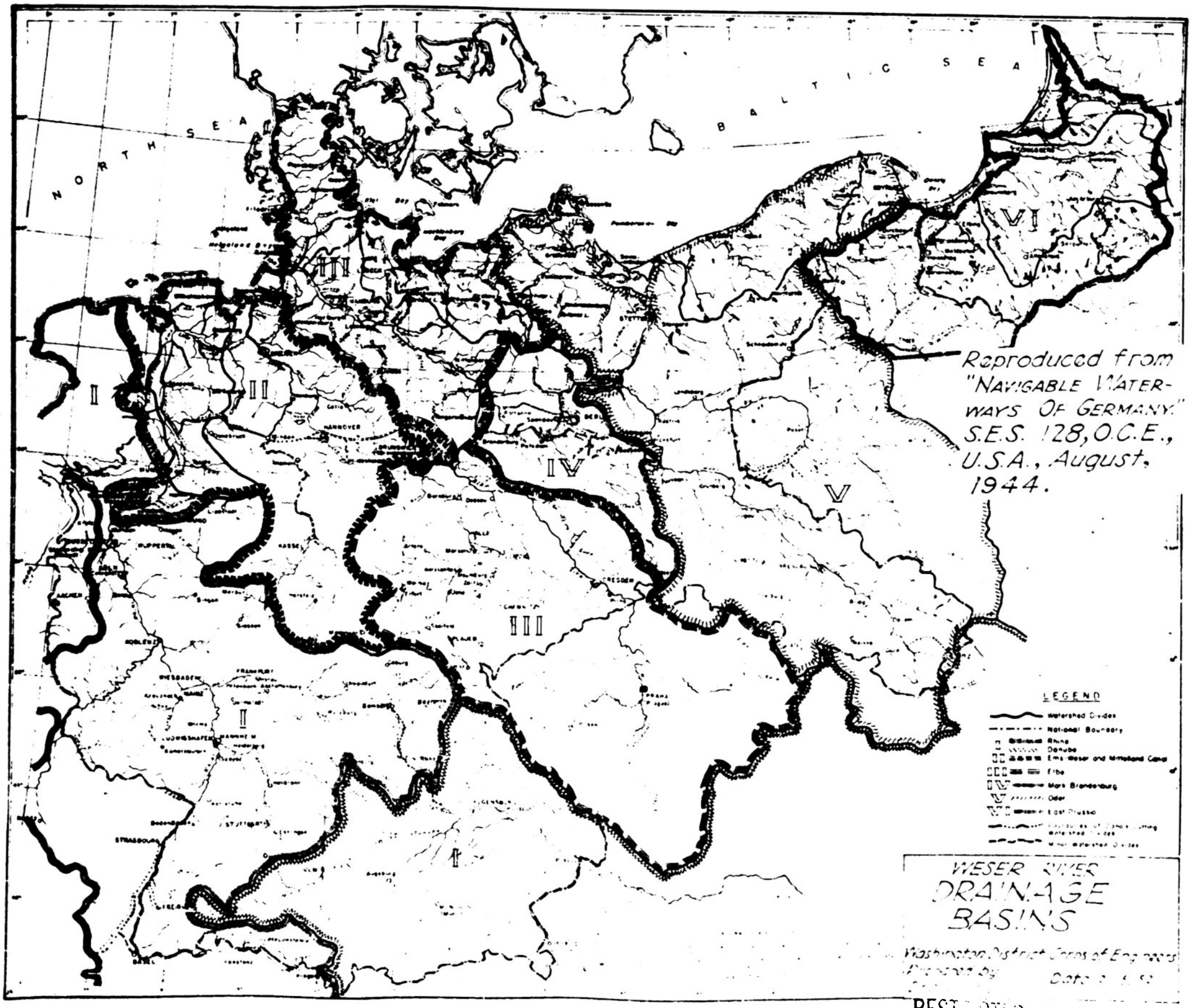
- Retained water and inundation areas
- Navigable rivers
- Canalized rivers
- Canals
- Completed sheet pilings
- Planned sheet pilings
- River kilometers
- Location of lock or dam
- 47 Completed sheet pilings
- 29 Object number
- Major Gaging Station

RESTRICTED

WESER RIVER

GENERAL MAP

Exhibit 2



Reproduced from "NAVIGABLE WATERWAYS OF GERMANY" S.E.S. 128, O.C.E., U.S.A., August 1944.

RESTRICTED
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M.H.1000

M.H.900

M.H.800

M.H.700

M.H.600

M.H.500

M.H.400

M.H.300

M.H.200

M.H.100

M.H.0

780

750

740

775

811

670

675

673

820

552

494

472

460

405

347

340

320

300

WERRA

FULDA

ULSTER

SCHLITZ

EDER

HUNDS

SCHWALM

ORKE

HUPPECKE

DIEMEL

TWENTE

507

382

351

249

200

192

180

175

150

1

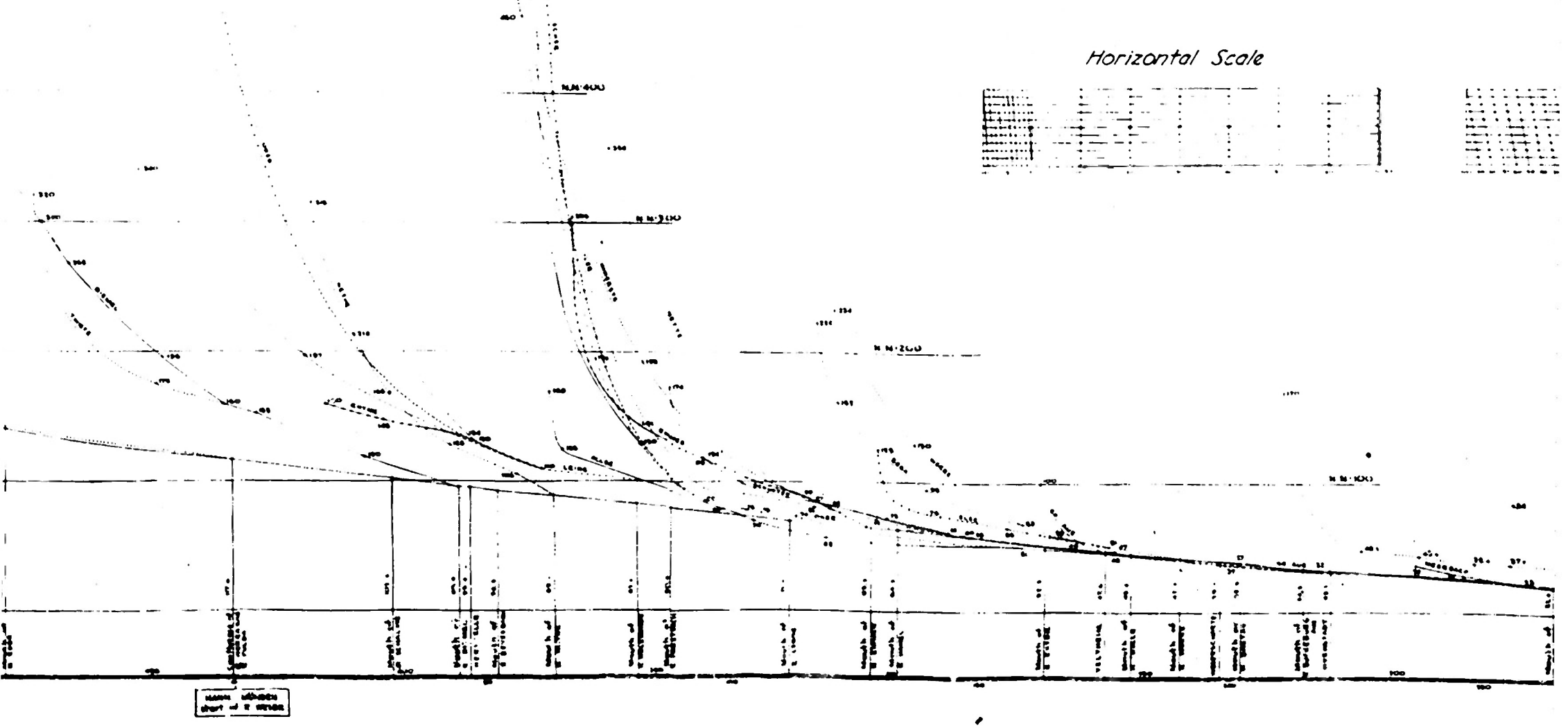
HANN. M
start of

RIVER WI

GENERAL PROFILE OF
STREAM AND TRIBUTA

2

Horizontal Scale



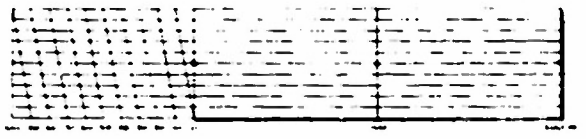
VER WESER

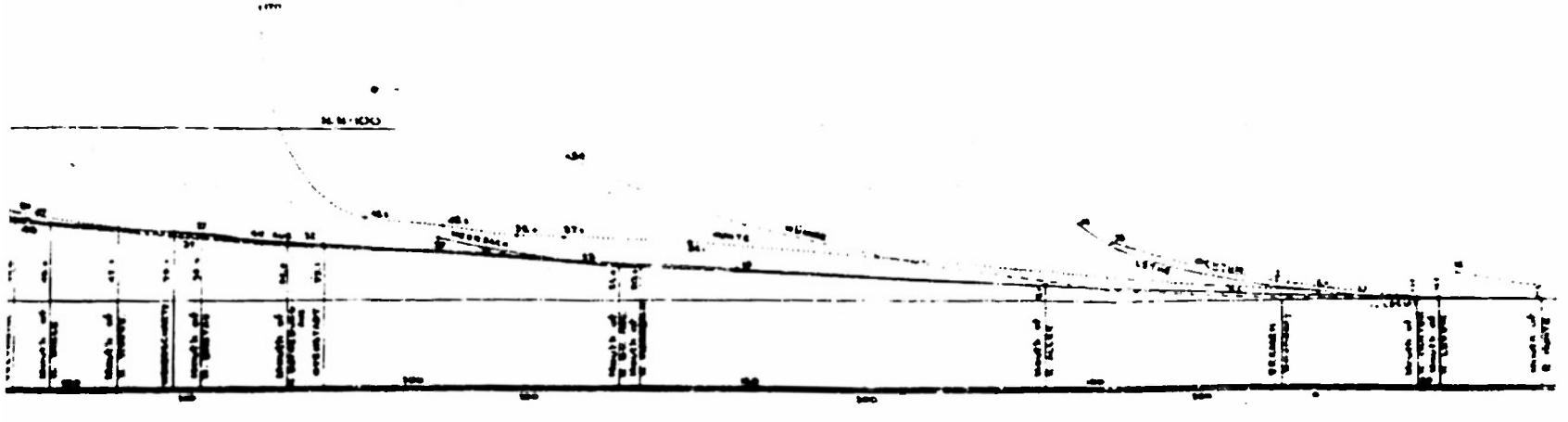
GENERAL PROFILE OF MAIN
STREAM AND TRIBUTARIES

3

rizontal Scale

Vertical Scale





RESTRICTED
SECURITY INFORMATION
Reproduced from "Report On Weser System," C.E. HQ. B.A.O.R. 1946.

WESER RIVER

GENERAL PROFILE

Washington District Corps of Engineers
Prepared by E.R.S. Date 2/15/52
Drawn by ---

Exhibit 4

Confidential

Mean high tidal high water

Mean tidal high water

Mean low tidal low water

Mean tidal low water

R. Lesum

R. Geeste

R. Ochtum

R. Lune

R. Hunte

Note:

Bremen

Lighthouse

Lighthouse

Hoheweg

Bremerhaven

Nordenham

Brake

Elsfleth

Farge

Vegesack

Oslebshausen

Kaiserbrück Road Bridge

Gross Weser Road Bridge

Gross Weser Road Bridge

Bremen

Weir

R.R. Bridge - Dreye

Dreye

Rotherssand

20

15

10

5

NN

5

10

20

30

20

15

10

5

NN

10

5

10

NN

100

50

0

3668

RIVER Km BELOW BREMEN

Confidential

Note: Water level normally held at 5.50m. 18 Nov - 17 Mar.

Water level normally held at 4.50m. 18 Mar - 17 Nov.

Oslebshausen

Kaiserbrücke Road Bridge

Gross Weser Road Bridge

Bremen

Bremen

Gross Weser Road Bridge

Hemelingen Weir

R.R. Bridge - Dreye

Dreye

Road Bridge - Uesen

Baden

R. Aller

Road Bridge - Hutbergen

Intschede

Ritzenbergen

Rieda

Dörverden Weir

Road Bridge

Hoya

R.R. Bridge

Bruchhäusen Kanal

Drakenburg

RR Bridge

Road Bridge

Nienburg

R. Aue

Road Bridge

Stolzenau

Schlüsselburg

20 30 15 10 20 5 NN 10 5 10 NN

0 — 3668 350 300 25

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2

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RIVER Km. BELOW MINDEN-HANN. MÜNDEN

150

200

250

Fuhlen — Road Bridge - Hess Oldendorf

Hameln (Weir) — Road Bridge RR Bridge

RR Bridge — Kirchohsen

Road Bridge

Grohnde

RR Bridge — Bodenwerder

Road Bridge

Rinteln — Road Bridge

Road Bridge — Elsbergen

Petershagen

Emt-Weser Kanal — RR Bridge

Minden — Road Bridge

Road Bridge

Neesen — Porta

(Canal Aqueduct N.N+46.1m)

RR Bridge - Rheme

Autobahn Bridge - Holtrup

Road Bridge — Vlotho

RR Bridge

R. Werre

Road Bridge

Schlüsselburg

Road Bridge — Stolzenau

Road Bridge-Ness Graenden

Hamel/n (Weir) Road Bridge
R.R. Bridge

R.R Bridge Kirchohsen
Road Bridge
Grohnde

RR Bridge Bodenwerder
Road Bridge

Polle

Road Bridge

Lüchtringen
RR Bridge
Höxter
Road Bridge

RR Bridge-Fürstenburg

RR Bridge-Meinbrexen

Road Bridge-Beverungen

Karlshafen

R Diemel

Holzminden

RR Bridge-Giesekwerder

Road Bridge-Giesekwerder

Vekerhagen

R Schalme

R Fulda

R. Werra

Bonaforth

Wilhelmshausen

Speele

100 150

90 140

80 130

70 120

60 110

50 100

100

50

LEGEND

- Bridge-showing clearance
- Gage
- River Junction
- Dam or Lock
- Average channel Bottom.
- Mean Low Water
- Mean Water
- Mean High Water
- 1926 High Water
- Flood No. 1

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4

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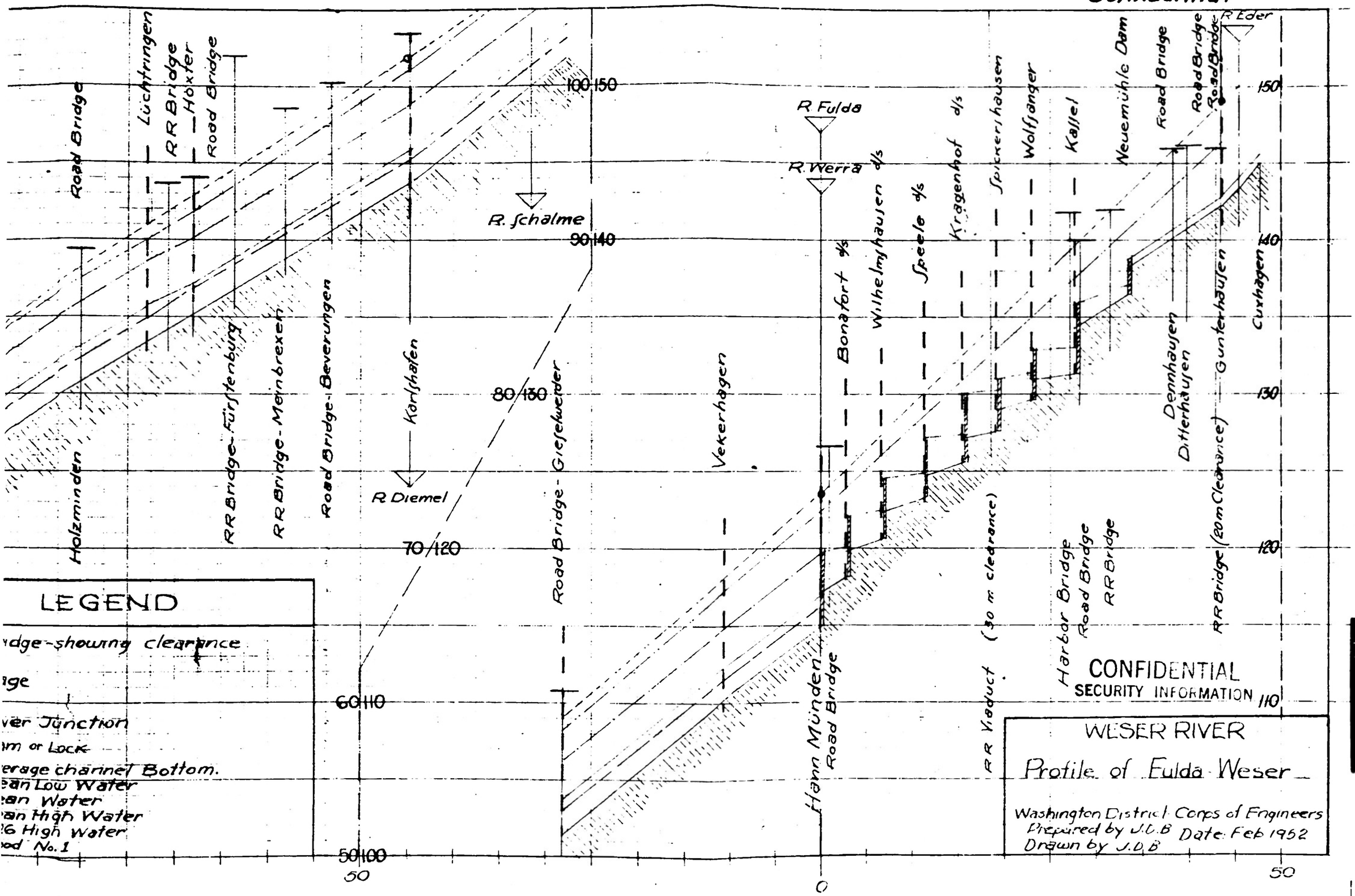

LEGEND

- ...dge-showing clearance
- ...ge
- ...ver Junction
- ...m or Lock
- ...erage channel Bottom.
- ...an Low Water
- ...an Water
- ...an High Water
- ...6 High Water
- ...od No. 1

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WESER RIVER

Profile of Fulda Weser

Washington District Corps of Engineers
Prepared by J.C.B Date Feb 1952
Drawn by J.C.B

RIVER Km ABOVE HANN-MÜNDEN

Exhibit No 5

5

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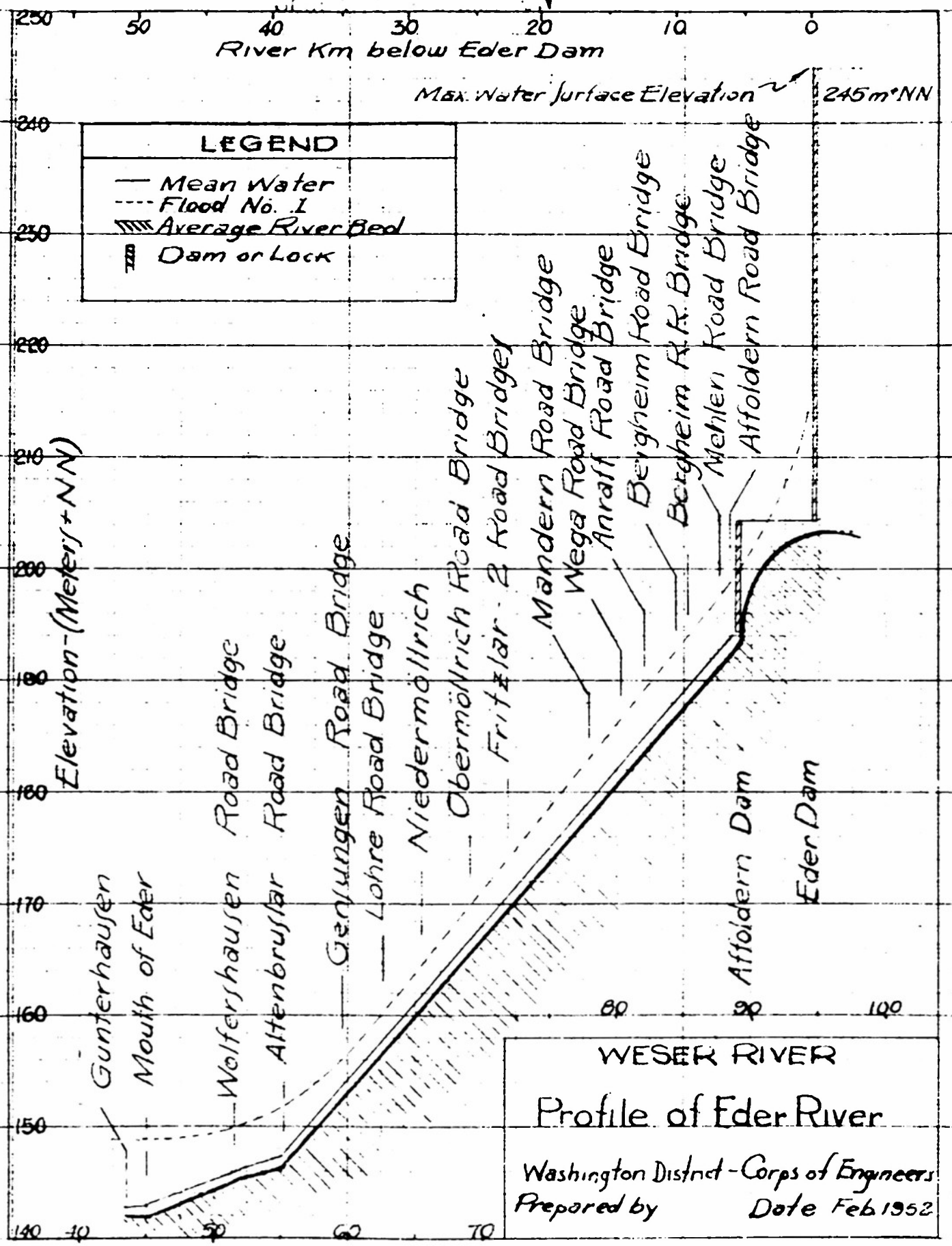

River Km above Hann. Münden

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Exhibit No. 6

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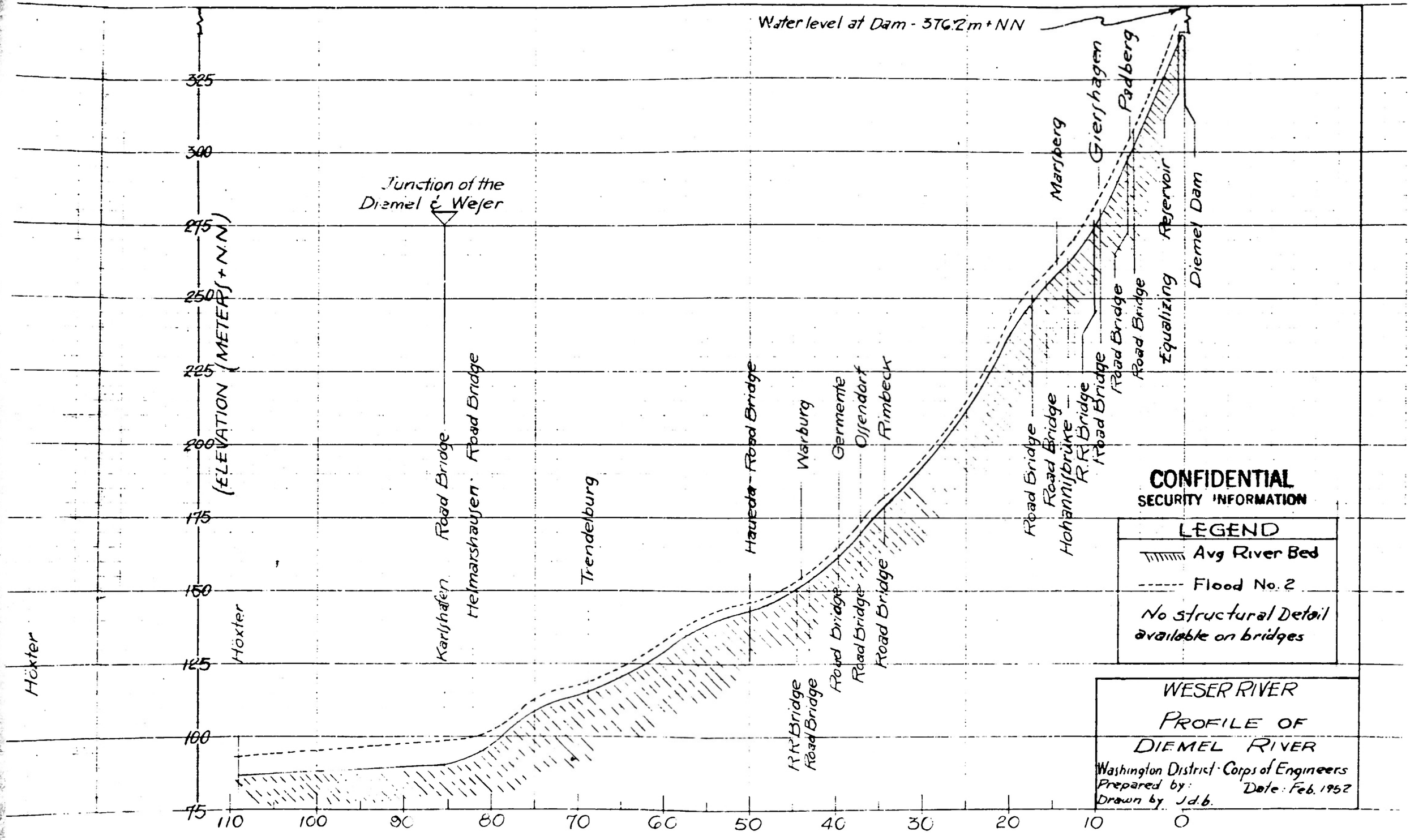

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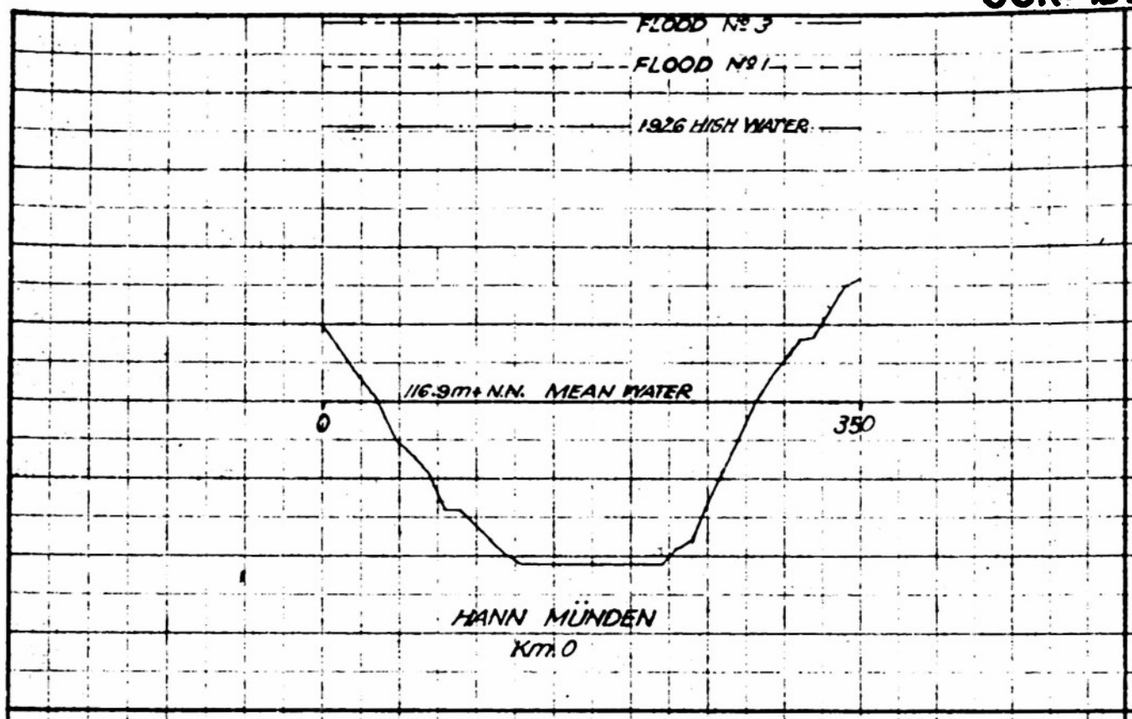
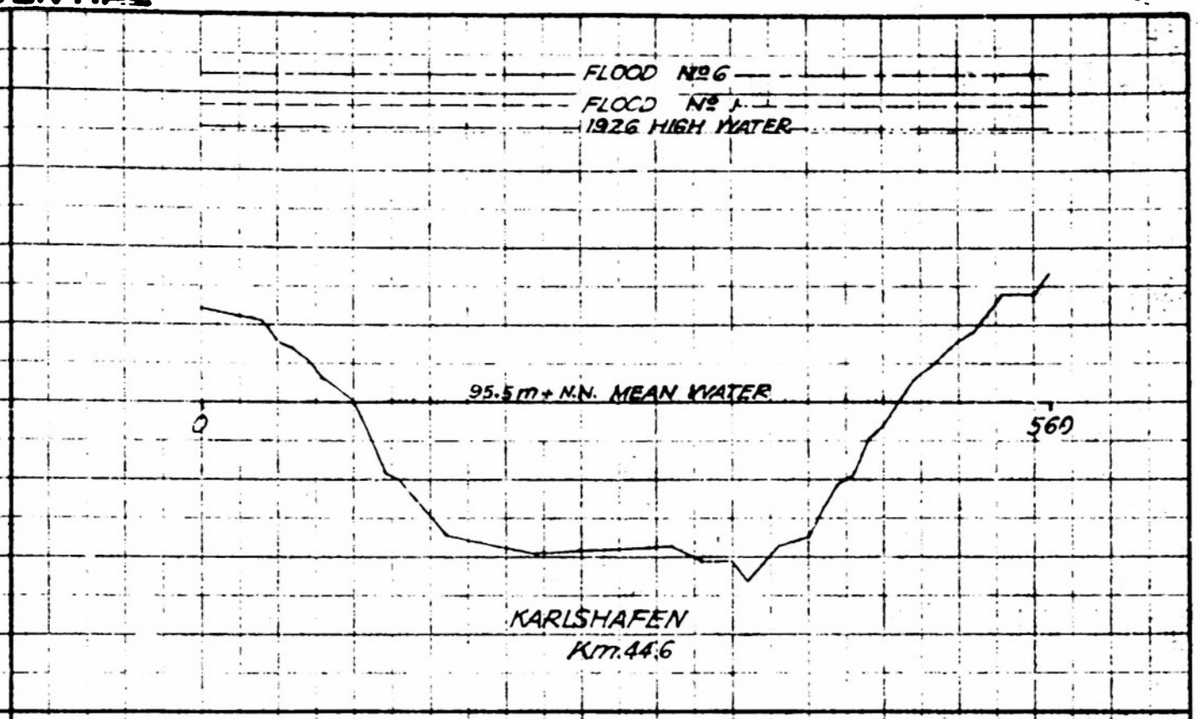
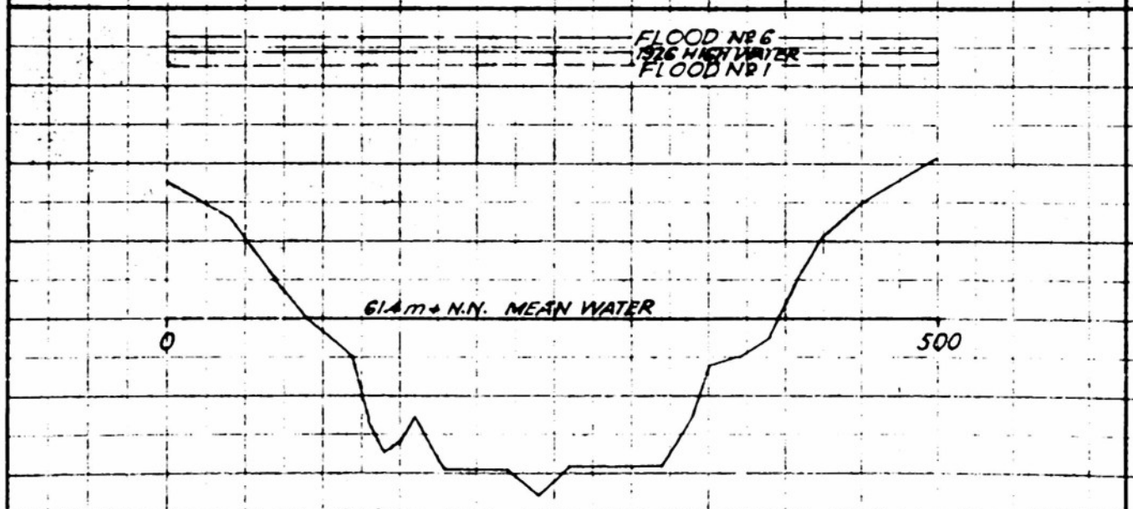
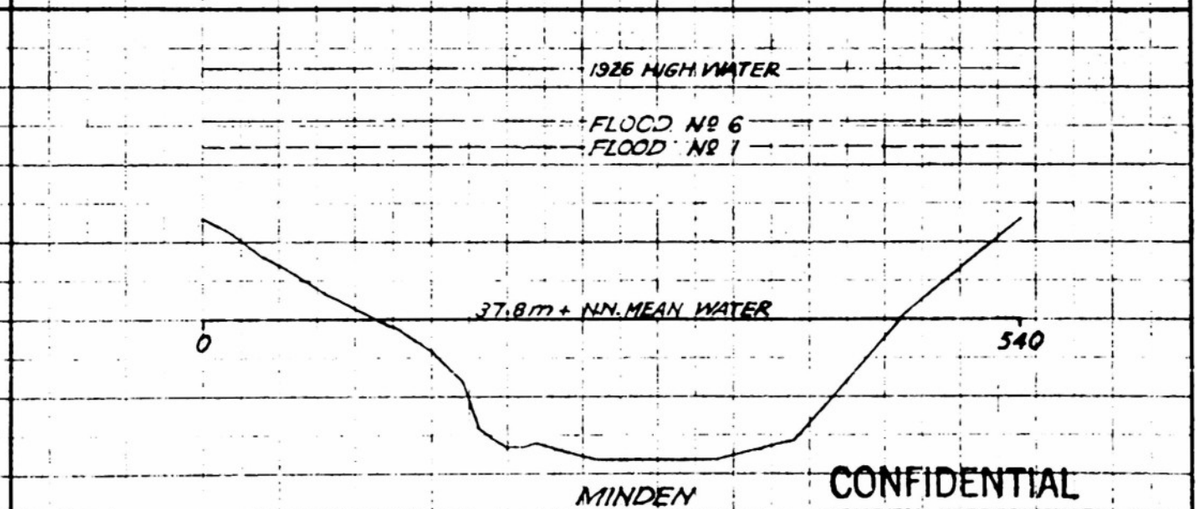
Exhibit # 7









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SCALE
1"=10' VERTICAL
1=100 HORIZONTAL

WESER RIVER
TYPICAL CHANNEL
CROSS SECTIONS

Washington District-Corps of Engineers
Prepared by EBB Date 2/11/51
Drawn by JJH

Exhibit 8

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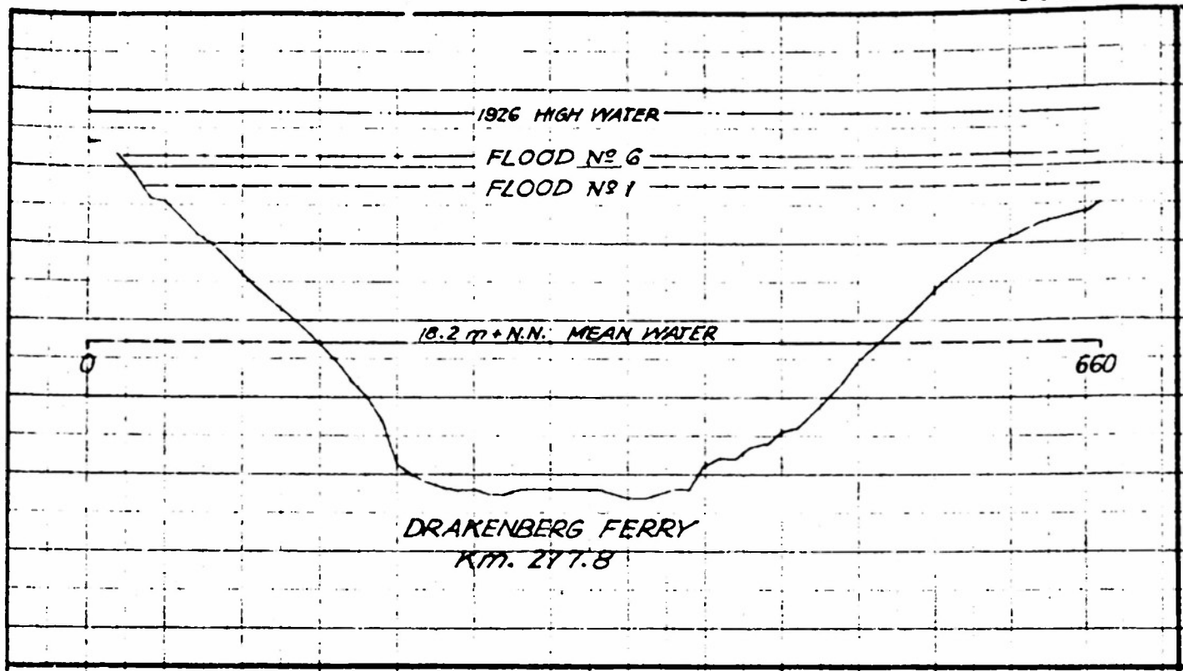
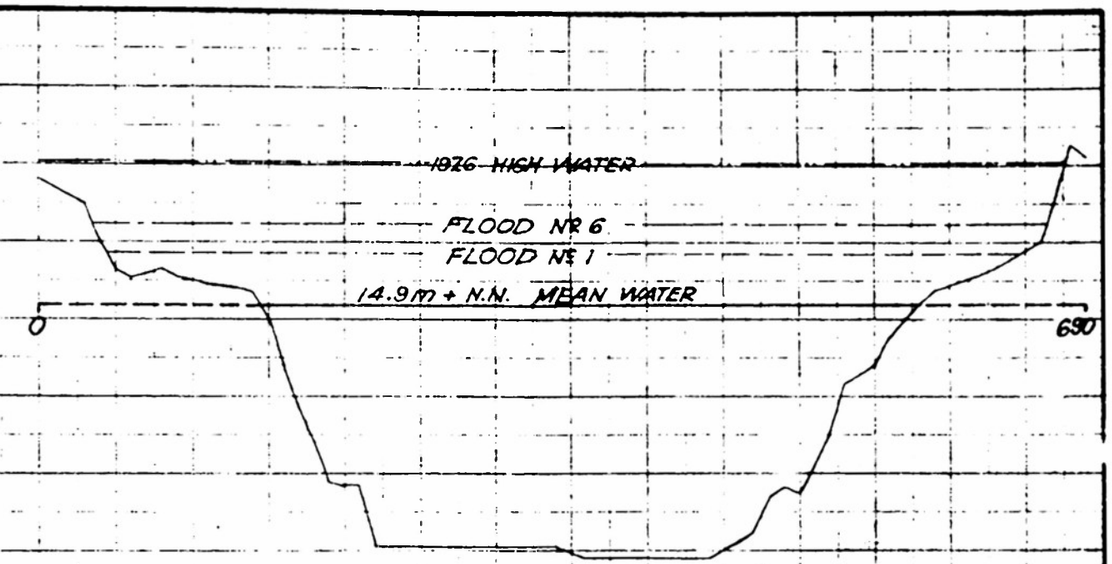
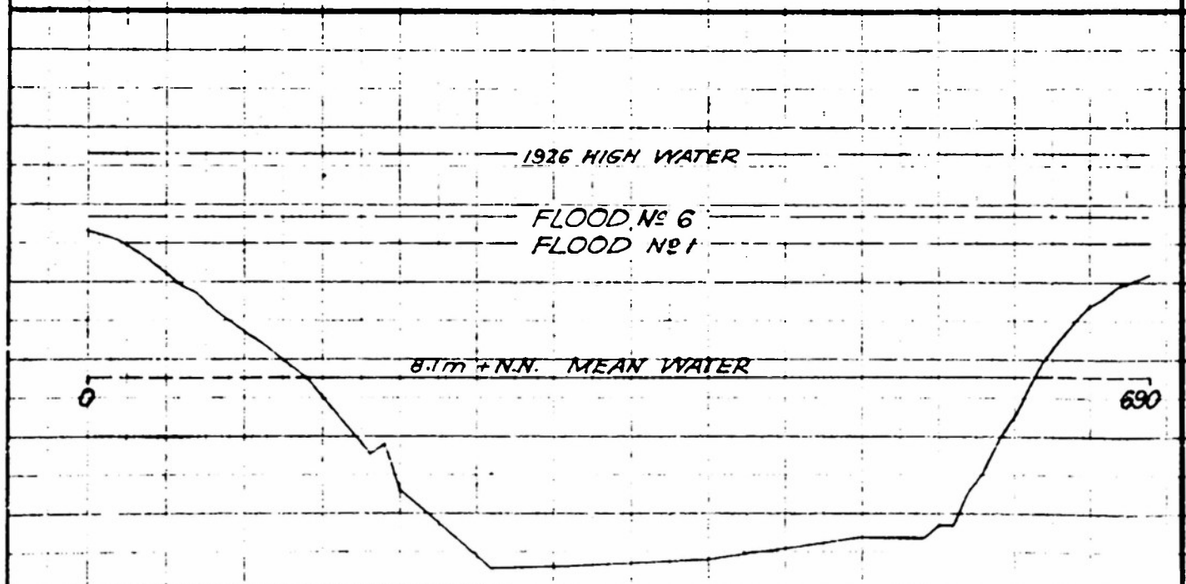


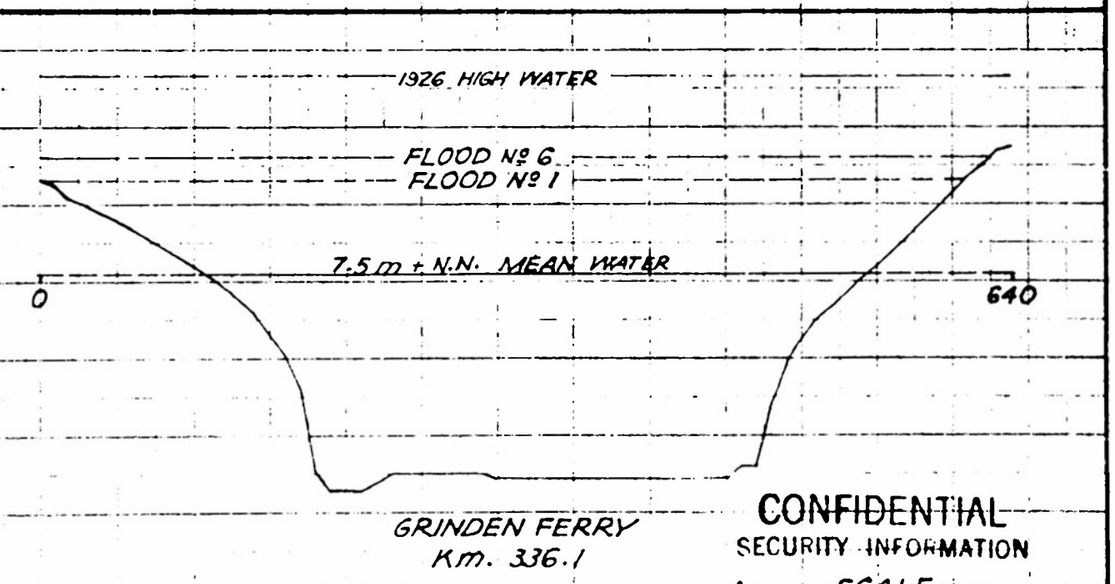
DRAKENBERG FERRY
Km. 297.8



BARME FERRY
Km. 305.5



DAVERDEN FERRY
Km. 329.2



GRINDEN FERRY
Km. 336.1

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SCALE
1" 10' VERTICAL
1" 100' HORIZOTAL

WESER RIVER
TYPICAL CHANNEL CROSS SECTIONS

Washington District Corps of Engineers
Prepared by E.B.B. Date 2/12/51
Drawn by J.J.H.

Exhibit 9

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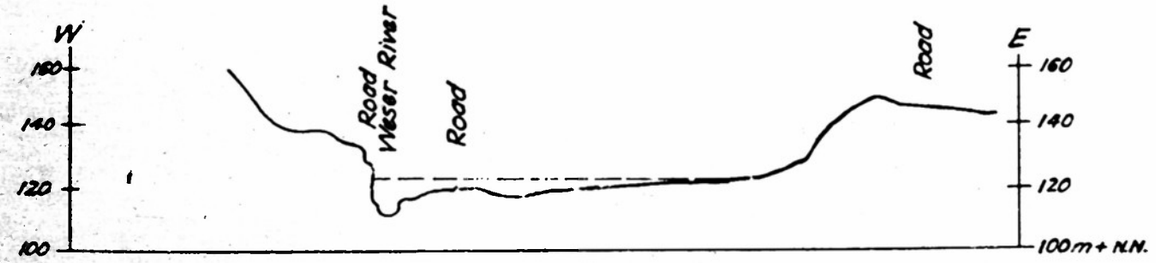
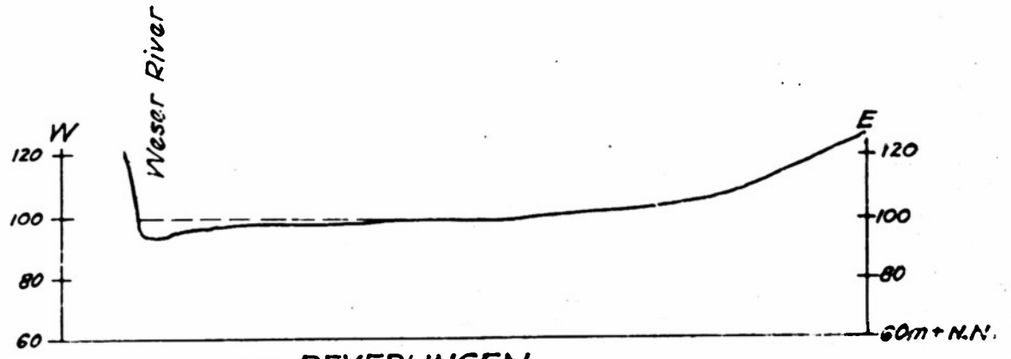
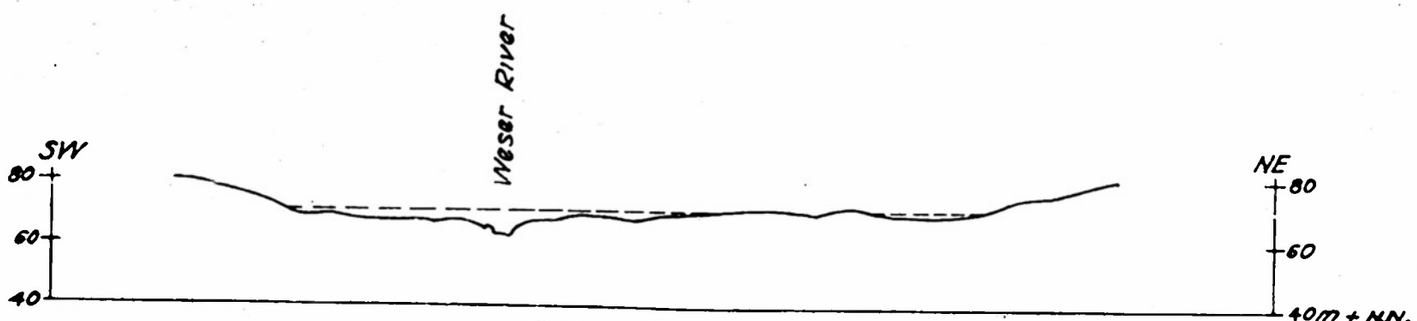


GIMTE
2.5 Km. below Hann Münden



near BEVERLINGEN
51.2 Km. below Hann Münden



EMMERN
127.8 Km. below Hann Münden

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——SCALE——
1:2000 VERTICAL
1:20000 HORIZONTAL

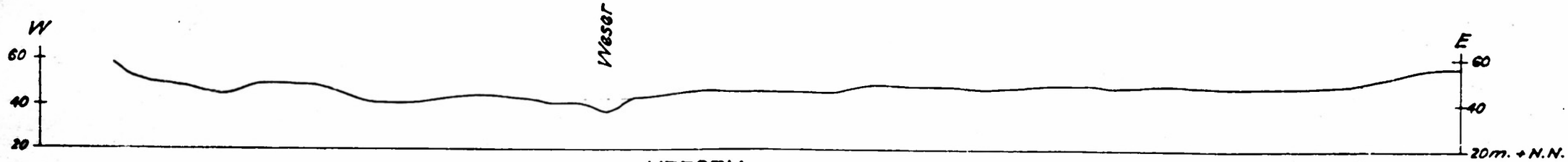
LEGEND
-----Flood No 1

WESER RIVER

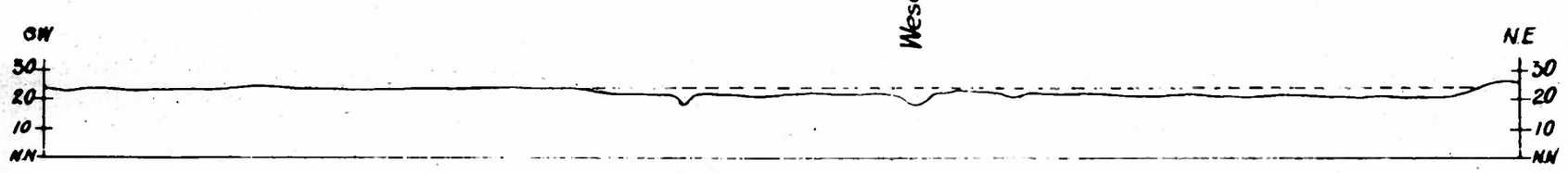
TYPICAL VALLEY CROSS-SECTIONS

Washington District Corps of Engineers
Prepared by_____Date_Feb 1952
Drawn by. J.H.

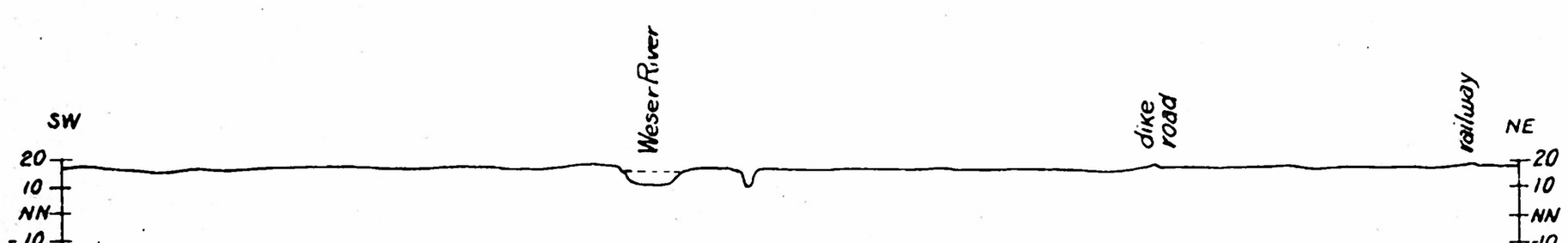
Exhibit 10



NEESEN
200.5 Km. below Hann Münden



NIENBURG
265.2 Km below Hann. Münden



DÖRVERDEN
308.8 Km below Hann. Munden

LEGEND

Flood 1 ------

SCALE

Vertical - 1:1000
Horizontal - 1:10,000

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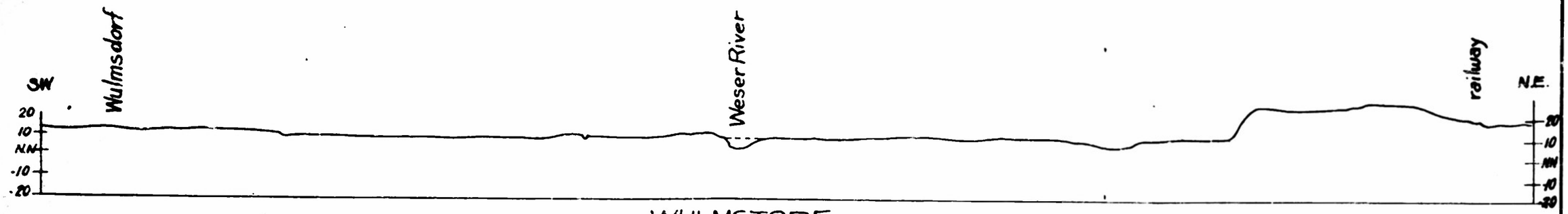
WESER RIVER

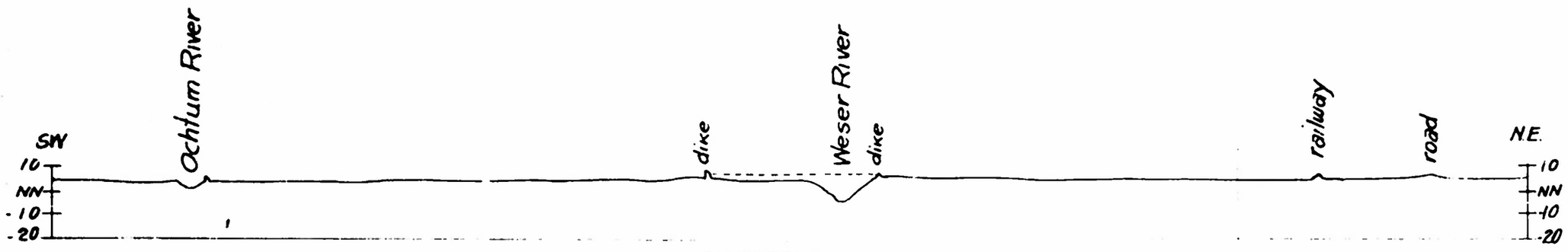
TYPICAL VALLEY CROSS-SECTIONS

Washington District Corps of Engineers
Prepared by _____ Date Feb 1952
Drawn by J.H.

Exhibit 11



WULMSTORF
3341 Km below Hann. Münden



ARSTEN
3583 Km. below Hann. Münden

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LEGEND

Flood 1 _____

SCALE

Horizontal - 1:10.000

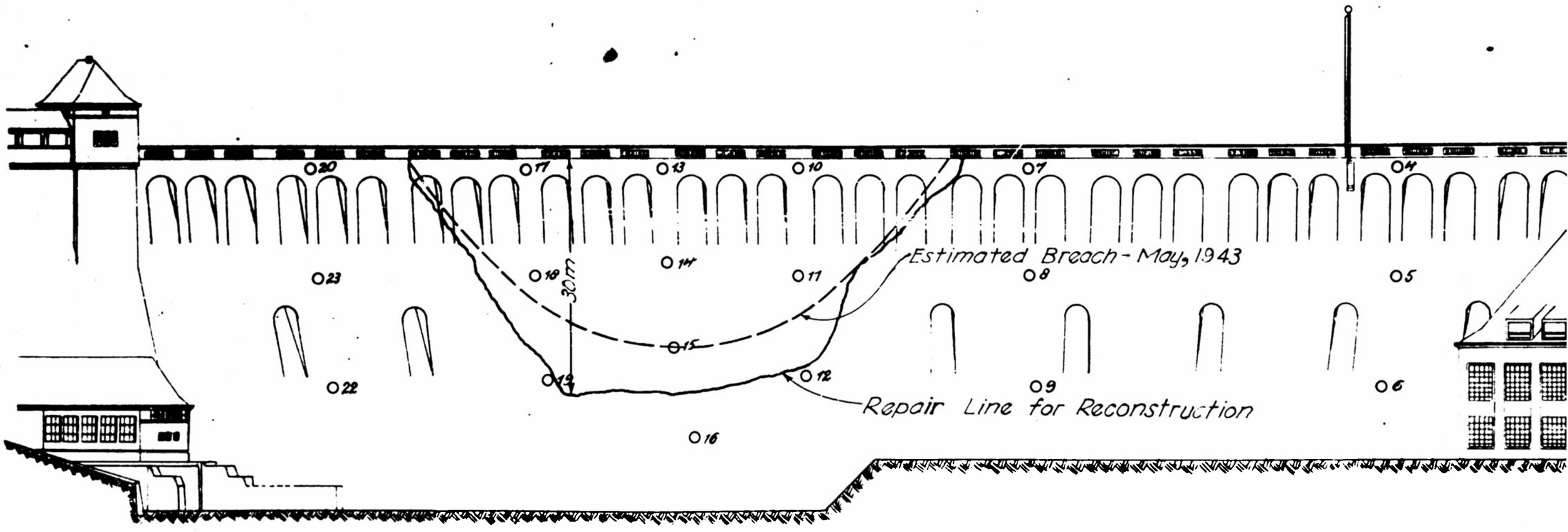
Vertical 1:1.000

WESER RIVER

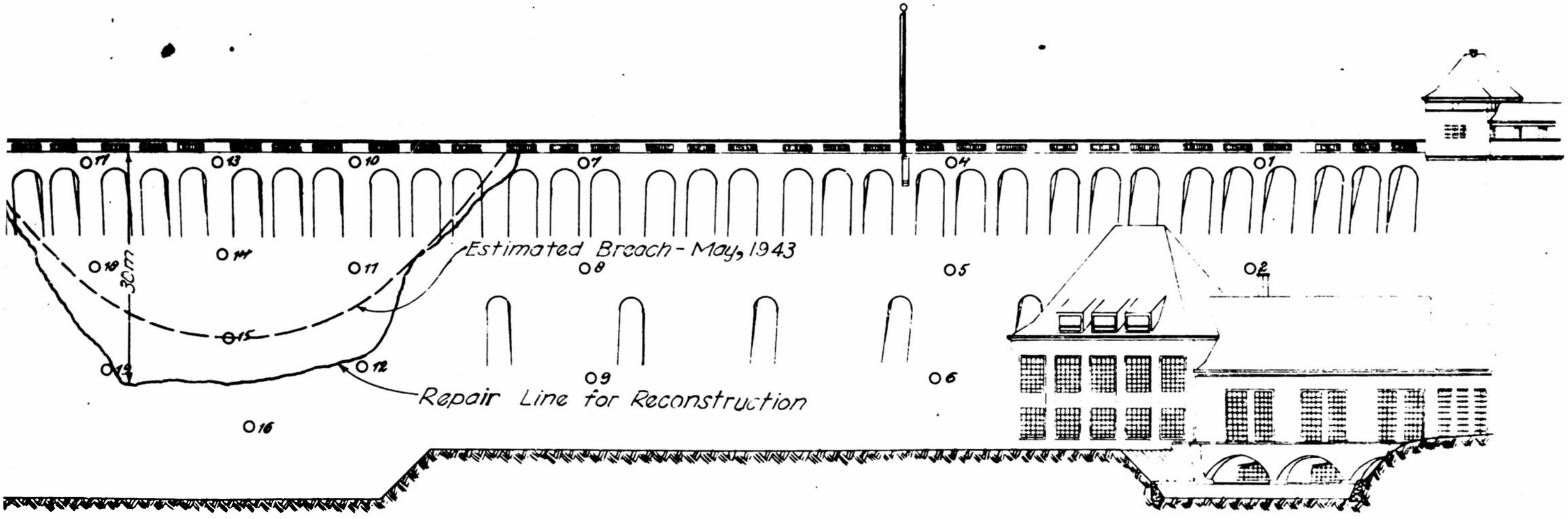
TYPICAL VALLEY CROSS-SECTIONS

Washington District Corps of Engineers
Prepared by_____ Date Feb 1952
Drawn by J.B.

Exhibit 12



EDER DAM ELEVATION
LOOKING UPSTREAM

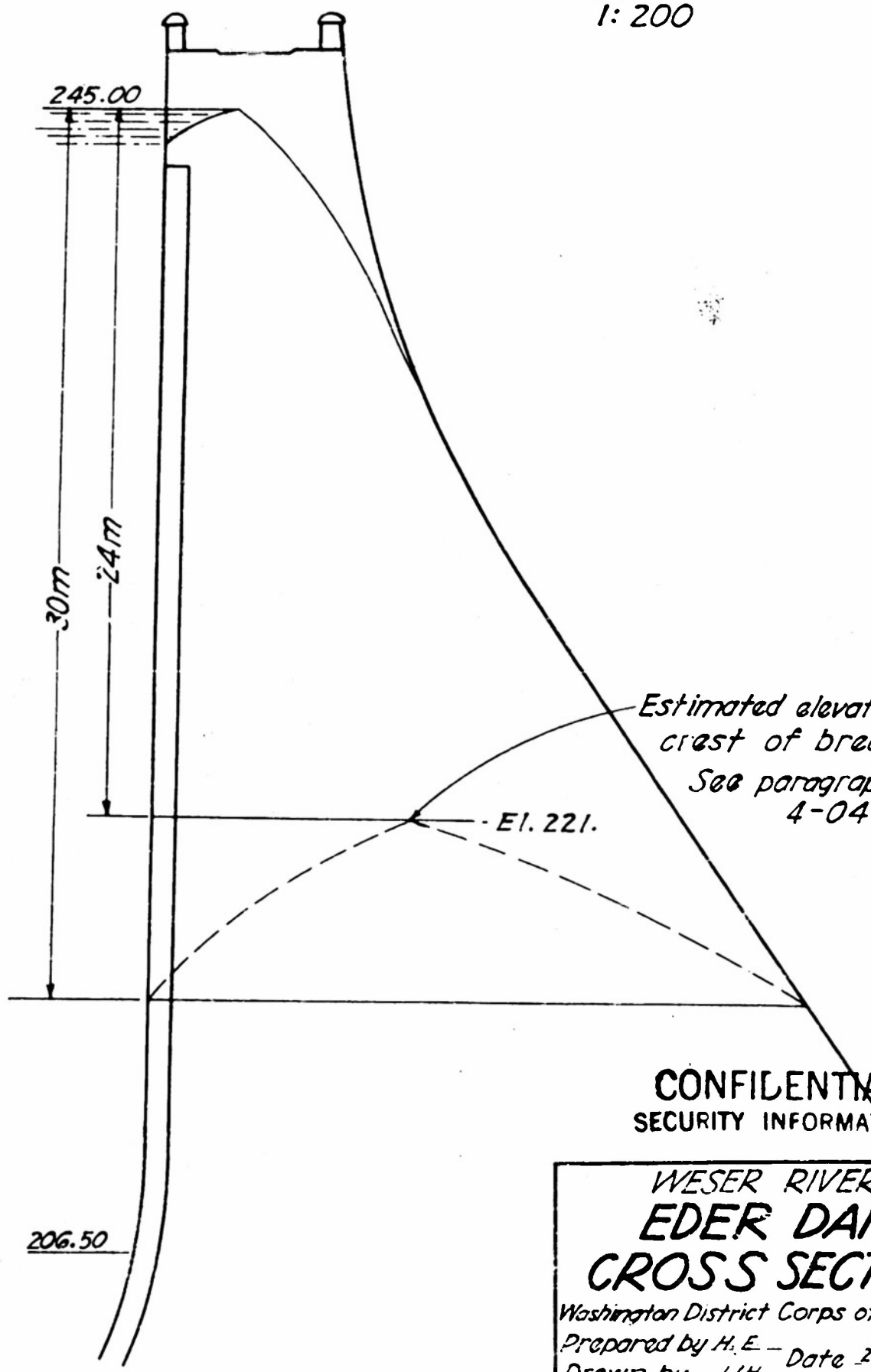


EDER DAM ELEVATION
LOOKING UPSTREAM

CONFIDENTIAL
SECURITY INFORMATION

EDER DAM
ELEVATION

SCALE
1: 200



CONFIDENTIAL
SECURITY INFORMATION

WESER RIVER
EDER DAM
CROSS SECTION

Washington District Corps of Engineers
Prepared by H. E. — Date 2/18/52
Drawn by JWH

Exhibit 14

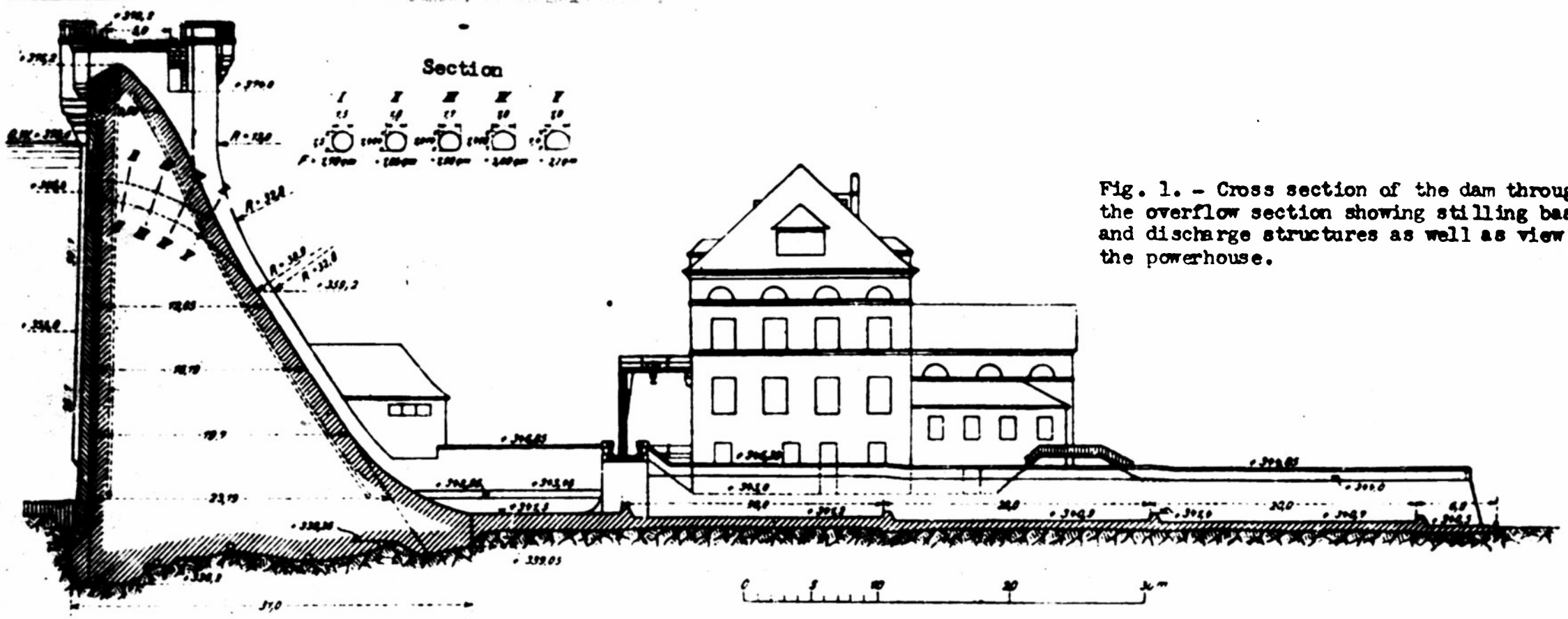


Fig. 1. - Cross section of the dam through the overflow section showing stilling basin and discharge structures as well as view of the powerhouse.

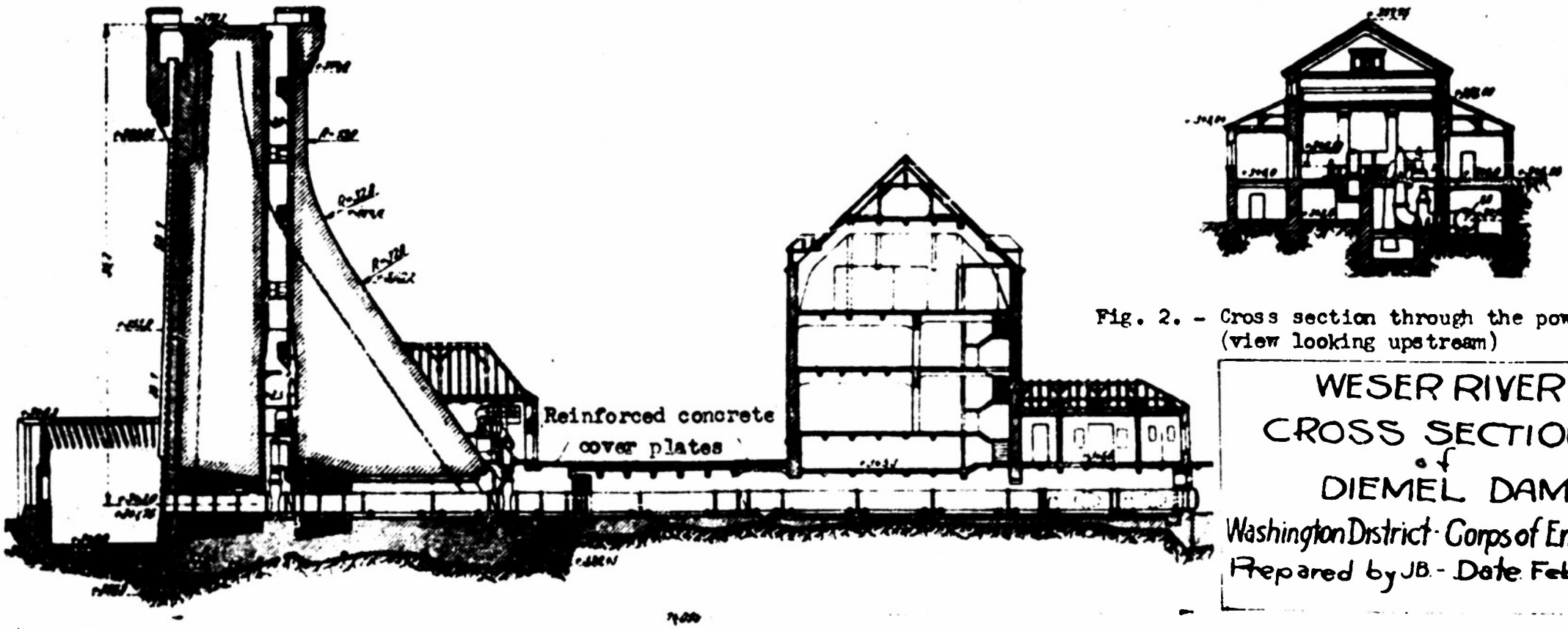


Fig. 2. - Cross section through the powerhouse (view looking upstream)

WESER RIVER,
CROSS SECTION
of
DIEMEL DAM
Washington District · Corps of Engineers
Prepared by JB. - Date Feb. 1952

Exhibit 15

CROSS-SECTIONS OF DYKES ON R. WESER.

SHEET I.

NOT TO SCALE.

NOTES.

1. SERIAL No's OF PHOTO RELATE TO GEOGRAPHIC LOCATION MAP SHEETS 2, 3 TO THE DETAILED DESCRIPTION.
2. ON THIS SHEET THE SLOPES ARE BASED ON SOUNDING REVISED BY THE HARBOUR/WASSERBAUDIREKTION, BREMEN; THE SOUNDING ARE FROM SOUNDING MADE BY A U.S. ARMED FORCES TEAM DETAILED AGAINST SOUNDED 1945.
3. THE DETAILED DESCRIPTION OF THE DYKES IS TRANSLATED FROM "WESER [illegible]" BY KELLER PUBLISHED IN 1949. THIS INFORMATION HAS NOT BEEN CHECKED ON THE GROUND.
4. MILES UPSTREAM STATED TO LEFT SIDE OF EACH CROSS SECTION IS THE RIVER BED.

FIG. 1. SERIAL 13. G.S.G.S. 4414. SHT 3821. G.S.G.S. 4416. SHT P3.
M.B. C060907.

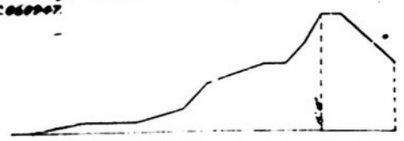


FIG. 2. SERIAL 24. G.S.G.S. 4414. SHT 3520. G.S.G.S. 4416. SHT N3.
M.B. W869256.

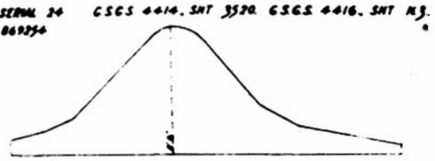


FIG. 3. SERIAL 27. G.S.G.S. 4414. SHT 3520. G.S.G.S. 4416. SHT N3.
M.B. W876304.

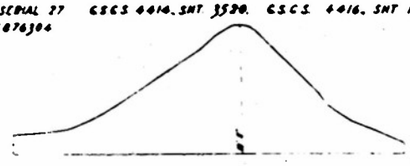


FIG. 4. SERIAL 29. G.S.G.S. 4414. SHT 3520. G.S.G.S. 4416. SHT N3.
M.B. WH3326.

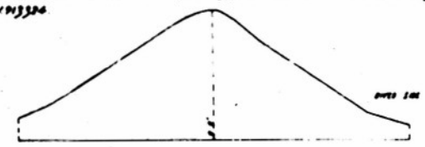


FIG. 5. SERIAL 30. G.S.G.S. 4414. SHT 3520. G.S.G.S. 4416. SHT N3.
M.B. W917326.

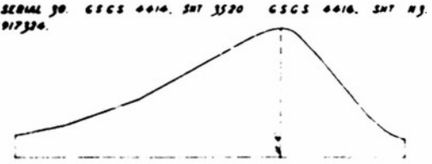


FIG. 6. SERIAL 38. G.S.G.S. 4414. SHT 3320. G.S.G.S. 4416. SHT N3.
M.B. W945466.

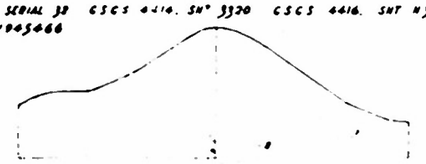


FIG. 7. SERIAL 43. G.S.G.S. 4414. SHT 3321. G.S.G.S. 4416. SHT N3.
M.B. W975634.

FIG. 8. SERIAL 44. G.S.G.S. 4414. SHT 3321. G.S.G.S. 4416. SHT N3.
M.B. W986606.

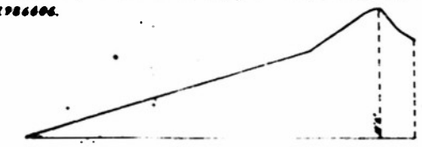


FIG. 9. SERIAL 45. G.S.G.S. 4414. SHT 3121. G.S.G.S. 4416. SHT N3.
M.B. W983773.

FIG. 10. SERIAL 46. G.S.G.S. 4414. SHT 3120. G.S.G.S. 4416. SHT N3.
M.B. W952686.

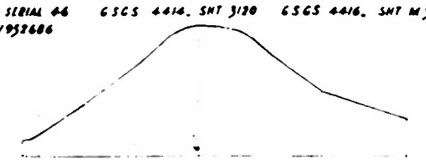


FIG. 11. SERIAL 46. G.S.G.S. 4414. SHT 3020.
M.B. B904863.

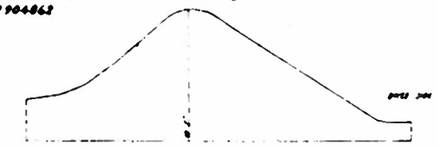


FIG. 12. SERIAL 47. G.S.G.S. 4414. SHT 3020.
M.B. B967865.

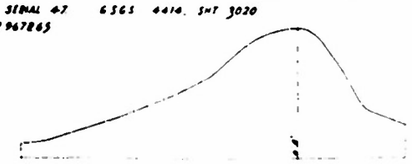


FIG. 13. SERIAL 48. G.S.G.S. 4414. SHT 3020.
M.B. B904871.

FIG. 14. SERIAL 50. G.S.G.S. 4414. SHT 2918.
M.B. B862907.

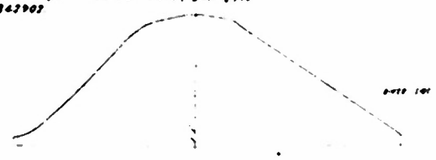


FIG. 15. SERIAL 54. G.S.G.S. 4414. SHT 2818.
M.B. B664029.

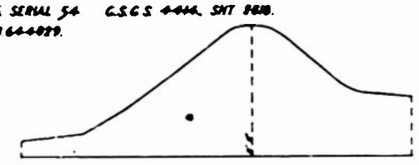


FIG. 16. SERIAL 54. G.S.G.S. 4414. SHT 2818.
M.B. B675015.

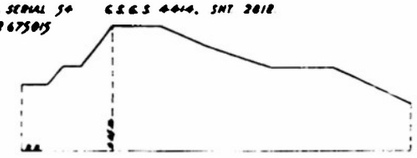


FIG. 17. SERIAL 54. G.S.G.S. 4414. SHT 2818.
M.B. B075079.

FIG. 18. SERIAL 55. G.S.G.S. 4414. SHT 2817.
M.B. B604052.

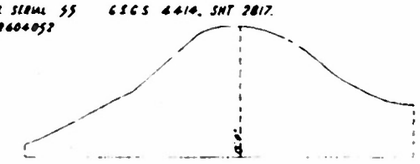
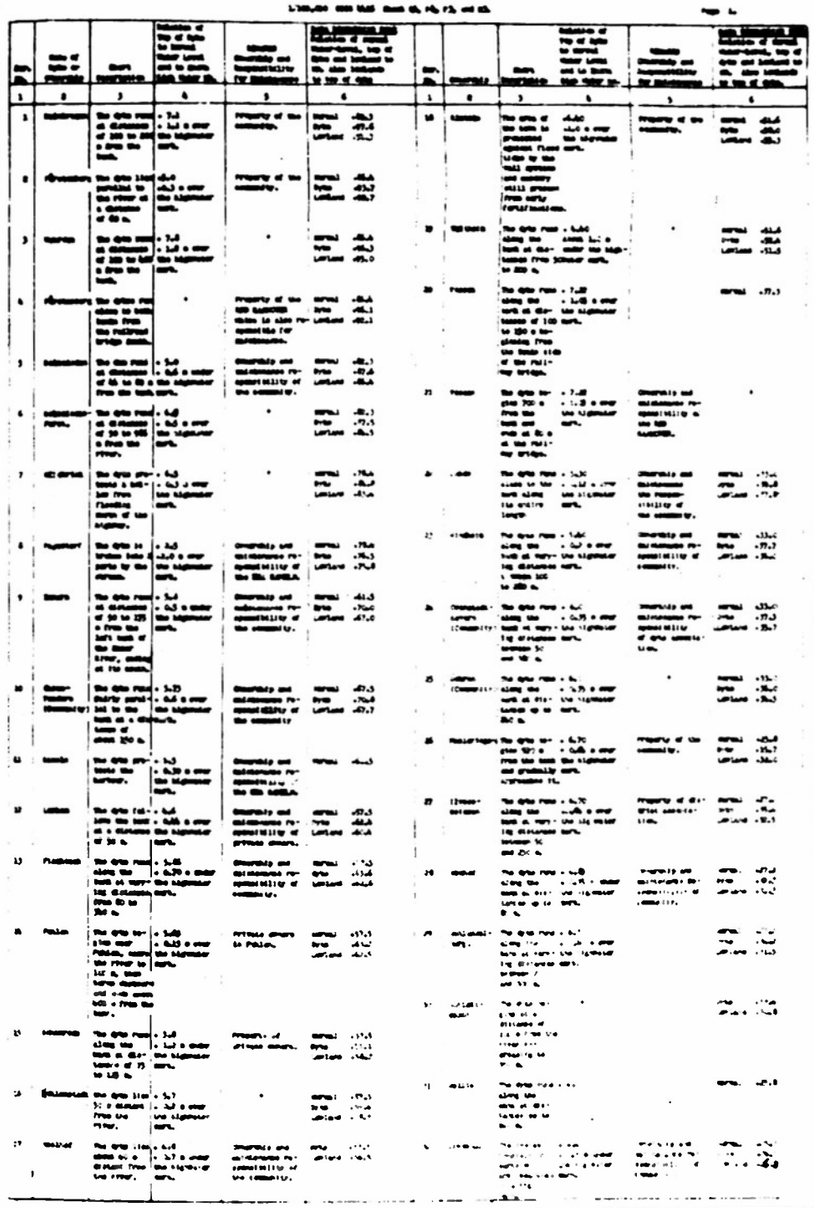


FIG. 19. SERIAL 56. G.S.G.S. 4414. SHT 2816.

FIG. 20. SERIAL 56. G.S.G.S. 4414. SHT 2816.
M.B. B4510.

FIG. 21. SERIAL 56. G.S.G.S. 4414. SHT 2716.
M.B. B475110.



WESER RIVER

LEVEE DATA

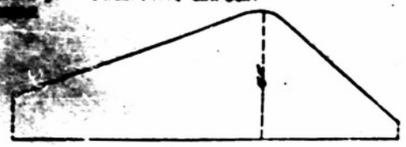
Exhibit 16

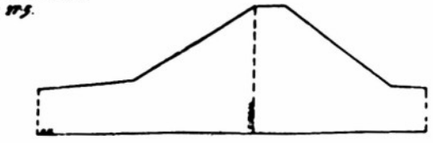
CROSS-SECTIONS OF DYKES ON R. WESER.

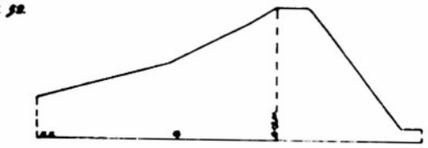
NOT TO SCALE.

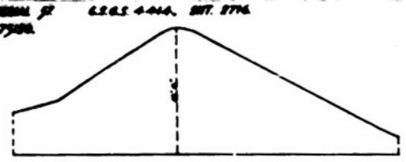
NOTES

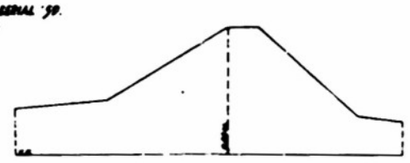
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

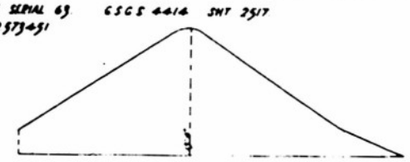


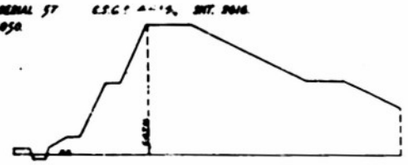


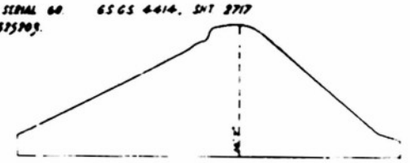


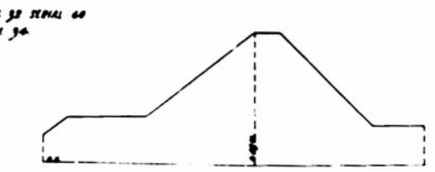


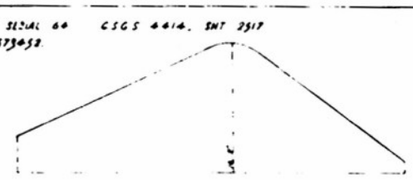


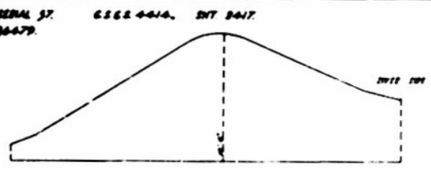


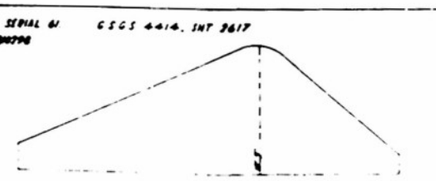


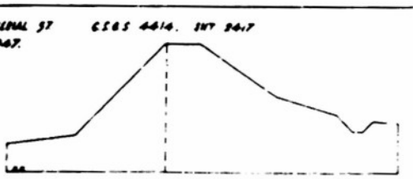


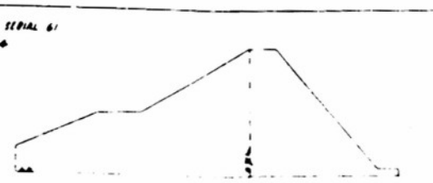


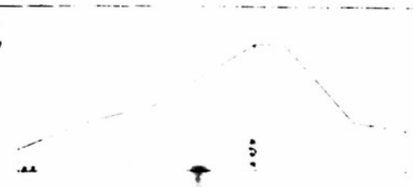


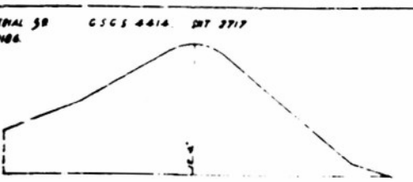












LEVEE DATA

Canals

Bank

with docking facilities

Ports

Docks

and

Places

Distances Km

Elevations above sea level at Amsterdam m

Right Bank of the Rhine River

Rhine Herne Canal

Herne Branch Canal

Dortmund-Ems Canal

Port of Duisburg
Dock A G fur Teerverwertung Quay, 260 m
Dock, Gewerkschaft Neumuhl Quay, 235 m
Dock, Bergbau – A G "Concordia" Quay, 560m
Dock, Essener Bergwerksverein "Kong Wilhelm" in Borbeck Quay, 350m
Dock, Arenbergscher A G Quay, 440m
Dock, Friedrich Krupp A G Quay, 170m
Dock, Bergwerks A G Recklinghausen bei Bottrop Quay, 518 m
Essen Dock Quay, 750 m
Dock, Koln-Neuessener, Bergwerks Verein Quay, 330 m
Dock, Gewerkschaft Mathias Stinnes Quay, 350 m
Coal Dock, Vereinigte Stahlwerke A G (Zeche Nordstern) Quay, 420m
Dock, Hibernia Bergbau A G Quay, 800 m
Port of Gelsenkirchen Quays, 2700m
Dock, Harpener Bergbau A G (Zeche Hugo) Quay, 400m
Dock, Gewerkschaft Graf Bismarck Quay, 800 m
Dock, Gelsenkirchener Bergwerks A G Quay, 1000m
Dock, Gewerkschaft "Unser Fritz" Quay, 180 m
Dock, Hafenbetriebsgesellschaft Wanne-Herne Quay, 507m
East Dock, Hafenbetriebsgesellschaft Wanne Herne Quay, 420m
Cooling B Docks, Harpener Bergbau A G (inc. Zeche Recklinghausen 18 Quay, 600m
Recklinghausen Dock Quay, 300 m
Coal Dock of Zeche "Konig Ludwig" Quays, 1129 m
Former Dock, "Konig Ludwig" Quay, 910m
Quay near Lock No VII 640m
Dock, Zeche "Victor" Quays, 308m
Henrichenburg Dock Quay, 120 m
Dattelbeck Dock Quay, 80m
Farth Dock Quay, 60m
Loringhoff Dock Quay, 90 m.
Coal Dock, Zeche-Emscher-Lippe Quay, 300 m
Dattein Dock Quay, 360m
Hamsoth Dock Quay, 45m
Olfen Dock Quay, 200m
Schole Dock Quay, 70m
2 Ludinghausen Docks Quays, 320 & 100m
Hiddingsel Dock Quay, 172 m
Senden Quay, 193m
Venner Moor Dock Quay, 127m
Kannenbaum Dock Quay, 136m
Amelsburen Quay, 67m on ea bank
Upper Dock of Hiltrup Quay, 130 m
Hiltruper Dock Quay, 250m
Dock at Hiltrup Quay, 50 m
Laddenheide Dock Quay, 50m
City Dock II at Munster Quay, 520 m.
Petroleum Dock at Munster Quay, 70 m
City Dock I at Munster Quay, 1380 m
St Mauritz Dock Quay, 300 m
City Dock at Munster Quay, 150 m
Joke Dock Quay, 70m
Gelmer Dock Quay, 350 m
Beckhelt Dock Quay, 100m
Beckhelt Dock Quay, 100m on ea bank
Greven Dock, Schmeddehausen Quay, 220m
Ledbergen Dock Quay, 130 m
Saerbeck Dock Quay, 500m
South Dock, Riesenbeck Quay, 130 m
North Dock, Riesenbeck Quay, 78 m
Quarry Dock, Riesenbeck Quay, 84 m
Bergeshovede Dock Quay, 160m
Hersel Quay, 80 m
Uffeln Quay, 80m
Zumwolde, Quay, 225 m
Recke Quay, 80m
Wachum (Gemeinde Achmer)
Quaye
Bramsche Quay, 225m
Engter Quay, 130 m
Venns Quay, 120m
Brosten & Schoegstorf Quay, 120m
Osterkappeln
Herrenhausen Quay, 130m
Stirpe
Bad Essen Quay, 200m

Lock No I
Lock No II at Oberhausen
Lock No III at Dellwig
Lock No IV at Hessler
Lock No V at Kranoe
Lock No VI at Herne
Lock No VII at Herne Poppinghausen
Emscher Siphon
Safety Gate
Safety Gate
Canal Bridge of Dattein
Canal Bridge over the Lippe. Pumping Plant
Canal Bridge over Olfen-Selm Highway
Canal Bridge over the Stever
Canal Bridge over the Olfen Ludinghausen Highway
Safety Gate
Otterbach Intake
Kannenbach Intake
Canal Bridge over the Eme
Safety Gate
Safety Gate
Safety Gate No.1
Safety Gate No 2
Osnabruck Branch Canal
Safety Gate No 3
Munster Locks (I, II, III)
Hollage Lock
Piesberg Dock Quay, 280 m
Osnabruck-Haste Lock
Osnabruck Quays, R 875 m, L 400m
Hunte R Siphon

PROF

PROFILE OF THE MITTELLAND CANAL

Ems-Weser Canal

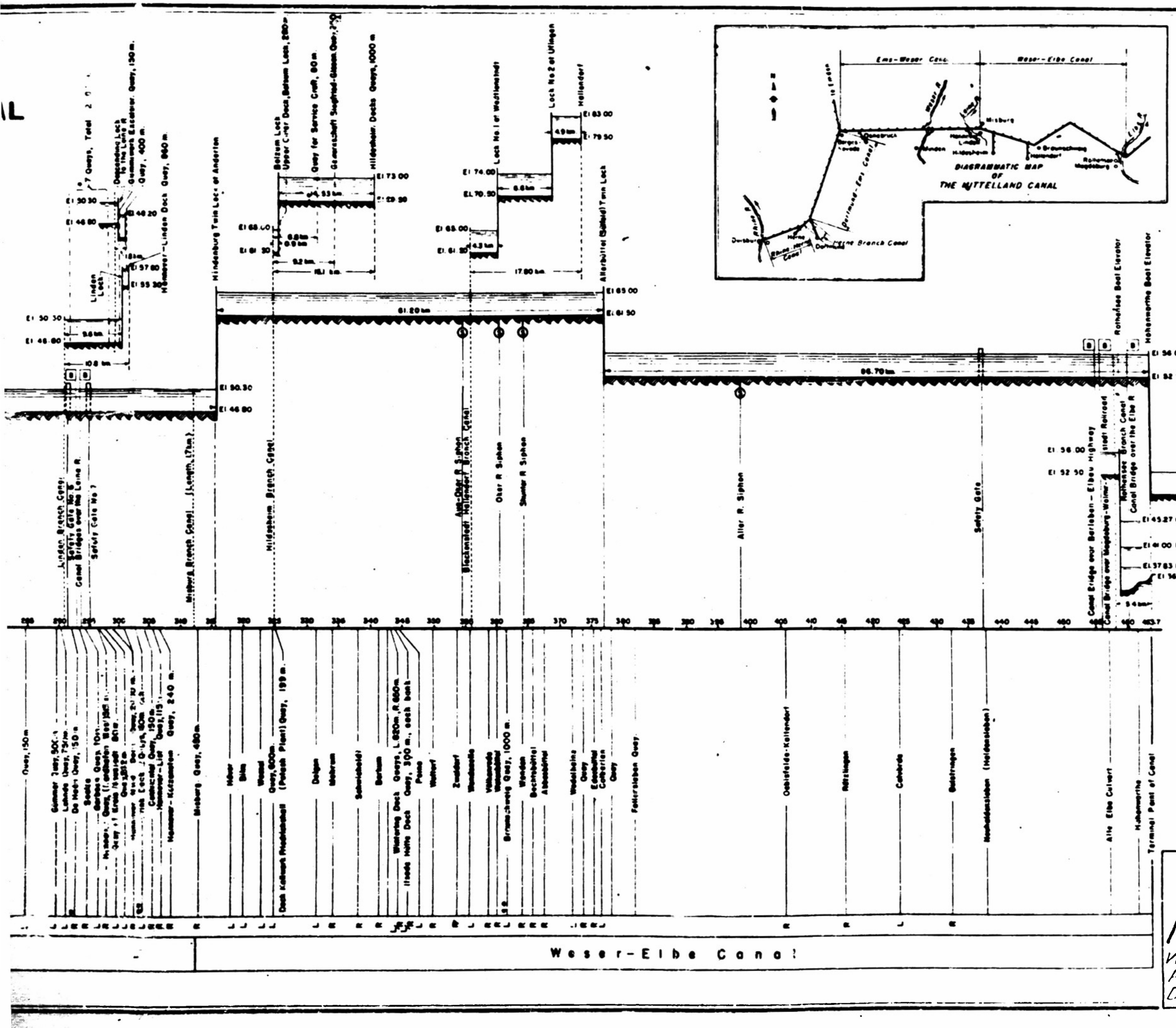
Weser

Horstel Quay, 80 m
Uffeln Quay, 80 m
Zumwalde, Quay, 225 m.
Recke Quay, 80m.
Wechum (Gemeinde Achmer) Quays
Bramsche Quay, 225m
Engter Quay, 130 m.
Venne Quay, 120m.
Brosten & Schwegstorf Quay, 120m.
Ostercappeln
Herringhausen Quay, 130 m
Stirpe
Bad Essen Quay, 200m
Wimmer Quay, 80m
Getmold Quay, 150m
Lubbecke Quay, 150 m
Hille Quay, 150 m
Hahlen Quay 60m
Minden-West Quay, 165 m
Minden-West Quay, 600m
Minden Tug Dock
Minden-Fulda Strasse Quay 350m
Minden - Ost Quay, 720m
Rusbend Quay, 80 m
Wiehagen Quay, 150m
Pollhagen Quay, 80 m
Sachsenhagen Quay, 65 m
Lindhorst
Idensen
Haste
Quay, 50m
Gummer Quay, 500m
Lohnde Quay, 750m.
De Kaen Quay, 150 m
Seelze
Garbsen Quay, 80m.
Hannover Quay, (Nordhafen West) 545 m.
Quay of Kross Neustadt 80m.
Quay, 242 m
Hannover Nord Dock Quay, 2400 m
Brink Dock 2 Quays, 160m each
Continental Quay, 150m
Hannover - List Quay, 115m
Hannover - Ketzendorf Quay, 240 m
Misburg Quay, 450m
Höver
Bilm
Wassel
Quay, 600m
Deck Kalkwerk Friedrichshall (Potash Plant) Quay, 199 m
Dolgen
Mehrum
Schwicheldt
Bortum
Winforing Dock Quays, L 820m, R 650m
Ilsede Hütte Dock Quay, 300 m., each bank
Peine
Wolfort
Zweidorf
Wendezelle
Völkenrode
Watenbüttel
Braunschweig Quay, 1000 m
Wenden
Beckenbüttel
Abbesbüttel
Wedelheine
Quay
Edesbüttel
Colberlen
Quay
Fellersleben Quay

Safety Gate No 2
Osnabrück Branch Canal
Safety Gate No 3
Hollage Lock
Piesberg Dock Quay, 280 m
Osnabrück - Haste Lock
Osnabrück Quays, R 875 m, L 400 m
Hunte R Siphon
Safety Gate No 4
Safety Gate No 5
Minden High Lift Lock
North connection to the Weser
Two Locks
South connection to the Weser
For Conc. Bridges near Minden see Schedule No 1
Linden Branch Canal
Safety Gate No 6
Canal Bridges over the Leine R
Safety Gate No 7
Linden Lock
7 Quays, Total 2000 m
Descending Lock to the Leine R
Gummiwerk Excelsior Quay, 150 m.
Quay, 400 m
Hannover - Linden Dock Quay, 860 m
Misburg Branch Canal (Length 17km)
Hindenburg Twin Lock at Anderten
Hildesheim Branch Canal
Bolzum Lock
Upper Outer Dock, Bolsum Lock, 280m
Quay for Service Craft, 80 m
Gemeinschaft Siegfried-Giesen Quay, 230
Hildesheim Docks Quays, 1000 m
Aue-Oker R Siphon
Blackenstedt Hallendorf Branch Canal
Oker R Siphon
Stunter R Siphon
Lock No 1 of Wedtlenstedt
Lock No 2 of Ullingen
Hallendorf
Allerbüttel (Silfeld) Twin Lock

Reproduced from "NAVIGABLE WATERWAYS OF GERMANY." S.E.S. 128, O.C.E., U.S.A., August, 1944.

DIAGRAMMATIC MAP OF THE MITTELLAND CANAL



SCHEDULE NO 1

Canal Bridges near Minden

Km Point	Canal Bridges
2437	Canal Bridge over Werftstrasse
2438	Canal Bridge over the Weser
2443	Canal Bridge over Friedrich Wilhelm Strasse
2463	Canal Bridge over Dankersen-Hasenkamp Road
2471	Canal Bridge over Dankersen Commer Road

SECURITY INFORMATION

RESTRICTED

WESER RIVER

PROFILE

MITTELLAND CANAL

Washington District Corps of Engineers

Prepared by E.P.B. Date 2/15/52

Drawn by

Exhibit 18

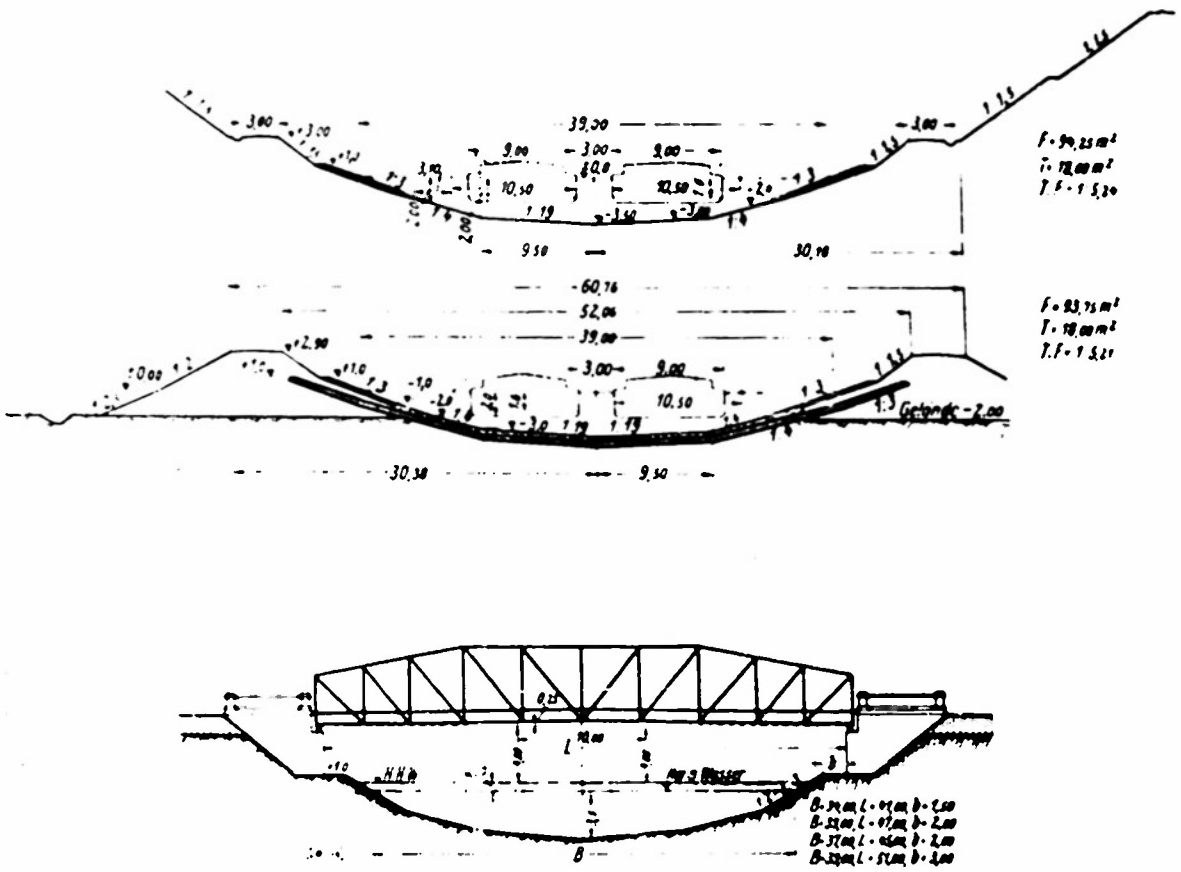


Fig. 15-7
Standard Cross Sections of the Mittelland Canal in Cuts, on Embankments, and Under Bridges

F - Wet cross section of canal prism
T - Wet cross section of boat
B - Canal width at the surface, at regulation water level
b - Berm
L - Horizontal clearance between abutments

On newly constructed German canals the ratio T:F is kept within the limits of 1:4 or 1:5.

Reproduced from "NAVIGABLE WATERWAYS OF GERMANY" S.E.S. 28, C.C.E., U.S.A., AUGUST, 1944.

WESER RIVER
CROSS SECTIONS
MITTELLAND CANAL
Washington District Corps of Engineers
Prepared by
Drawn by
Date 2/11/52

RESTRICTED
SECURITY INFORMATION

Exhibit 19

BRIDGES
CROSSING THE

NO. 27. THE WESER, THE EMS-WESER REGION

1	2	3	4	5	6	7
KM FROM O.O	NAME AND LOCATION		TYPE - MATERIAL	CLEARANCE (m)		REMARKS
	RAILROAD LINE	HIGHWAY ROUTE		VERTICAL M.H.W.	HORIZONTAL BET CROSSING SPAN	
(1)	NO. 27a. AUSSENWESER AND UNTERWESER (OUTER WESER AND LOWER WESER)					
111.0	At Bremen	-	Steel	-	2 45.00 *2 18.00	*Over the Grosse Weser and over the Kleine Weser.
		NO. 27b. MITTELWESER (MIDDLE WESER)				
112.4 * 0.0	-	Bremen Kaiser-brück	Steel	-	95.0	*Zero point of the km. system of the inland water route. The Mittelweser (Middle Weser) is officially considered as beginning upstream of the Bremen Dam (km. 5.8) 2 approach spans of 11 and 13 m. respectively, across the Grosse Weser; also a river span of 60 m. across the Kleine Weser
0.8	-	Bremen, Grosse Weser bridge	*	6.02	2 32.20 1 63.30	Navigation chart zero, El. -1.09 m. (-3.37 m. Bremen Datum)
5.4	-	-	*	-	-	Footbridge
10.2	Railroad bridge	-	*	6.00	3 58.37	-
26.5	-	Near Uesen	Steel and reinforced concrete	4.50	1 58.37 2 57.50	-
44.2	-	Near Ritzenbergen	Steel	4.44	76.50	3 spans
*53.0	-	Highway, Across the Lock; Upper Canal	*	5.0	50.0	*Distance is given through the lock
64.9	-	At Hoya RR.Sta.	*	5.49	1 32.30	2 side spans, each 25.7 m. wide
65.0	At Hoya	-	*	5.18	1 71.60	2 side spans, 30 m. wide each
92.0	Nienburg	-	*	5.07	1 98.0	2 side spans; 7 flood spans
95.7	-	Nienburg	*	4.88	111.0	-
120.5	-	At Stolzenau	*	4.72	1 64.30	2 side spans, 30.10 m. wide each

(1) See NOTE on Exhibit 22

Exhibit 20

BRIDGES

CROSSING THE

NO. 27. THE WESER, THE EMS-WESER REGION

1	2	3	4	5	6		7
KM FROM O.O	NAME AND LOCATION		TYPE - MATERIAL	CLEARANCE (m)			REMARKS
	RAILROAD LINE	HIGHWAY ROUTE		VERTICAL above H.W.	HORIZONTAL BET CROSSING SPAN		
(1)		NO. 27b.	MITTELWESER (MIDDLE WESER) (Cont.)				
158.9	-	Ems-Weser Canal	-	8.97	2	80.00	Arch bridge. 2 river spans, 6 flood spans
160.1	Minden, Narrow gauge	-	Steel	4.84	1	65.00	14 flood spans
160.6	-	Minden	-	4.60	1	72.80	6 flood spans
		NO. 27c.	OBERWESER (UPPER WESER)				
165.7	-	At Barkhausen, Aulhausen	Steel	5.56		88.00	Suspension bridge. 1 river span; 13 arch flood spans
175.5	Hamm-Hannover	-	"	6.85	1	79.00	1 river and 2 flood spans
180.6	-	At Vlotho	Reinforced concrete	11.95	1	60.00	1 river span and 6 flood spans
182.3	Railroad bridge	-	Steel	5.35	1	57.68	1 river and 3 flood spans
195.7	-	At Elsbergen	"	4.92	1	64.00	Navigation passage under the central span; 2 side spans 30.60 m. wide each
201.1	-	Rinteln	Reinforced concrete; Steel	4.00	1	85.00	1 river span and 2 flood spans, 22.36 m. wide each
217.9	-	Hessisch-Oldendorf	Steel	5.03		79.80	Suspension bridge. 1 river and 3 flood spans
229.3	-	At Hameln	-	•4.36 ••4.75	1	44.10	Cantilever bridge. 6 river spans. Navigation passage under the main span (44.10 m.) •Downstream side ••Upstream side
229.9	At Hameln	-	-	8.44	2	63.00	3 river and 3 flood spans. Navigation passages, under 2 of the river spans
237.1	At Emmern	-	Steel	4.27	1	62.80	2 river and 2 flood spans. Navigation passage, under the span at the left
237.6	-	At Hagenohsen	"	4.26	1	74.50	1 river and 2 flood spans. Navigation passage, under the middle span

(1) See NOTE on Exhibit 22

Exhibit 21

BRIDGES

CROSSING THE

NO. 27. THE WESER, THE DORTMUND-EMS-WESER REGION

1	2	3	4	5	6	7
KM FROM 00	NAME AND LOCATION		TYPE - MATERIAL	CLEARANCE (m)		REMARKS
	RAILROAD LINE	HIGHWAY ROUTE		VERTICAL H.W.	HORIZONTAL BET. CROSSING SPAN	
(1)		NO. 27a.	DORTMUND-EMS-WESER (DEW)		(Cont.)	
252.7	At Kammada	-	Steel	4.55	1 77.40	2 river and 10 flood spans. Navigation passage, under the river span on the right bank
253.6	-	Near Dalenwerder	"	4.03	1 46.90	1 river and flood spans. Navigation passage, under the middle span
284.2	-	At Holzminden	"	3.67	2 38.64	3 spans. Navigation passages, under 2 spans on the right
293.5	Corvay	-	"	4.56	1 120.0	1 river and 4 flood spans
296.1	-	At Höxter	"	4.33	1 44.02	6 river and 1 flood spans. Navigation passage, under the left river span
300.9	Near Fürstenberg	-	"	8.38	1 40.00	3 river and 5 flood spans. Navigation passage, under the fourth span from the right bank
305.9	Railroad bridge	-	"	5.40	1 75.00	1 river and 10 flood spans
311.4	-	Near Beverungen	"	4.86	1 62.75	1 river and 2 flood spans
320.0	-	Near Karlshafen	"	4.65	1 45.00	3 spans. Navigation passage, under the first span from the left
336.3	-	Glesclwerder		4.34	1 53.30	2 river spans; and 2 masonry flood spans, 15.4 m. wide each. Navigation passage, under the left bank river span

(1)

NOTE: To convert the kilometer system of inland water route, (measured upstream from Kaiserbrueck at Bremen to Hann-Muenden), to official stationing of Weser River, (measured downstream from Hann-Muenden to Gross Weser-Brueck at Bremen), subtract inland water route kilometers shown in colurn 1 from:

367. 4 (between Bremen & highway bridge at Doerverden Lock)
363.8 (between highway bridge at Hoya R. R. station & R. R. Bridge near Vlotho)
364.4 (between highway bridge at Elsbergen & Hann-Muenden)

Exhibit 22

BRIDGES
CROSSING THE

No. 38. THE FULDA, THE EMS-WESER REGION

1	2	3	4	5	6	7
KM FROM 00	NAME AND LOCATION		TYPE - MATERIAL	CLEARANCE (m)		REMARKS
	RAILROAD LINE	HIGHWAY ROUTE		VERTICAL H.W.	HORIZONTAL BET CROSSING SPAN	
0.2	-	-	-	4.50	1 69.80	Suspension bridge
0.8	-	Highway	Steel	6.75	1 80.00	Arch bridge. 7 spans; 1-27.50 m.; 2-23.75 m., 2-26.25 m.; 2-20.00 m. wide. The navigable span is the seventh on the right
16.6	Railroad viaduct	-	-	*50.15	* 21.00	Arch viaduct. 4 river and 1 flood span. Navigation passage about 16 m. wide. *Width at the springline *Height of crown
27.1	-	Kassel (Cassel) Harbor Bridge	Steel	6.00	rd 60.0	-
27.8	-	At Kassel	Reinforced concrete	about *4.0	57.5	Arch bridge *Clearance under crown
28.4	-	-	-	4.0	70.0	Footbridge
31.4	Railroad bridge	-	Steel	5.40	24.00	-
38.2	-	Dennhausen	Concrete	5.00	1 28.00	Arch bridge
39.7	-	Dittershausen	Concrete	5.00	1 30.00	- "
43.0	-	Restaurant	"	3.60	1 26.00	Arch bridge; 3 river and 1 flood spans
43.3	Railroad bridge	-	-	20.50	1 [illegible].60	Arch bridge
47.1	At Dunhagen	-	-	6.30	1 20.00	" "
53.1	-	At Grebenau	Concrete	3.50	1 16.00	" "
55.4	-	At Warenfurth	Masonry	3.50	1 14.00	" "
60.8	-	At Röhrenfurth	Steel	4.05	1 15.00	-
64.4	-	At Melsungen	-	4.70	1 12.40	Arch bridge
64.5	-	Near Melsungen	Steel	3.20	1 20.35	Footbridge
66.5	-	At Obermelsungen	Concrete girder	3.50	25.20	-
66.9	Near Melsungen	-	-	7.77	1 12.50	Arch bridge
69.4	Near Malsfeld	-	Steel	1[illegible].00	1 [illegible].00	-
72.6	Near Beiseforth	-	"	7.17	1 12.50	-
73.4	-	At Beiseförth	-	3.50	1 15.00	Arch bridge
76.3	-	At Binsförth	Concrete	6.00	1 32.00	" "
79.3	-	At Heinrichsch.	Steel	[illegible].45	1 17.50	-

Exh. 6 # 23

MAJOR BRIDGES

EDER RIVER
(Downstream from Eder Dam)

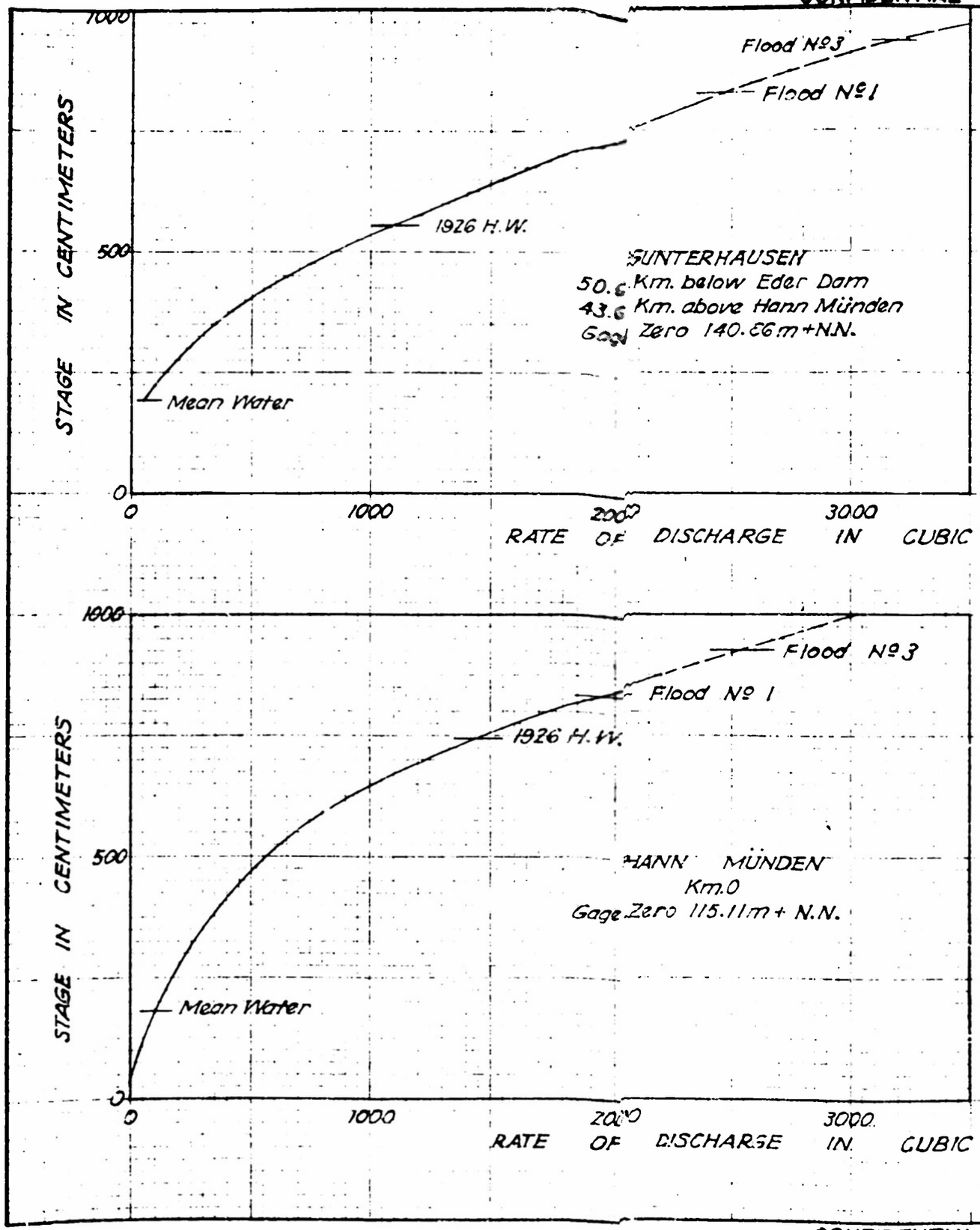
Km. from Eder Dam	Name & Location	Type	Material	Remarks
2.0	Hemfurth	Road	Steel Girder	5 span
2.1	Hemfurth	Railroad		5 span, single truck
6.5	Affoldern	Road	Concrete	3 span
7.0	Mehlen (Affoldern)	Road		
9.0	Bergheim	Railroad		Single track
10.0	Bergheim	Road		
12.0	Anraff	Road	Steel Girder	6 span, sheet piling piers
14.0	Wega	Road		
16.0	Mandern	Road	[illegible]	5 span, sheet piling piers 2 span
			(Side) Reinf. concrete beam and slab	3 span, reinf. con.
30.0	Wrexen	Road	Steel Truss	Single span, masonry abutments
34.0	Rimbeck	Road	(Main) Steel girder	4 span, masonry piers
			(Side) Steel girder	2 span, masonry piers
37.2	Ossendorf	Road	Iron	2 span
39.4	Germete	Road	Concrete Arch	7 span, concrete piers
43.2	Warburg	Road	Concrete	3 span
44.0	Warburg	Railroad	Steel & Masonry Arch	Multispan, masonry pier
44.5	Warburg	Road	(Rt) Masonry Arch	6 span
			(Lt) Masonry Arch	3 span
47.5	Dalheim	Road	Timber	3 span
50.0	W. of Haueda	Railroad	Masonry Arch	6 span, single track
59.5	Lamerden	Road	Steel Truss	2 span
63.5	Ebersehuts	Road	Steel girder	3 span
65.3	Sielen	Road	Masonry Arch	3 span, masonry piers
69.8	Trendelburg	Road	Masonry Arch	3 span, masonry piers
77.5	NE of Deisel	Road	Masonry Arch	Single span
82.2	Helmarshausen	Road	Masonry Arch	3 span, masonry piers
85.0	Karlshafen	Road	Masonry Arch	2 span, masonry piers

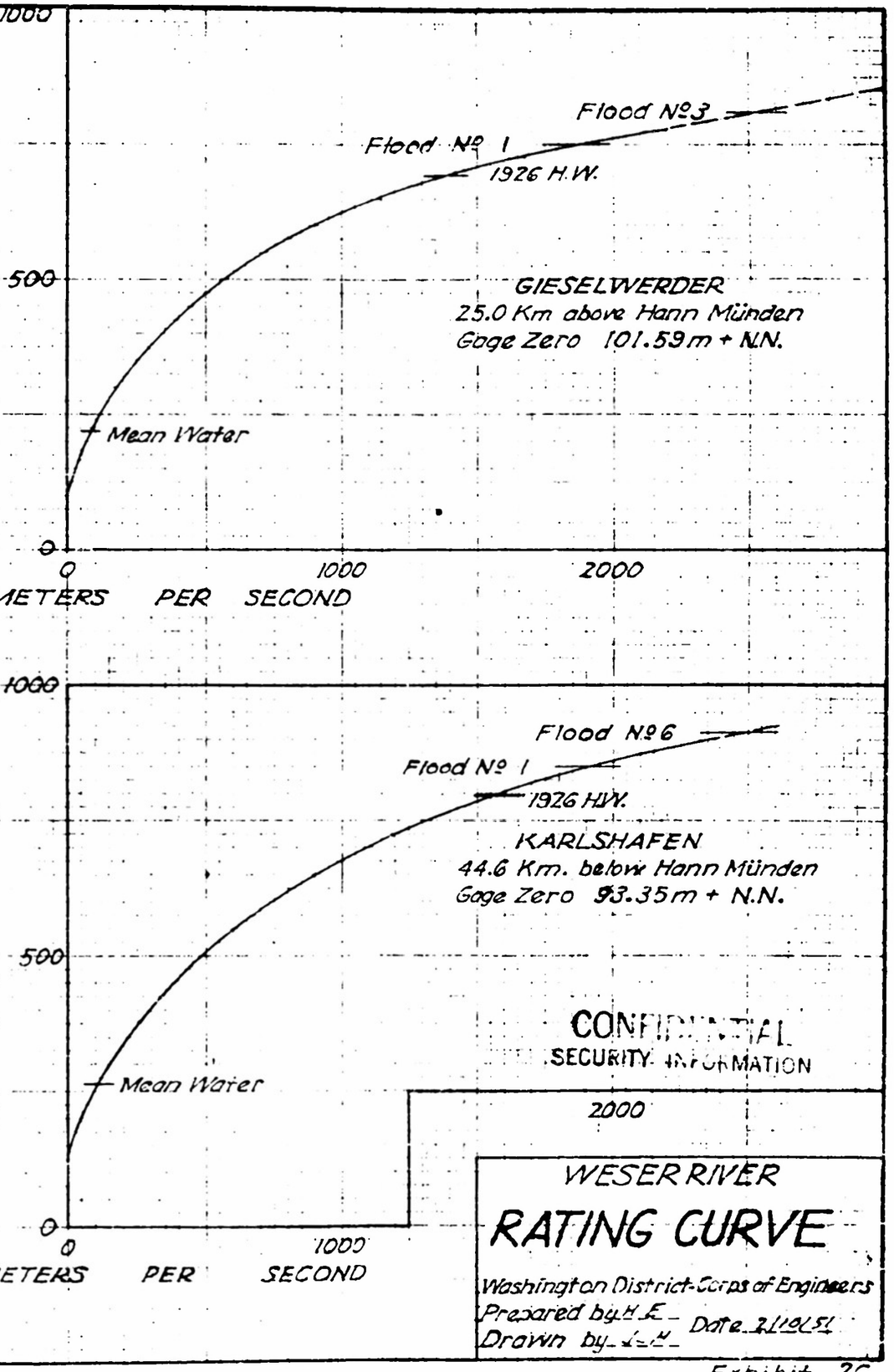
RESTRICTED SECURITY INFORMATION

SECRET

Exhibit 25

CONFIDENTIAL





CONFIDENTIAL
SECURITY INFORMATION

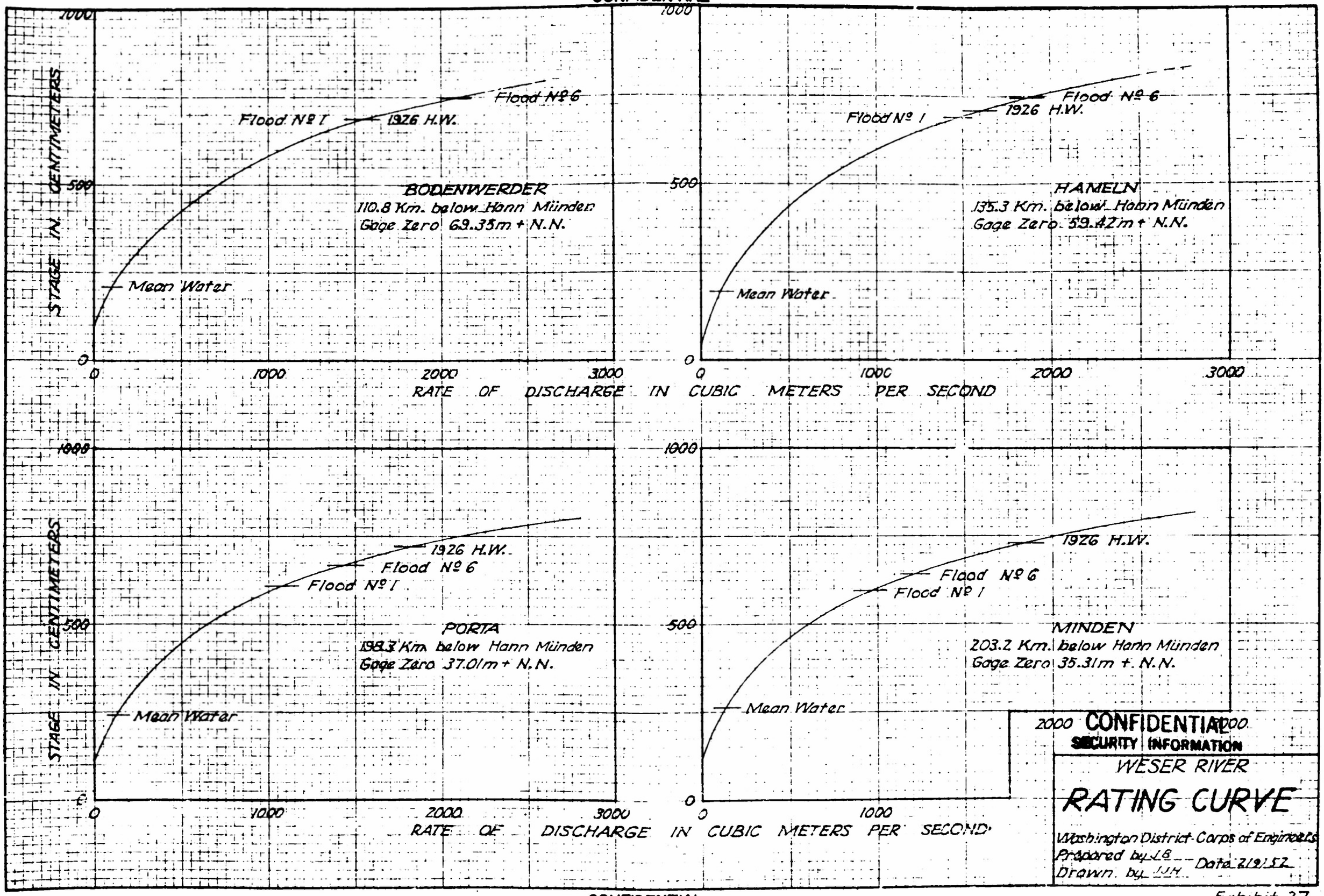
WESER RIVER

RATING CURVE

Washington District-Corps of Engineers
Prepared by H.E. Date 2/19/51
Drawn by L.N.

CONFIDENTIAL

Exhibit 26



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SECURITY INFORMATION

WESER RIVER

RATING CURVE

Washington District Corps of Engineers
Prepared by JB Date 2/2/52
Drawn by JJH

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Exhibit 27

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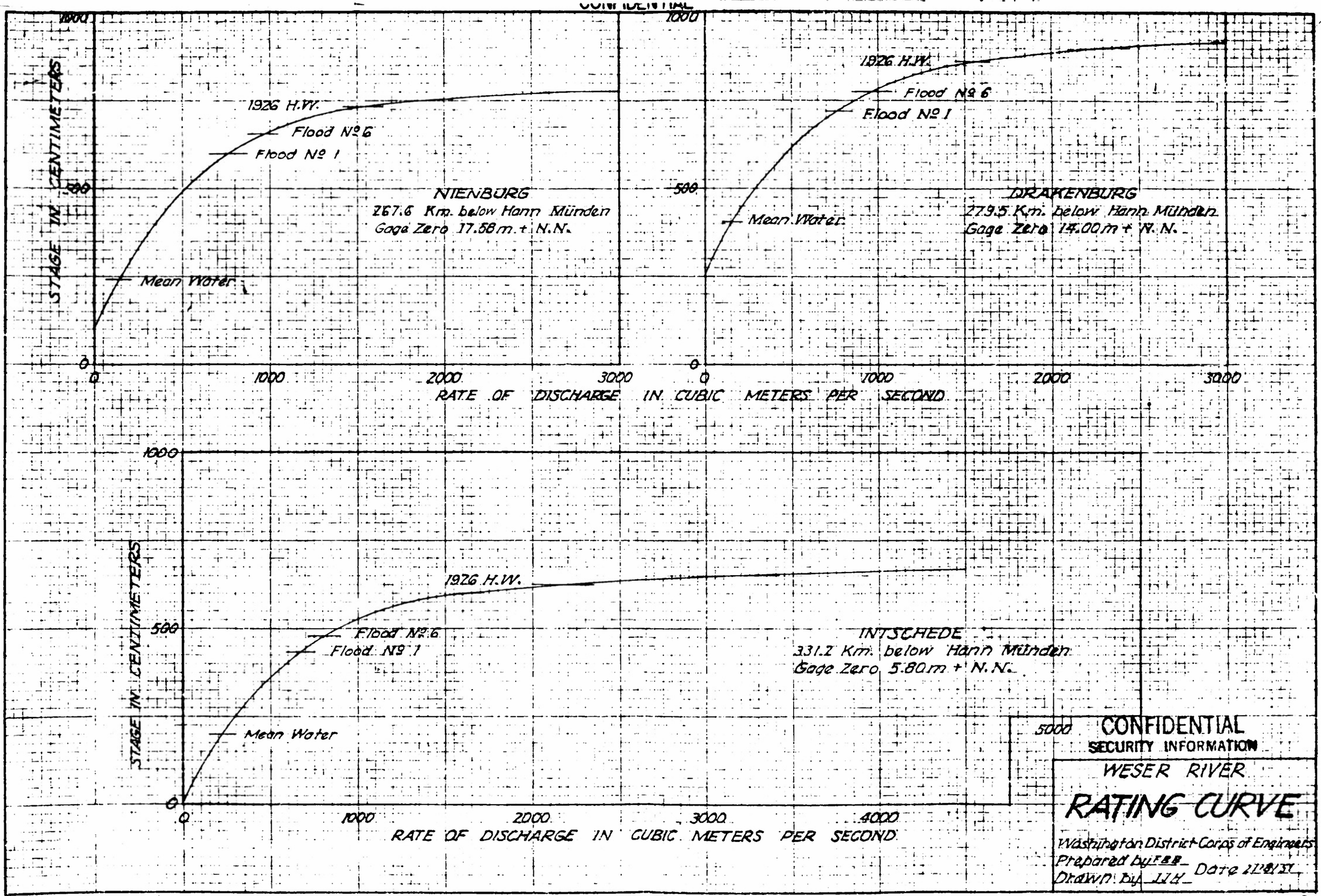

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Exhibit 28

SUMMARY OF GAGE DATA

WESER RIVER

Gaging Station (Pegel)	Km from Ader Dam	Km from Hann-Muenden	Drainage Area Sq. Km.	Gage Zero m/ N.N.	Item *	Date or Period of Record	River Stage in Centimeters above Gage Zero														
							Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Winter	Summer	Year
Hameln (Werderspitze)	230.6	135.6	17,113	59.42	HHW	3 Jan 1926			714												714
					HW	1926-1935													714	498	714
					MHW	"	326	316	393	325	315	311	236	226	230	185	170	236	479	305	494
					MW	"	206	204	264	235	225	239	185	163	164	151	145	158	227	161	194
					MNW	"	147	132	176	171	172	164	151	129	121	120	125	119	117	107	103
					NW														81	69	69
					NNW	30 Nov 1921	22														22
Forte	292.8	196.4	19,184	37.01	HHW	3 Jan 1926			729												729
					HW	1926-1935													729	505	729
					MHW	"	357	359	426	363	349	339	276	257	264	221	204	271	504	337	518
					MW	"	244	249	305	283	267	267	224	201	200	188	183	195	269	198	233
					MNW	"	196	188	221	221	223	210	195	176	170	167	172	167	174	160	157
					NW	"													144	123	123
					NNW	1 Dec 1921		115													115
Drakenburg	373.9	279.5	22,036	14.00	HHW	4 Jan 1926			857												857
					HW	1926-1935													857	676	857
					MHW	"	528	524	597	552	530	518	446	417	424	374	357	424	695	507	702
					MW	"	412	424	487	462	439	439	367	360	356	342	334	350	444	355	400
					MNW	"	355	358	397	397	390	375	355	330	320	316	320	315	343	306	306
					NW	"													291	241	241
					NNW	2 Oct 1934												241			241
Intschede	425.6	331.2	37,906	5.60	HHW	29 Feb 1940				662											662
					HW	1926-1935			630										630	470	630
					MHW	"	330	357	431	370	366	341	256	215	214	165	142	210	504	319	515
					MW	"	214	233	316	285	255	253	184	147	143	121	112	133	259	140	199
					MNW	"	146	151	201	209	190	168	141	108	91	87	93	90	130	74	74
					NW	"												4	56	4	4
					NNW	1 Oct 1934												4			4

*See Exhibit 1 for definition of terms

Exhibit 30

SUMMARY OF TIDAL GAGE DATA

WESER RIVER

Gaging Station (Fegel)	Km from Hann.-Muenden	Km from Bremen	Gage Zero m ± M.	Tide	Item *	Date or Period of Record	River Stage in Centimeters above Gage Zero or 0 Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Winter	Summer	Year
Bremen	366.8	0	-5.00	Flood	HHThw	23 Nov 1930	949														949
(Luederitzbruecke)					HThw	1931-1935													949	850	949
					MHThw	"	810	764	816	826	766	779	763	773	787	769	804	814	874	823	874
					MThw	"	710	697	719	721	702	714	710	714	722	709	711	717	710	714	712
					MNThw	"	612	579	650	625	625	641	640	647	675	654	641	633	558	614	558
					NThw	"													538	583	538
					NNThw	25 Jan 1937			490												490
				Ebb	HHTnw	10 Jan 1932			716												716
					HTnw	1931-1935													716	607	716
					MHTnw	"	506	500	556	525	486	502	447	456	464	433	470	538	611	536	624
					MTnw	"	419	405	453	444	408	421	394	386	396	383	391	402	425	392	408
					MNTnw	"	342	337	377	362	349	364	361	353	356	348	357	346	316	340	316
					NTnw	"													288	320	288
					NNTnw	18 Dec 1938		255													255
Vegesack		17.5	-5.00	Flood	HHThw	23 Nov 1930	922														922
					HThw	1931-1935													922	834	922
					MHThw	"	790	738	791	807	744	760	743	752	767	747	785	798	850	807	850
					MThw	"	689	675	691	695	676	691	689	691	702	689	691	698	686	693	690
					MNThw	"	597	560	626	597	604	616	623	628	656	637	626	617	539	599	529
					NThw	"													521	566	521
					NNThw	25 Jan 1937			448												448
				Ebb	HHTnw	24 Nov 1930	639														639
					HTnw	1931-1935													639	610	639
					MHTnw	"	493	467	521	507	450	473	431	437	455	438	473	535	566	537	581
					MTnw	"	403	390	414	407	382	394	383	386	396	389	396	406	398	393	395
					MNTnw	"	324	320	363	327	322	346	336	353	361	356	361	352	295	346	295
					NTnw	"													259	335	259
					NNTnw	25 Jan 1937			215												215

*See Exhibit 1 for definition of terms

Exhibit 31

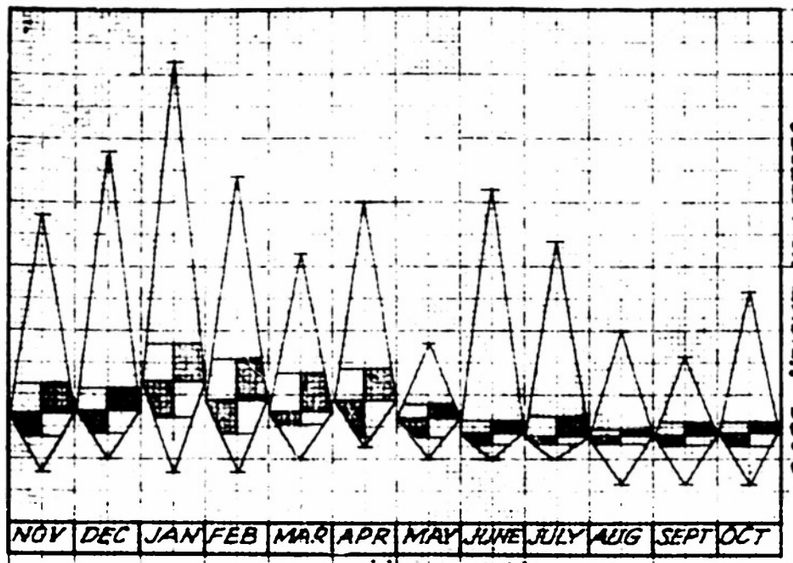
SUMMARY OF TIDAL GAGE DATA

WESER RIVER

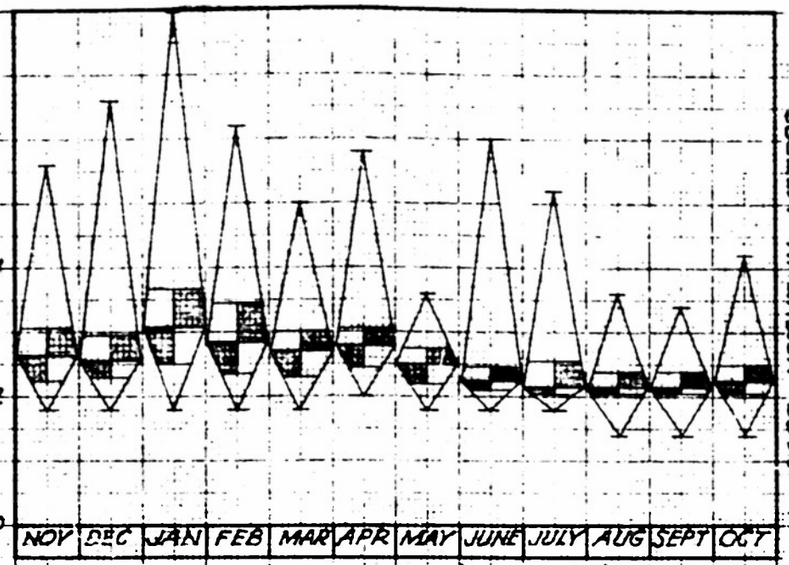
Gaging Station (Pegel)	Km From Hann-Muenden	Km from Bremen	Gage Zero m ∠ NN	Tide	Item *	Date or Period of Record	River Stage in Centimeters above Gage Zero													
							Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Winter	Summer	Year
Brake		40.6	-5.00	Flood	HHThw	1 Jan 1855			987											987
					HThw	1926-1935													919	919	919
					MHThw	"	775	765	779	762	733	740	721	733	746	741	764	801	842	810	851
					MThw	"	668	661	669	659	659	668	669	674	681	674	672	680	664	675	670
					MNThw	"	569	548	582	553	578	588	608	614	631	620	607	598	508	585	508
					NThw														442	547	442
					NNThw	16 Jan 1905			375												375
				Ebb	HHTnw	23 Dec 1894		793													793
					HTnw	1926-1935													611	688	688
					MHTnw	"	483	461	477	457	432	434	402	404	409	430	448	524	560	536	580
					MTnw	"	359	354	361	347	341	346	340	343	349	349	354	366	351	350	351
					MNTnw	"	272	276	295	269	281	285	308	306	307	304	308	300	238	290	237
					NTnw	"													188	265	188
					NNTnw	25 Jan 1937			135												135
Weserm uende (Doppelschleuse)		65.3	-5.00	Flood	HHThw	3-4 Feb 1825				1004											1004
					HThw	1926-1935													938	938	938
					MHThw	"	779	766	776	762	727	735	716	734	744	738	767	807	852	819	863
					MThw	"	657	649	656	649	647	655	657	662	670	664	663	671	652	665	658
					MNThw	"	555	532	563	537	565	573	594	598	616	606	593	583	499	569	499
					NThw	"													428	533	428
					NNThw	16 Jan 1905			356												358
				Ebb	HHTnw	23 Dec 1894		797													797
					HTnw	1926-1935													628	703	703
					MHTnw	"	486	445	467	451	422	425	368	399	405	431	447	531	565	549	593
					MTnw	"	335	329	330	317	312	315	313	321	329	330	337	350	323	330	327
					MNTnw	"	234	240	243	227	241	243	270	274	281	274	276	266	197	252	196
					NTnw	"													153	195	153
					NNTnw	25 Jan 1937			89												89

*See Exhibit 1 for definition of terms

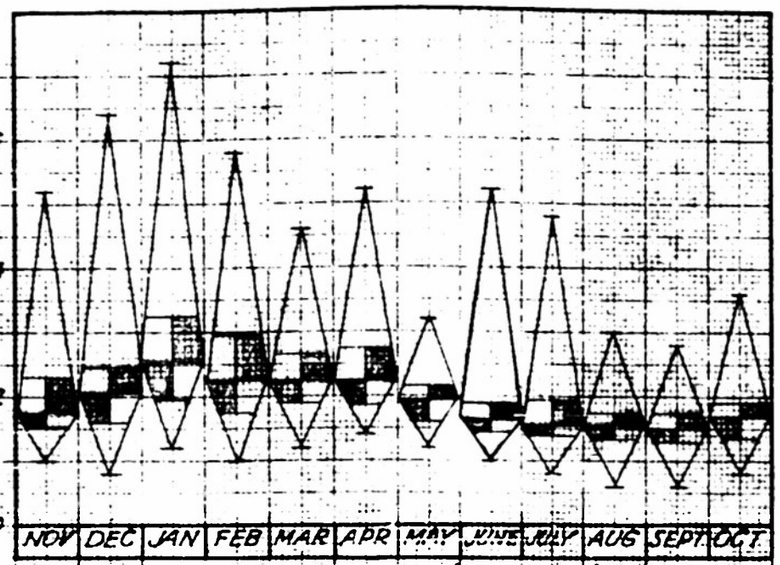
Exhibit 32



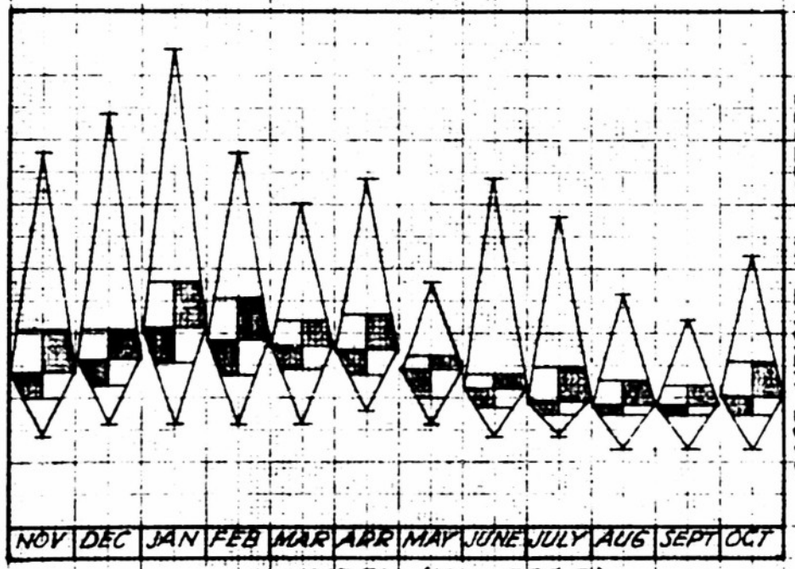
HANN. MÜNDEN (Km. 0)
GAGE ZERO 115.11 m + N.N.



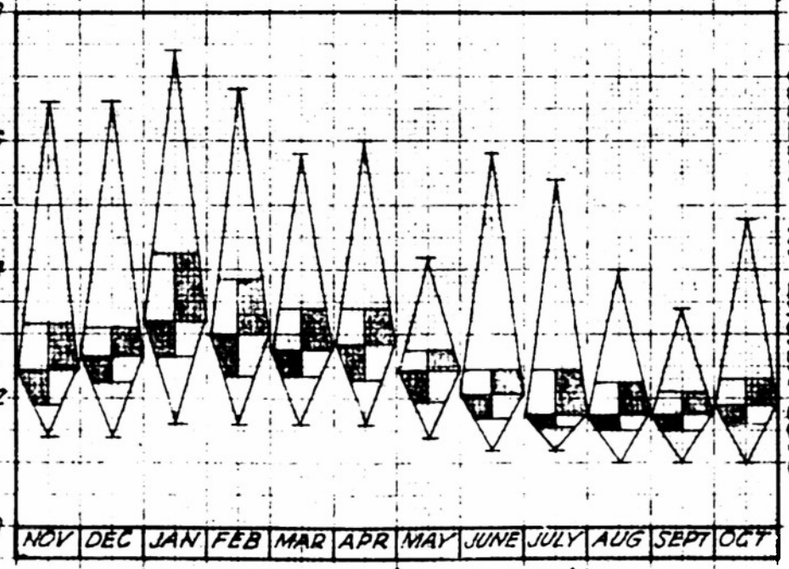
KARLSHAFEN (Km. 44.6)
GAGE ZERO 93.35 m. + N.N.



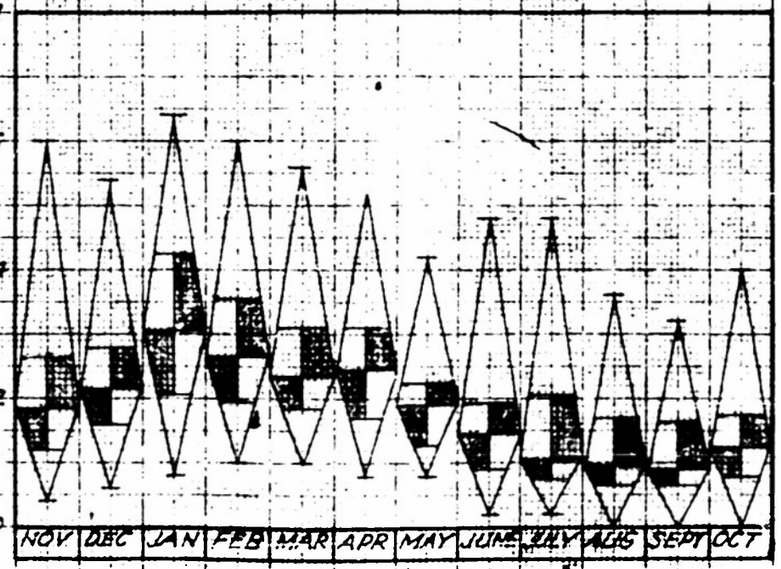
HAMELN D/S (Km. 135.6)
GAGE ZERO 59.42 m + N.N.



MINDEN (Km. 203.2)
GAGE ZERO 35.31 m N.N.

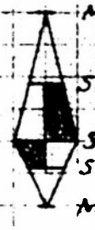


NIENBURG (Km. 267.7)
GAGE ZERO 17.47 m. + N.N.



INTSCHEDE (Km. 331.2)
GAGE ZERO 5.80 m + N.N.

LEGEND:



MAXIMUM STAGE

STAGE EQUALED OR EXCEEDED 25% OF TIME

STAGE EQUALED OR EXCEEDED 50% OF TIME

STAGE EQUALED OR EXCEEDED 75% OF TIME

MINIMUM STAGE

NOTES:

1. DURATION DATA BASED UPON DAILY OCCURRENCES WITHIN 20 CENTIMETER INTERVALS EXPRESSED AS PERCENTAGE OF TOTAL OCCURRENCES IN A GIVEN MONTH OVER THE 10 YEAR PERIOD FROM 1 NOVEMBER 1926 TO 30 OCTOBER 1935.
2. SOURCE OF DATA: "REPORT ON WESER SYSTEM," C.E. HQ. E.A.O.R. 1946.

RESTRICTED
SECURITY INFORMATION

WESER RIVER
STAGE
DURATION

Washington District Corps of Engineers
Prepared by E.A.E. Date 31 Oct 52
Drawn by JJH

Exhibit 33

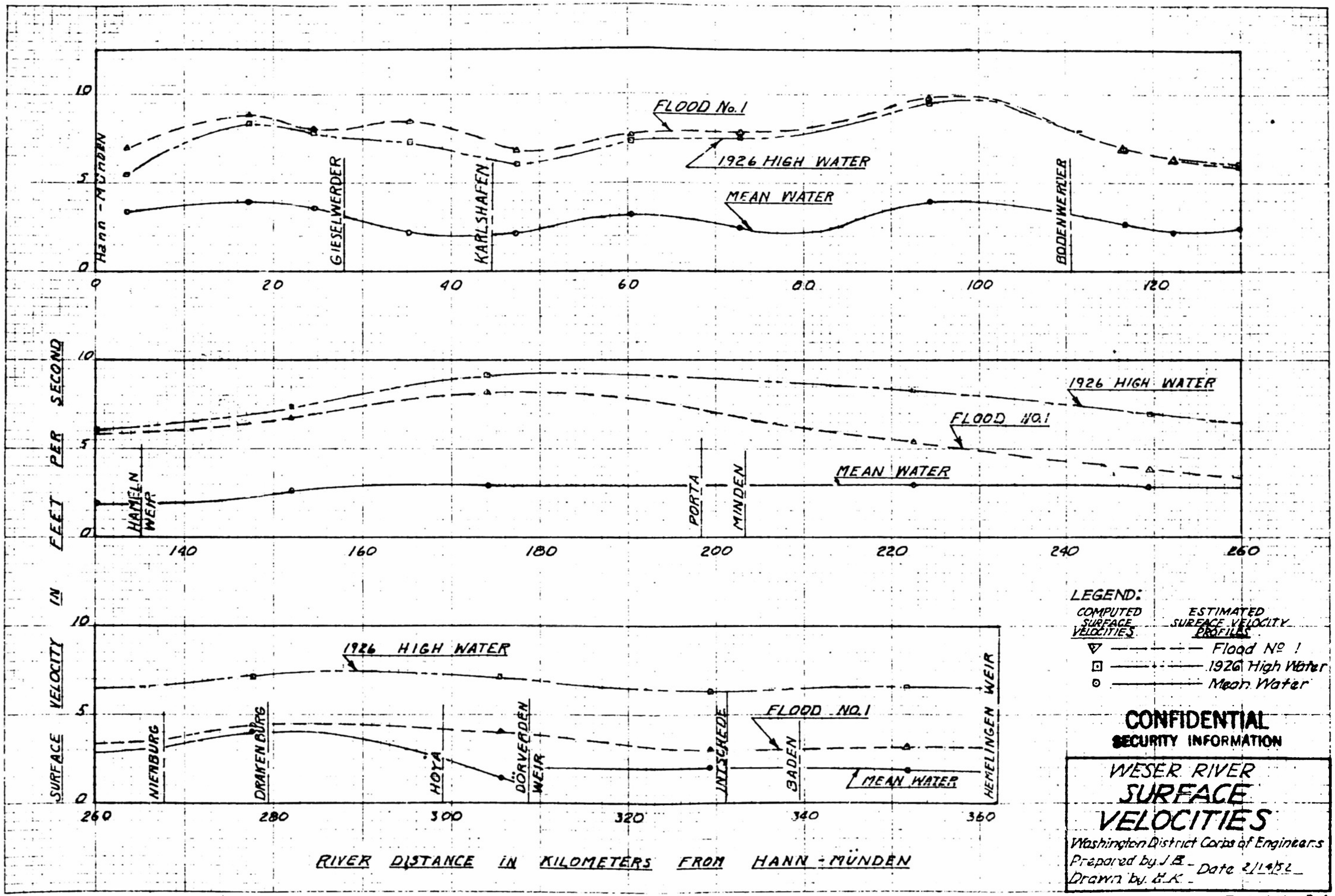

FEET PER SECOND
SURFACE VELOCITY IN
Hann - Münden
GIESELWERDER
KARLSHAFEN
BODENWERDER
HAMELN WEIR
PORTA
MINDEN
NIENBURG
DRAKENBURG
HOYA
DÖRVERDEN WEIR
INTSCHEDE
BADEN
HEMELINGEN WEIR
FLOOD No. 1
1926 HIGH WATER
MEAN WATER
RIVER DISTANCE IN KILOMETERS FROM HANN - MÜNDEN
LEGEND:
COMPUTED SURFACE VELOCITIES
ESTIMATED SURFACE VELOCITY PROFILES
Flood No. 1
1926 High Water
Mean Water
CONFIDENTIAL
SECURITY INFORMATION
WESER RIVER
SURFACE VELOCITIES
Washington District Corps of Engineers
Prepared by J.E. - Date 2/14/52
Drawn by E.K.

Exhibit 34

RESERVOIR STORAGE CAPACITY IN 1,000,000 CUBIC METERS

200 180 160 140 120 100 80 60 40 20 0

ELEVATION IN METERS ABOVE NORMAL NULL

250 240 230 220 210

2024 x 10⁶ m³

252

Discharge - Breach NO.1

249.0

8500 CMS

249.0

17,000 CMS

Discharge - Breach No. 3

Storage

221.0 Control Crest - Breach

206.5

EDER DAM

0 2 4 6 8 10 12 14 16 18 20

DISCHARGE IN 1000 CUBIC METERS PER SECOND

RESERVOIR STORAGE CAPACITY IN 1000,000 CUBIC METERS

20 18 16 14 12 10 8 6 4 2 0

ELEVATION IN METERS ABOVE NORMAL NULL

370 360 350 340

376.2

20 x 10⁶ M³

Discharge Breach No. 2

375.0

8500 CMS

375.0

17,000 CMS

Discharge - Breach No 4

Estimated Storage

352.0 Control Crest - Breach

392.0

DIEMEL DAM

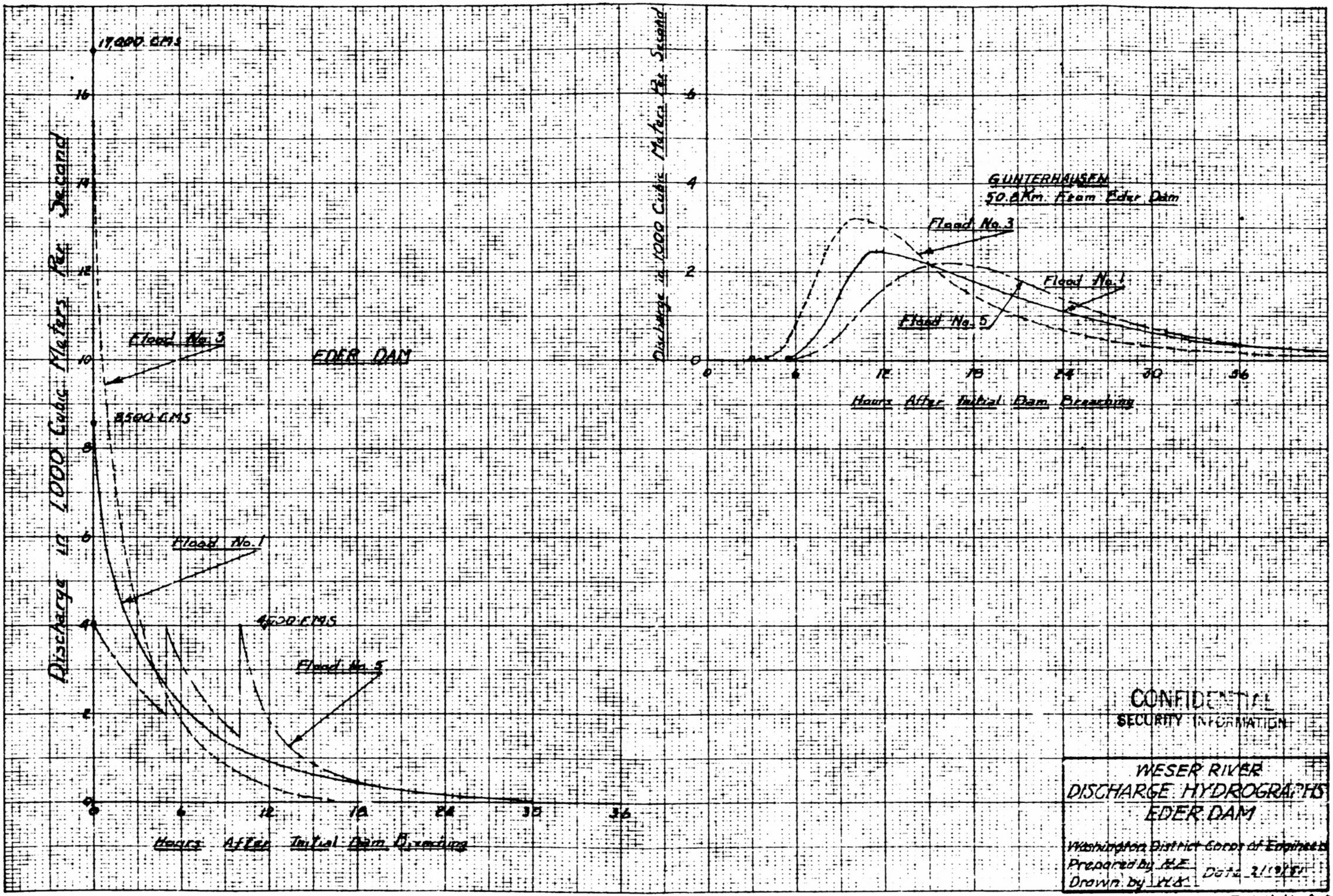
0 2 4 6 8 10 12 14 16 18 20

DISCHARGE IN 1000 CUBIC METERS PER SECOND

CONFIDENTIAL
SECURITY INFORMATION

WESER RIVER
DISCHARGE & STORAGE CURVES
EDER & DIEMEL DAMS
Washington District Corps of Engineers
Prepared by H.E. Date 2/19/52
Drawn by H.K.

Exhibit 35



CONFIDENTIAL
SECURITY INFORMATION

WESER RIVER
DISCHARGE HYDROGRAPHS
EDER DAM

Washington District Corps of Engineers
Prepared by M.E.
Drawn by W.A. Date 2/19/51

Exhibit 36

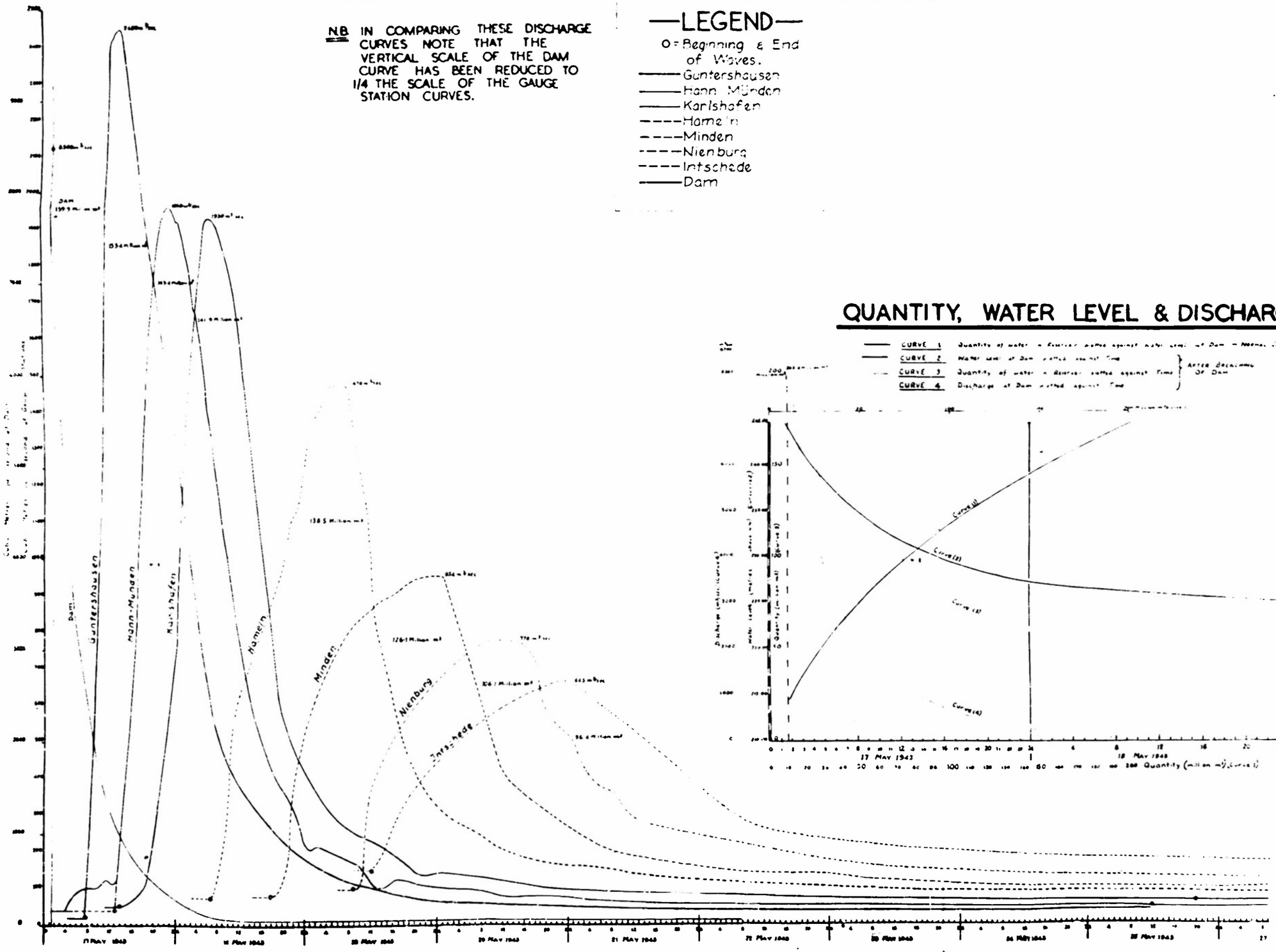
EDER DAM BREACH DISCHARGE HYDROGRAPHS

N.B. IN COMPARING THESE DISCHARGE CURVES NOTE THAT THE VERTICAL SCALE OF THE DAM CURVE HAS BEEN REDUCED TO 1/4 THE SCALE OF THE GAUGE STATION CURVES.

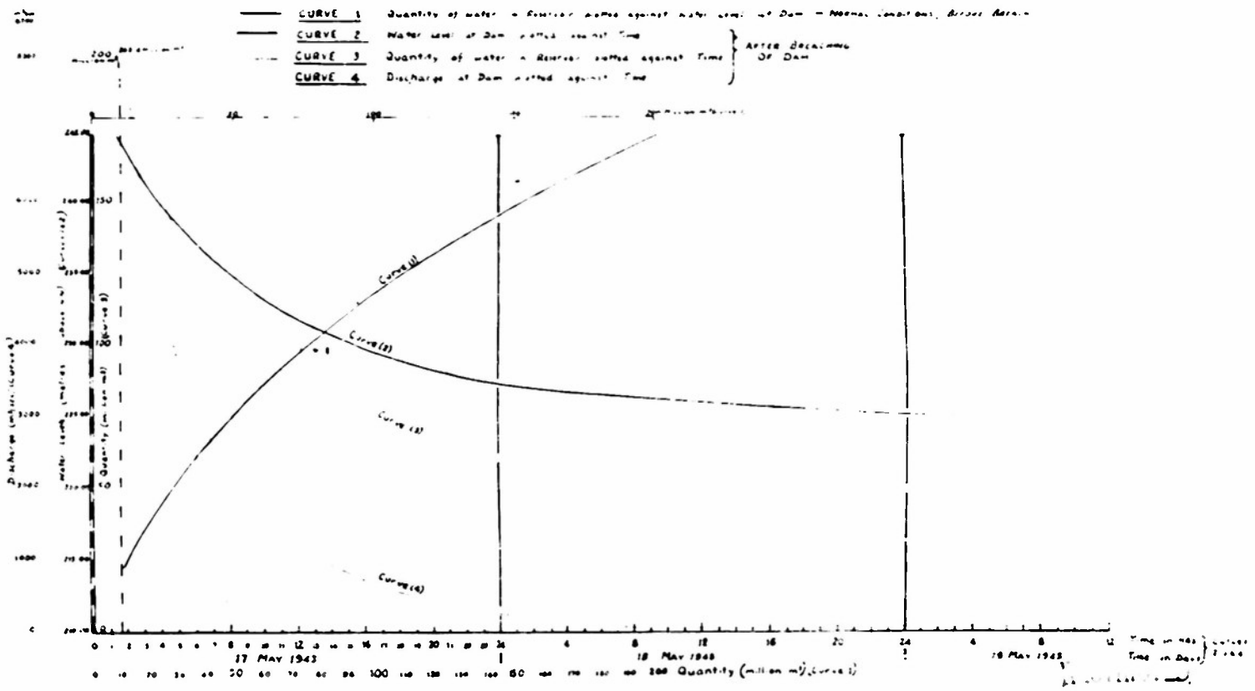
—LEGEND—

O = Beginning & End of Waves.

——— Guntershausen
——— Hann. Münden
——— Karlshafen
– – – – Hameln
– – – – Minden
– – – – Nienburg
– – – – Intschede
——— Dam



QUANTITY, WATER LEVEL & DISCHARGE CURVES.



SECURITY INFORMATION

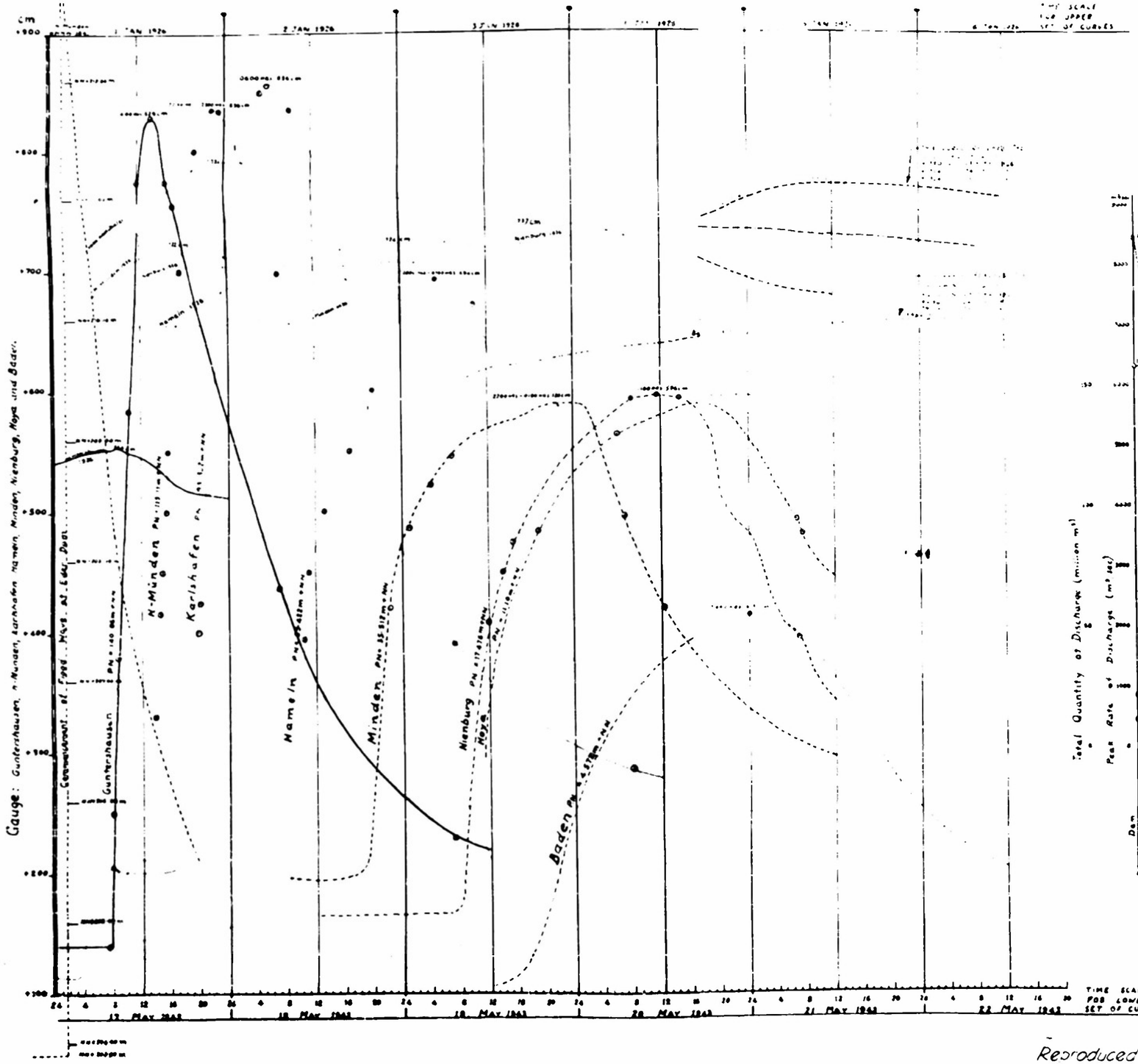
Reproduced from [illegible] WESER
System [illegible] - B.A.O. 346.

WESER RIVER
DISCHARGE
HYDROGRAPHS

Washington District Corps of Engineers
Prepared by JH Date Feb 1952
Drawn By JH

Exhibit No. 37

WATER STAGE CURVES. — SHOWING COMPARISON OF EDER DAM BREACH WITH FLOOD WAVE OF 1926

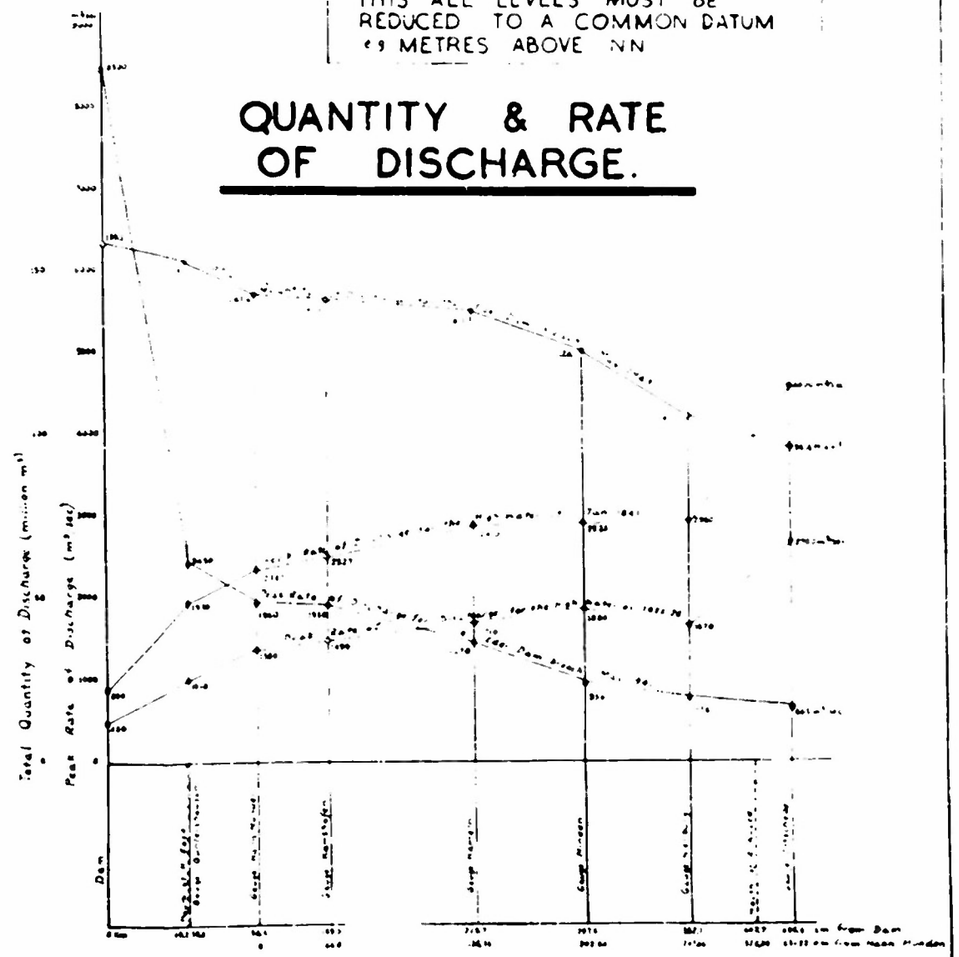


NOTE

THE VERTICAL SCALE FOR THE HEIGHT OF WATER AT THE DAM IS IN METRES ABOVE N.N. THE VERTICAL SCALE FOR THE WATER LEVELS AT THE VARIOUS GAUGES DOWN THE RIVER IS IN CENTIMETRES ABOVE THEIR RESPECTIVE GAUGE ZEROS (PN)

THUS IT IS NOT POSSIBLE TO MAKE A DIRECT COMPARISON BETWEEN THE CREST HEIGHTS OF THESE CURVES TO DO THIS ALL LEVELS MUST BE REDUCED TO A COMMON DATUM e.g METRES ABOVE NN

QUANTITY & RATE OF DISCHARGE.



Reproduced from "REPORT ON WESER SYSTEM" C.E.H.Q.-B.A.D.K. '46.

WESER RIVER STAGE HYDROGRAPHS

Washington District Corps of Engineers
Prepared by J H Date Feb 1952
Drawn by J H

Exhibit No. 38

To 11000 CMS (Flood No. 4)

8500 CMS (Flood No. 2)

DISCHARGE IN 1000 CUBIC METERS PER SECOND

0 1 2 3 4 5 6 7 8 9

Flood No. 2

Flood No. 4

Start of Flood No. 4 at Karlshafen

Start of Flood No. 2 at Karlshafen

Start (Flood #3) at Karlshafen

Flood No. 4

Flood No. 2

Flood No. 3

0 3 6 9 12 15 18 21 24 27 30 33 36 39

Hours After Initial Dam Breaching

NOTE: Eder Dam and Diemel Dam considered to be breached simultaneously

CONFIDENTIAL
SECURITY INFORMATION

WESER RIVER
DISCHARGE HYDROGRAPHS
DIEMEL DAM

Washington District Corps of Engineers
Prepared by HE Date 21/2/51
Drawn by HA

Exhibit 39

CONFIDENTIAL
SECURITY INFORMATION

SUMMARY OF ARTIFICIAL FLOODS

Location	Dist. from Dam Km	Base Flow	Peak Flow	Peak Stage	Time From Dam Breach To: Start of Rise	Peak	End of Rise (1)
	Km	cms	cms	m / NN	hrs.	hrs.	hrs.
	(2)		FLOOD NO. 1				
Eder Dam	0	-	8,500	213.04	0	0	24
Gunterhausen	50.8	10	2,450	149.15	6	12	82
Hann Muenden	94.4	30	1,960	123.47	11	21	78
Karlshafen	139.0	40	1,930	101.91	16	28	82
Hameln	229.7	65	1,470	66.36	30	54	117
Minden	297.6	75	954	41.19	40	70	151
Nienburg	362.1	90	776	23.44	54	82	158
Intschede	425.6	150	665	10.1	60	94	130
	(3)		FLOOD NO. 2				
Diemel Dam	0	-	8,500	344	0	0	10
Karlshafen	85.3	-	480	98.2	5	13	37
	(2)		FLOOD NO. 3				
Eder Dam	0	-	17,000	218	0	0	12
Gunterhausen	50.8	10	3,200	150.1	4	10	68
Hann Muenden	94.4	30	2,530	124.4	9	19	68
Karlshafen	139.0	40	2,370	102.3	12	26	68
	(3)		FLOOD NO. 4				
Diemel Dam	0	-	17,000	346	0	0	8
Karlshafen	85.3	-	500	98.2	4	12	32
	(2)		FLOOD NO. 5				
Eder Dam	0	-	4,000	211	0	0, 5, 10(4)	37
Gunterhausen	50.8	10	2,200	148.6	5	16	52
	(2)		FLOOD NO. 6				
Karlshafen	139.0	40	2,500	102.5	5	26	68
Hameln	229.7	65	1,890	66.9	16	50	103
Minden	297.6	75	1,200	41.7	30	68	141
Nienburg	362.1	90	950	24.0	46	80	148
Intschede	425.6	150	810	10.6	54	88	120

(1) Taken as point of recession to Mean Water
(2) Distance from Eder Dam
(3) Distance from Diemel Dam
(4) Progressive partial breaching

CONFIDENTIAL
SECURITY INFORMATION

Exhibit 40

SECURITY INFORMATION

WIDTHS OF FLOODED AREA & DURATION

OF FLOODING RESULTING FROM ARTIFICIAL FLOOD NO. 1

Location	Km.	Elev. m+NN	Width from River Centerline kilometers (A) L	(A) R	(B) L	(B) R	Hrs. Time Overbank
Hann-Muenden	0	123.5	.05	1.00			24
Veckerhagen	11.0	118.2	.30	.20			
Gieselwerder	28.0	109.5	.40	.15			
Karlshafen	44.6	101.9	.50	.50			24
Beverungen	53.0	100.7	.30	.80			
Luchtringen	72.8	90.8	.50	.50			
Polle	92.2	83.3	.50	1.00			
Bodenwerder	110.8	76.2	2.50	.50			
Grohnde	122.2	72.0	.40	.30			
Hameln (Weir)	135.3	66.4	.50	.05			24
Rinteln	163.	56.3	.50	.05	3.00	.20	24
Vlotho	183.	49.0	.10	.10			
Porta	198.4	43.1	.05	.05			
Minden	203.2	41.2	.10	.20			24
Petershagen	215.6	36.8	.05	.10			
Schluesselburg	236.4	31.7	.30	.10			
Landesbergen	249.3	28.3	.20	.15	2.00	.15	36
Leeseringen	259.5	25.5	.05	.05	.50	.50	
Nienburg	267.7	23.4	.05	.05	1.00		30
Drakenburg	278.9	21.2	.20	.05			6
Sebbenhausen	286.2	19.9	.05	.05	1.0	.30	6
Hoya	299.0	*17.0 / 17.5	.10	.05	1.5	1.50	6
Doerverden (Weir)	308.8	*15.0 / 15.5	.05	.05	1.0	2.00	6
Rieda	316.2	13.6	.30	.10	.30	3.00	12
Hutbergen	323.2	12.0	.10	.10	.50	1.00	24
Intschede	331.3	10.4	.30	.40	.50	.50	36
Grinden	336.1	9.3	.30	.10	.30	3.0	36
Baden	339.3	8.7	.60	.10			36
Bollen	351.7	* 6.4 / 7.5	.10	.30	1.00**	3.00**	**
Hemelingen (Weir)	362.0	* 5.0 / 7.0	1.00	.20	**	.50**	**

* Weir open / Weir raised

** (Overbank only with weir raised)

(A) Width of flooded section, resulting from Eder Dam breaching; levees along stream intact

(B) Same but with levees breached

Exhibit No. 41

SECURITY INFORMATION