Re-Evaluation of a Flood Control Project

Presentation for the

Tri-Service Conference

By

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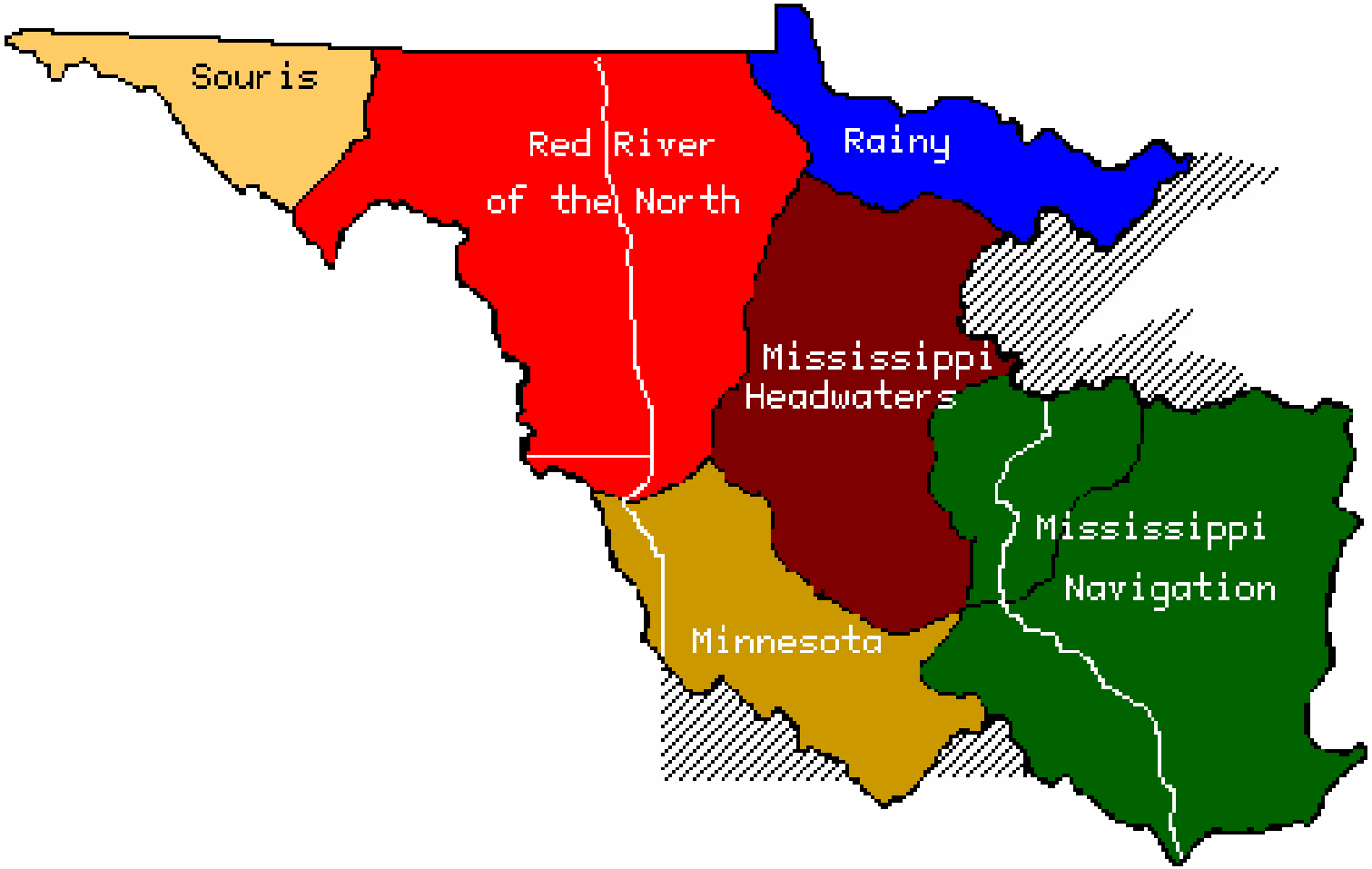
August 2005

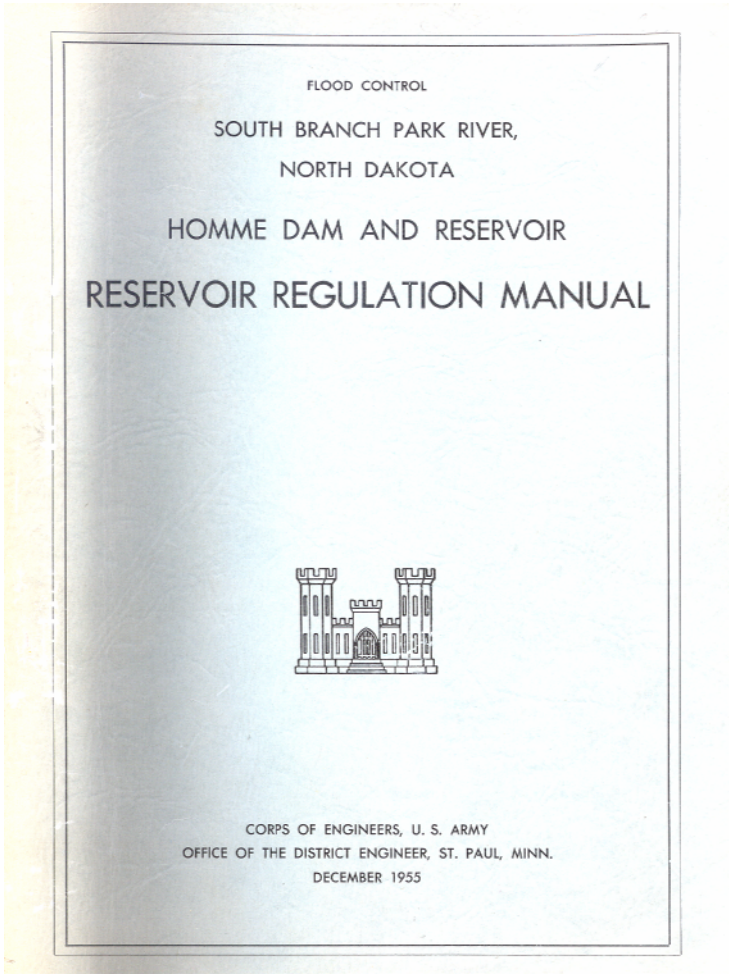
St. Paul District



Eau Galle Reservoir

Cross Lake Dam

Water Control Manuals

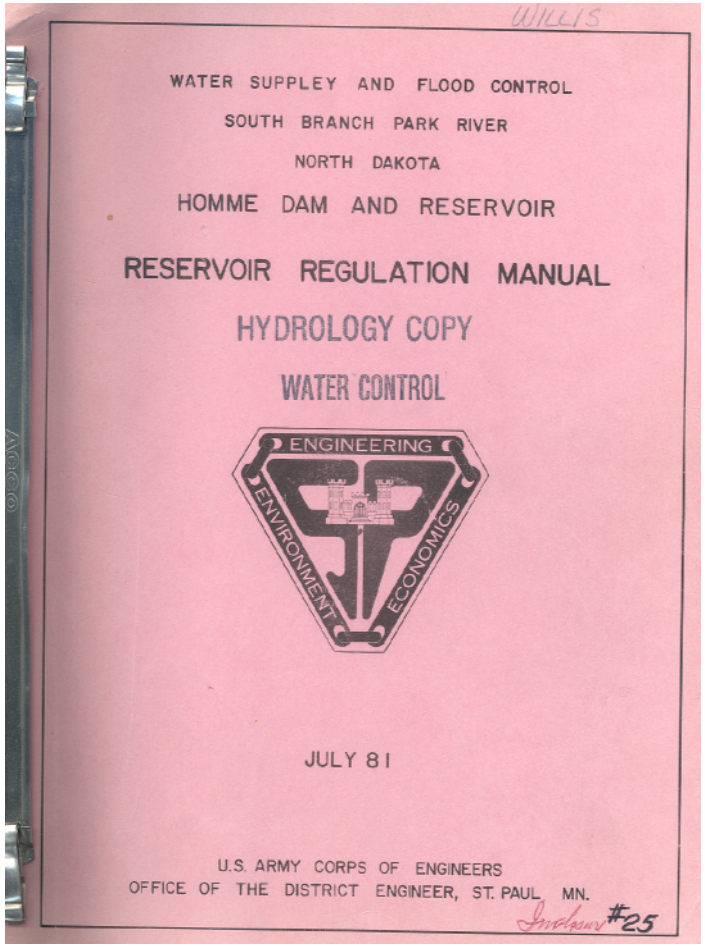

FLOOD CONTROL

SOUTH BRANCH PARK RIVER,
NORTH DAKOTA

HOMME DAM AND RESERVOIR

RESERVOIR REGULATION MANUAL

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DISTRICT ENGINEER, ST. PAUL, MINN.
DECEMBER 1955


WILLIS

WATER SUPPLEY AND FLOOD CONTROL
SOUTH BRANCH PARK RIVER
NORTH DAKOTA
HOMME DAM AND RESERVOIR
RESERVOIR REGULATION MANUAL
HYDROLOGY COPY
WATER CONTROL
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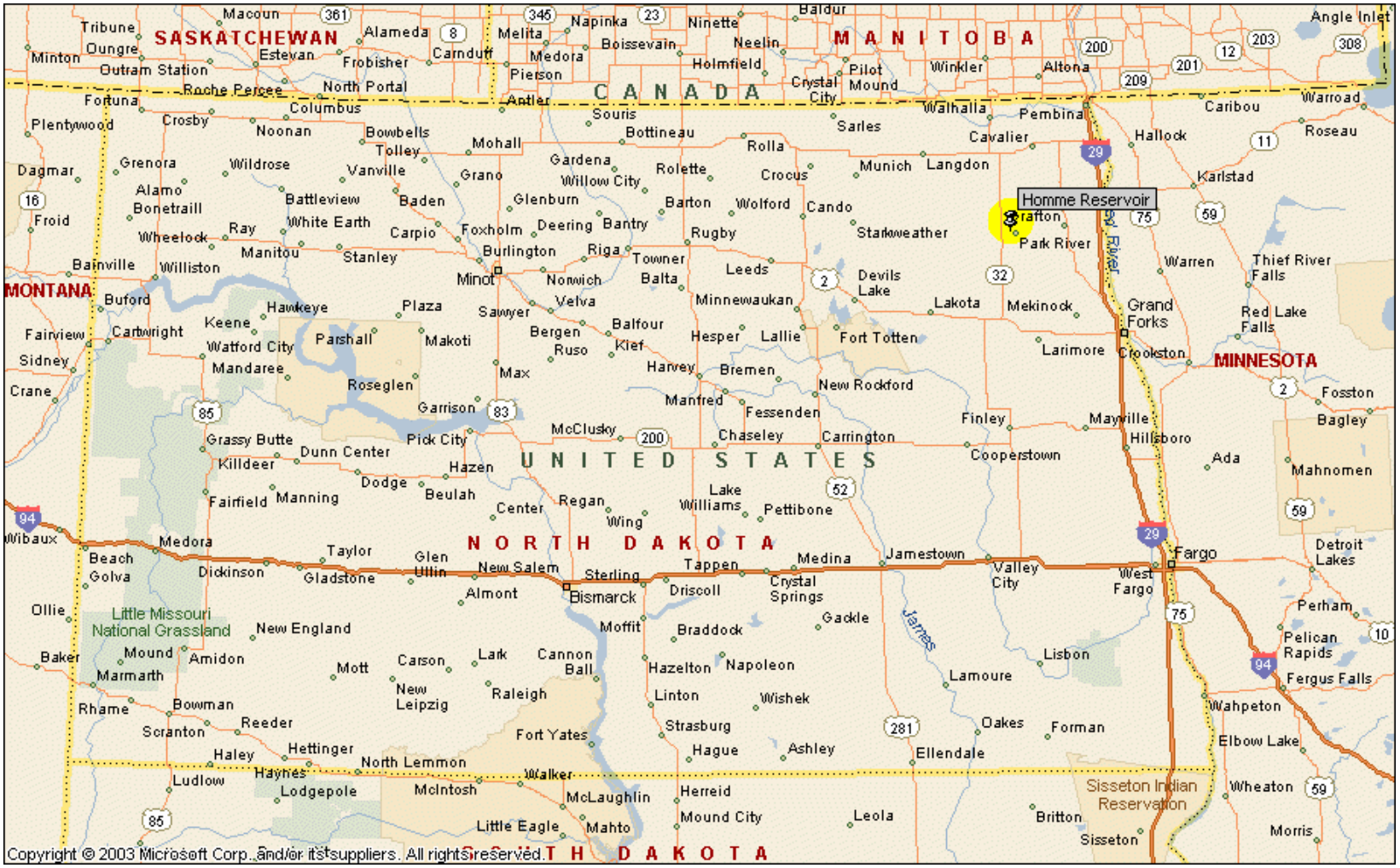
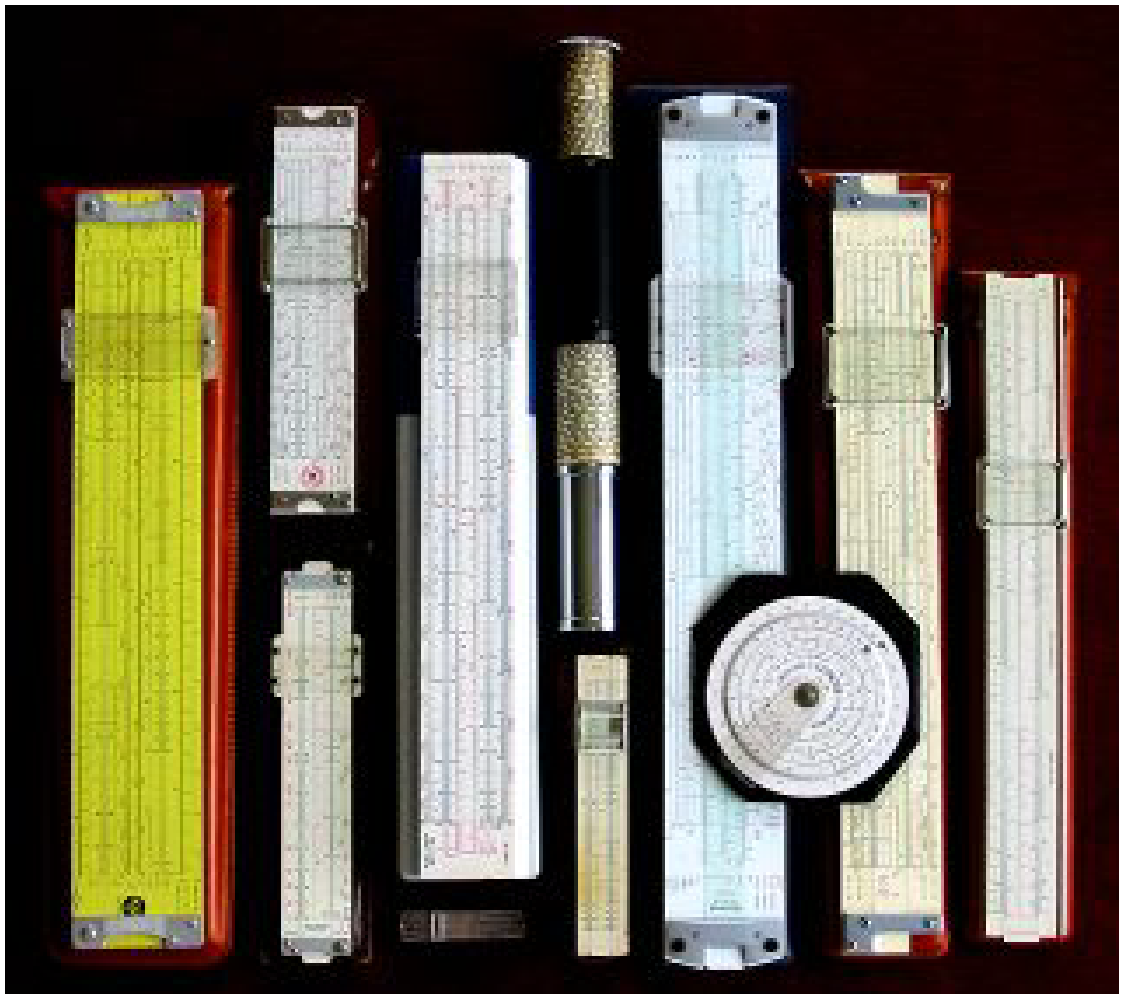
US Army Corps of Engineers®
Mississippi Valley Division
Mississippi River Commission

North Dakota

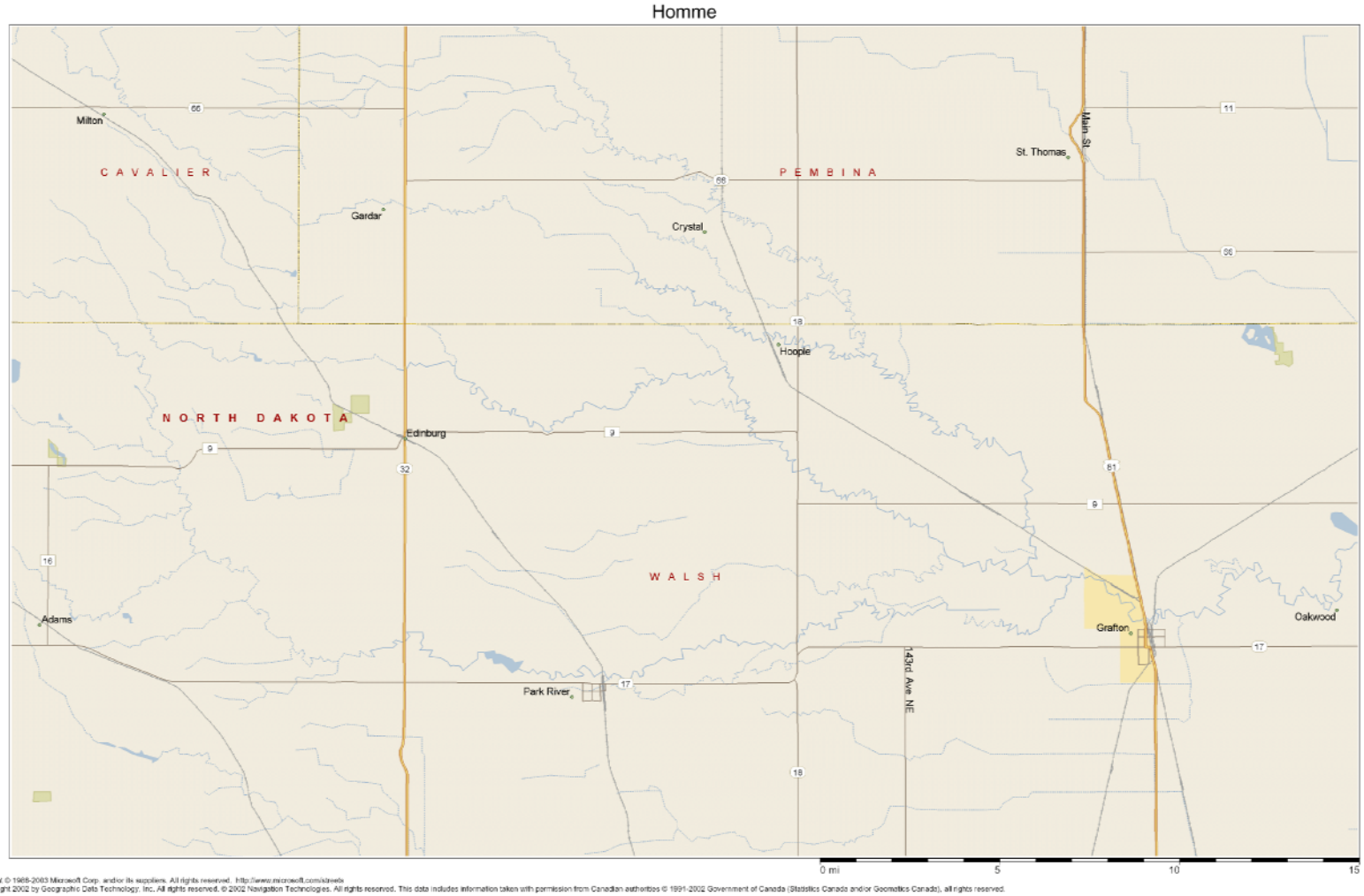


One Corps Serving the Armed Forces and the Nation

Tools of the Trade



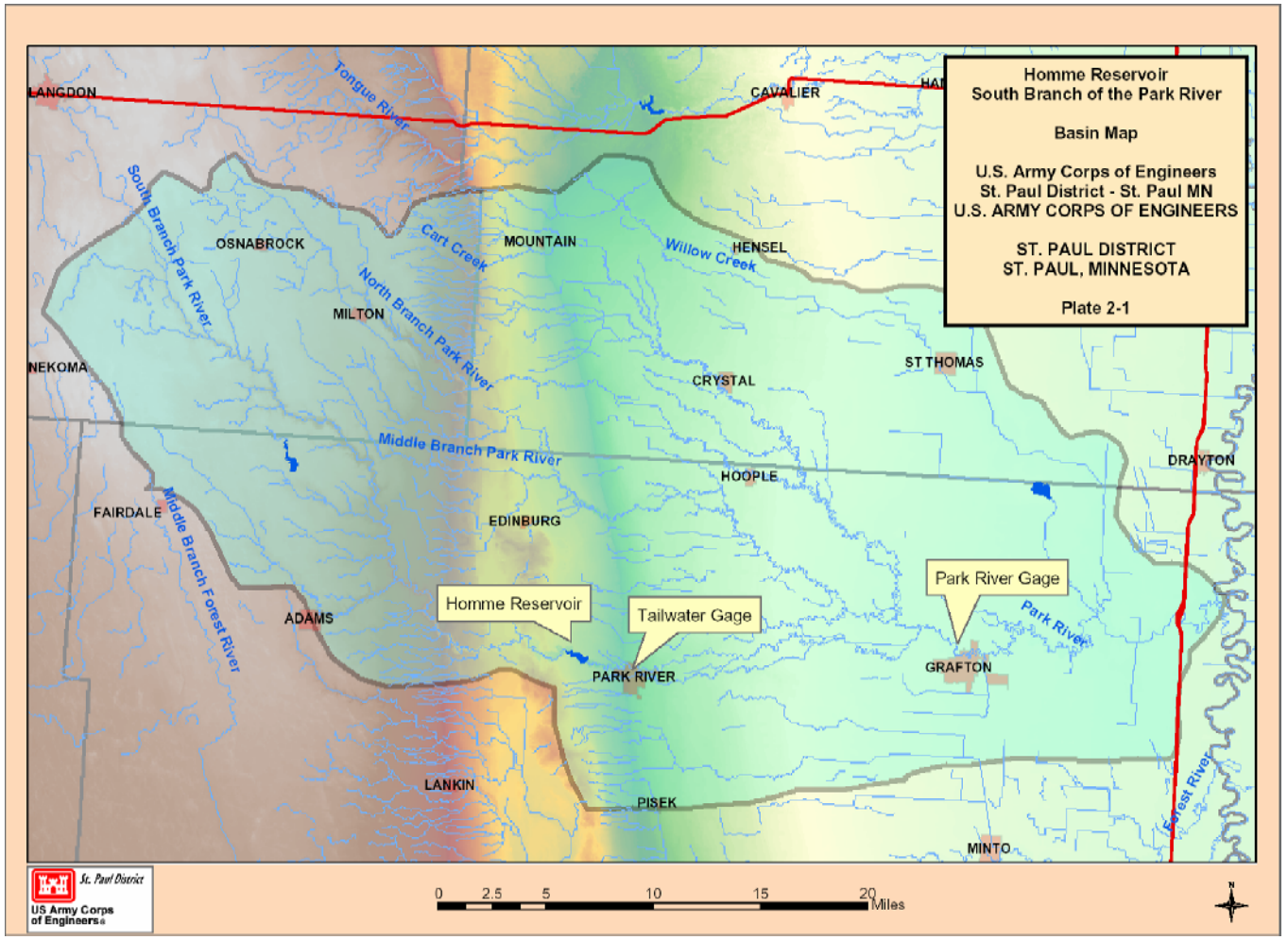
Northeast North Dakota



The Dust Bowl

Homme Reservoir

Park River Basin



Average Monthly Rainfall

	Jan	Feb	Mar	Apr
Grafton	0.60	0.44	0.89	1.52
Park River	0.61	0.46	0.92	1.66

Spring Runoff

3.0 inches 2001	0.1 inches 2000
2.5 inches 1999	3.0 inches 1998
8.0 inches 1997	2.5 inches 1996
3.4 inches 1995	1.4 inches 1994
0.2 inches 1993	1.1 inches 1992

Flood of 1997

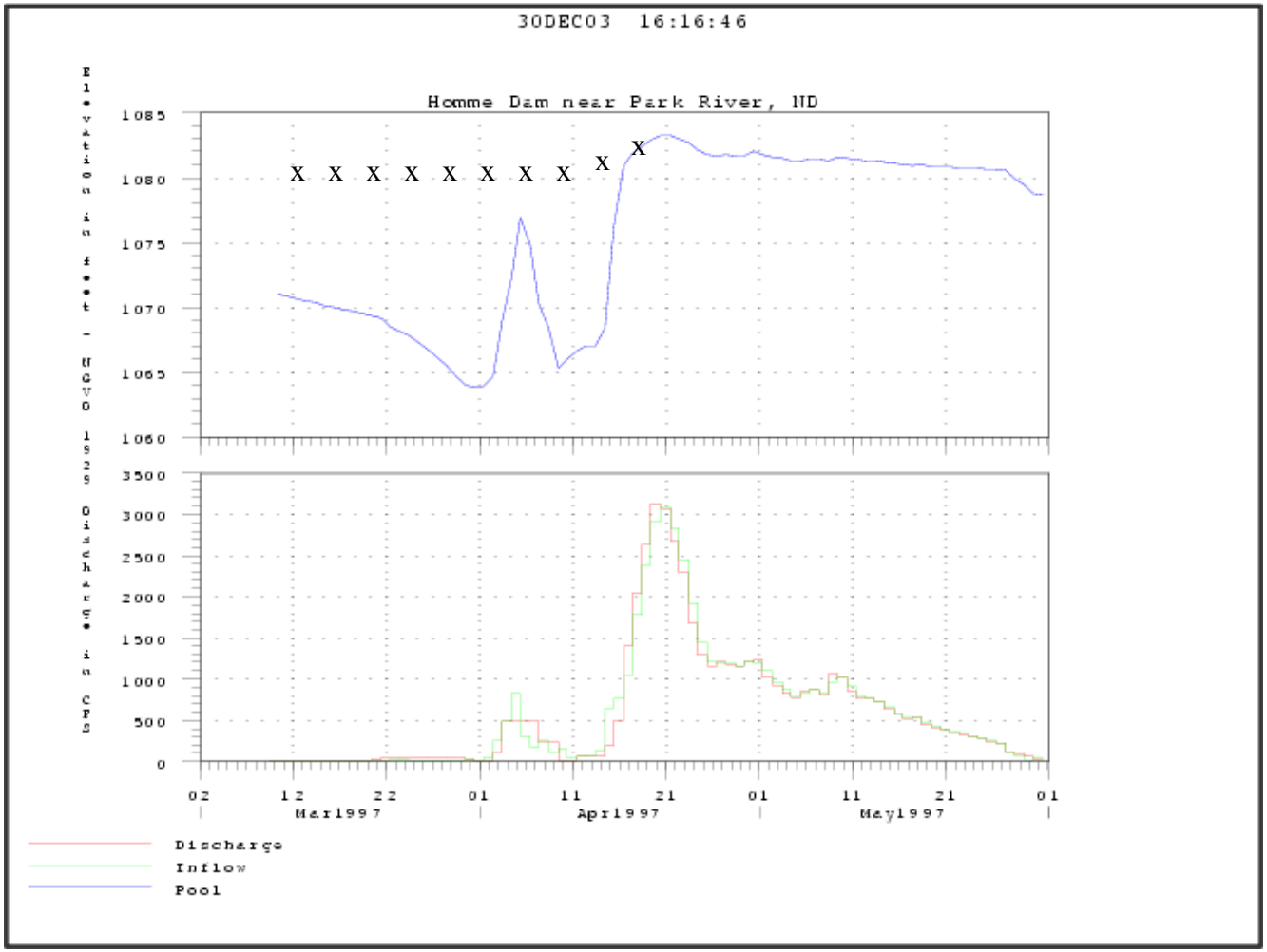
Runoff: 8 inches **Drawdown: 1064.0 feet**

The Pool Rose Accordingly:

Date	Pool	Inflow
13 Apr	1066.97	54
14 Apr	1068.37	126
15 Apr	1076.25	641
16 Apr	1080.90	763 (over spillway)
17 Apr	1081.87	1042

Peak Inflow was 3,093 cfs on 21 April.

1997 Flood


30DEC03 16:16:46
Homme Dam near Park River, ND
Elevation in feet - NGVD 1929
Discharge in CFS
1085
1080
1075
1070
1065
1060
3500
3000
2500
2000
1500
1000
500
0
02
12
22
01
11
21
01
11
21
01
Mar1997
Apr1997
May1997
Discharge
Inflow
Pool

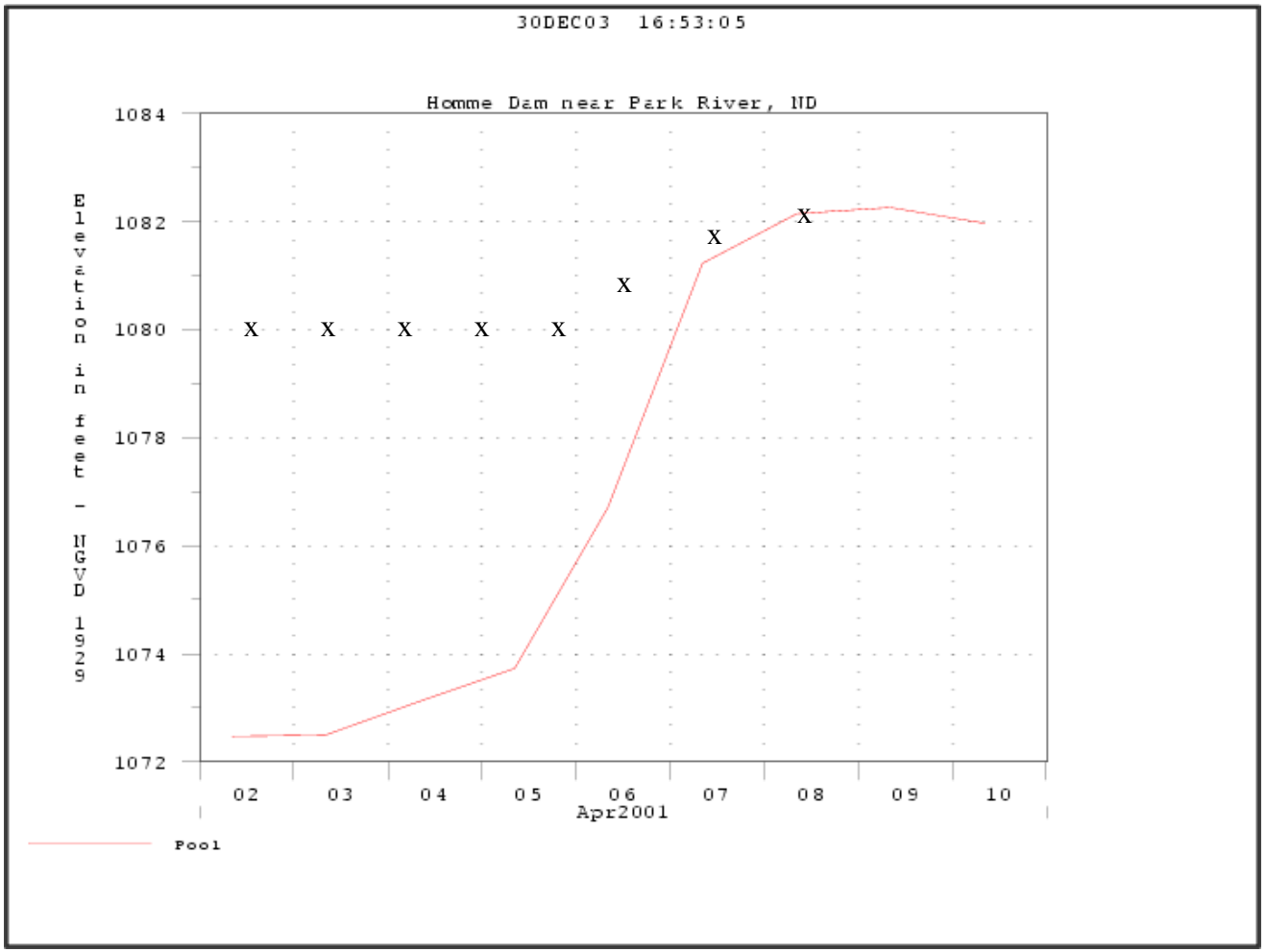
Flood of 2001

Runoff: 3.0 inches **Drawdown: 1072.0 ft**

The Pool Rose Accordingly:

Date	Pool	Inflow
4 Apr	1073.11	82
5 Apr	1073.72	92
6 Apr	1076.71	331
7 Apr	1081.22	1060 (over spillway)
8 Apr	1082.15	1420
9 Apr	1082.26	1,540 (peak inflow)

2001 Flood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Homme Dam near Park River, ND
Elevation in feet - NGVD 1929
1084
1082
1080
1078
1076
1074
1072
02
03
04
05
06
07
08
09
10
Apr2001
Pool

Spring of 1993

Runoff: 0.24 inches Drawdown: 1065.3 ft

The Pool Rose Accordingly:

Date	Pool	Inflow
6 Apr	1075.01	185 (peak inflow)
7 Apr	1077.08	172
8 Apr	1078.60	130
9 Apr	1079.78	119
10 Apr	1080.23	109 (storage gone)

Peak outflow was 104 cfs on 10 April.

Conclusions of Analysis

Over an Inch of Runoff

1. **Flood storage is gone days before the peak inflow arrives.**
2. **Drawdown has no impact on peak pool or peak discharge.**

Under an Inch of Runoff

1. **Maximum outflow is within channel capacity with or without drawdown.**

What Were The Designers Up To?

Water Supply was primary goal.

The Tools of the time were adequate for the flood control design; however, it would appear little time was spent on the flood control analysis.

There was a war going on.

How sharp are we now?

We've been drawing the reservoir down every winter since 1950.