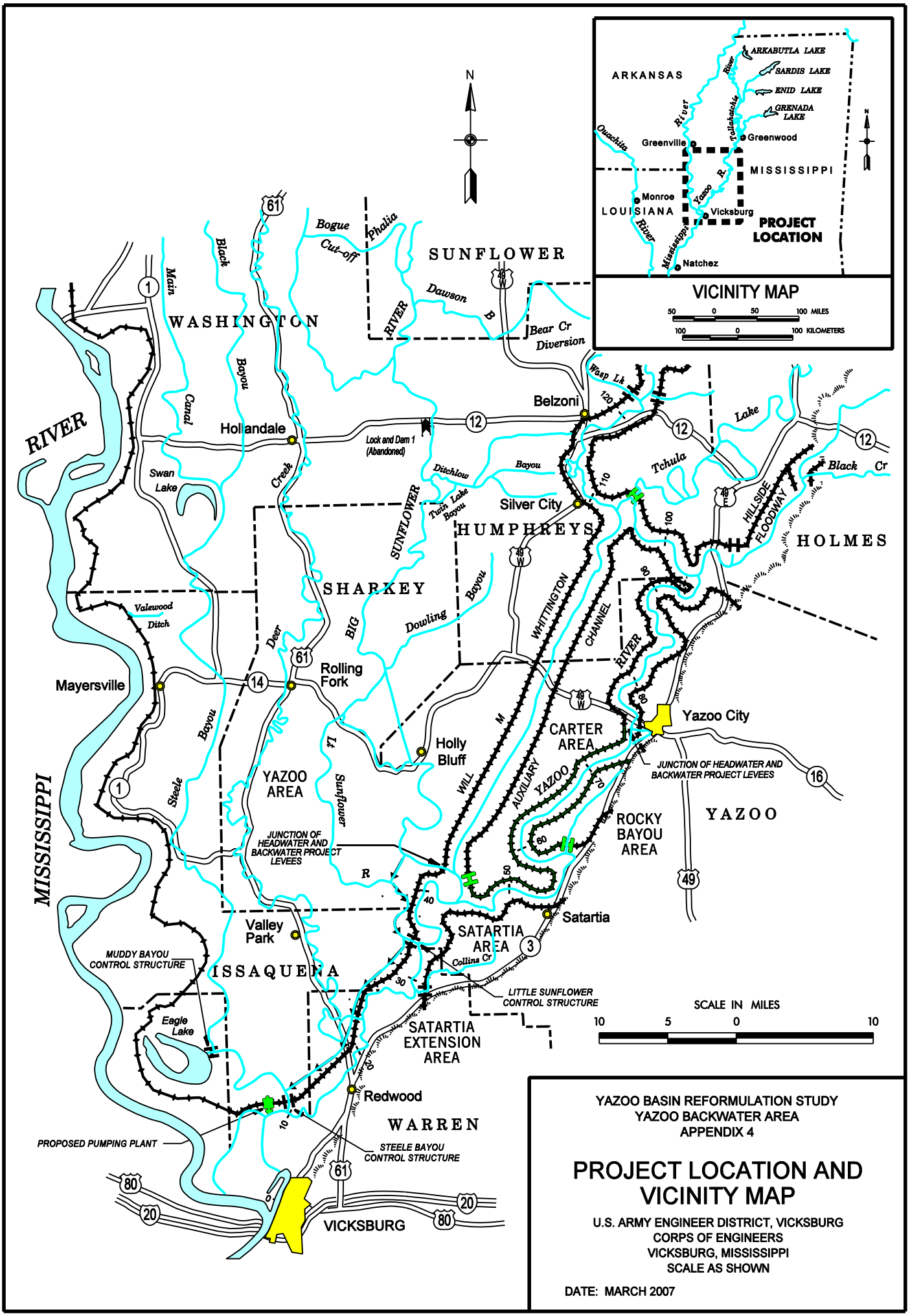
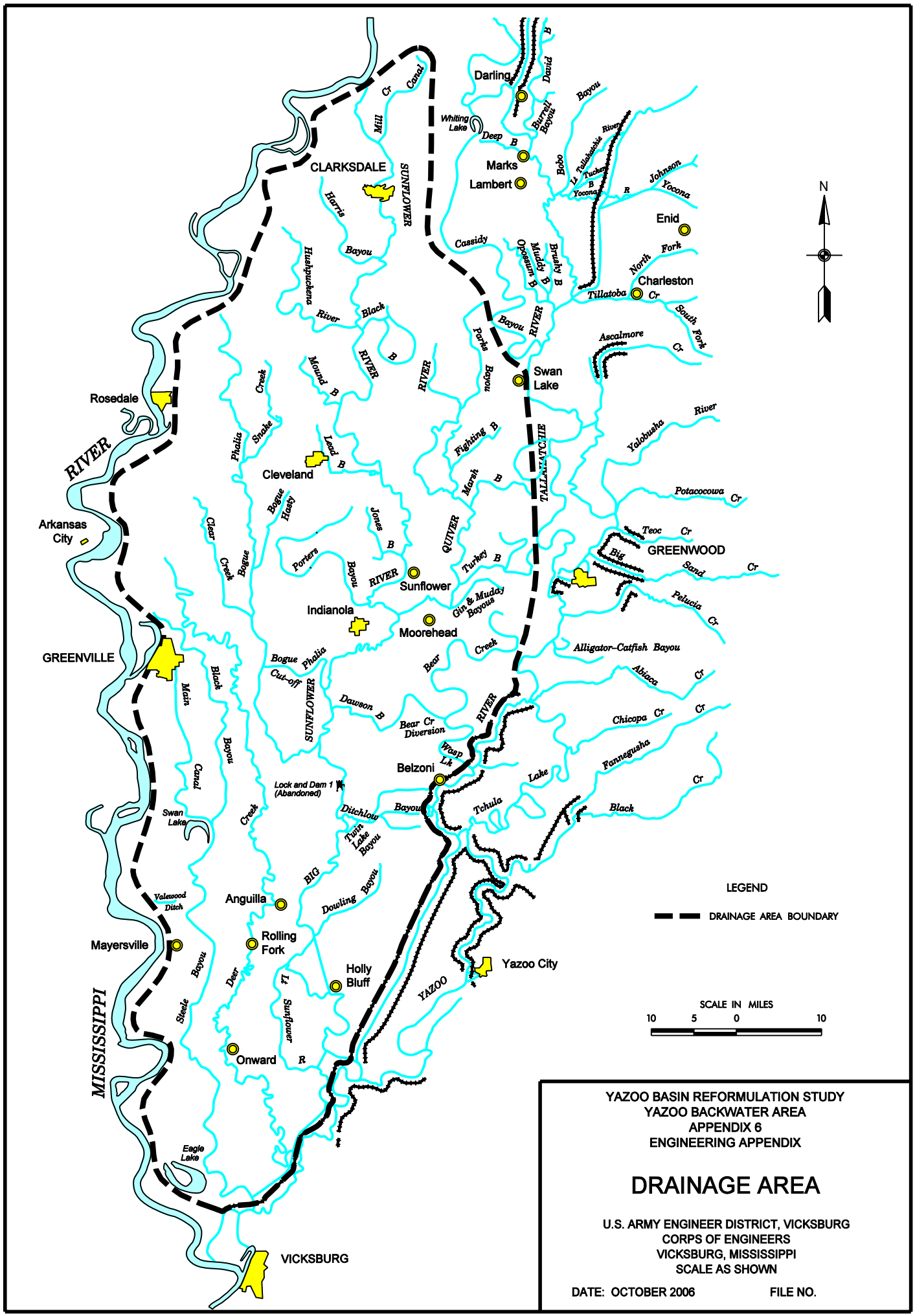


YAZOO BASIN REFORMULATION STUDY
YAZOO BACKWATER AREA
APPENDIX 4

PROJECT LOCATION AND VICINITY MAP

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN

DATE: MARCH 2007



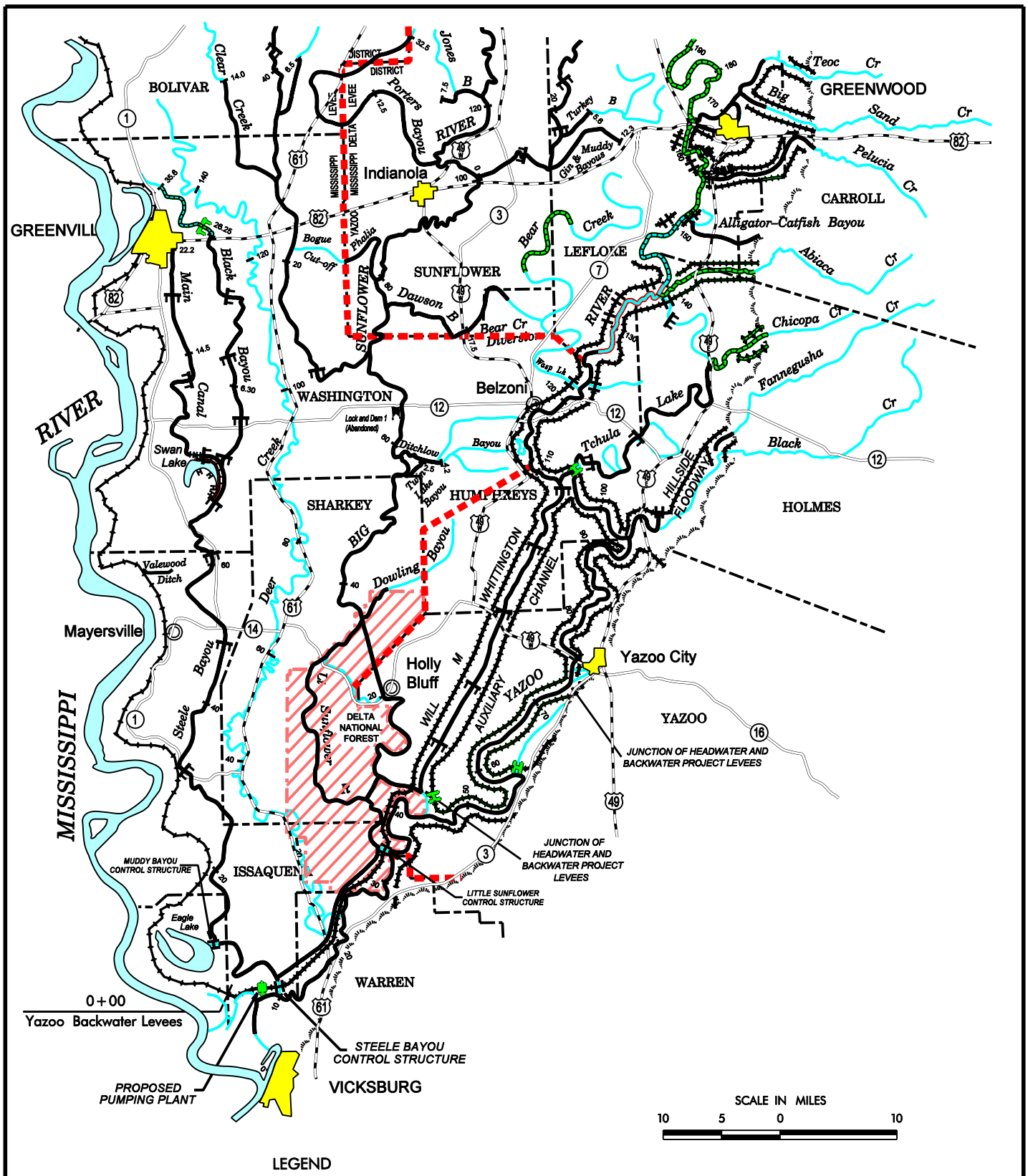
YAZOO BASIN REFORMULATION STUDY
YAZOO BACKWATER AREA
APPENDIX 6
ENGINEERING APPENDIX

DRAINAGE AREA

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN

DATE: OCTOBER 2006 FILE NO.

PLATE 6-2



LEGEND

Project Levees		Weir	
Constructed By Local Interest		Hill Line	
Channel Improvement		Levee District Boundary	
Additional Work Authorized		Authorized	
Miles Above Mouth		Under Construction	
Pumping Plant		Completed	
Drainage Structure			

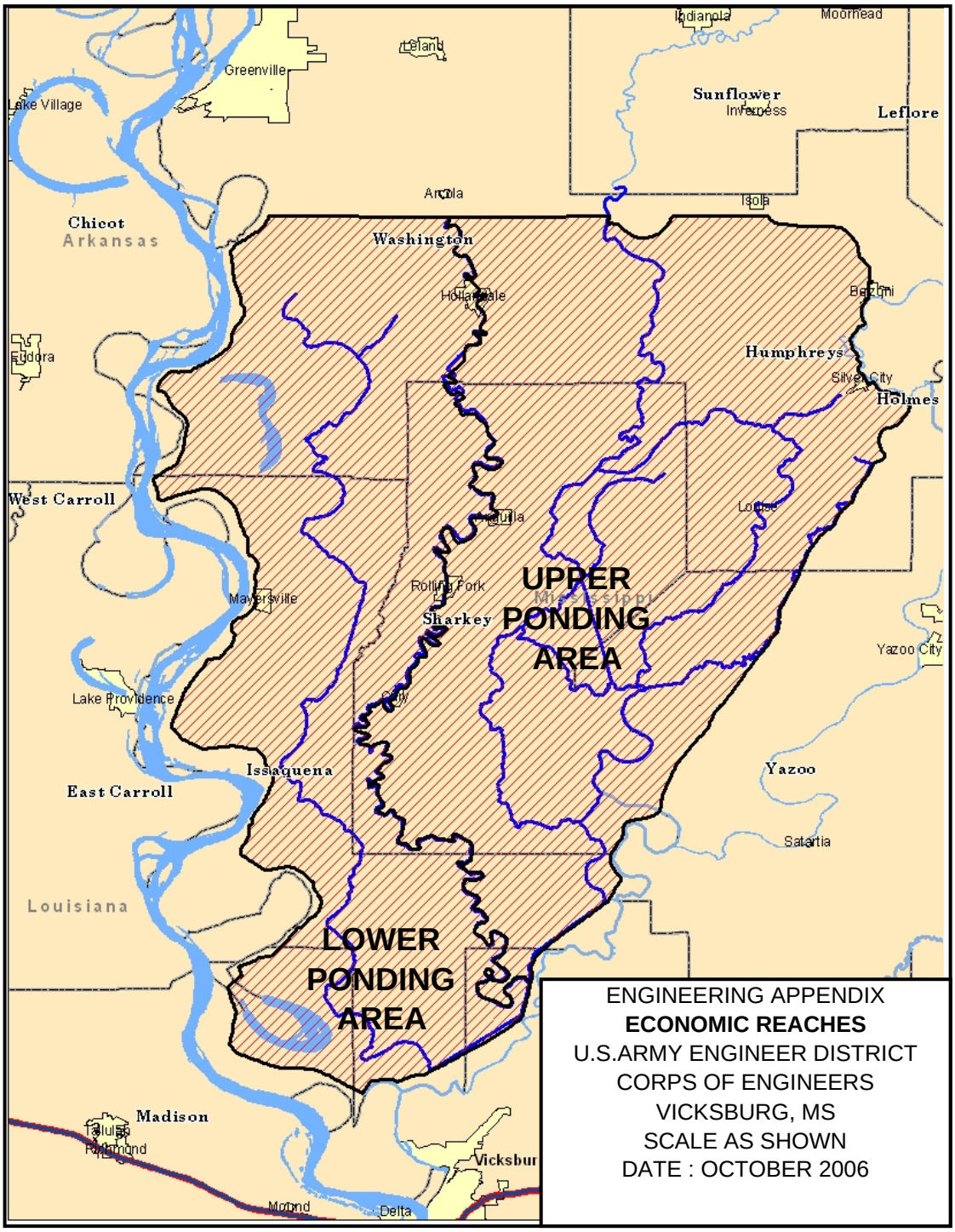
YAZOO BASIN REFORMULATION STUDY
YAZOO BACKWATER AREA
APPENDIX 6
ENGINEERING APPENDIX

PROJECT FEATURES

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN

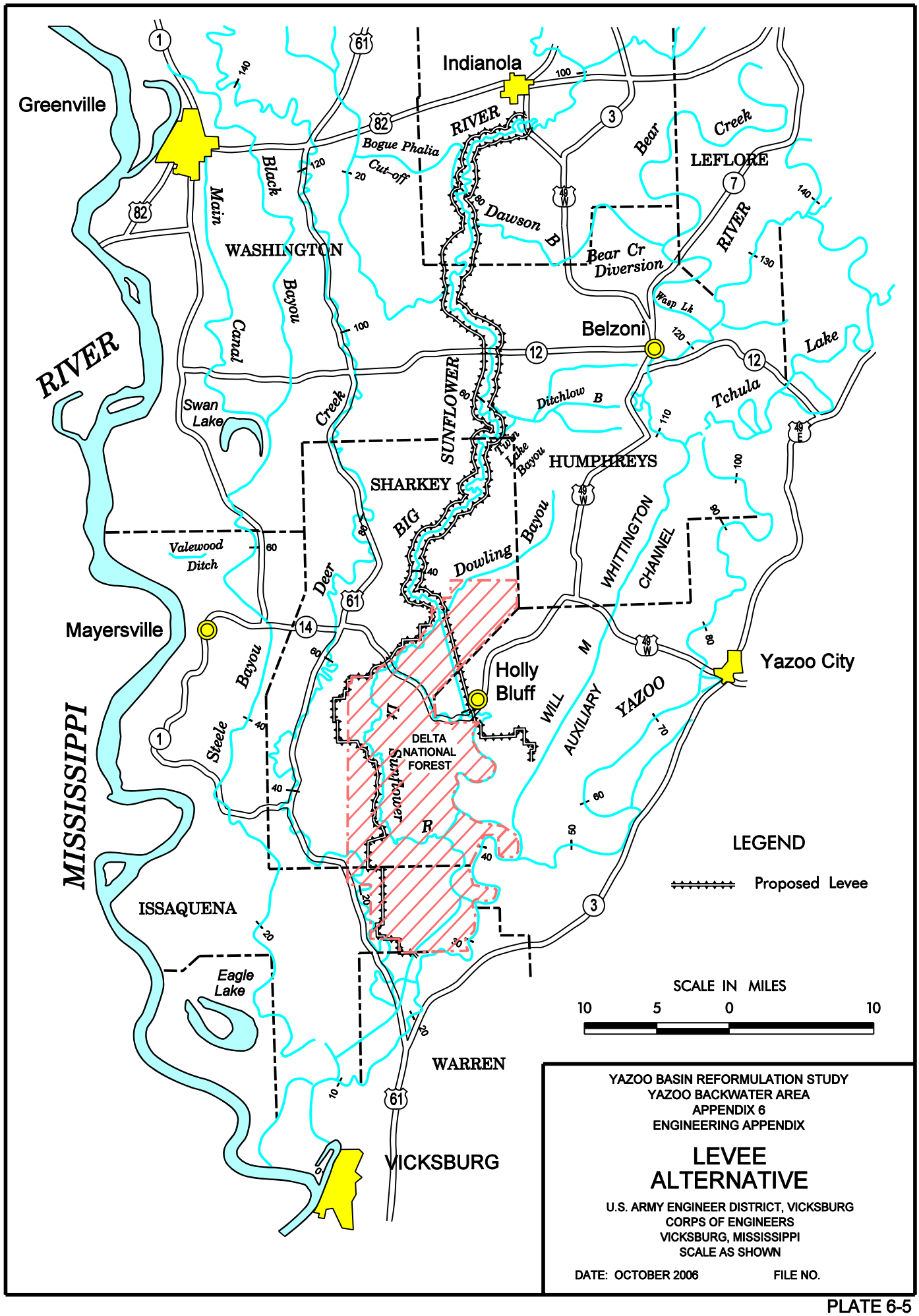
DATE: OCTOBER 2006 FILE NO.

PLATE 6-3



ENGINEERING APPENDIX
ECONOMIC REACHES
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

PLATE 6-4



YAZOO BASIN REFORMULATION STUDY
YAZOO BACKWATER AREA
APPENDIX 6
ENGINEERING APPENDIX

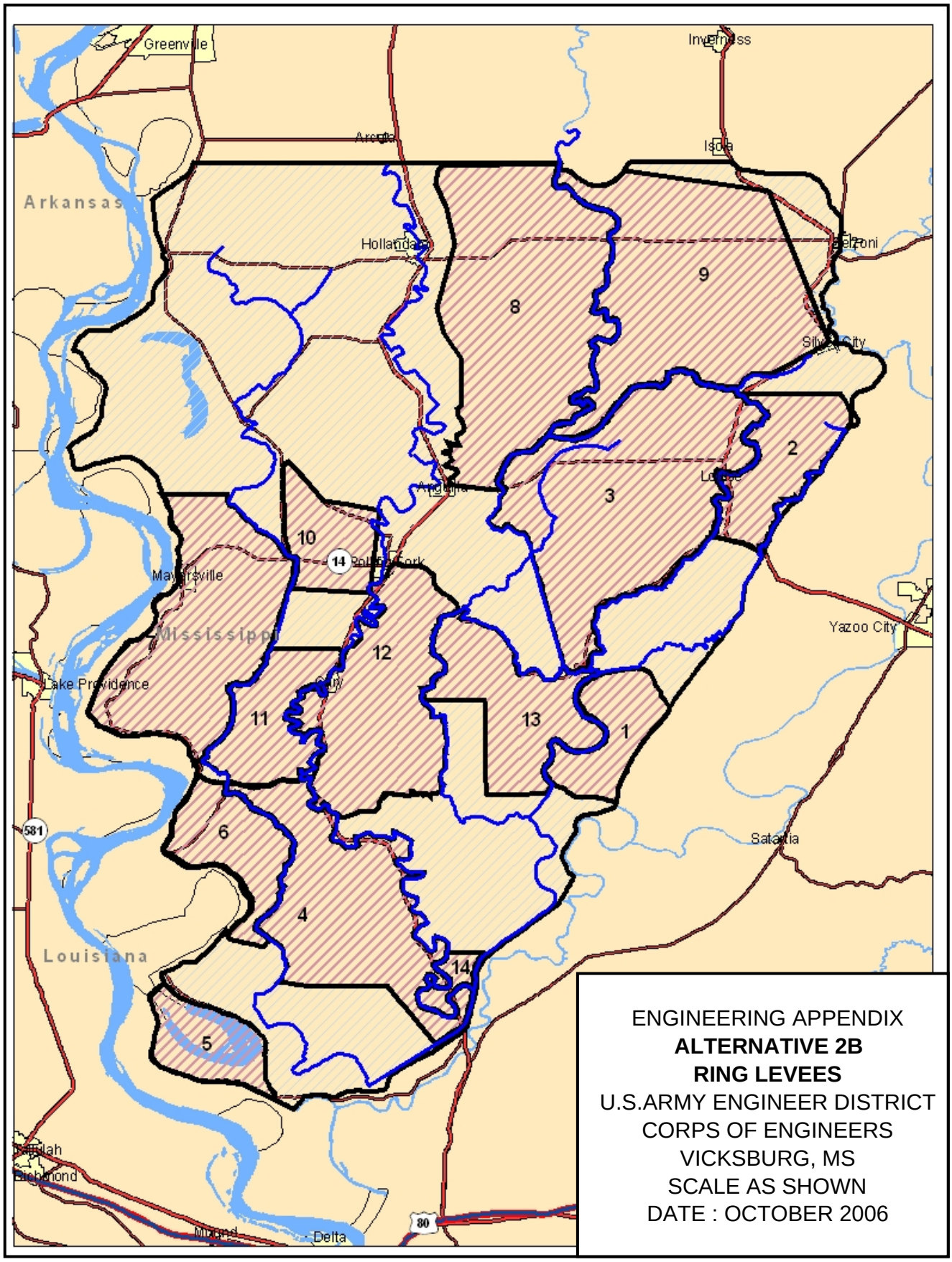
LEVEE ALTERNATIVE

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN

DATE: OCTOBER 2006 FILE NO.

Plan	Construction Cost												Average Annual Benefit	Excess Benefits
	Easements				Reforestation	Reforestation	Environmental Impacts	Mititgation Cost	Structural Modifications	Pump	Total	Average Annual Cost		
	Conservation Woodlands	Reforestation Open Lands a/	Flow/Water Management	Total ($ Million)	Acres	($ Million)	(HU)	($ Million)	($ Million)	($ Million)	($ Million)	$000	$000	$000
1	Preserve Below 100.3	Use Retained	N/A	261.4	0	0	0	0	0	0	261	19,238	0	-19,238
2	Preserve Below 100.3	Reforest Below 90.0	N/A	307.8	101,800	14.3	80,070	0	0	0	330	24,265	-4,452	-28,717
NONSTRUCTURAL PLANS														
3	Preserve Below 85.0	Use Retained Below 85.0	N/A	42.1	0	0	-49,151	31.3	0	120	193	16,365	16,242	-123
4	Preserve Below 85.0	Use Retained Below 85.0	Below 80.0 b/	63.5	0	0	-41,104	26.2	0.35	120	210	17,548	16,242	-1,306
5	Preserve Below 85.0	Use Retained Below 85.0	Below 85.0 c/	81.7	0	0	-41,200	26.2	0.35	120	228	18,890	16,242	-2,648
6	Preserve Below 85.0	Reforest Below 85.0	N/A	56.0	53,000	7.4	10,608	0	0	120	187	15,574	16,900	1,326
7	Preserve Below 85.0	Reforest Below 85.0	Below 80.0 b/	70.2	53,000	7.4	21,533	0	0.35	120	202	16,654	16,900	246
8	Preserve Below 85.0	Reforest Below 85.0	Below 85.0 c/	81.7	53,000	7.4	21,390	0	0.35	120	213	17,503	16,900	-603
9	Preserve Below 90.0	Use Retained Below 90.0	N/A	85.2	0	0	-30,927	19.1	0	120	224	18,522	13,387	-5,135
10	Preserve Below 90.0	Use Retained Below 90.0	Below 80.0 b/	102.0	0	0	-9,232	5.8	0.35	120	228	18,675	13,387	-5,288
11	Preserve Below 90.0	Use Retained Below 90.0	Below 85.0 c/	117.0	0	0	-9,223	5.8	0.35	120	243	19,783	13,387	-6,396
12	Preserve Below 90.0	Reforest Below 90.0	N/A	135.0	101,800	14.3	36,022	0	0	120	276	22,155	13,883	-8,272
13	Preserve Below 90.0	Reforest Below 90.0	Below 80.0 b/	139.0	101,800	14.3	66,607	0	0.35	120	280	22,466	13,883	-8,583
14	Preserve Below 90.0	Reforest Below 90.0	Below 85.0 c/	141.0	101,800	14.3	66,616	0	0.35	120	282	22,615	13,883	-8,732
COMBINATION PLANS - 14,000 CFS PUMP a/														
15	Preserve Below 85.0	Use Retained Below 85.0	N/A	42.1	0	0	-53,614	34.2	0	143	219	18,562	18,052	-510
16	Preserve Below 85.0	Use Retained Below 85.0	Below 80.0 b/	63.5	0	0	-45,832	29.2	0.35	143	236	19,756	18,052	-1,704
17	Preserve Below 85.0	Use Retained Below 85.0	Below 85.0 c/	81.7	0	0	-45,828	29.2	0.35	143	254	21,097	18,052	-3,045
18	Preserve Below 85.0	Reforest Below 85.0	N/A	56.0	53,000	7.4	3,932	0	0	143	210	17,532	18,159	627
19	Preserve Below 85.0	Reforest Below 85.0	Below 80.0 b/	70.2	53,000	7.4	14,414	0	0.35	143	225	18,612	18,159	-453
20	Preserve Below 90.0	Reforest Below 85.0	Below 85.0 c/	81.7	53,000	7.4	14,417	0	0.35	143	236	19,461	18,159	-1,302
21	Preserve Below 90.0	Use Retained Below 90.0	N/A	85.2	0	0	-35,692	22.8	0	143	251	20,783	14,794	-59,889
22	Preserve Below 90.0	Use Retained Below 90.0	Below 80.0 b/	102.0	0	0	-11,473	7.3	0.35	143	253	20,763	14,794	-5,969
23	Preserve Below 90.0	Use Retained Below 90.0	Below 85.0 c/	117.0	0	0	-11,469	7.2	0.35	143	268	21,855	14,794	-7,061
24	Preserve Below 90.0	Reforest Below 90.0	N/A	135.0	101,800	14.3	29,534	0	0	143	299	24,113	14,917	-9,196
25	Preserve Below 90.0	Reforest Below 90.0	Below 80.0 b/	139.0	101,800	14.3	63,519	0	0.35	143	303	24,424	14,917	-9,507
26	Preserve Below 90.0	Reforest Below 90.0	Below 85.0 c/	141.0	101,800	14.3	63,523	0	0.35	143	305	24,573	14,917	-9,656
STRUCTURAL PLANS a/														
27 (14K P) d/	N/A	N/A	N/A	0.0	0.0	0.0	-63,743	40.5	0	120	161	13,990	17,539	3,549
28 (17.5K P) d/	N/A	N/A	N/A	0.0	0.0	0.0	-75,884	48.2	0	143	191	16,636	19,664	3,028
29(LEV)	N/A	N/A	N/A	0.0	0.0	0.0	-30,081	19.1	0	215	234	19,552	15,102	-4,450
30 (14K P)	Preserve Below 100.3	N/A	N/A	73.3	0.0	0.0	-63,743	39.4	0	120	233	19,348	17,539	-1,809

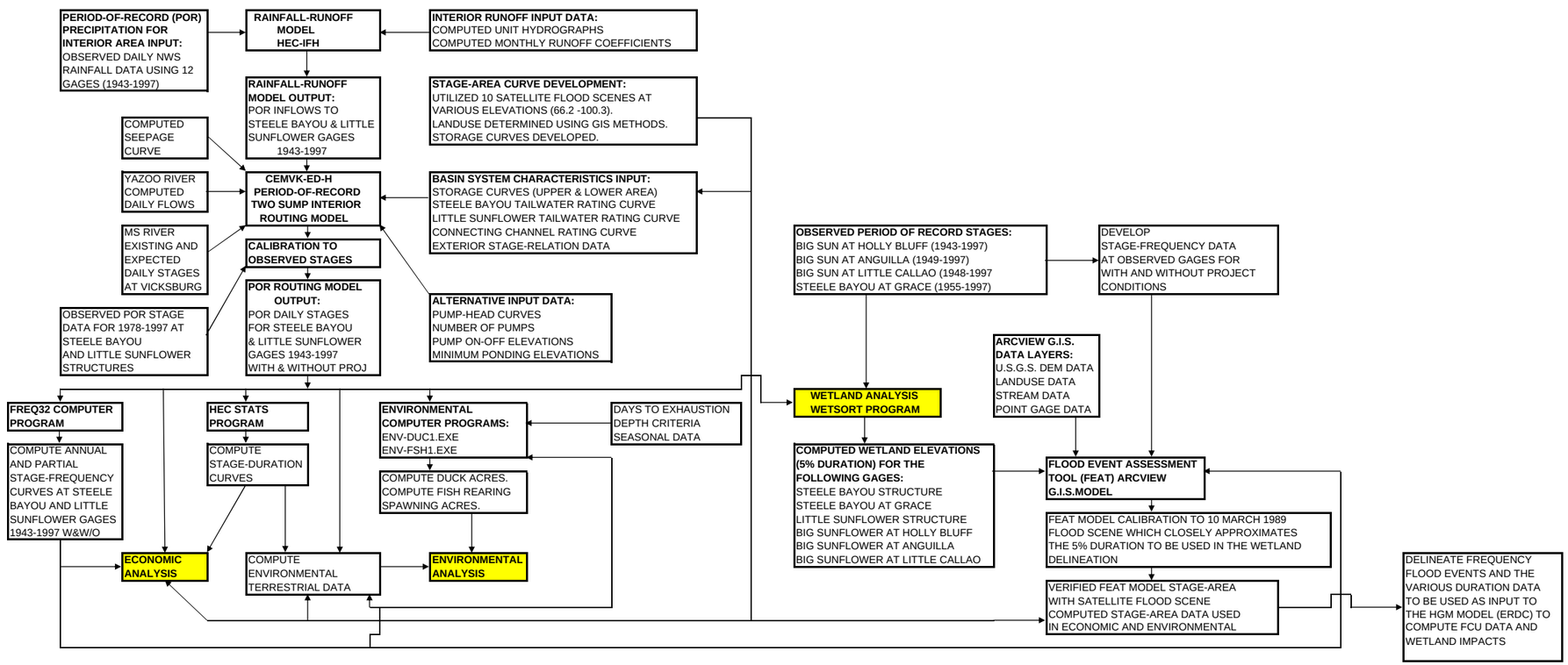
a/ Pump would be operated to provide flood damage reduction for cleared lands above easement elevation.
b/ 1 December - 1 March.
c/ 80 feet, NGVD, 1 December - 1 January and 15 February - 1 March; 85 feet, NGVD, 1January - 15 February.
d/ Pump would be operated to provide flood damage reduction for cleared lands above elevation 80 feet
except during 1 December - 1March when pump would be operated at 85.0 feet, NGVD.
e/ Does not reflect cost of pump but of the levee.



ENGINEERING APPENDIX
ALTERNATIVE 2B
RING LEVEES
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

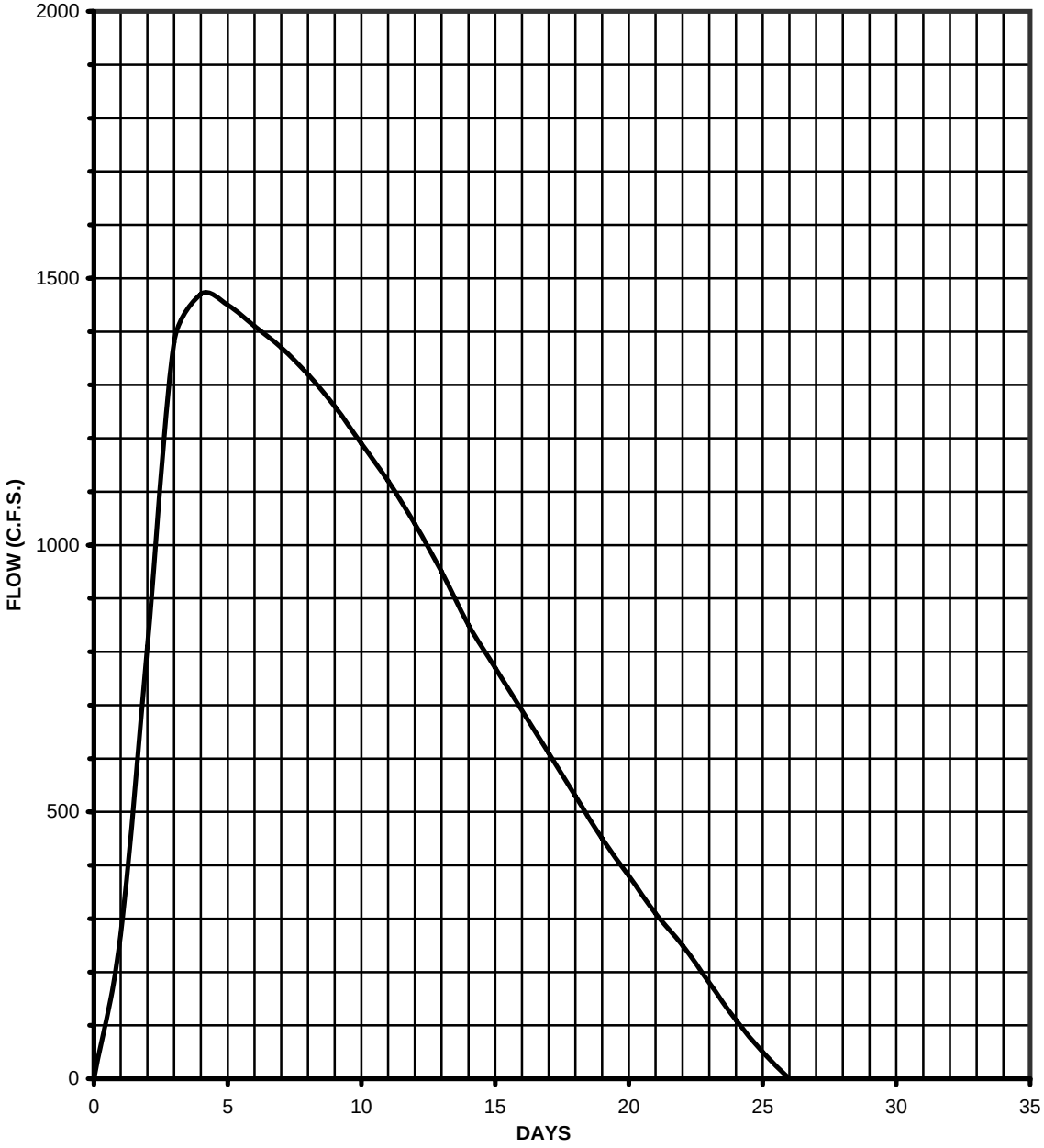
PLATE 6-7

YBW H&H PERIOD-OF-RECORD ANALYSIS SCHEMATIC



ENGINEERING APPENDIX
HYDROLOGY AND HYDRAULICS ANALYSIS SCHEMATIC
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

UNIT HYDROGRAPH - LOWER PONDING AREA

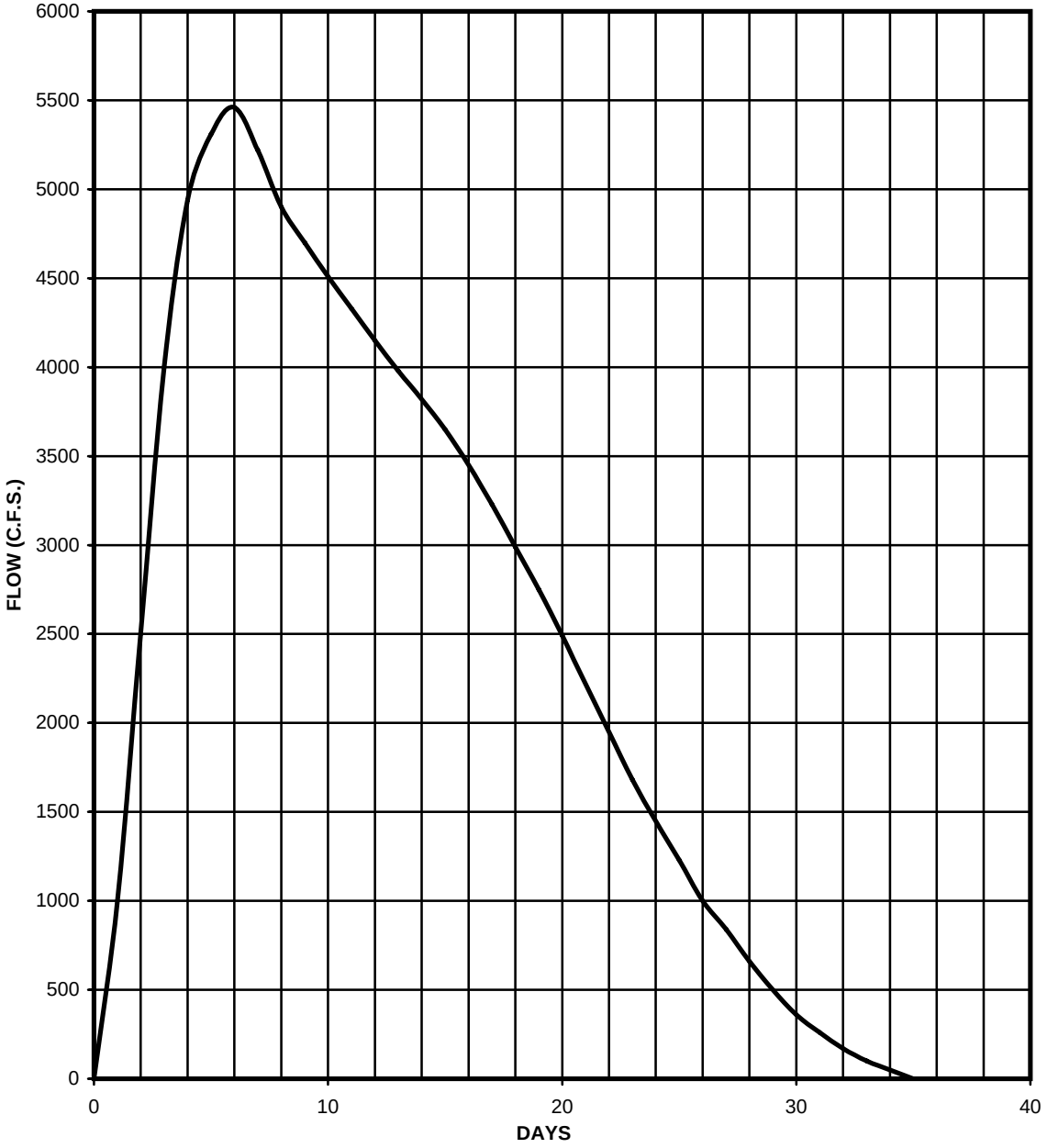


ENGINEERING APPENDIX

UNIT HYDROGRAPH
LOWER PONDING AREA

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

UNIT HYDROGRAPH - UPPER PONDING AREA

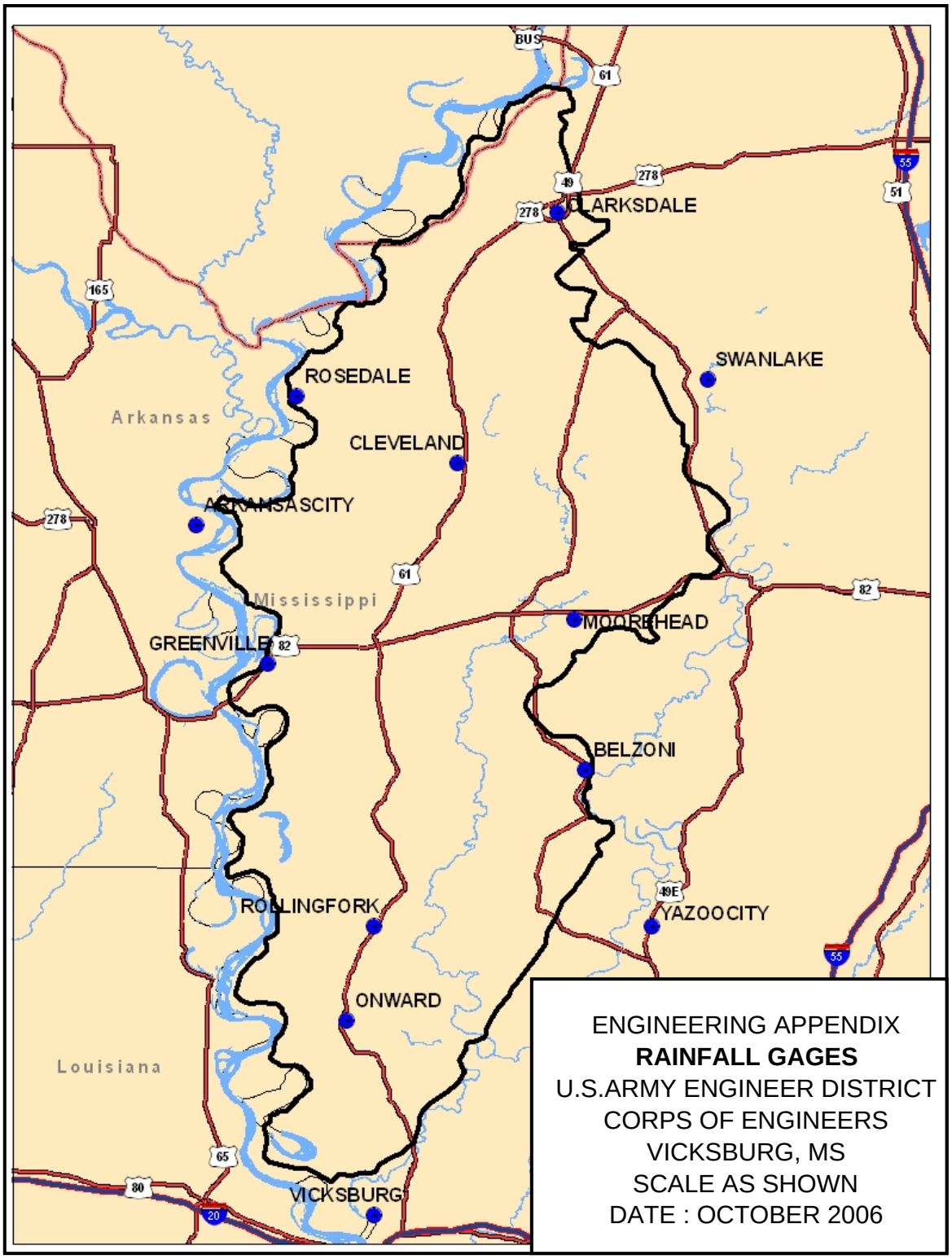


ENGINEERING APPENDIX

UNIT HYDROGRAPH

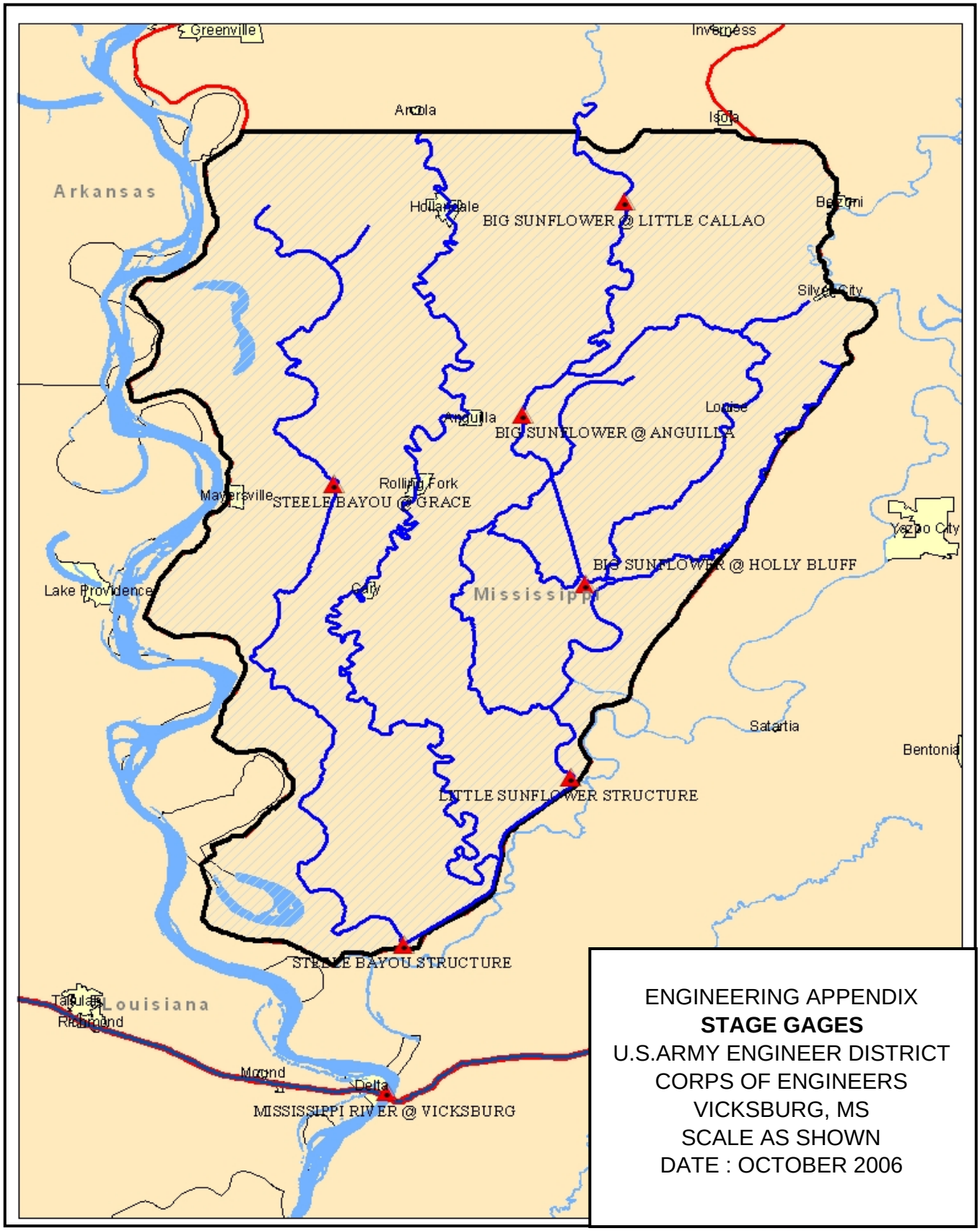
UPPER PONDING AREA

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006



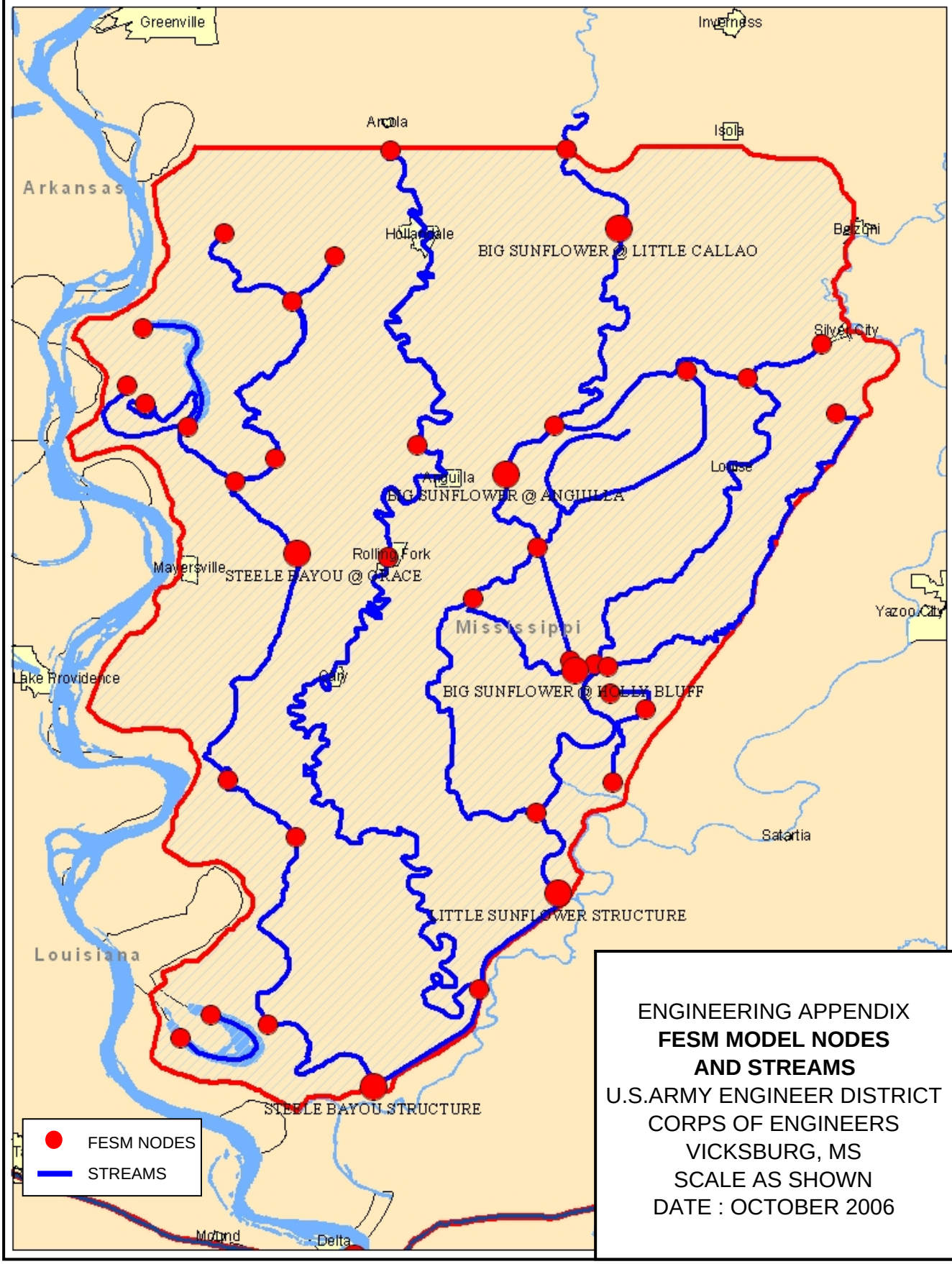
ENGINEERING APPENDIX
RAINFALL GAGES
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

PLATE 6-11



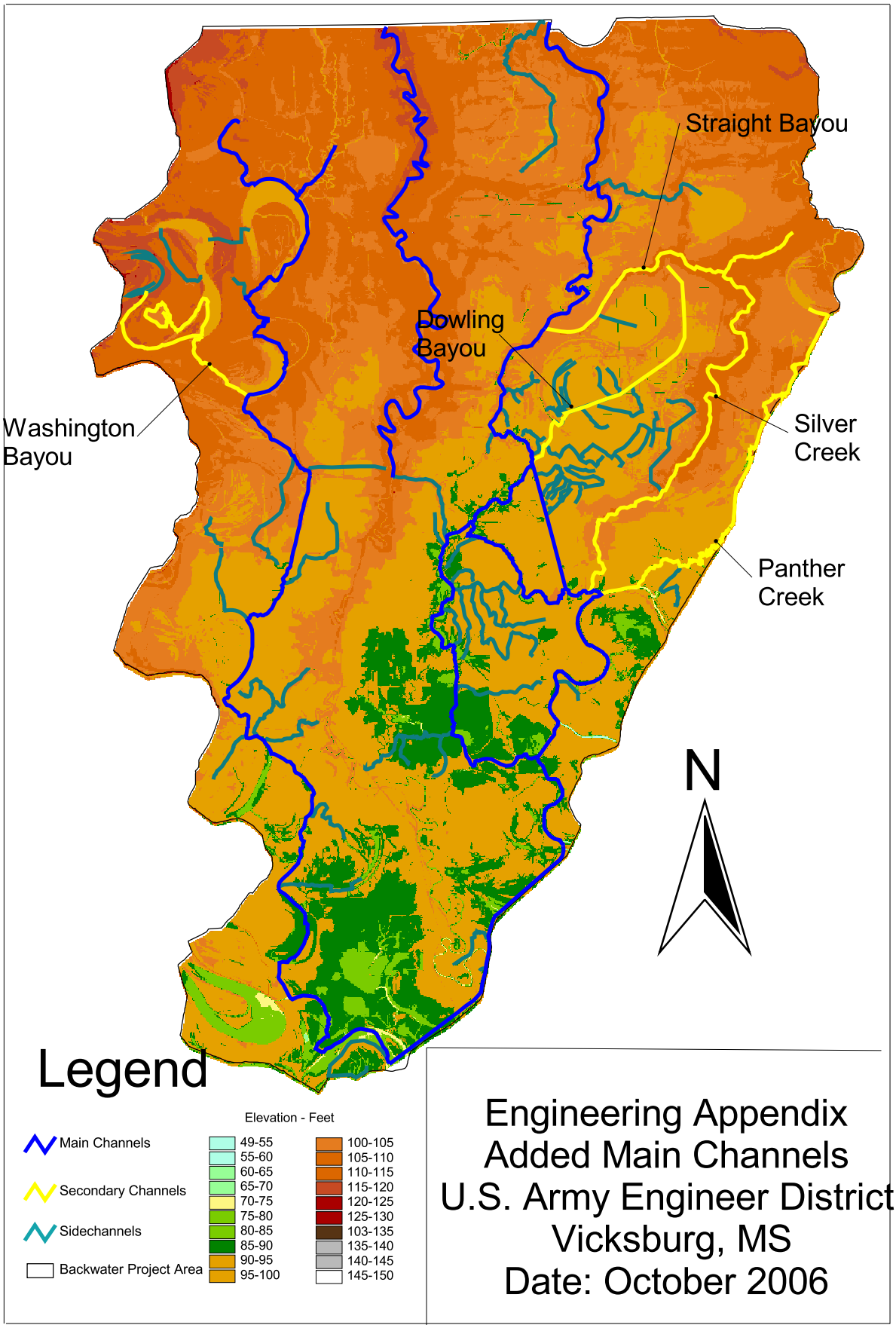
ENGINEERING APPENDIX
STAGE GAGES
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

PLATE 6-12

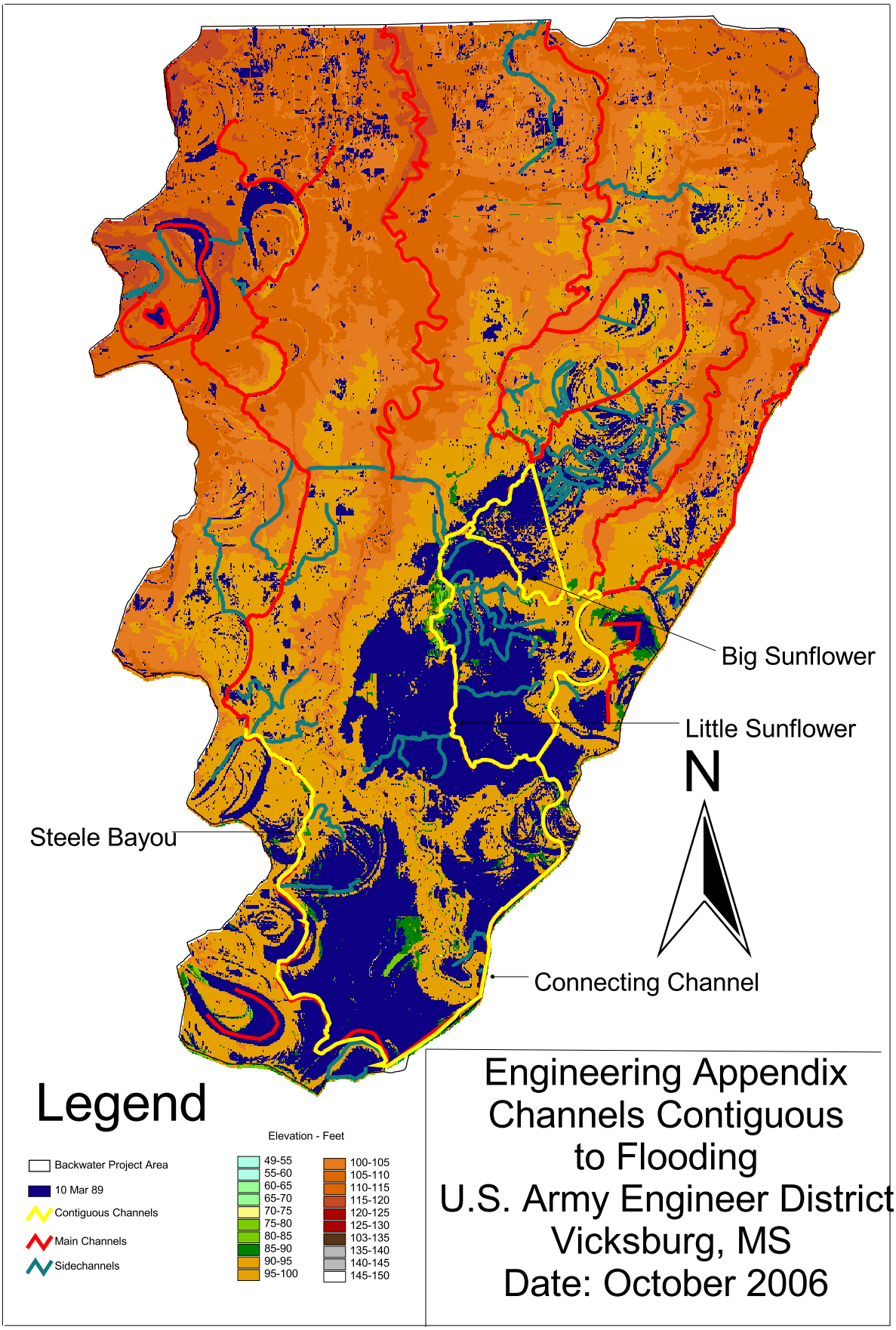


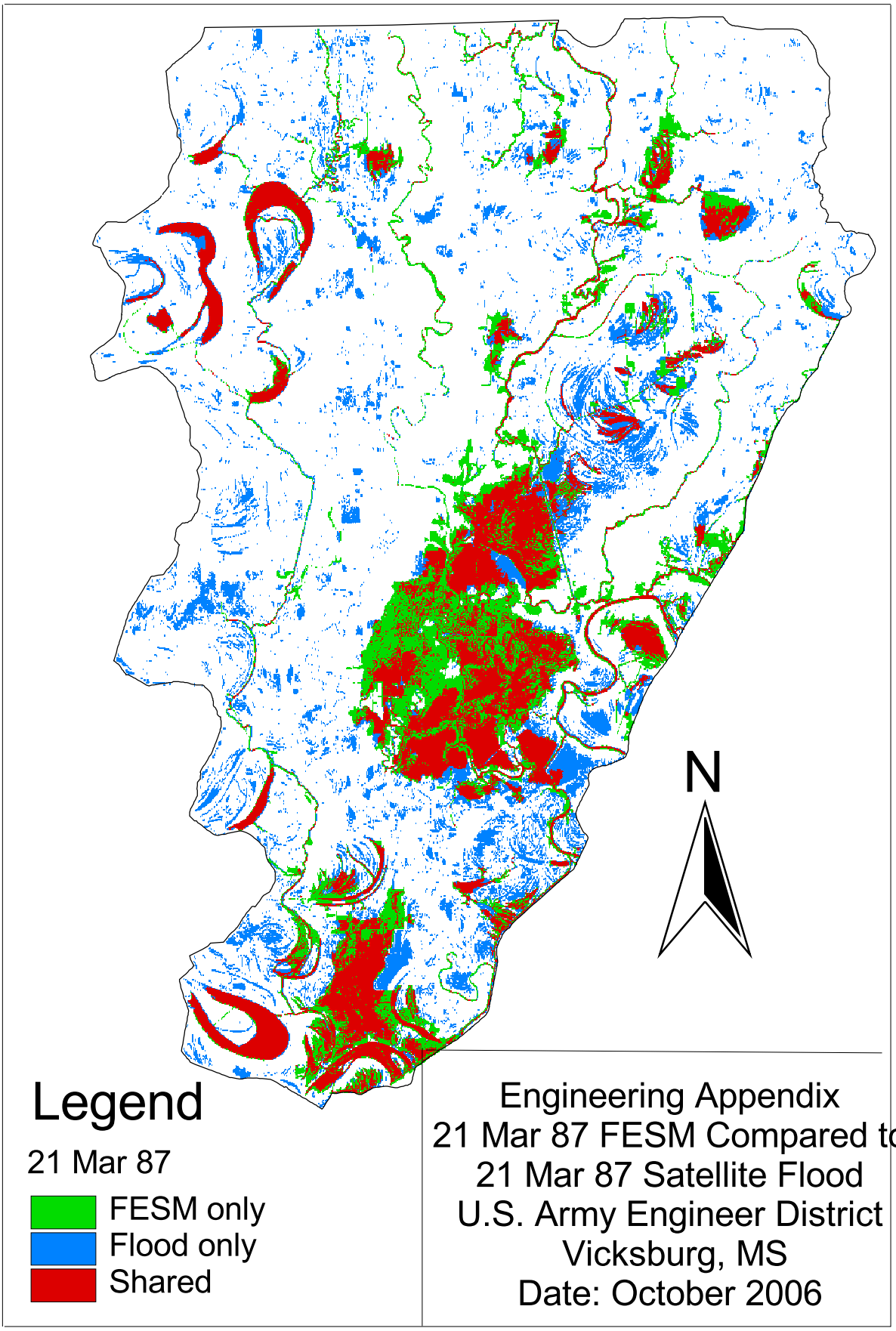
ENGINEERING APPENDIX
FESM MODEL NODES
AND STREAMS
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

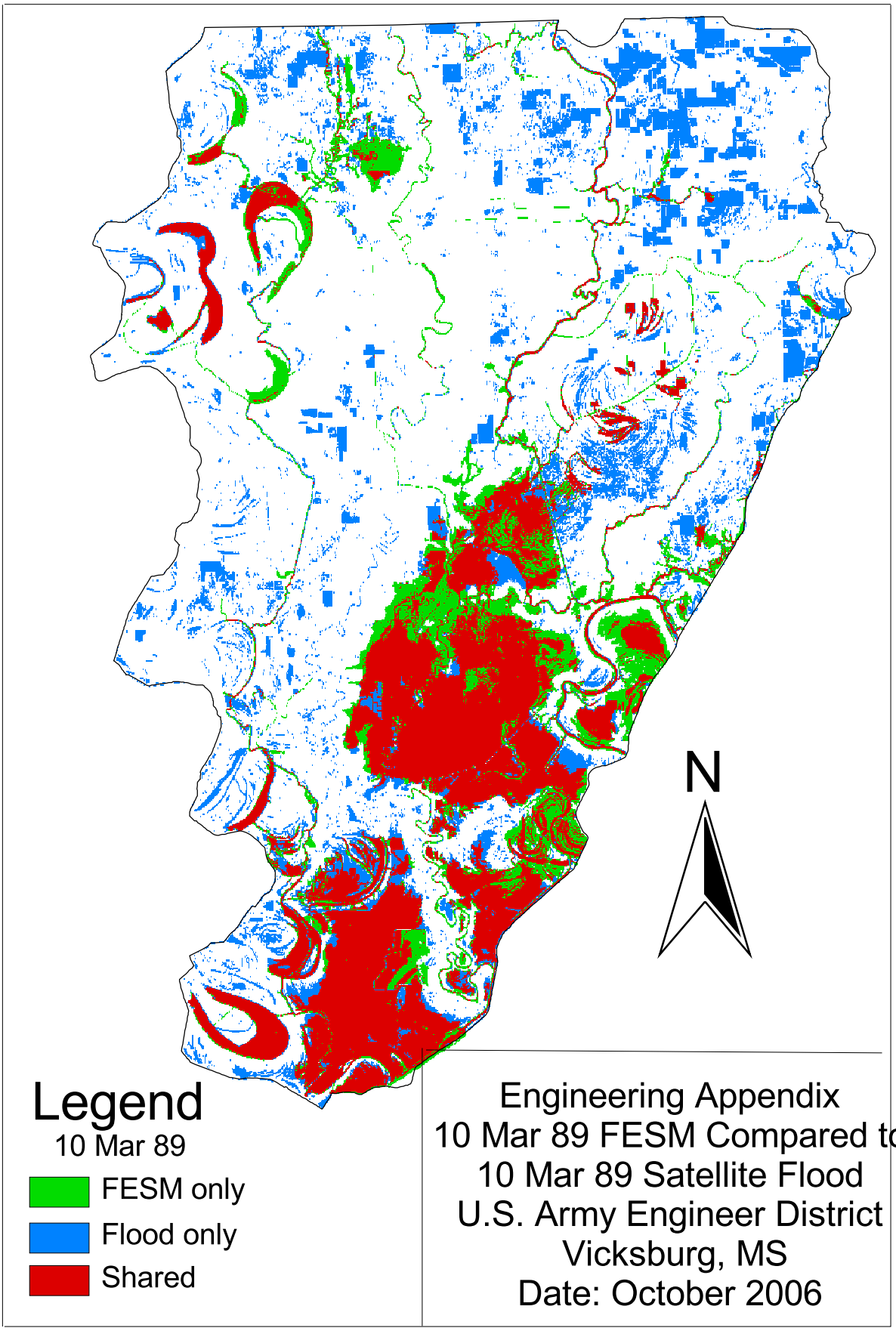
PLATE 6-13

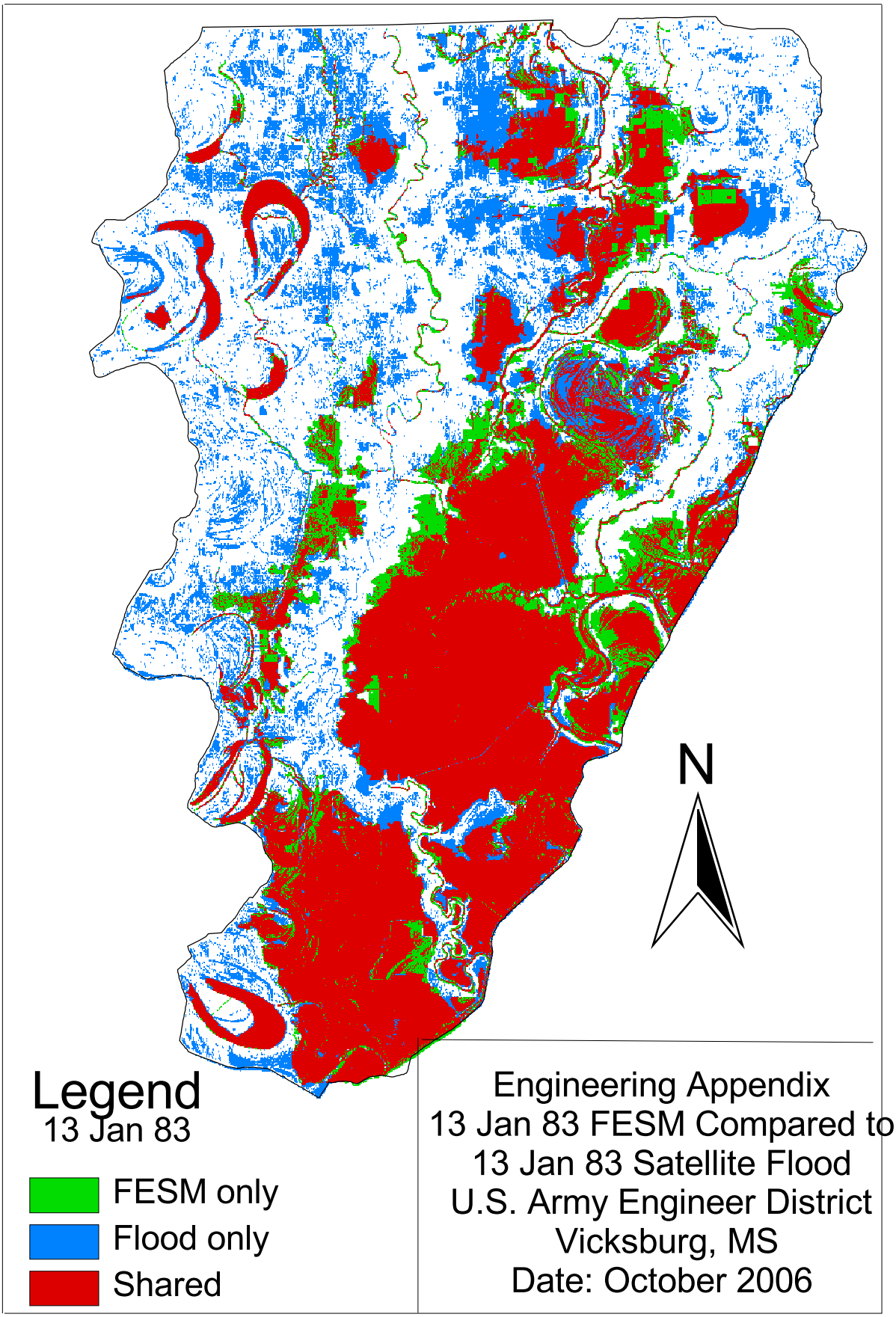


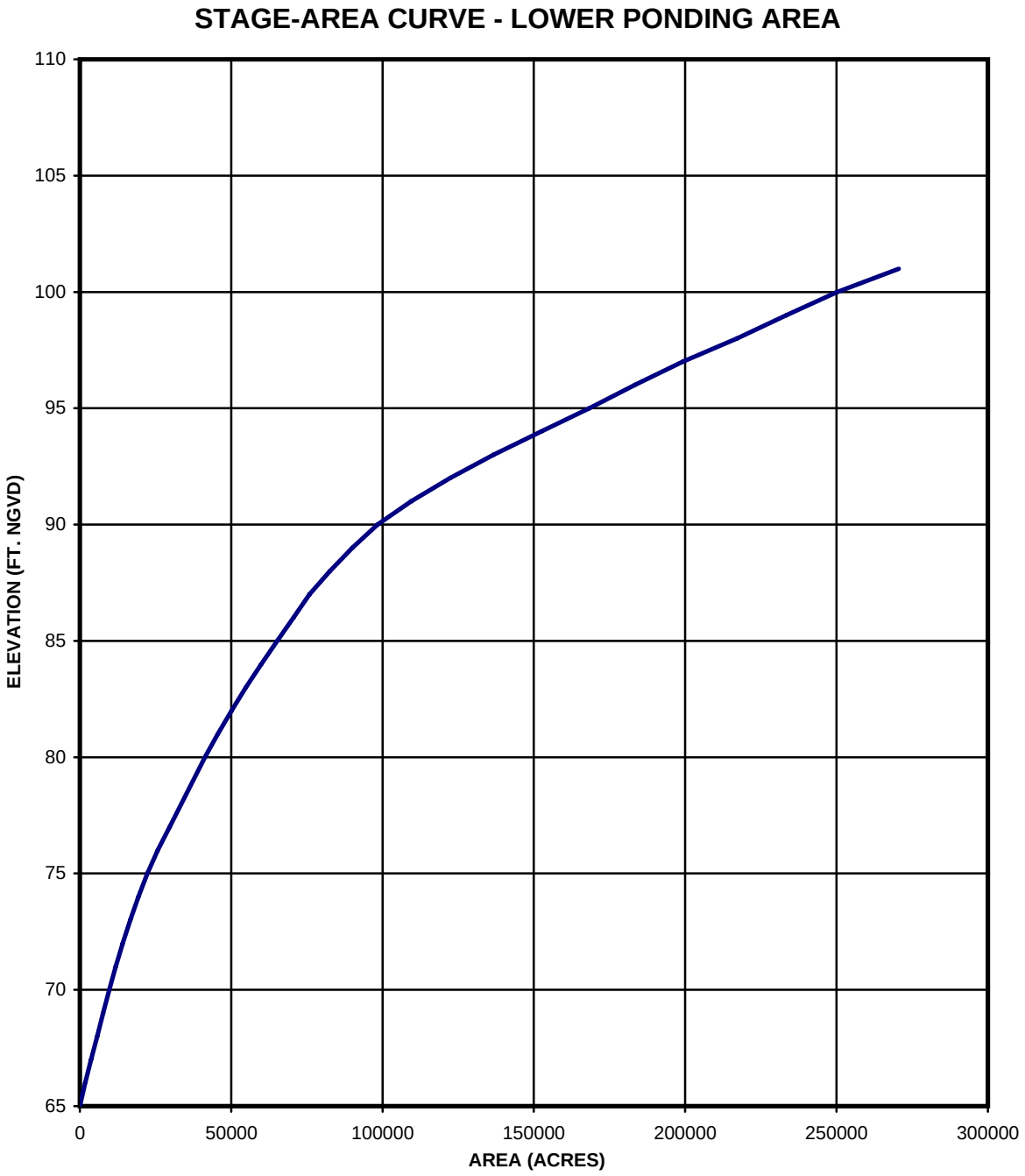
Engineering Appendix
Added Main Channels
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006


Big Sunflower
Little Sunflower
N
Steele Bayou
Connecting Channel
Legend
Backwater Project Area
10 Mar 89
Contiguous Channels
Main Channels
Sidechannels
Elevation - Feet
49-55
55-60
60-65
65-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-115
115-120
120-125
125-130
103-135
135-140
140-145
145-150
Engineering Appendix
Channels Contiguous
to Flooding
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006


N
Legend
21 Mar 87
FESM only
Flood only
Shared
Engineering Appendix
21 Mar 87 FESM Compared to
21 Mar 87 Satellite Flood
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006


N
Legend
10 Mar 89
FESM only
Flood only
Shared
Engineering Appendix
10 Mar 89 FESM Compared to
10 Mar 89 Satellite Flood
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006

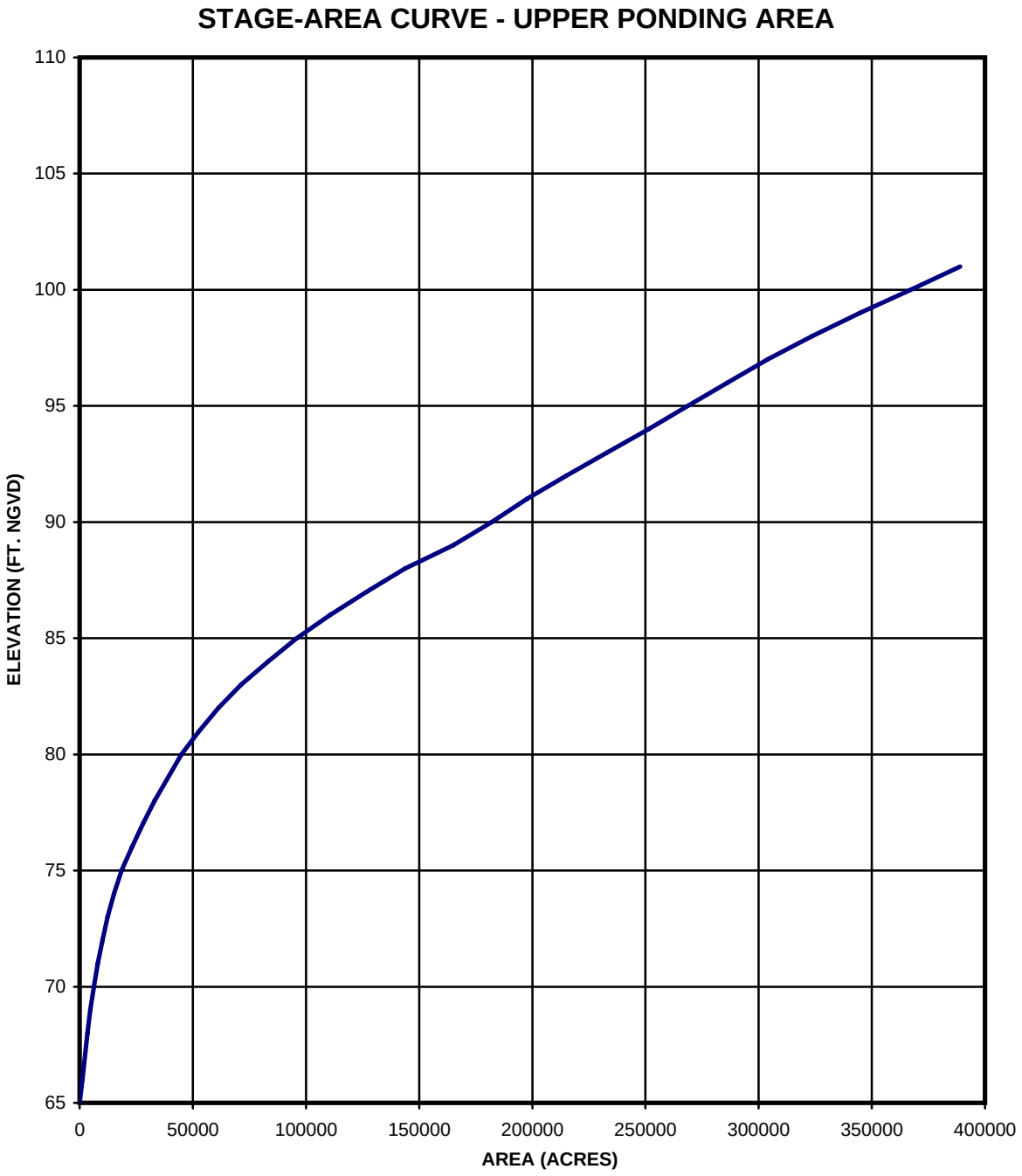

N
Legend
13 Jan 83
FESM only
Flood only
Shared
Engineering Appendix
13 Jan 83 FESM Compared to
13 Jan 83 Satellite Flood
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006



ENGINEERING APPENDIX

STAGE-AREA CURVE
LOWER PONDING AREA

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006



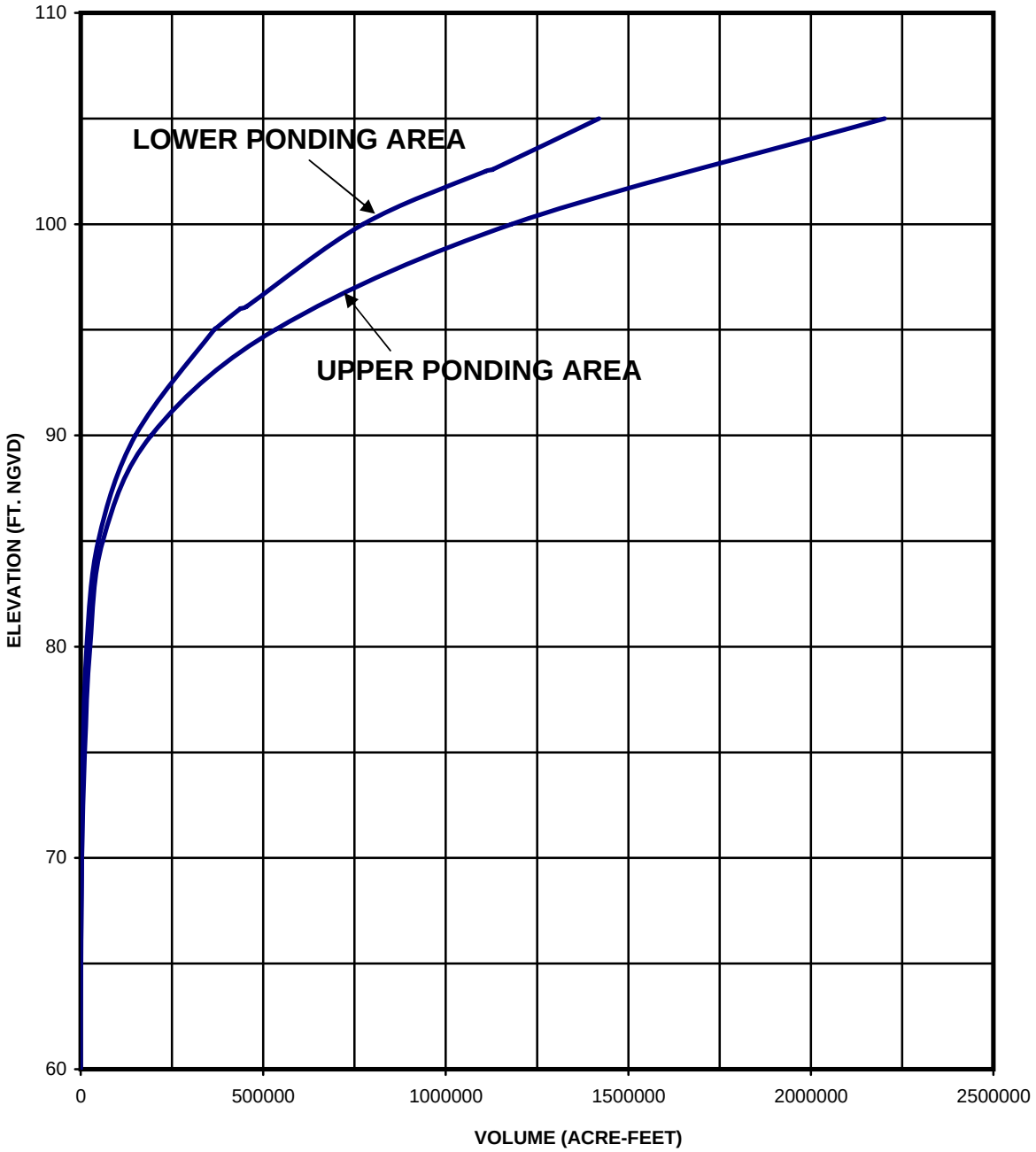
ENGINEERING APPENDIX

STAGE-AREA CURVE

UPPER PONDING AREA

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

STAGE-STORAGE CURVES

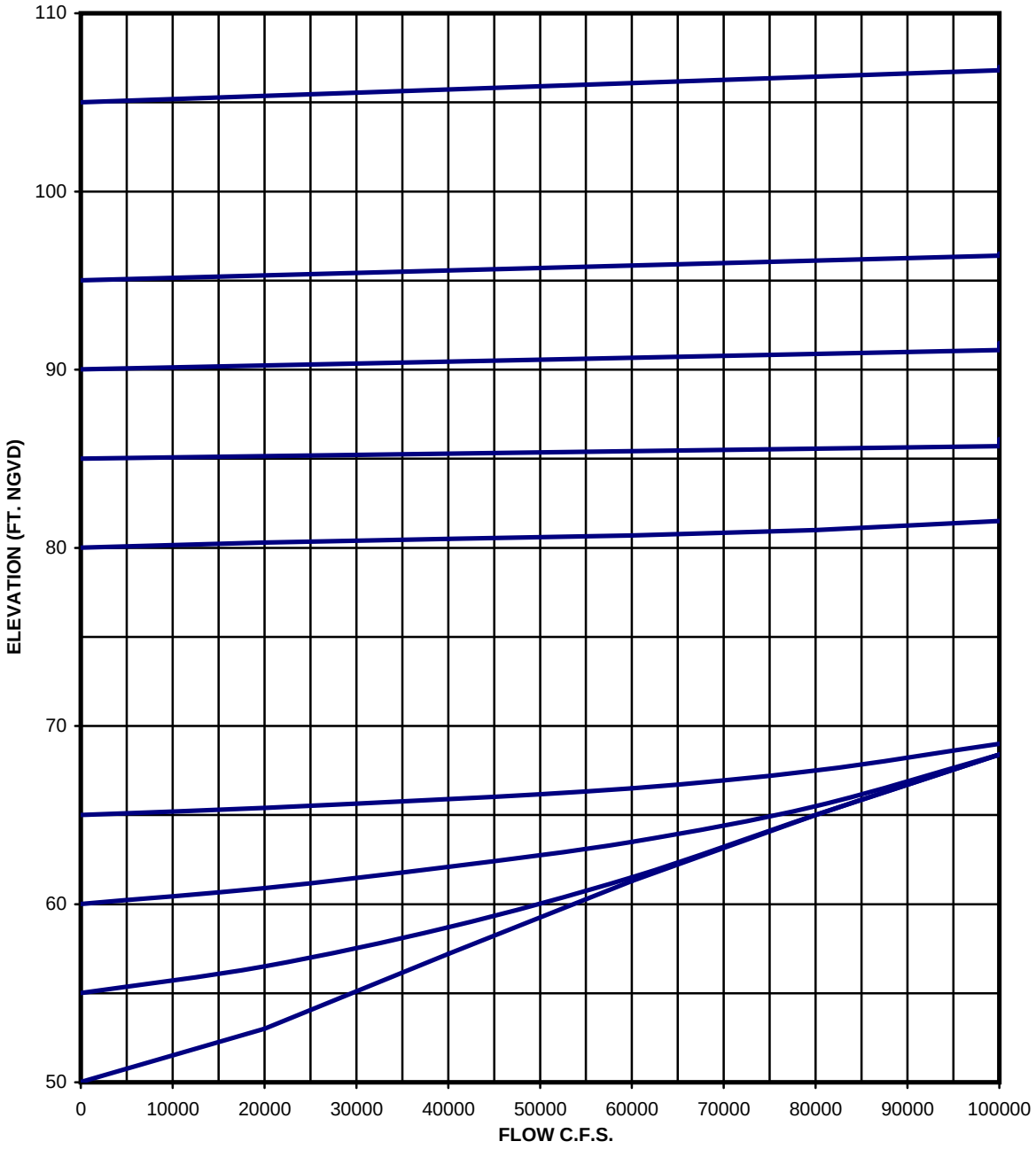


ENGINEERING APPENDIX

STAGE-STORAGE CURVES

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

STEELE BAYOU STRUCTURE
TAILWATER RATING CURVE

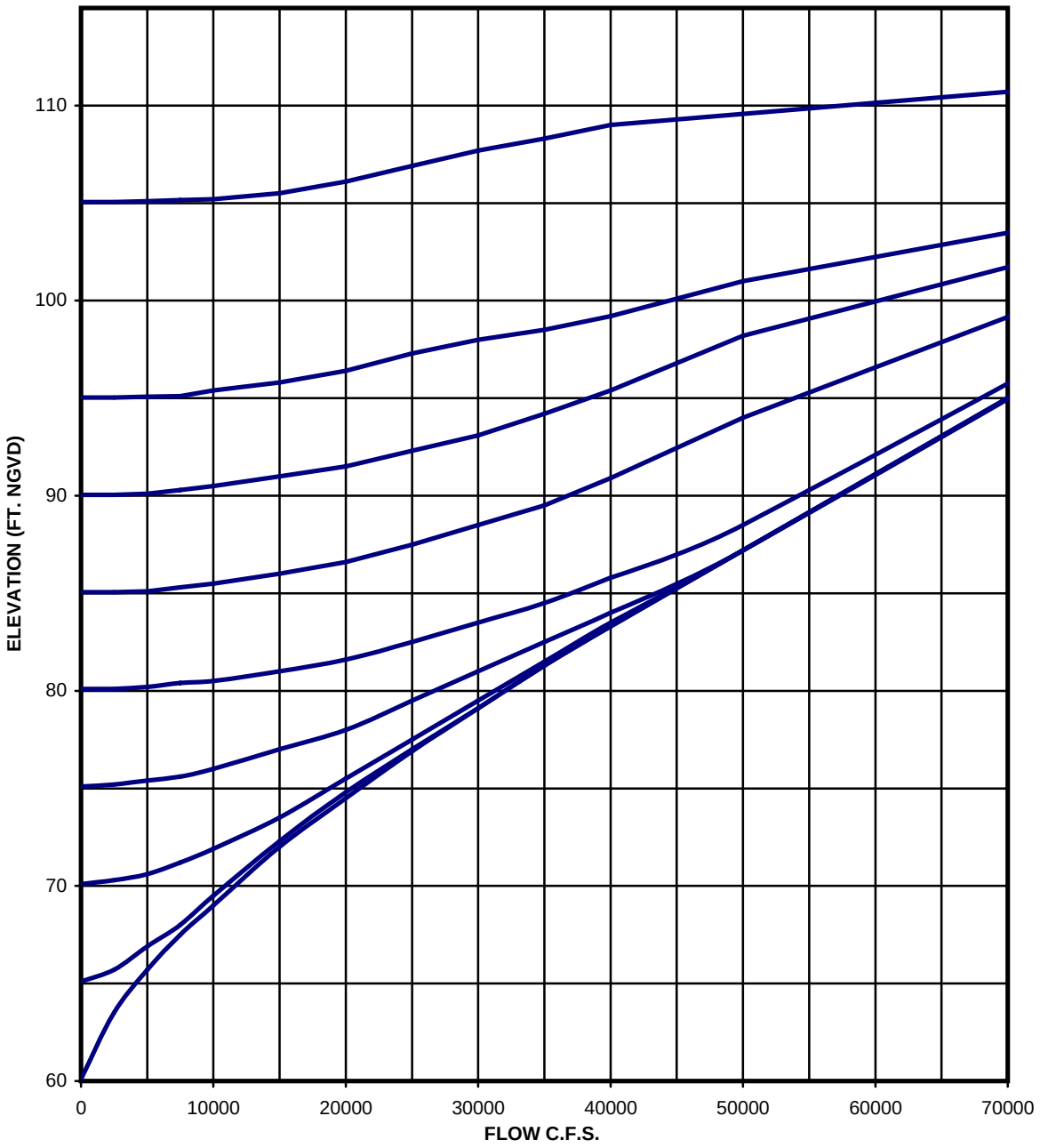


ENGINEERING APPENDIX

STEELE BAYOU STRUCTURE TAILWATER RATING CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

STEELE BAYOU STRUCTURE
FLOODGATE RATING CURVE

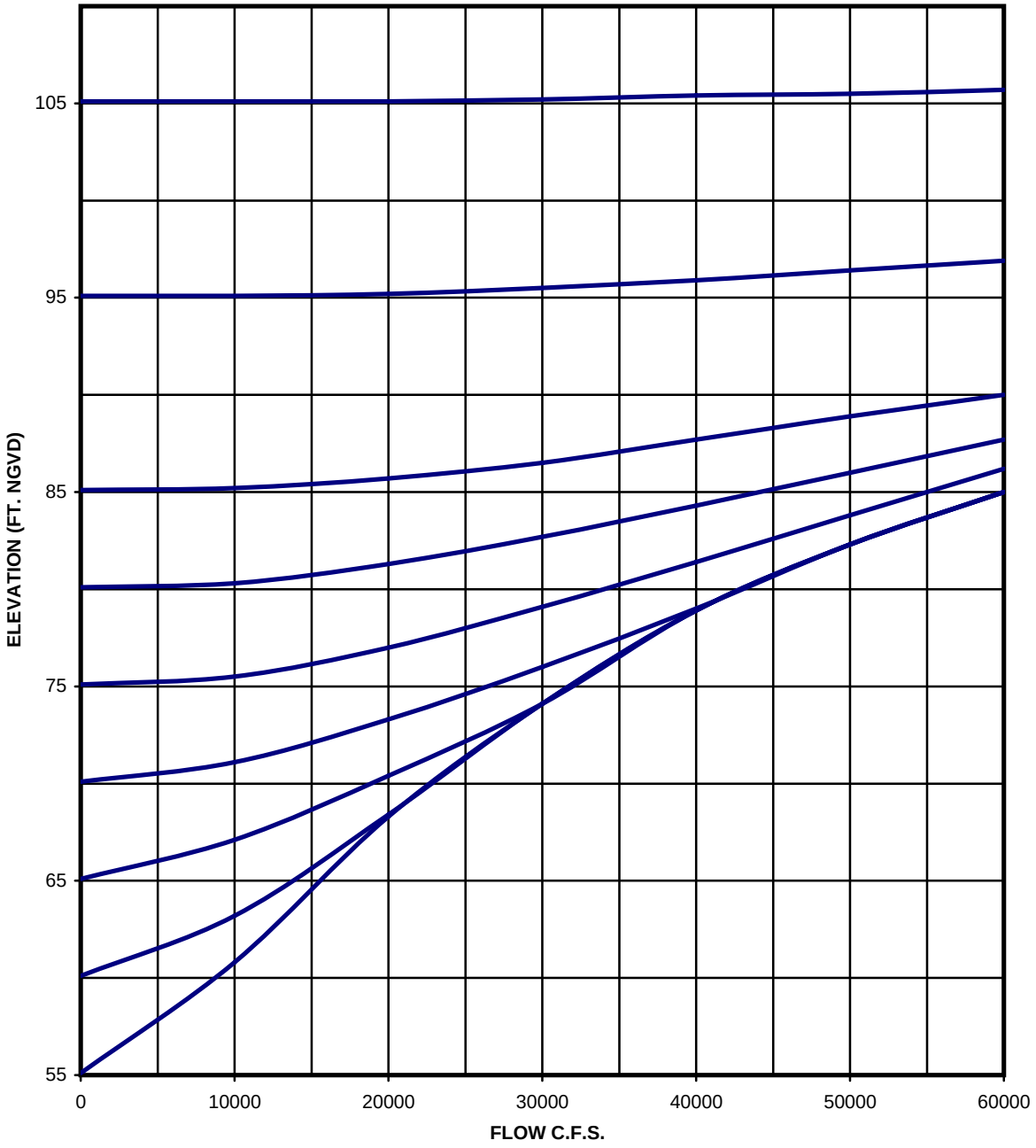


ENGINEERING APPENDIX

STEELE BAYOU STRUCTURE FLOODGATE RATING CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

LITTLE SUNFLOWER STRUCTURE
TAILWATER RATING CURVE

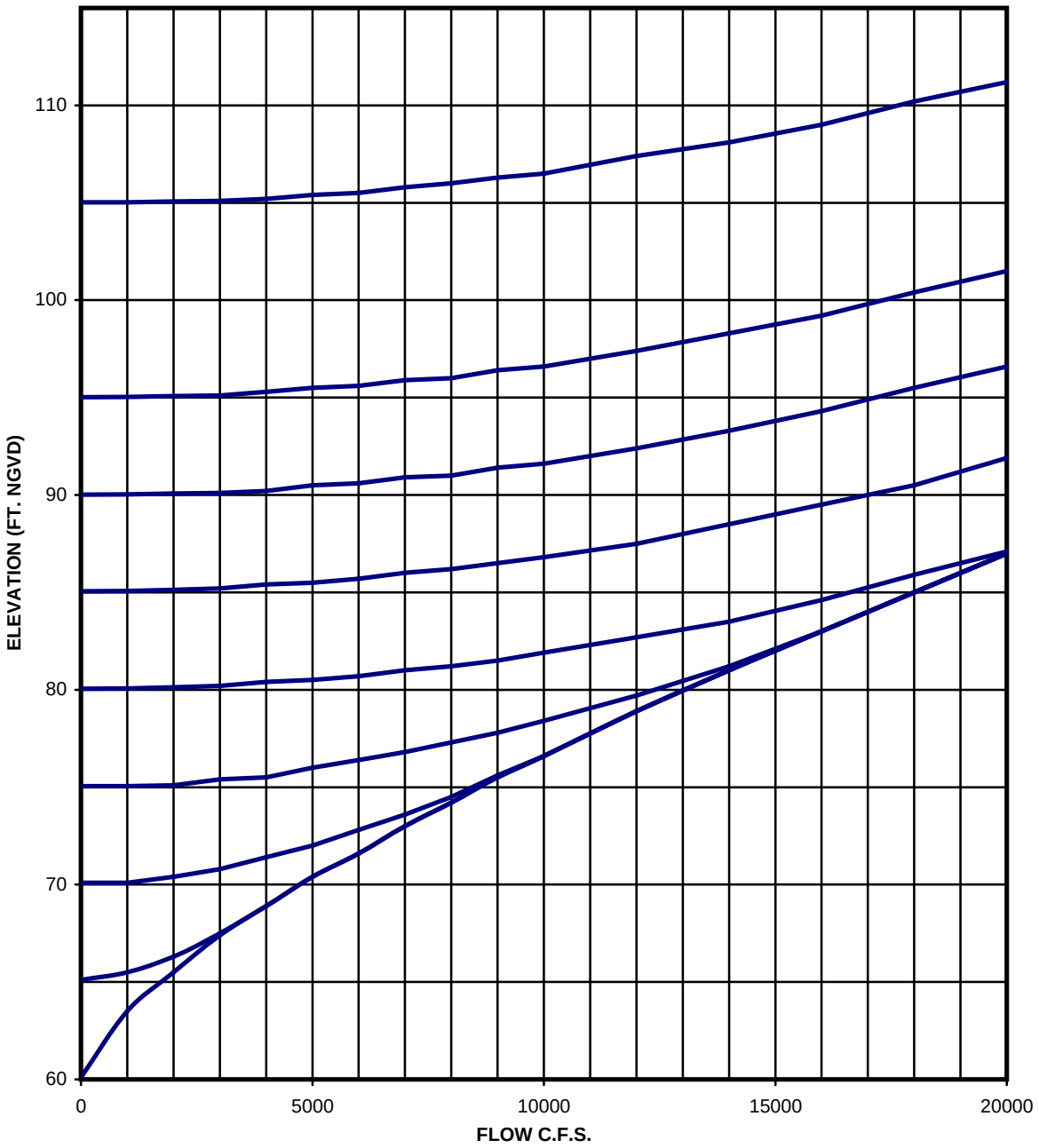


ENGINEERING APPENDIX

LITTLE SUNFLOWER STRUCTURE TAILWATER RATING CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

LITTLE SUNFLOWER STRUCTURE
FLOODGATE RATING CURVE

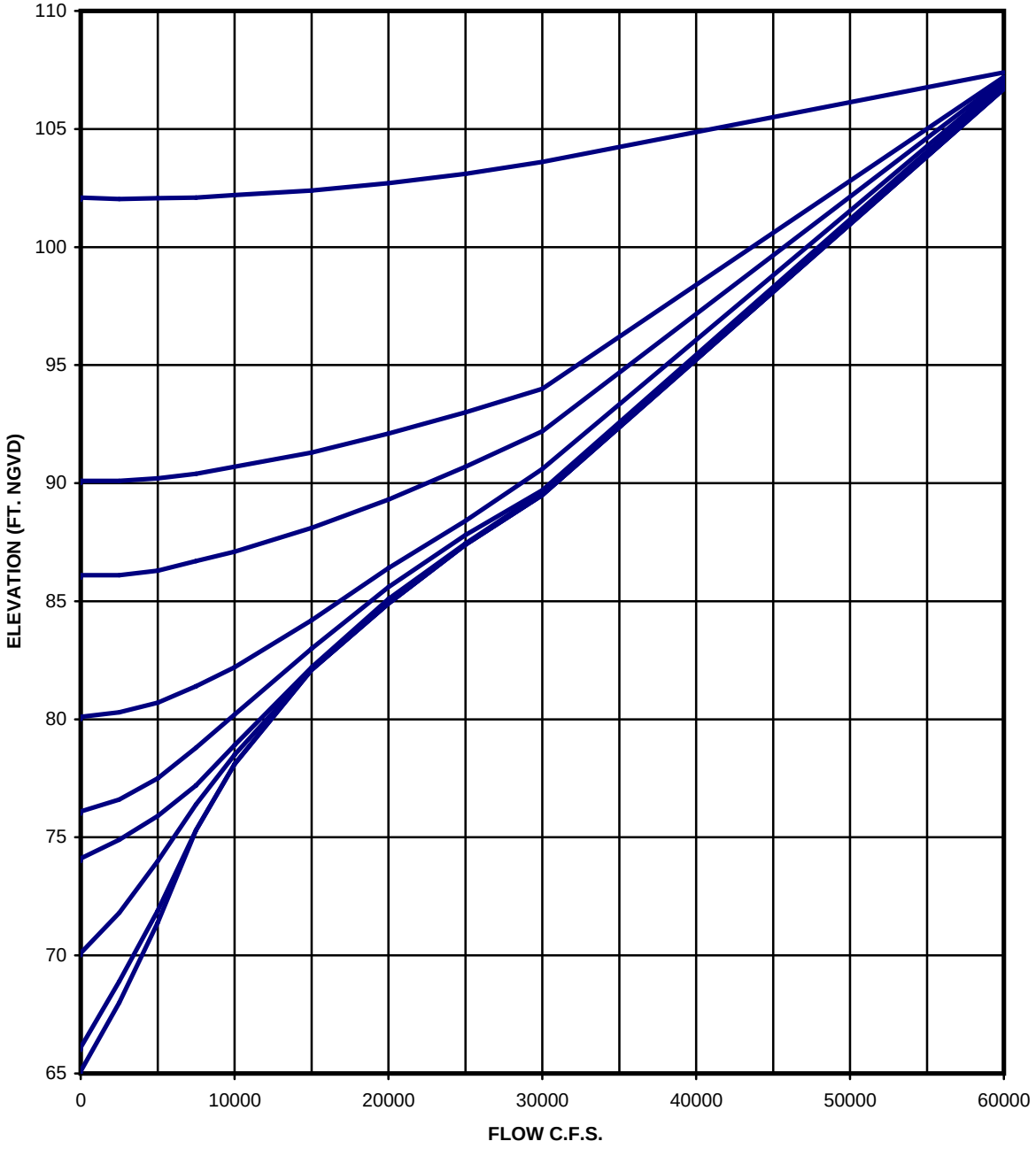


ENGINEERING APPENDIX

LITTLE SUNFLOWER STRUCTURE FLOODGATE RATING CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

CONNECTING CHANNEL RATING CURVE

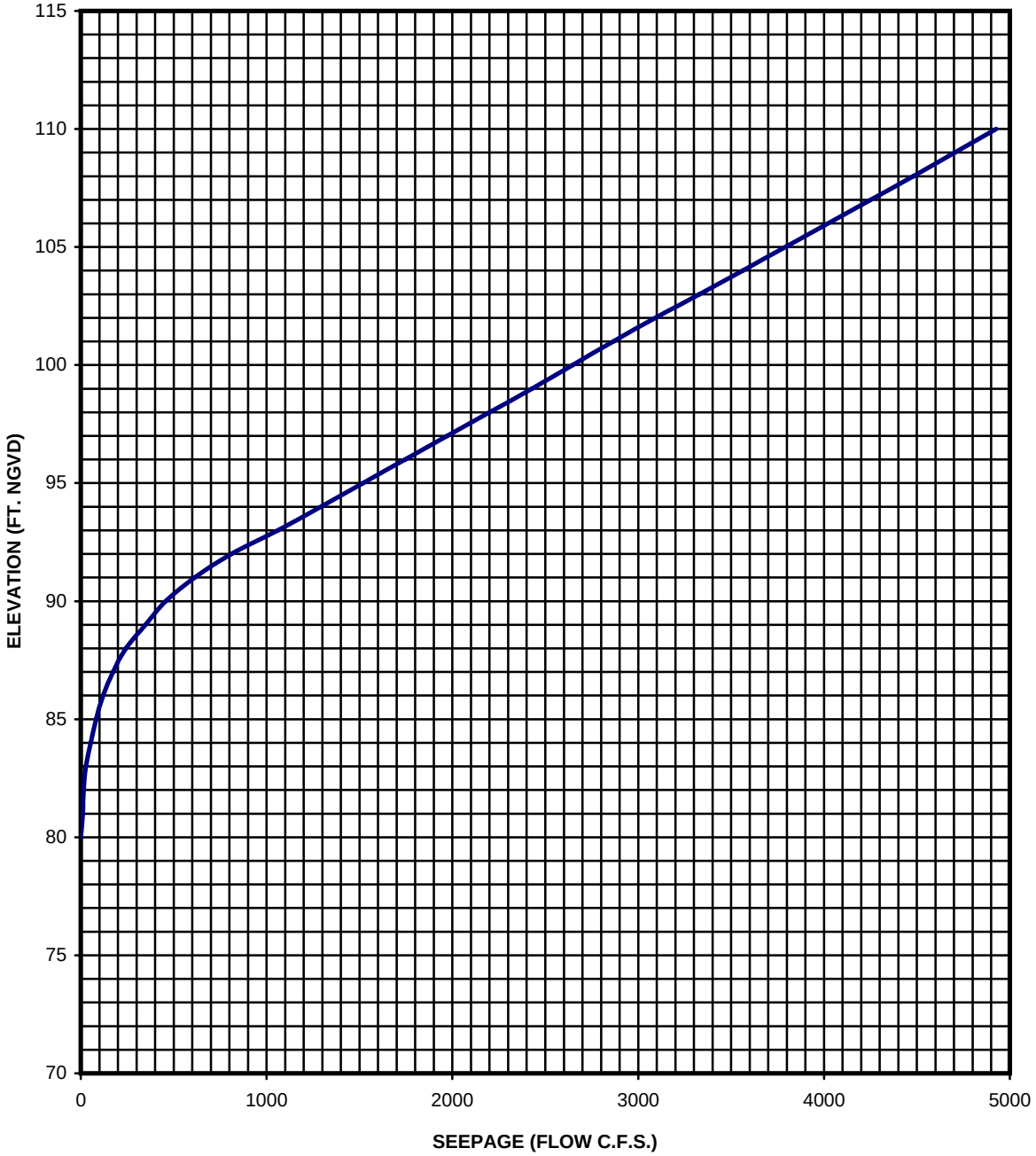


ENGINEERING APPENDIX

CONNECTING CHANNEL RATING CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

SEEPAGE CURVE

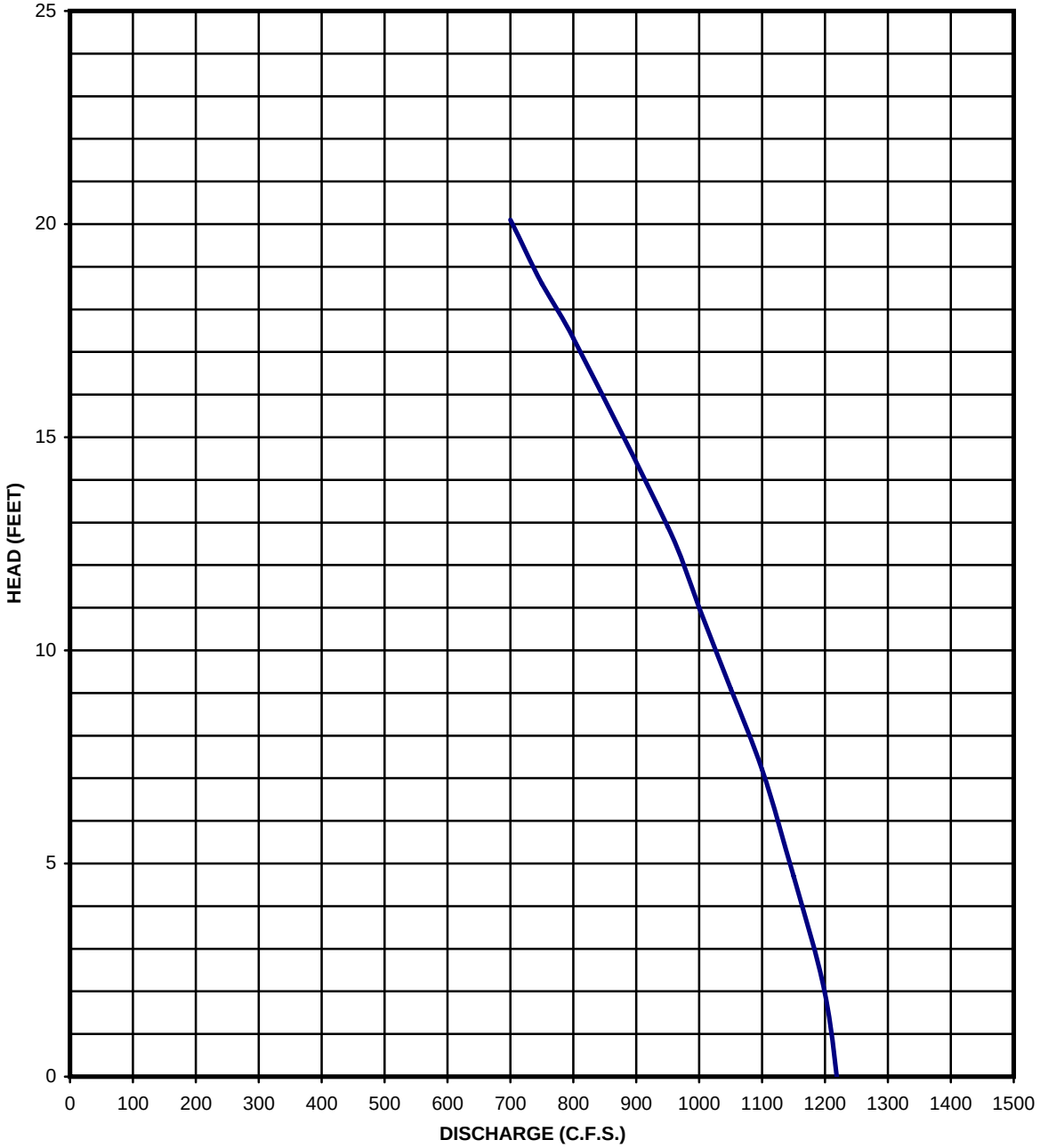


ENGINEERING APPENDIX

SEEPAGE CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

HEAD-DISCHARGE PUMP CURVE

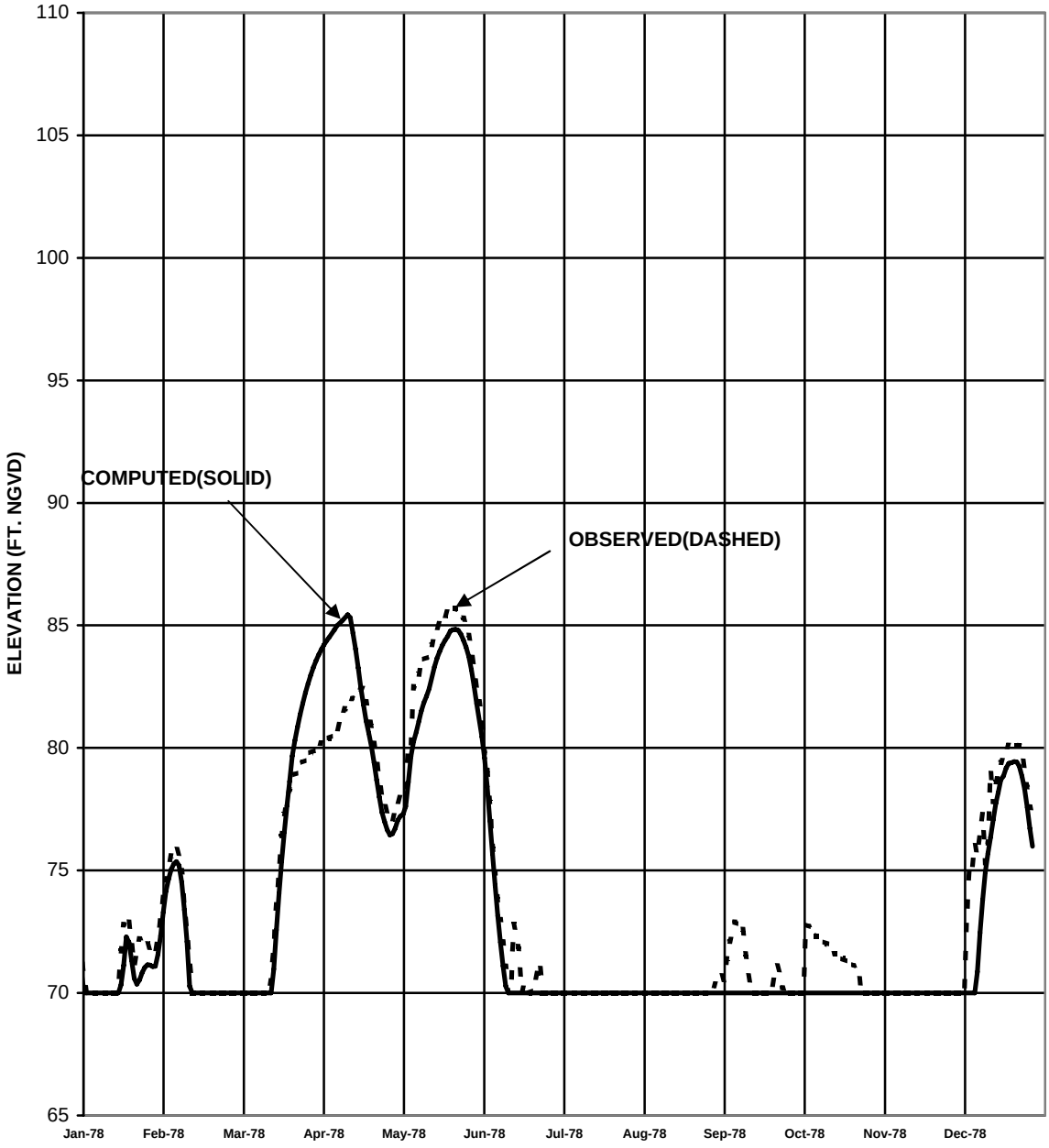


ENGINEERING APPENDIX

HEAD-DISCHARGE PUMP CURVE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

1978 OBSERVED VS. 1978 COMPUTED STAGE HYDROGRAPH



ENGINEERING APPENDIX

1978 OBSERVED HYDROGRAPH

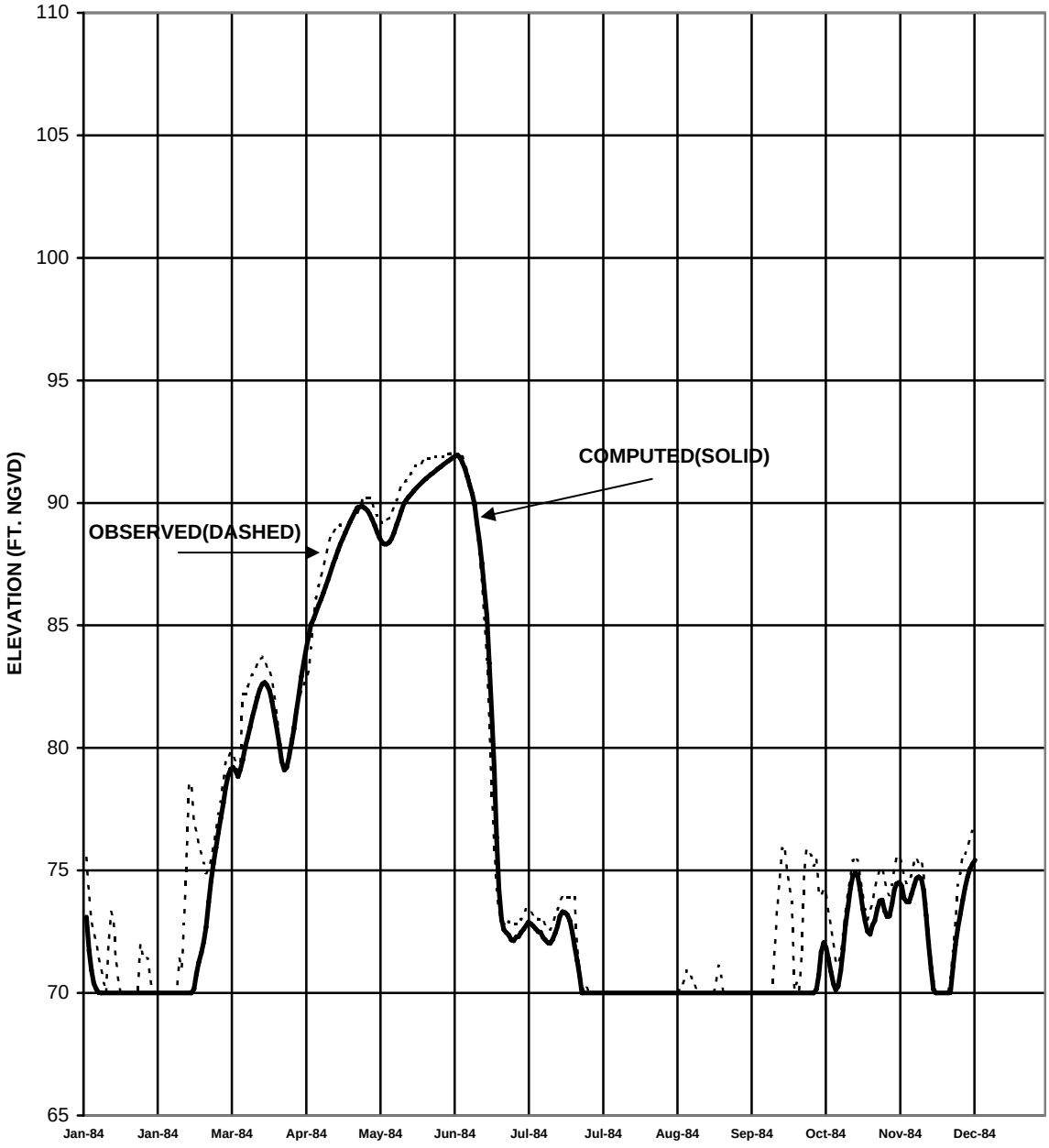
VS.

1978 COMPUTED HYDROGRAPH

STEELE BAYOU STRUCTURE GAGE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

1984 OBSERVED VS. 1984 COMPUTED STAGE HYDROGRAPH



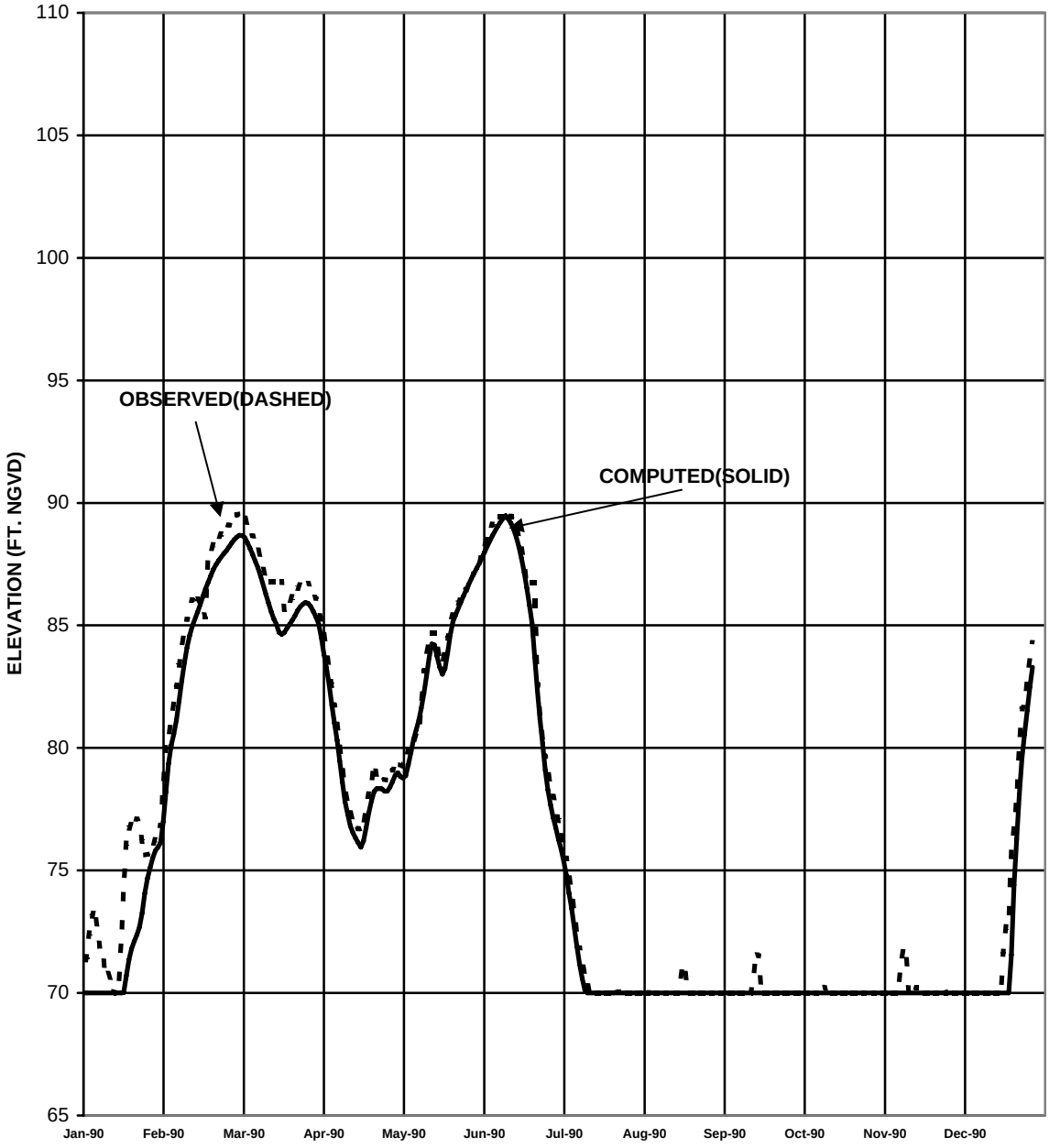
ENGINEERING APPENDIX

1984 OBSERVED HYDROGRAPH
VS.
1984 COMPUTED HYDROGRAPH

STEELE BAYOU STRUCTURE GAGE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

1990 OBSERVED VS. 1990 COMPUTED STAGE HYDROGRAPH



ENGINEERING APPENDIX

1990 OBSERVED HYDROGRAPH

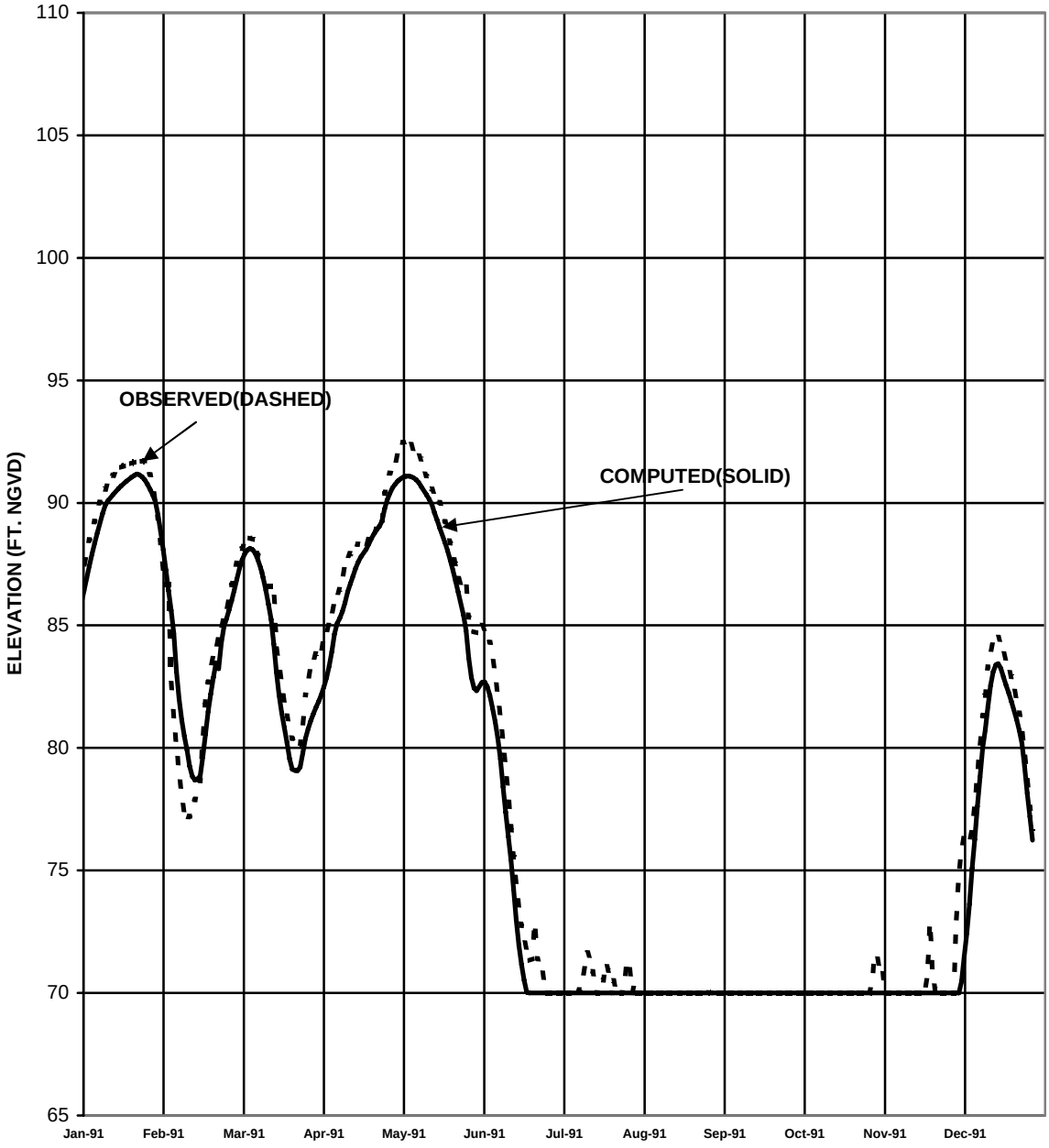
VS.

1990 COMPUTED HYDROGRAPH

STEELE BAYOU STRUCTURE GAGE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

1991 OBSERVED VS. 1991 COMPUTED STAGE HYDROGRAPH



ENGINEERING APPENDIX

1991 OBSERVED HYDROGRAPH

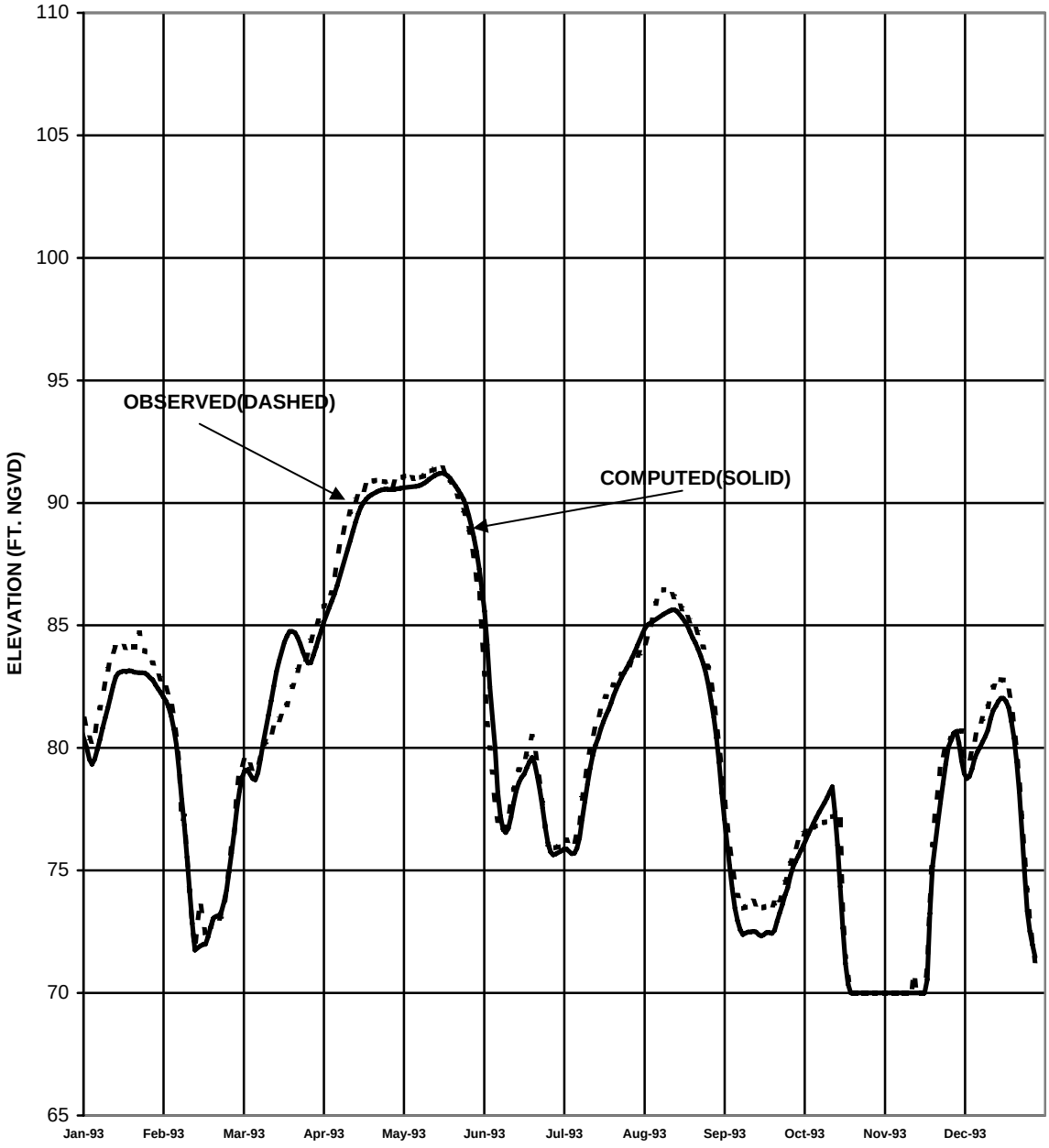
VS.

1991 COMPUTED HYDROGRAPH

STEELE BAYOU STRUCTURE GAGE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

1993 OBSERVED VS. 1993 COMPUTED STAGE HYDROGRAPH



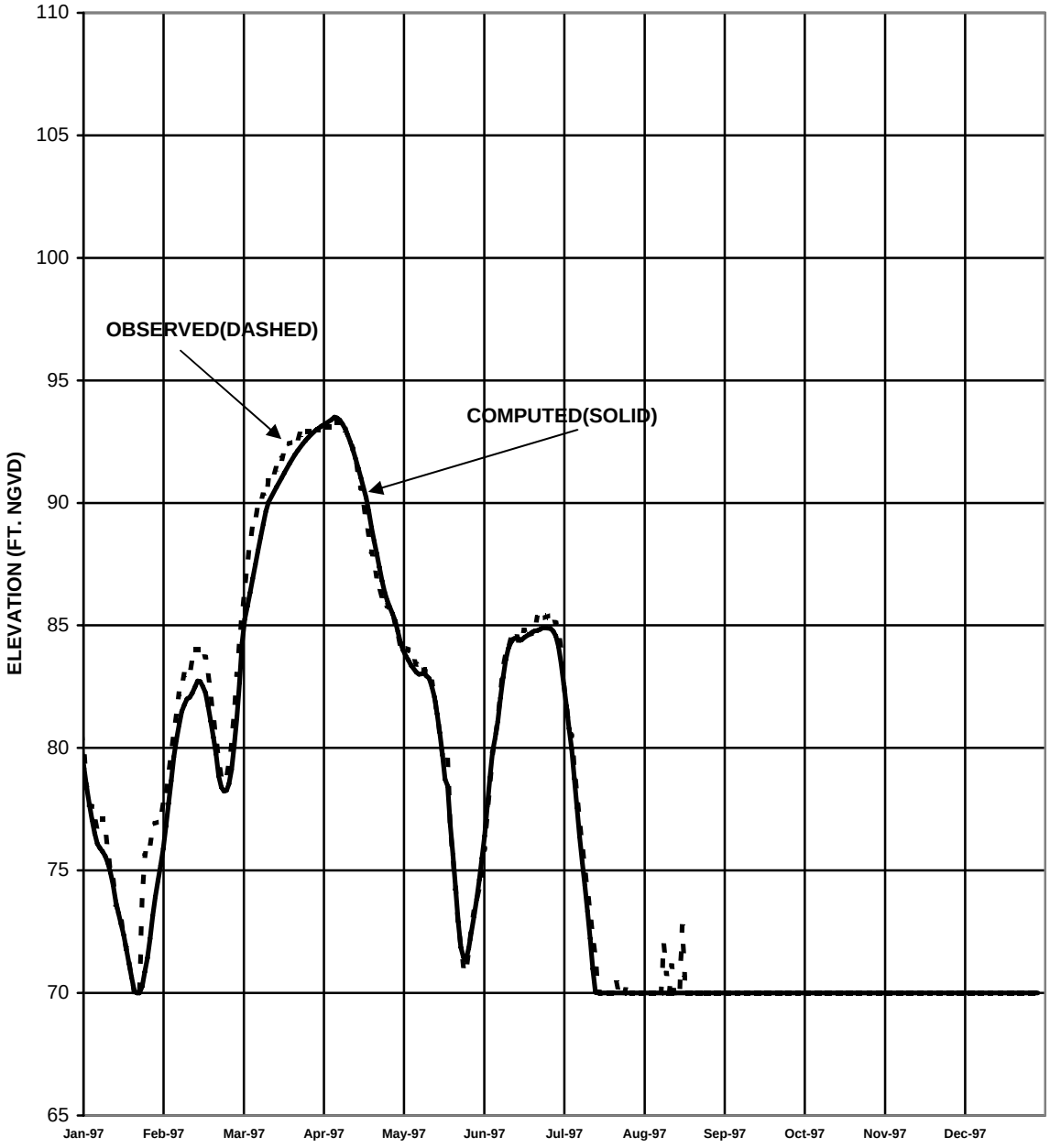
ENGINEERING APPENDIX

1993 OBSERVED HYDROGRAPH
VS.
1993 COMPUTED HYDROGRAPH

STEELE BAYOU STRUCTURE GAGE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

1997 OBSERVED VS. 1997 COMPUTED STAGE HYDROGRAPH



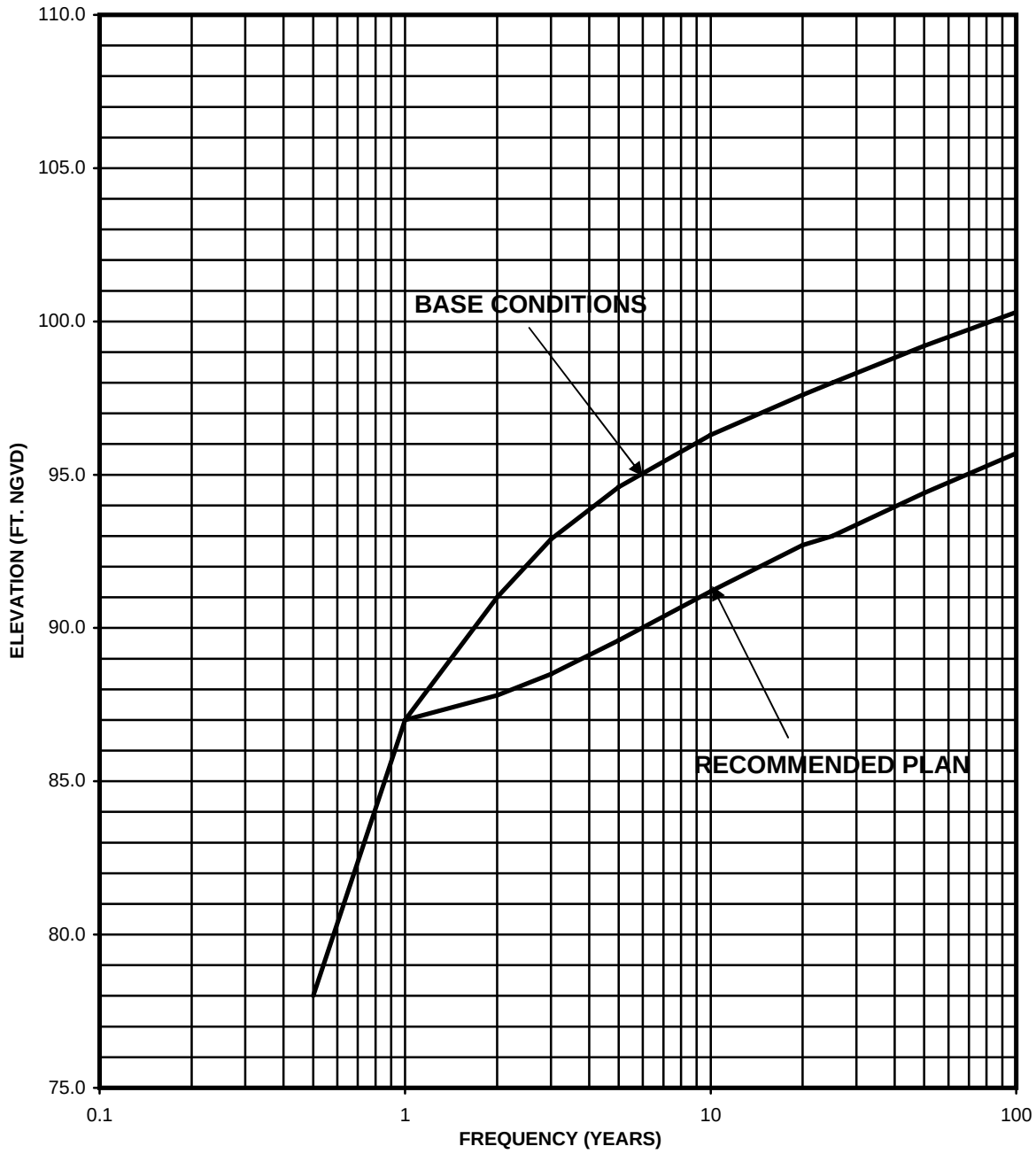
ENGINEERING APPENDIX

1997 OBSERVED HYDROGRAPH
VS.
1997 COMPUTED HYDROGRAPH

STEELE BAYOU STRUCTURE GAGE

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

STAGE FREQUENCY CURVE - LOWER PONDING AREA

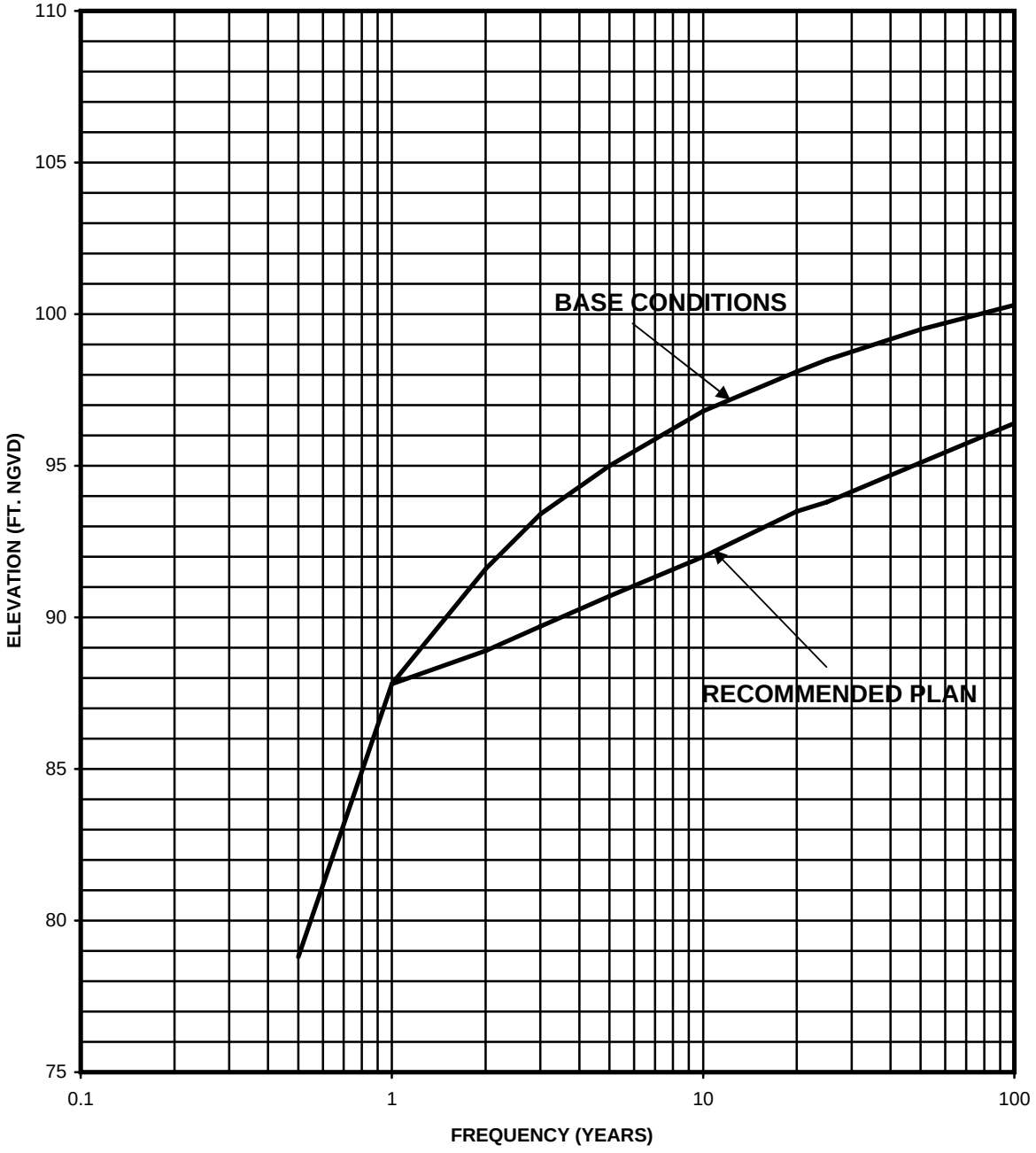


ENGINEERING APPENDIX

STAGE-FREQUENCY CURVE
LOWER PONDING AREA

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

STAGE FREQUENCY CURVE - UPPER PONDING AREA



ENGINEERING APPENDIX

STAGE-FREQUENCY CURVE
UPPER PONDING AREA

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

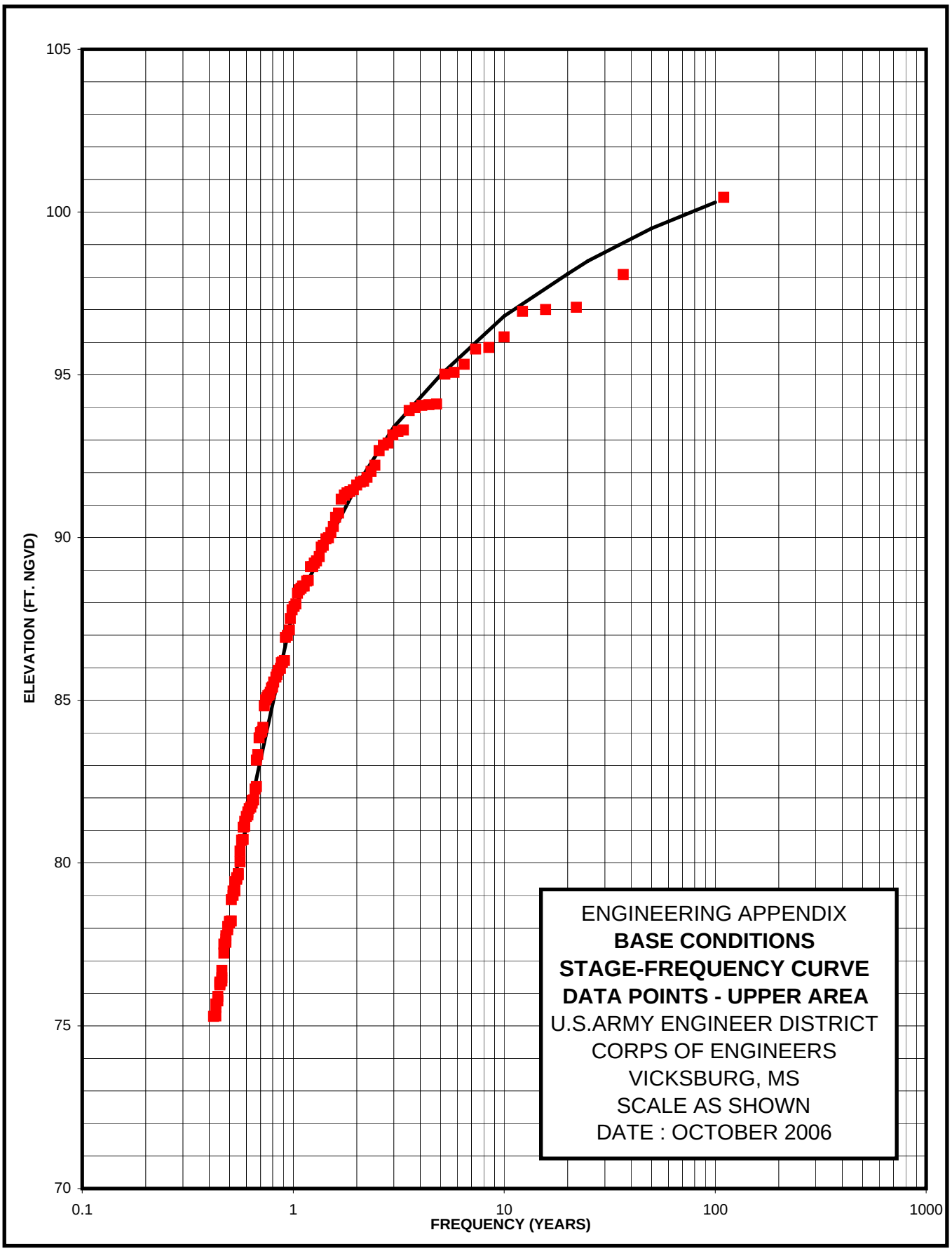
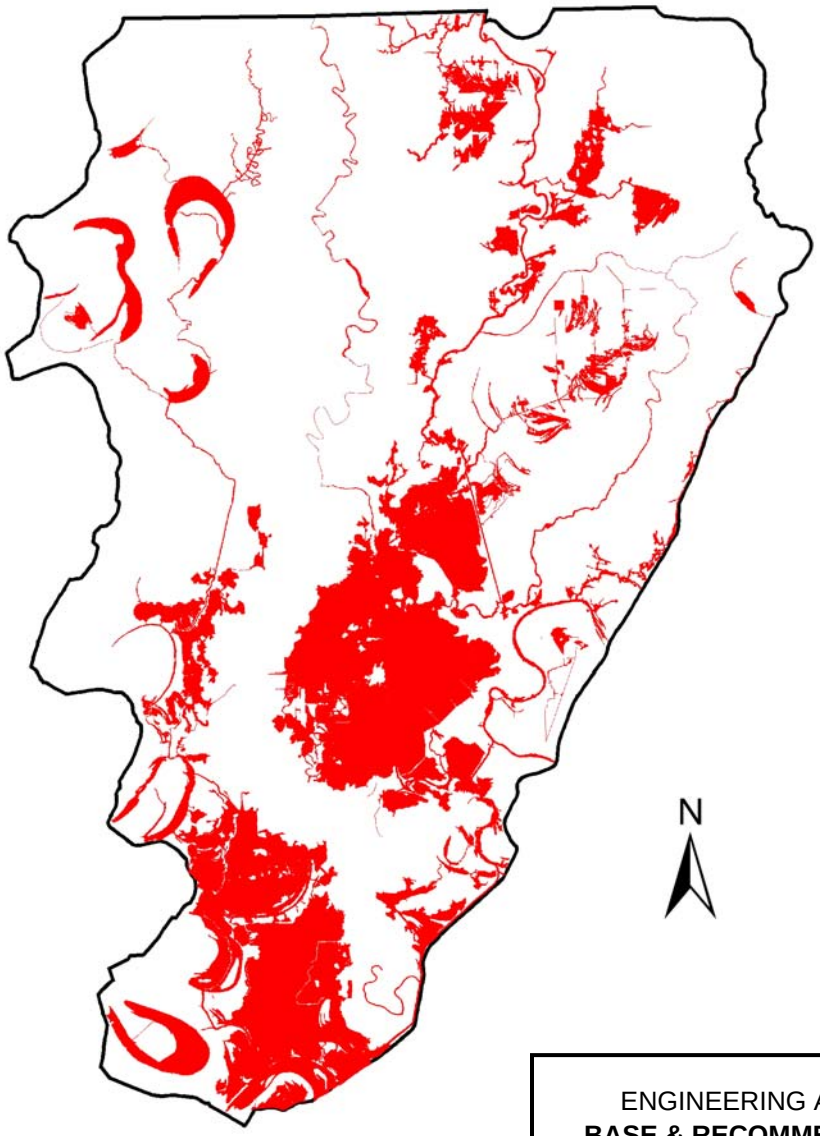

105
100
95
90
85
80
75
70
ELEVATION (FT. NGVD)
0.1
1
10
100
1000
FREQUENCY (YEARS)
ENGINEERING APPENDIX
BASE CONDITIONS
STAGE-FREQUENCY CURVE
DATA POINTS - UPPER AREA
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

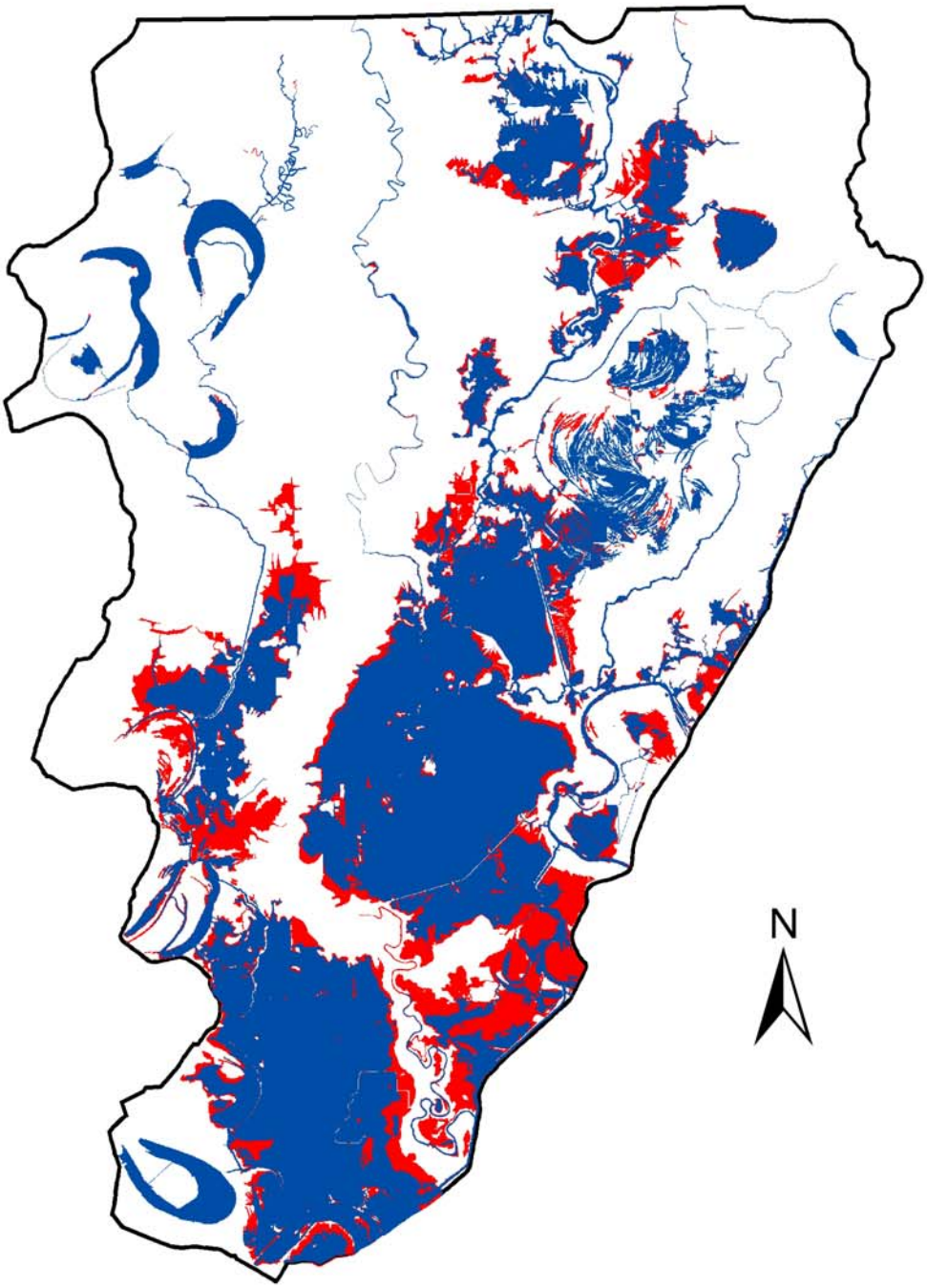
PLATE 6-36A



Legend

BASE & REC. PLAN 1-YEAR (216,200 ACRES)

ENGINEERING APPENDIX
BASE & RECOMMENDED PLAN
1-YEAR FREQUENCY FLOOD
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

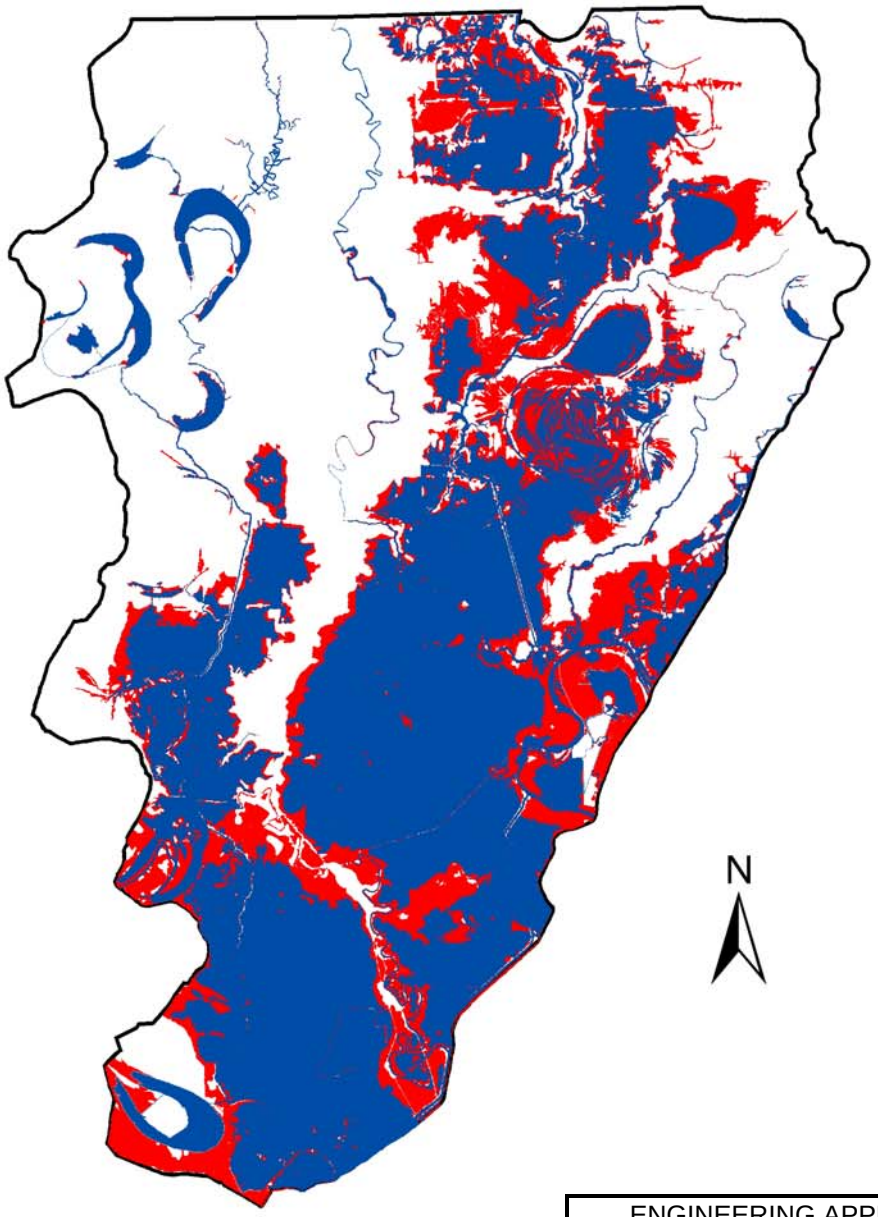


Legend

PLAN 5 2-YEAR (244,000 ACRES)

BASE COND 2-YEAR (317,500 ACRES)

ENGINEERING APPENDIX
BASE & RECOMMENDED PLAN
2-YEAR FREQUENCY FLOOD
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

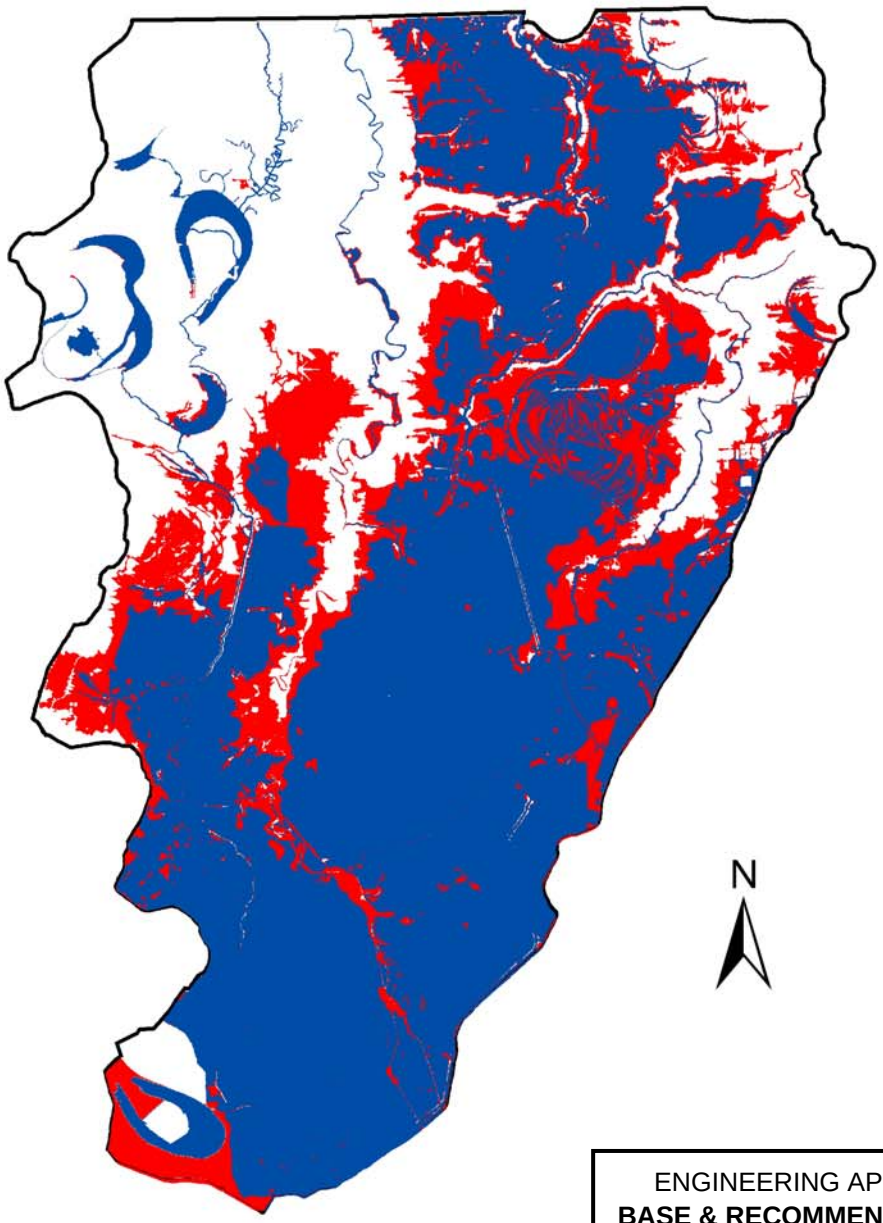


Legend

PLAN 5 10-YEAR (327,100 ACRES)

BASE COND 10-YEAR (488,150 ACRES)

ENGINEERING APPENDIX
BASE & RECOMMENDED PLAN
10-YEAR FREQUENCY FLOOD
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

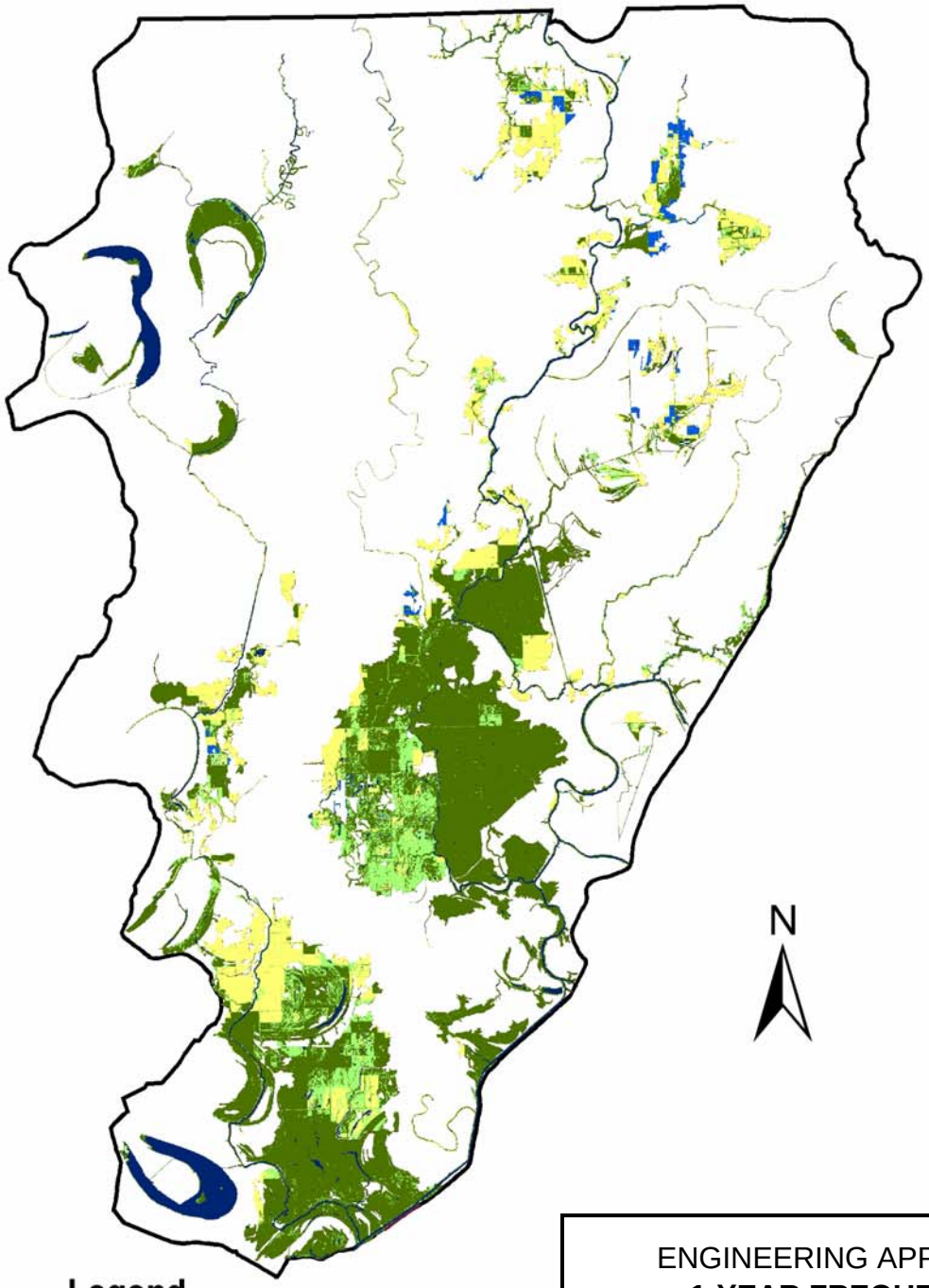


Legend

PLAN 5 100-YEAR (471,900 ACRES)

BASE COND 100-YEAR (630,000 ACRES)

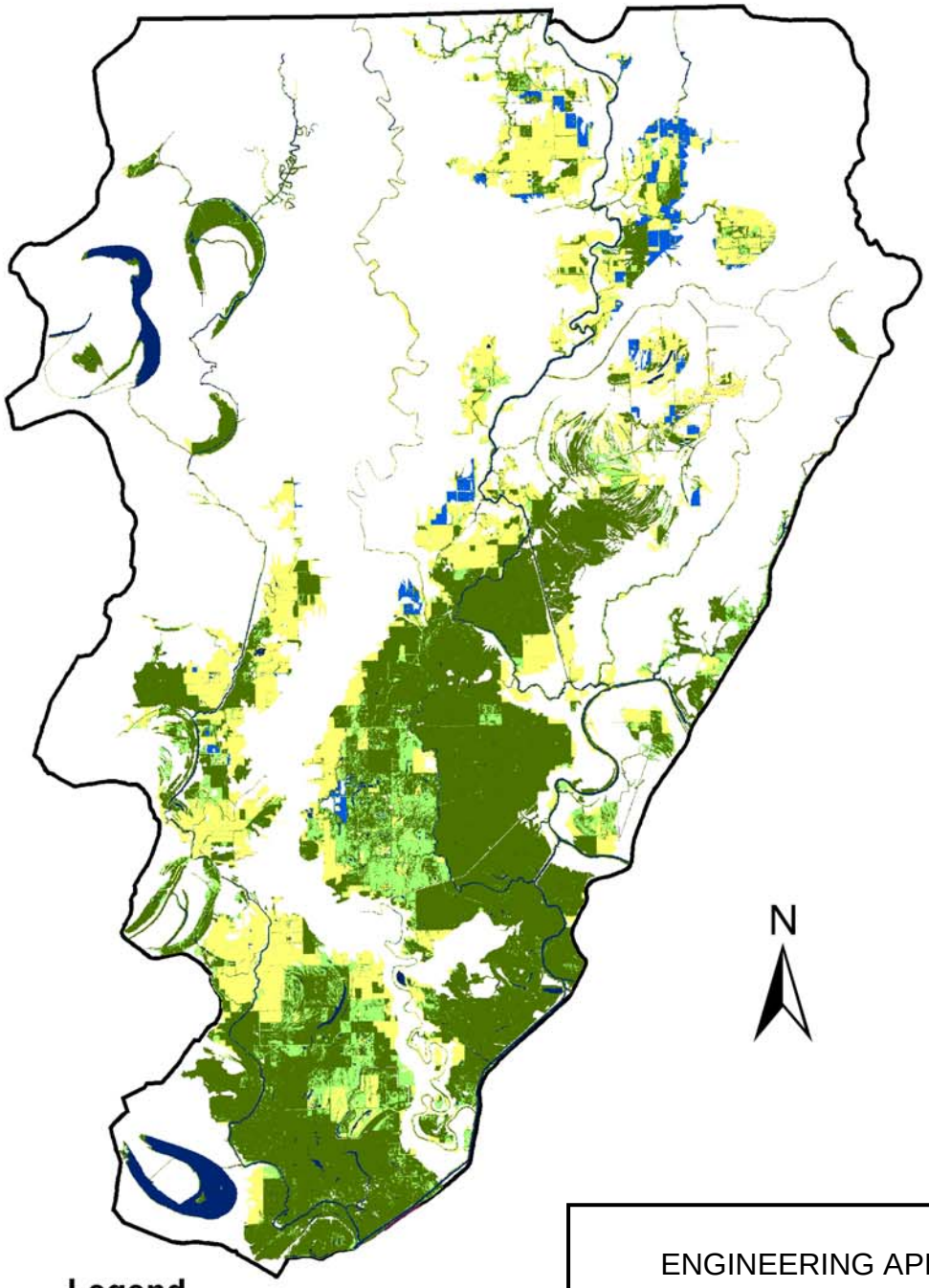
ENGINEERING APPENDIX
BASE & RECOMMENDED PLAN
100-YEAR FREQUENCY FLOOD
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006



Legend

- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

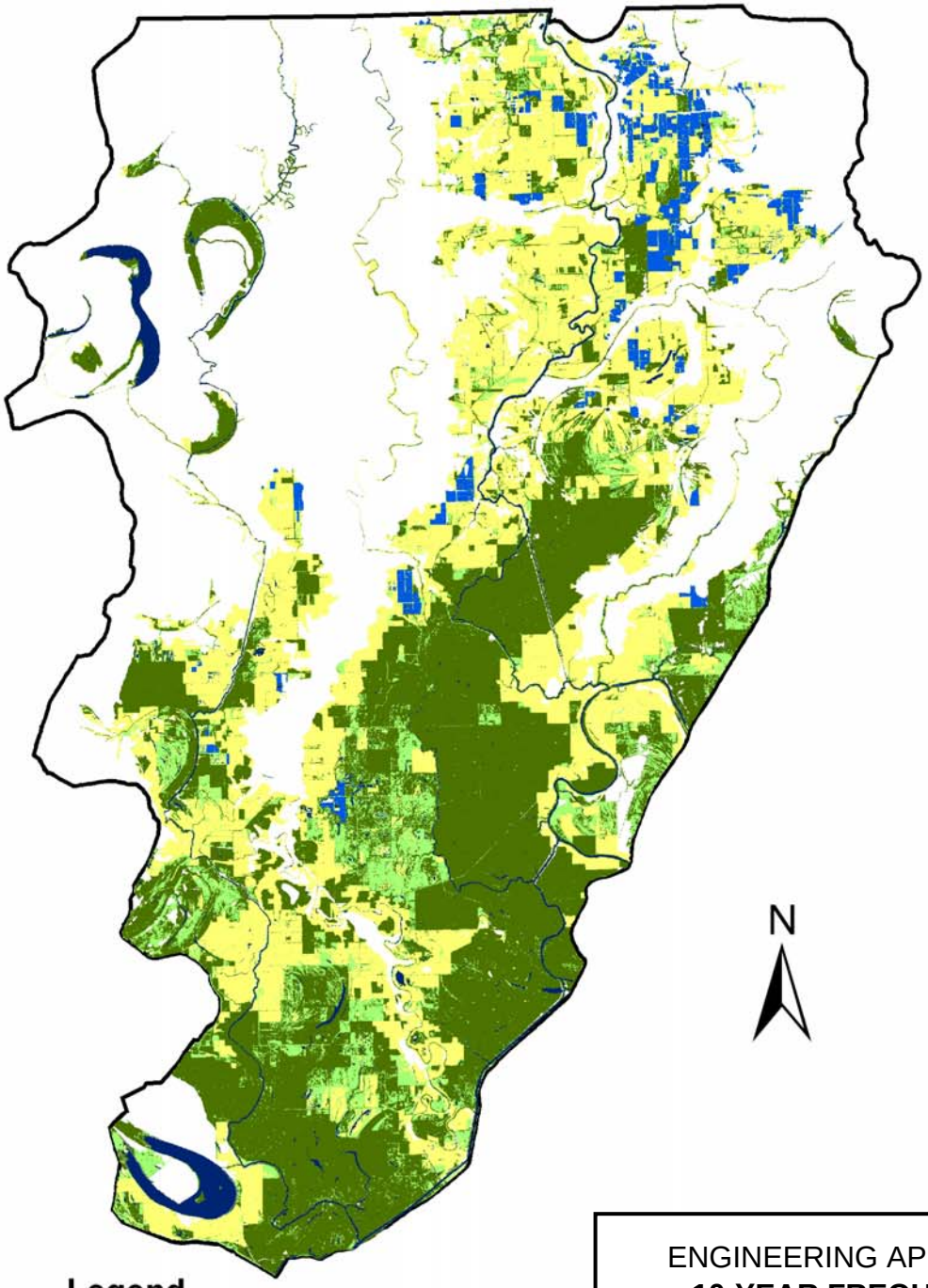
ENGINEERING APPENDIX
1-YEAR FREQUENCY
BASE CONDITIONS
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006



Legend

- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

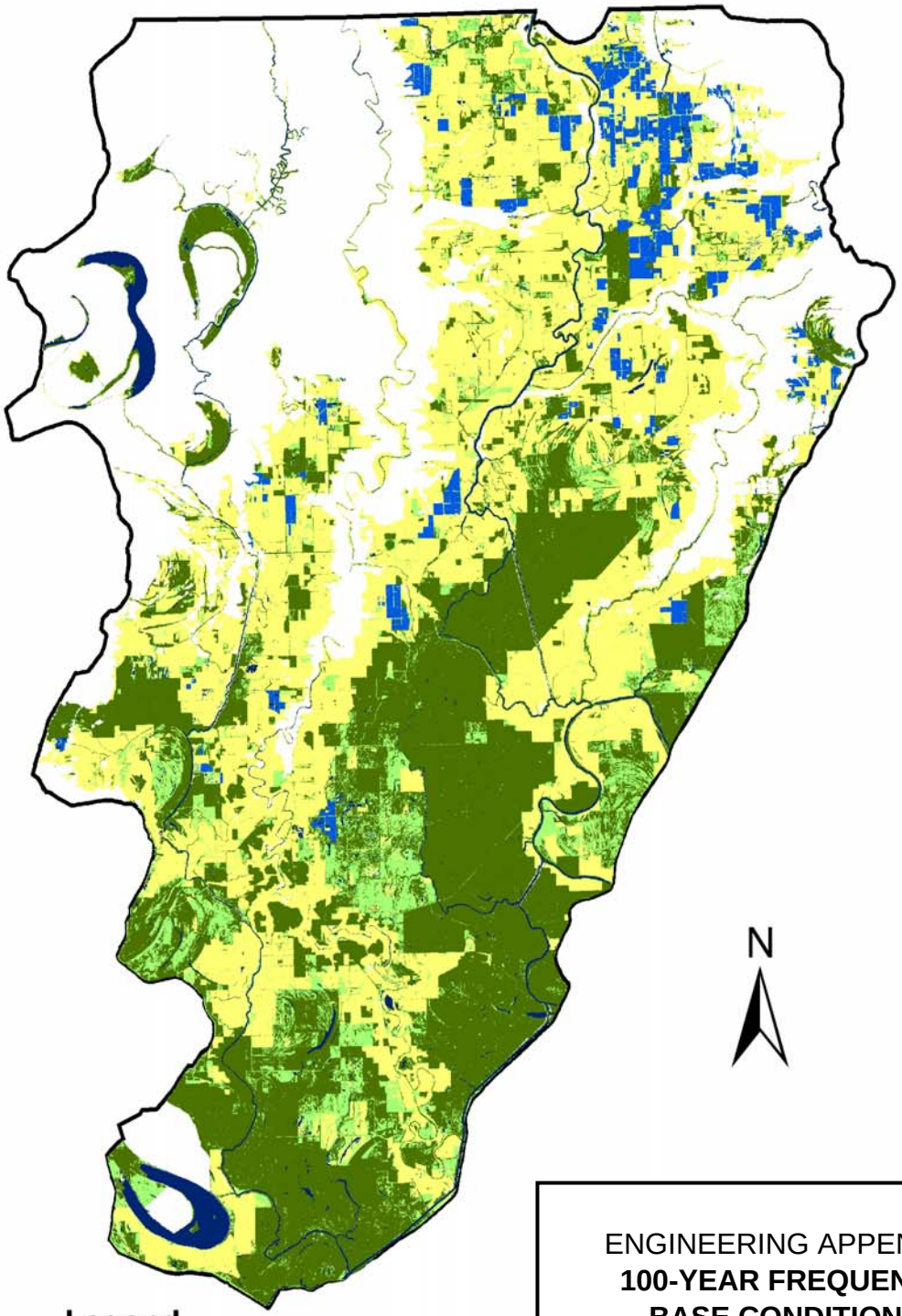
ENGINEERING APPENDIX
2-YEAR FREQUENCY
BASE CONDITIONS
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006



Legend

- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

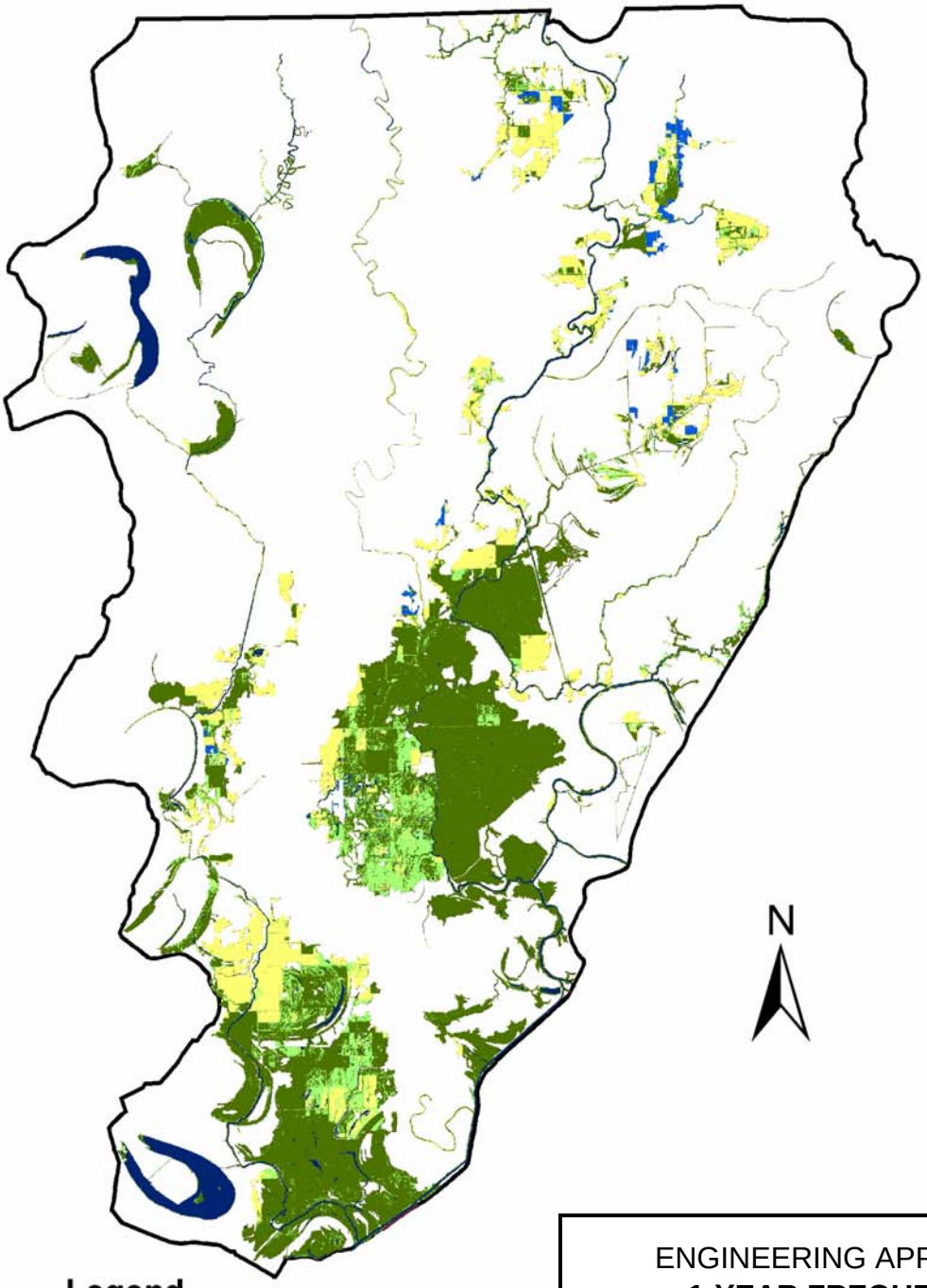
ENGINEERING APPENDIX
10-YEAR FREQUENCY
BASE CONDITIONS
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006



Legend

- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

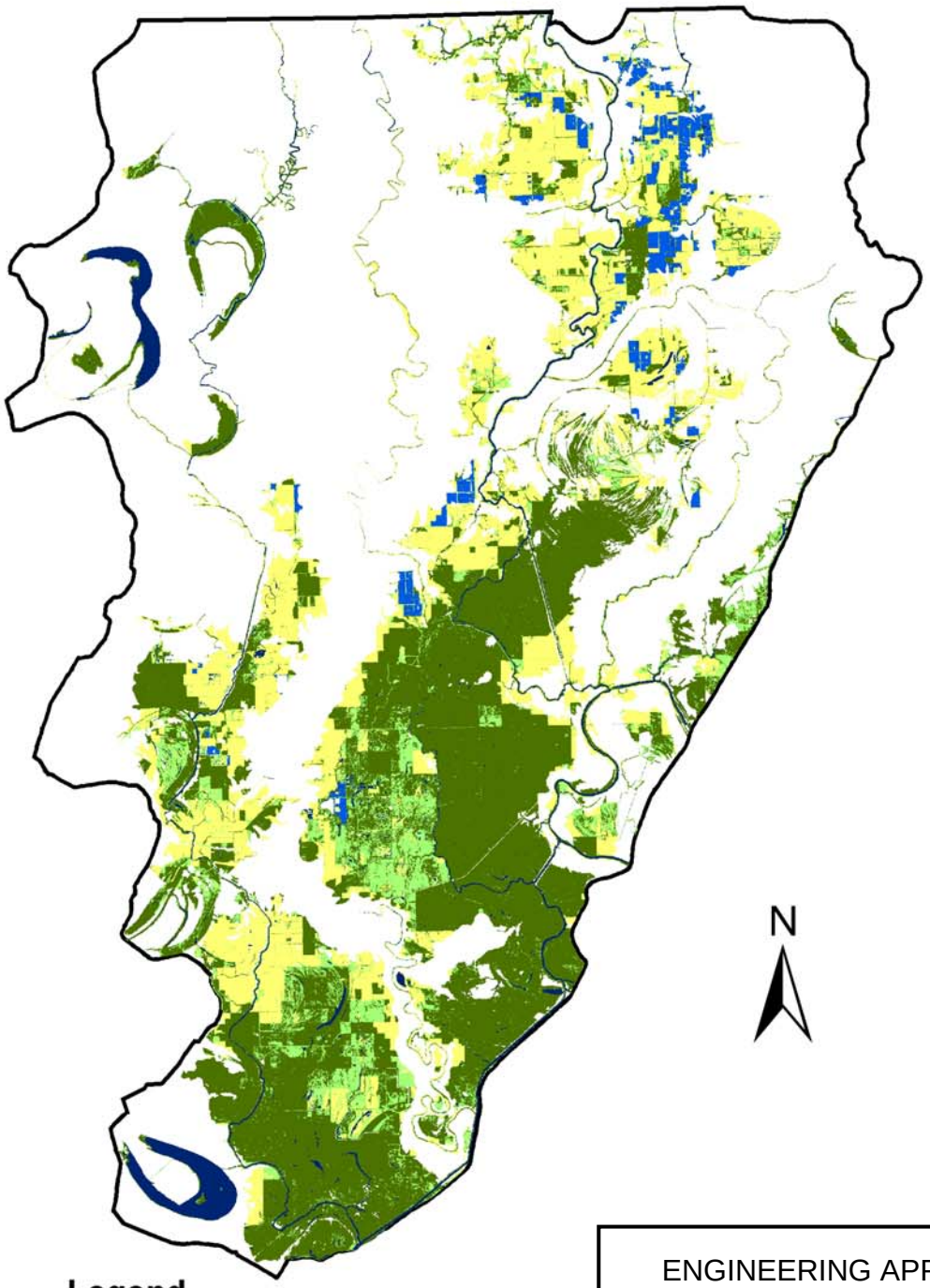
ENGINEERING APPENDIX
100-YEAR FREQUENCY
BASE CONDITIONS
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006



Legend

- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

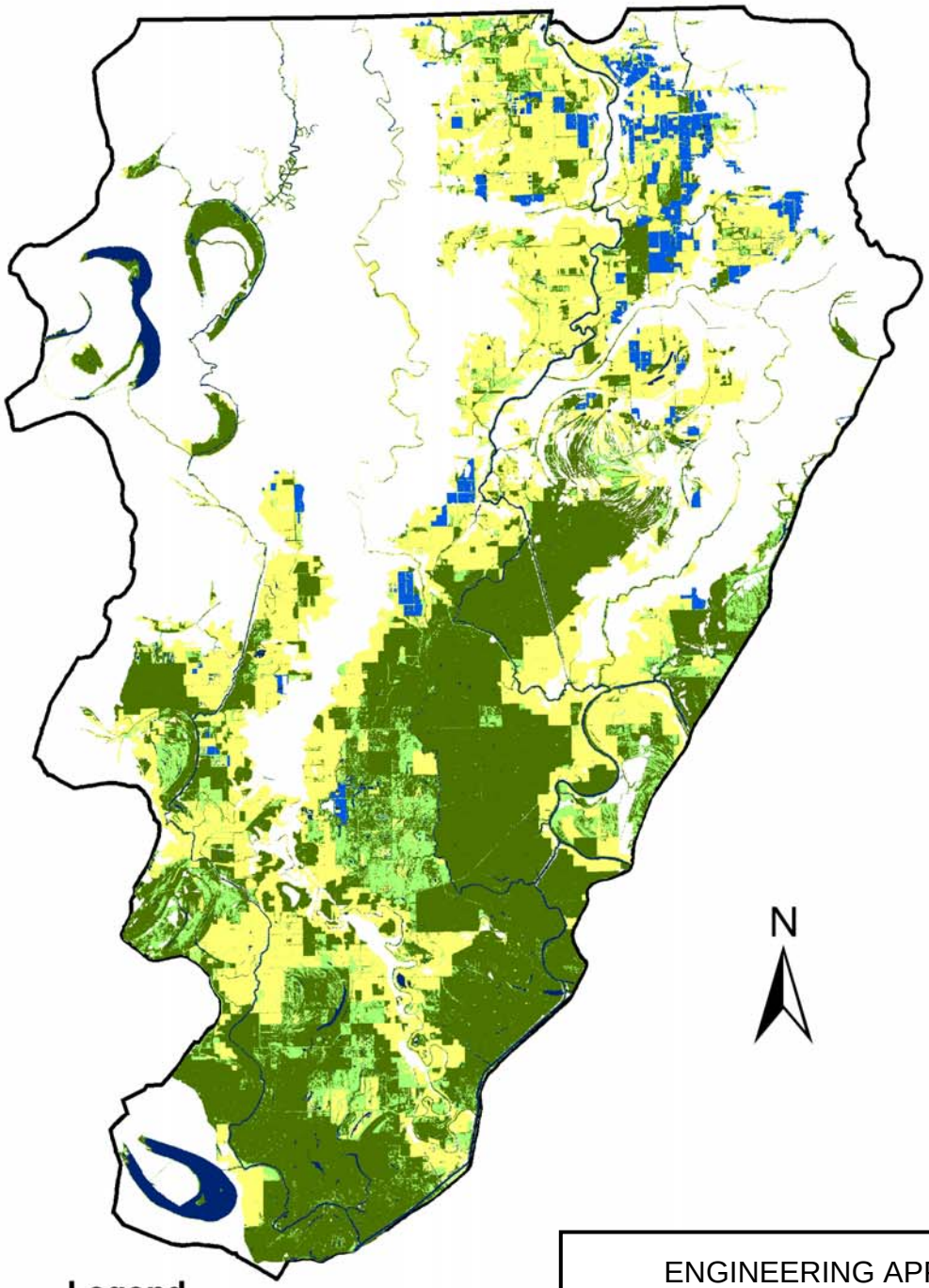
ENGINEERING APPENDIX
1-YEAR FREQUENCY
PLAN 5 - REC. PLAN
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006



Legend

- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

ENGINEERING APPENDIX
10-YEAR FREQUENCY
PLAN 5 - REC. PLAN
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

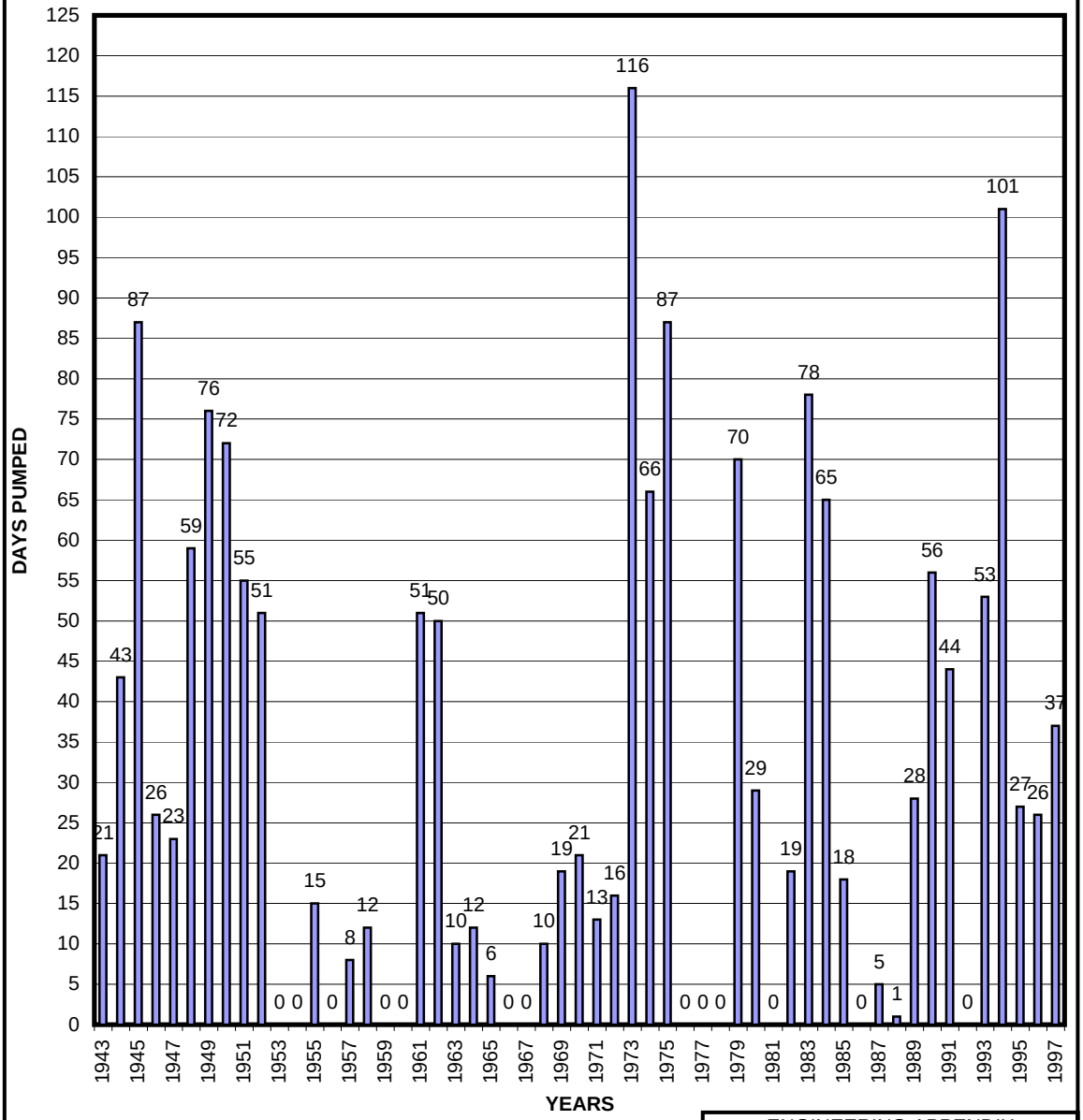


Legend

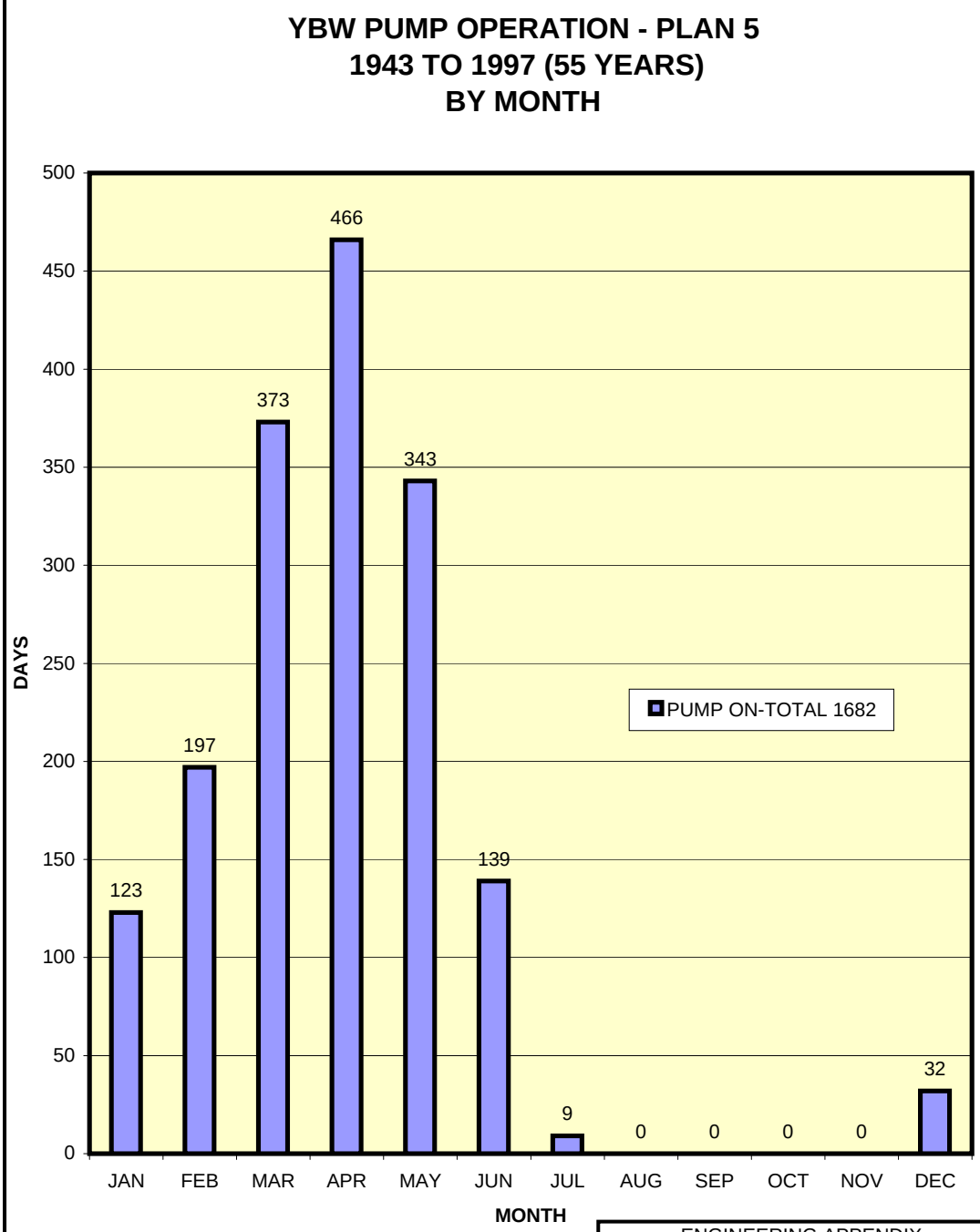
- **CROP**
- **NON-CROP**
- **FOREST**
- **LAKE**
- **POND**

ENGINEERING APPENDIX
100-YEAR FREQUENCY
PLAN 5 - REC. PLAN
2005 LAND USE
U.S.ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MS
SCALE AS SHOWN
DATE : OCTOBER 2006

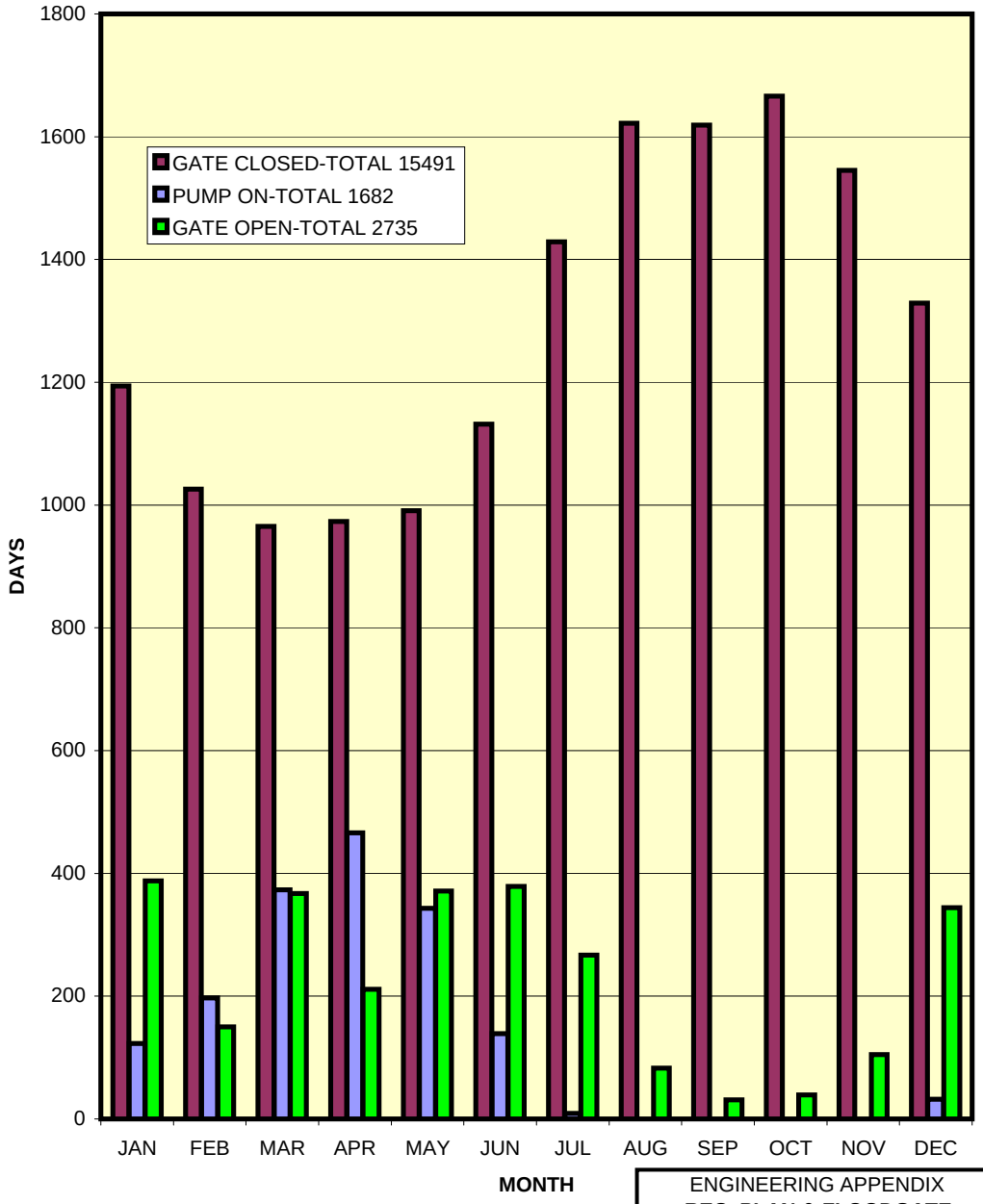
YAZOO BACKWATER RECOMMENDED PLAN
NUMBER OF DAYS PUMPED PER YEAR
1943-1997



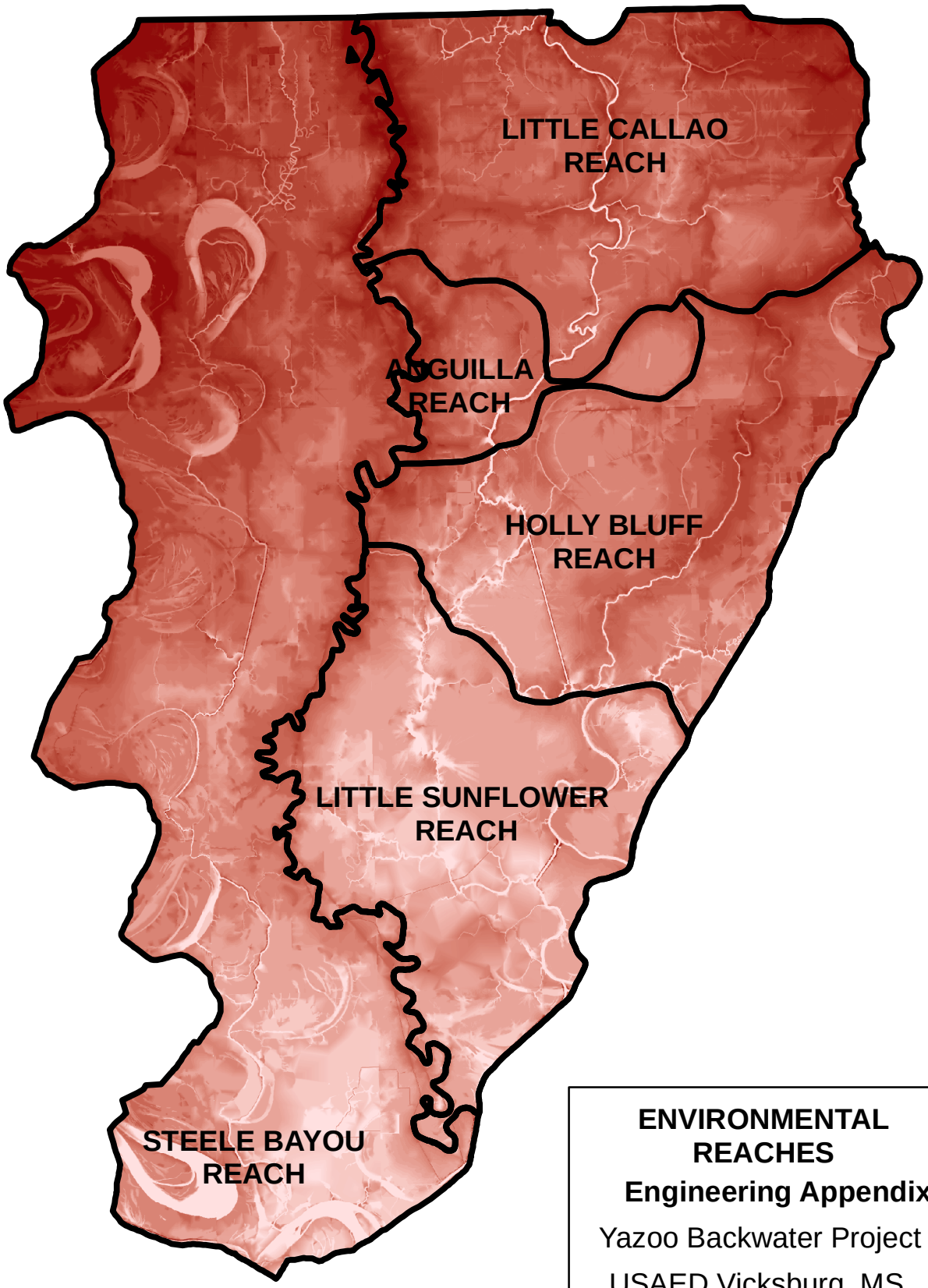
ENGINEERING APPENDIX
NUMBER OF DAYS PUMPED PER YEAR
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006



ENGINEERING APPENDIX
NUMBER OF DAYS PUMPED PER MONTH
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006



ENGINEERING APPENDIX
REC. PLAN & FLOODGATE OPERATION
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006



ENVIRONMENTAL REACHES

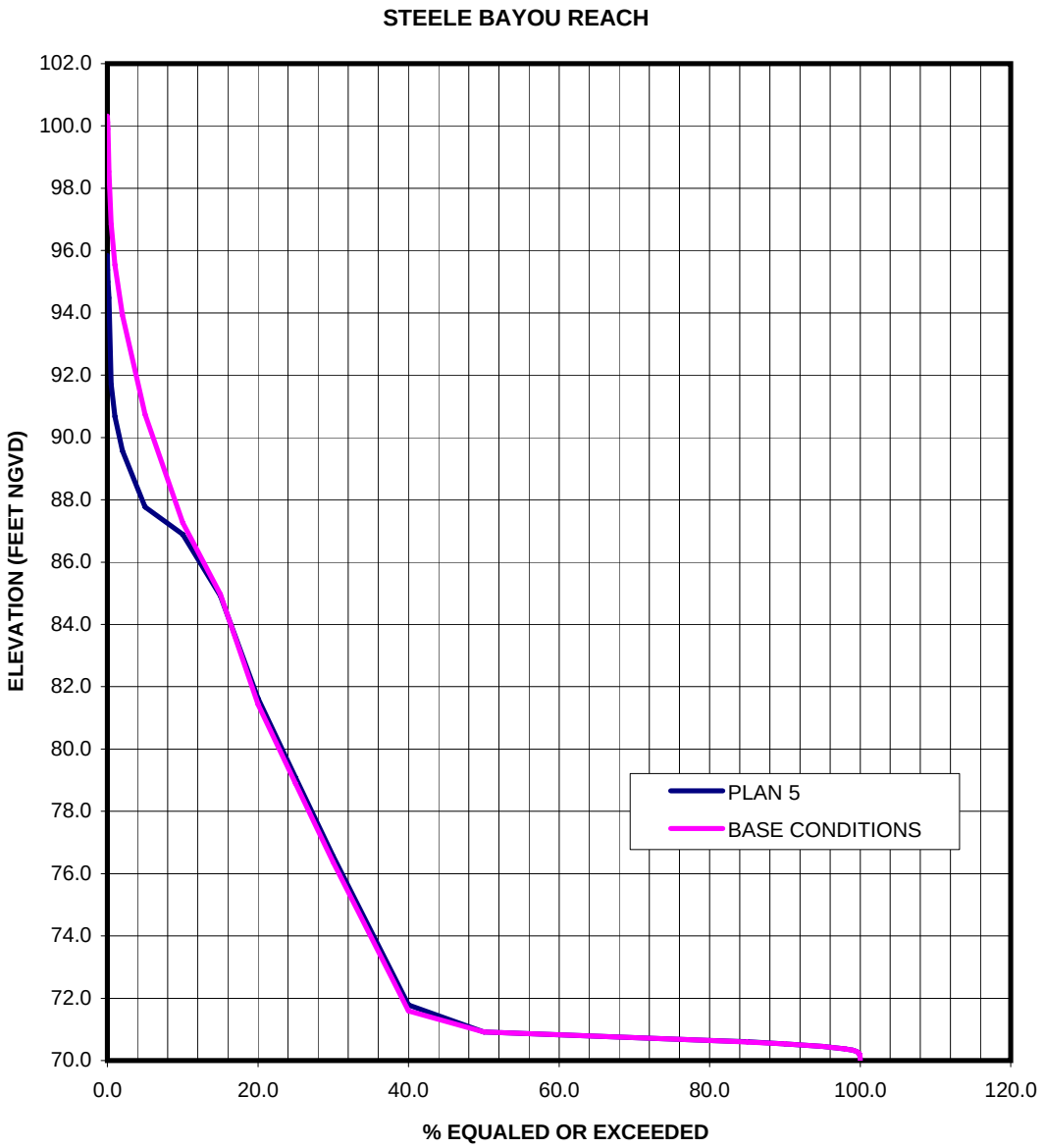
Engineering Appendix

Yazoo Backwater Project

USAED Vicksburg, MS

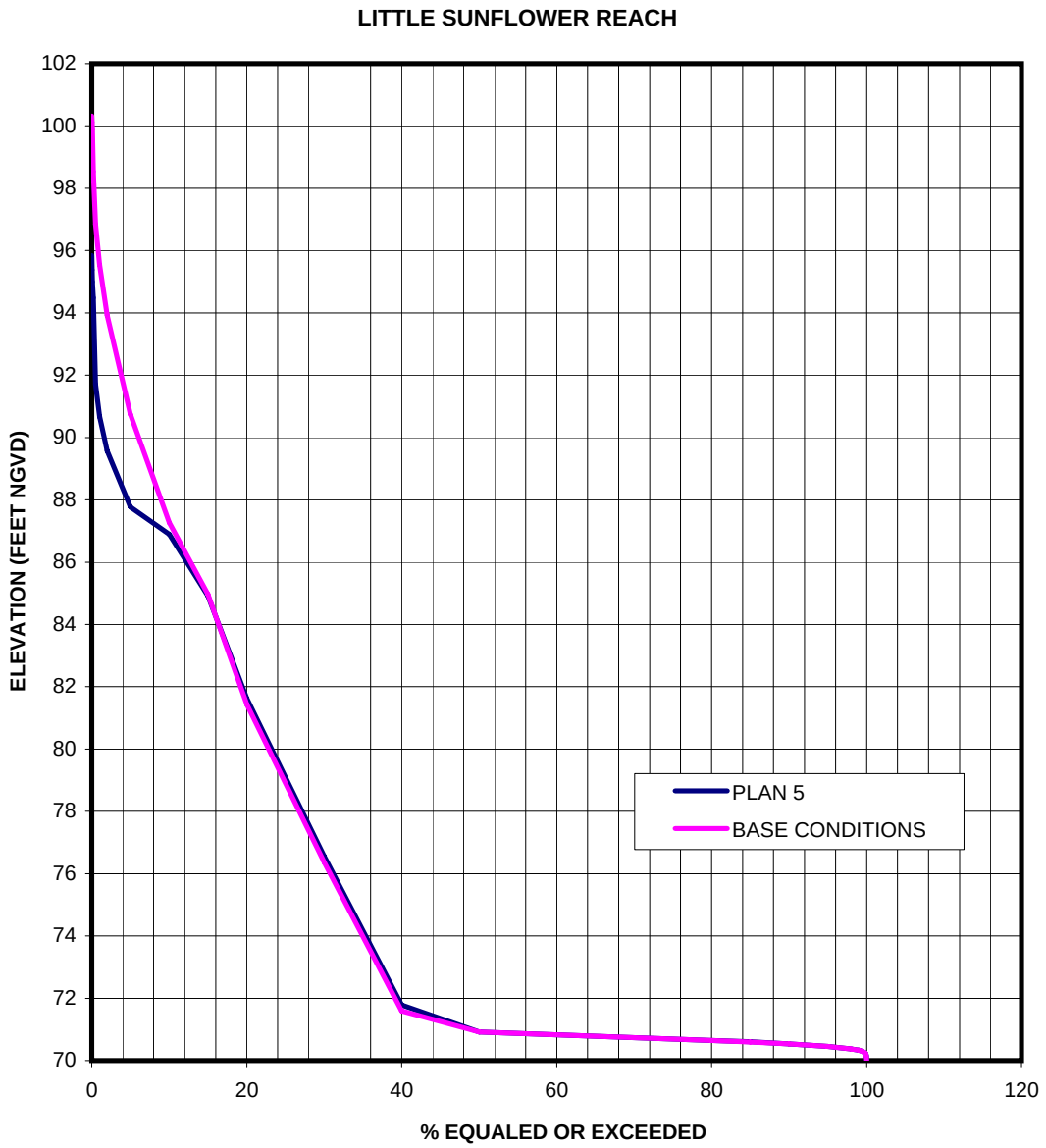
Date: OCTOBER 2006

PLATE 6-52



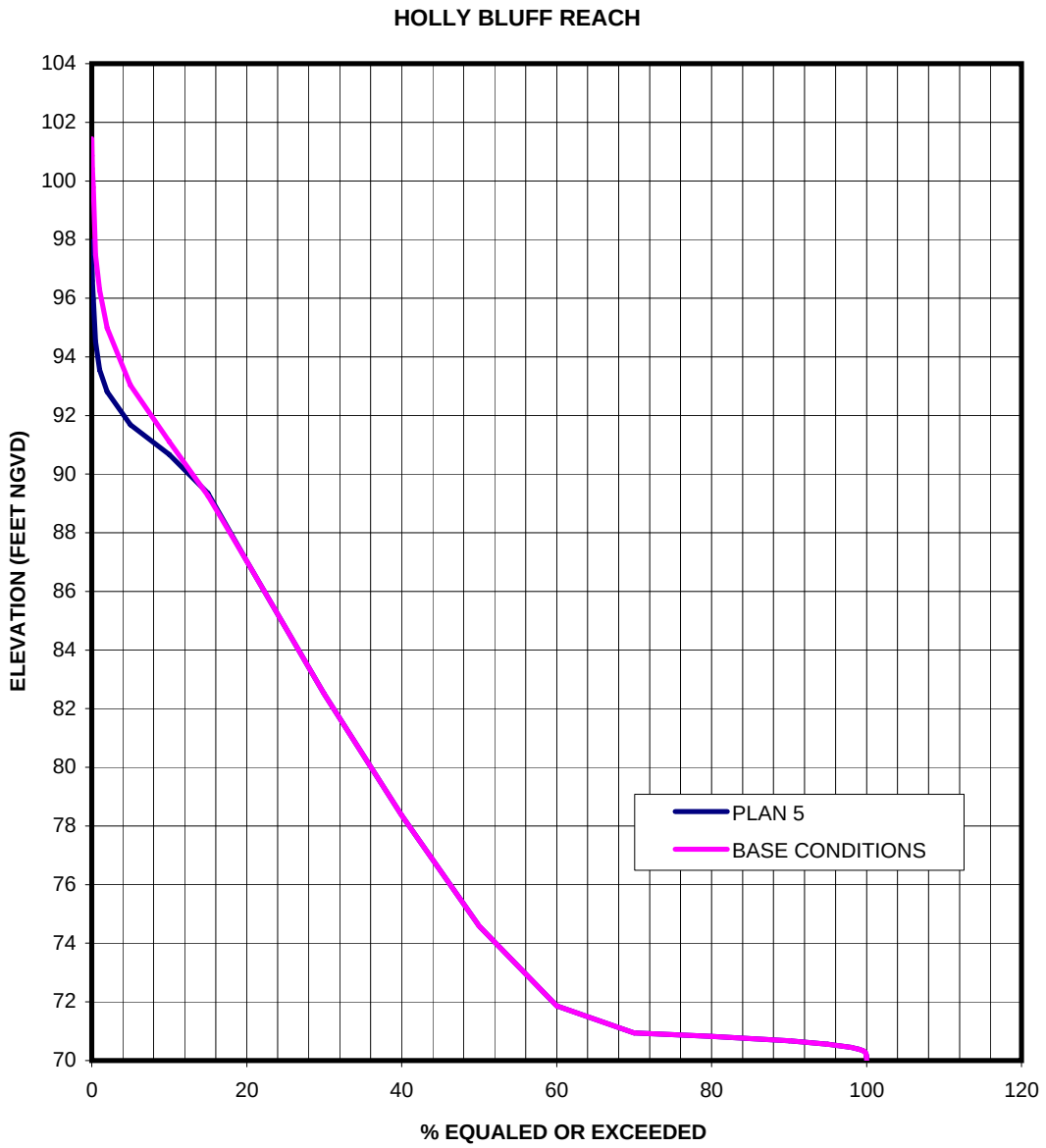
STEELE BAYOU REACH
STAGE-DURATION CURVE
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS

DATE: OCTOBER 2006



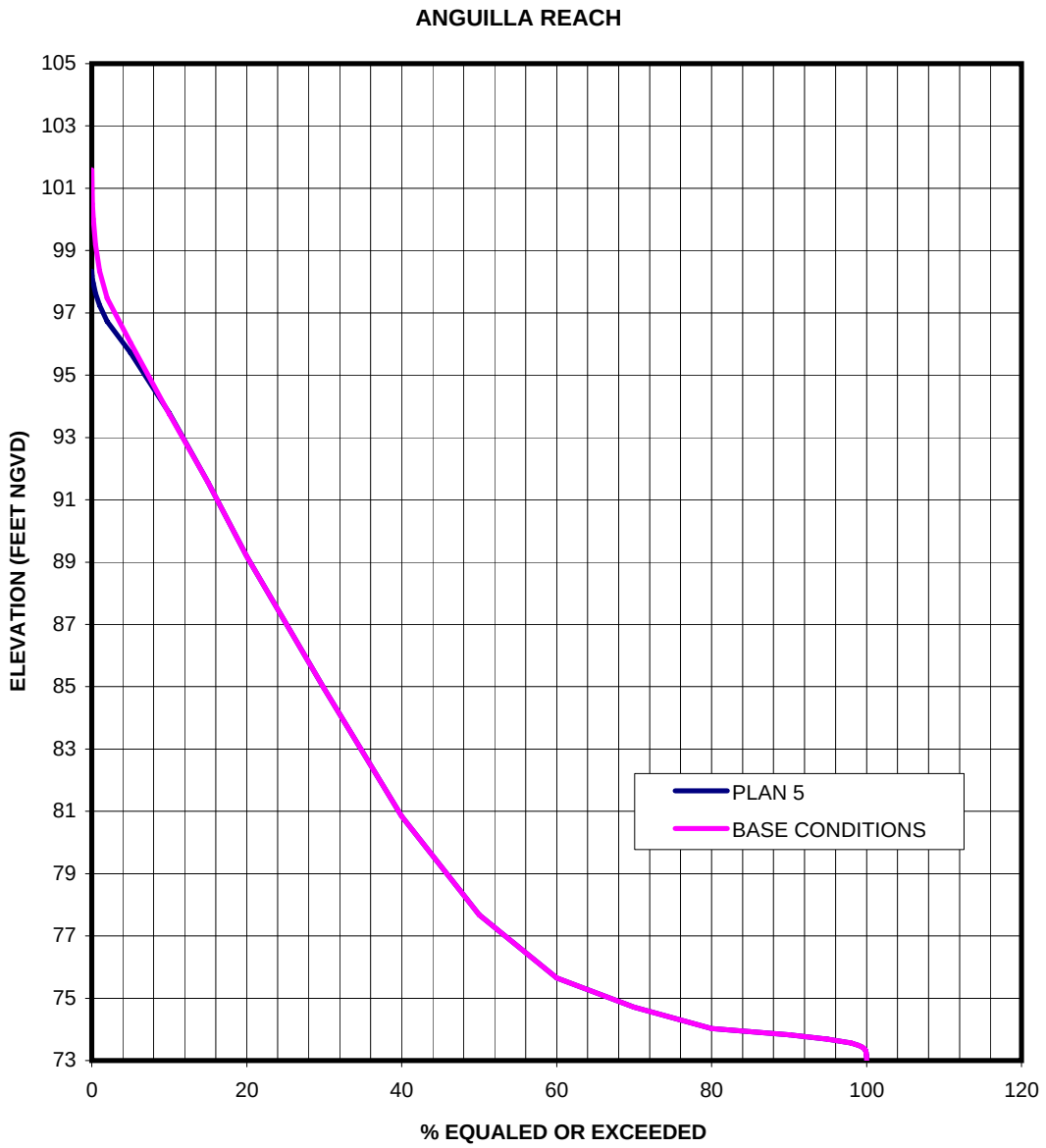
LITTLE SUNFLOWER REACH
STAGE-DURATION CURVE
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS

DATE: OCTOBER 2006



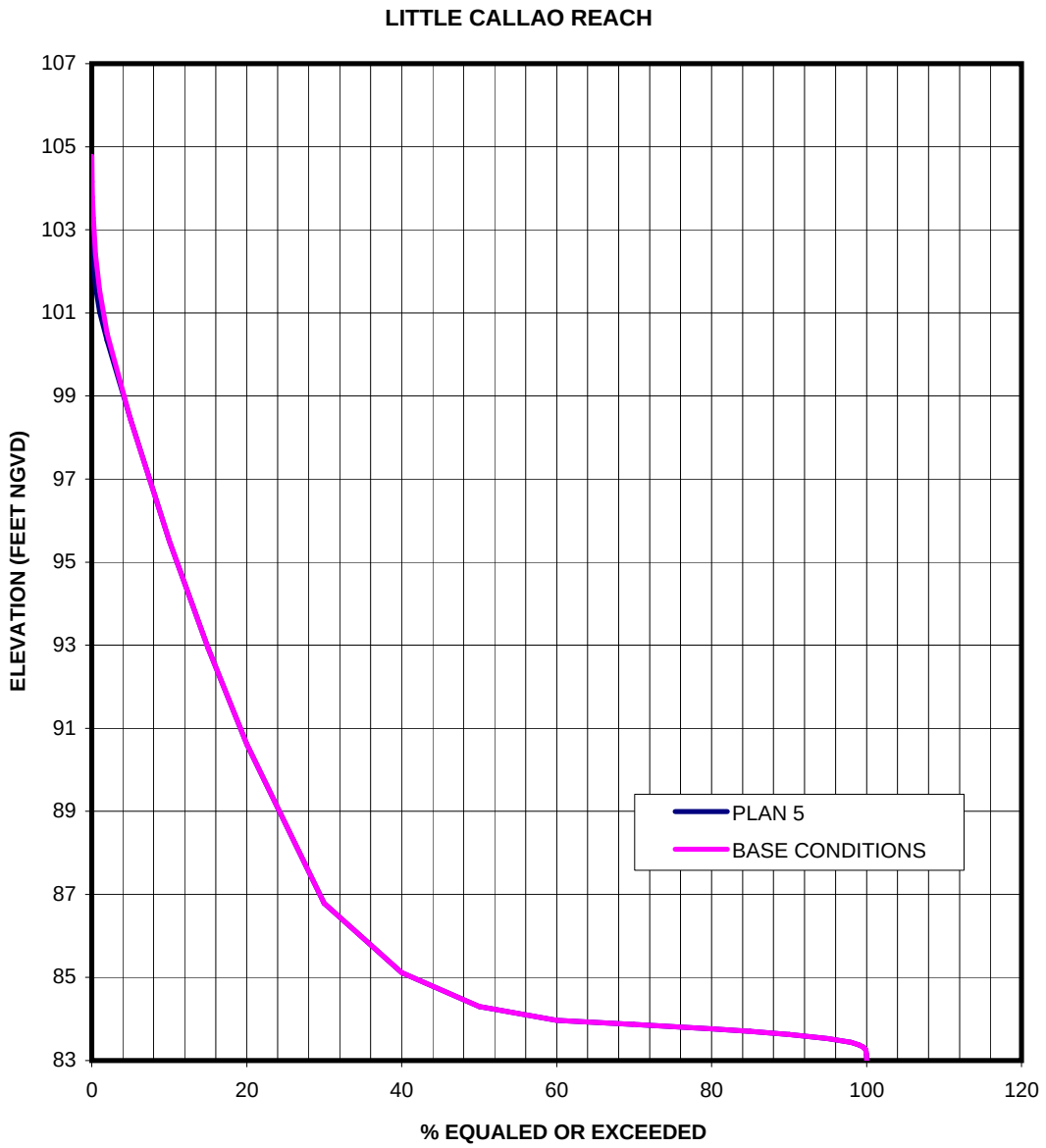
HOLLY BLUFF REACH
STAGE-DURATION CURVE
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS

DATE: OCTOBER 2006



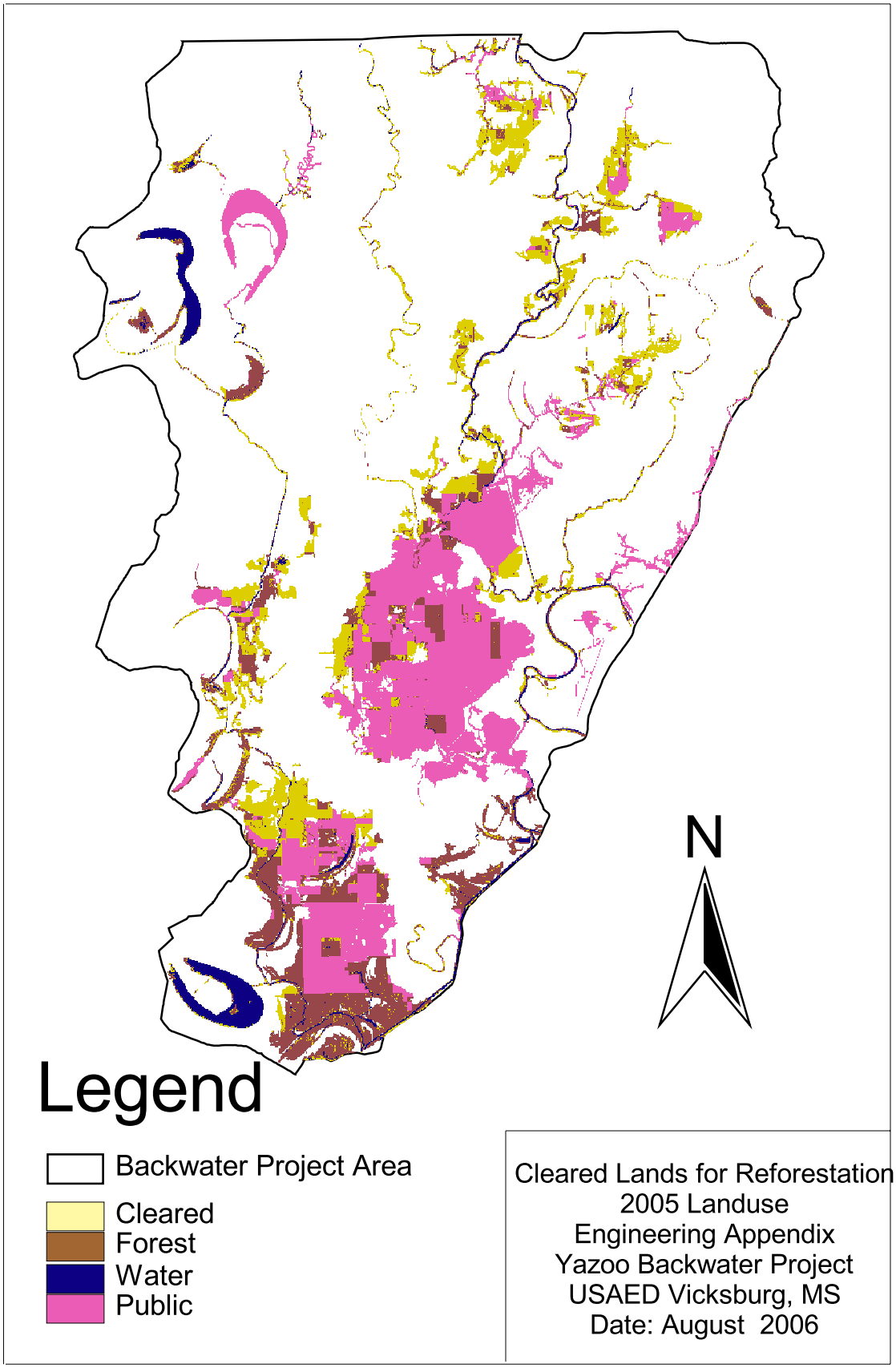
ANGUILLA REACH
STAGE-DURATION CURVE
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS

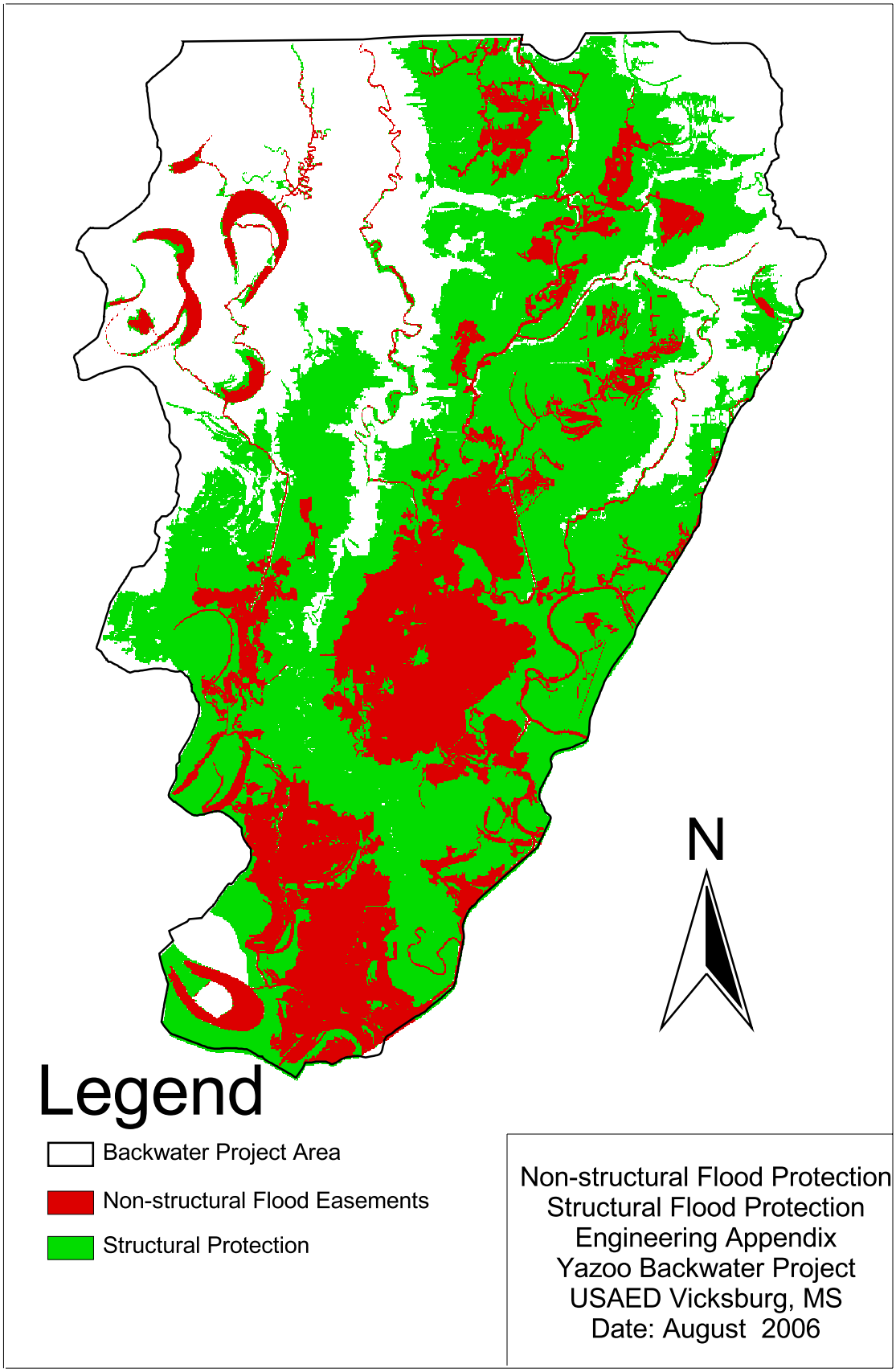
DATE: OCTOBER 2006



LITTLE CALLAO REACH
STAGE-DURATION CURVE
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS

DATE: OCTOBER 2006


N
Legend
Backwater Project Area
Cleared
Forest
Water
Public
Cleared Lands for Reforestation
2005 Landuse
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS
Date: August 2006


N
Legend
Backwater Project Area
Non-structural Flood Easements
Structural Protection
Non-structural Flood Protection
Structural Flood Protection
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS
Date: August 2006

STEELE BAYOU BASE CONDITION STAGE-FREQUENCY PROFILES

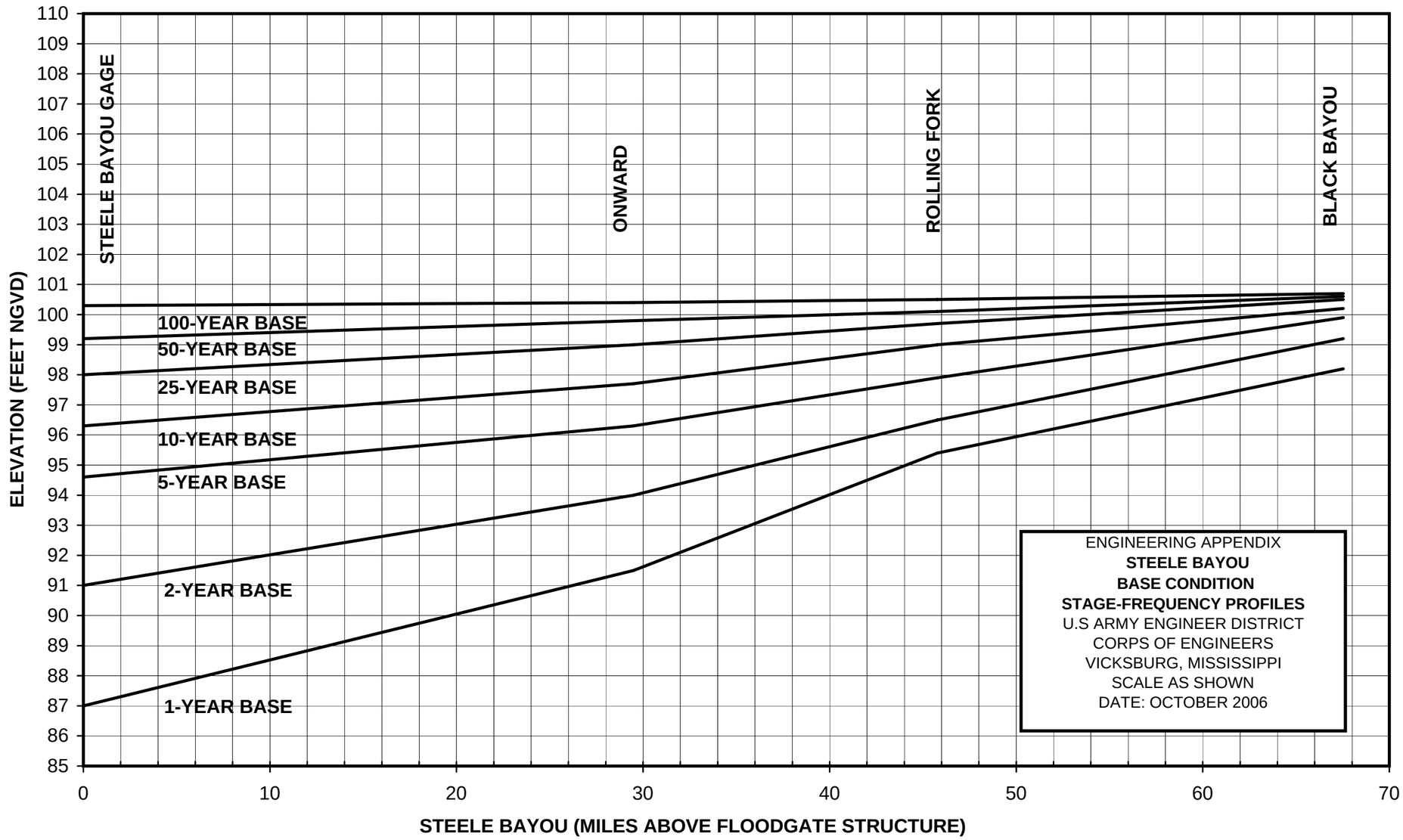
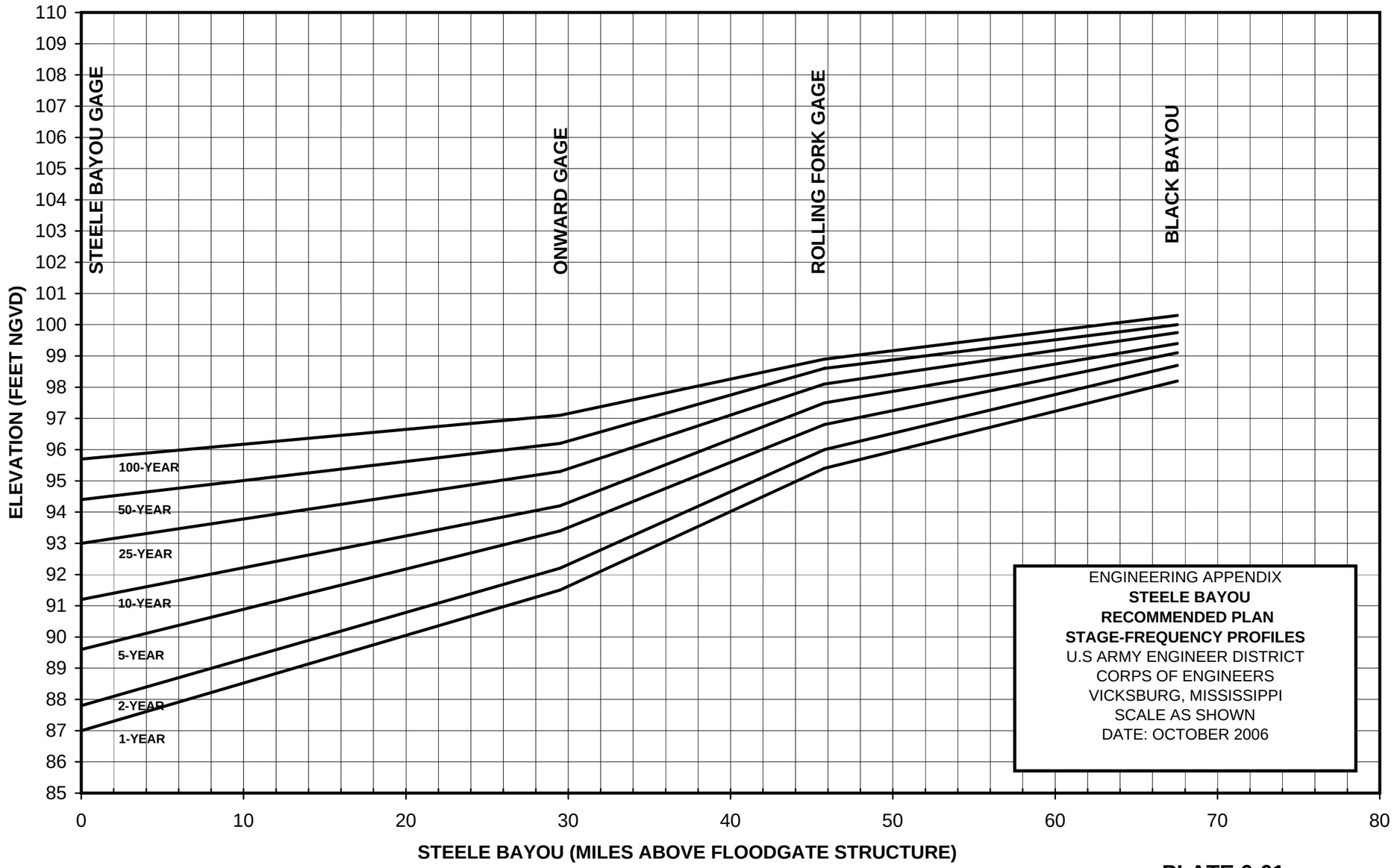


PLATE 6-60

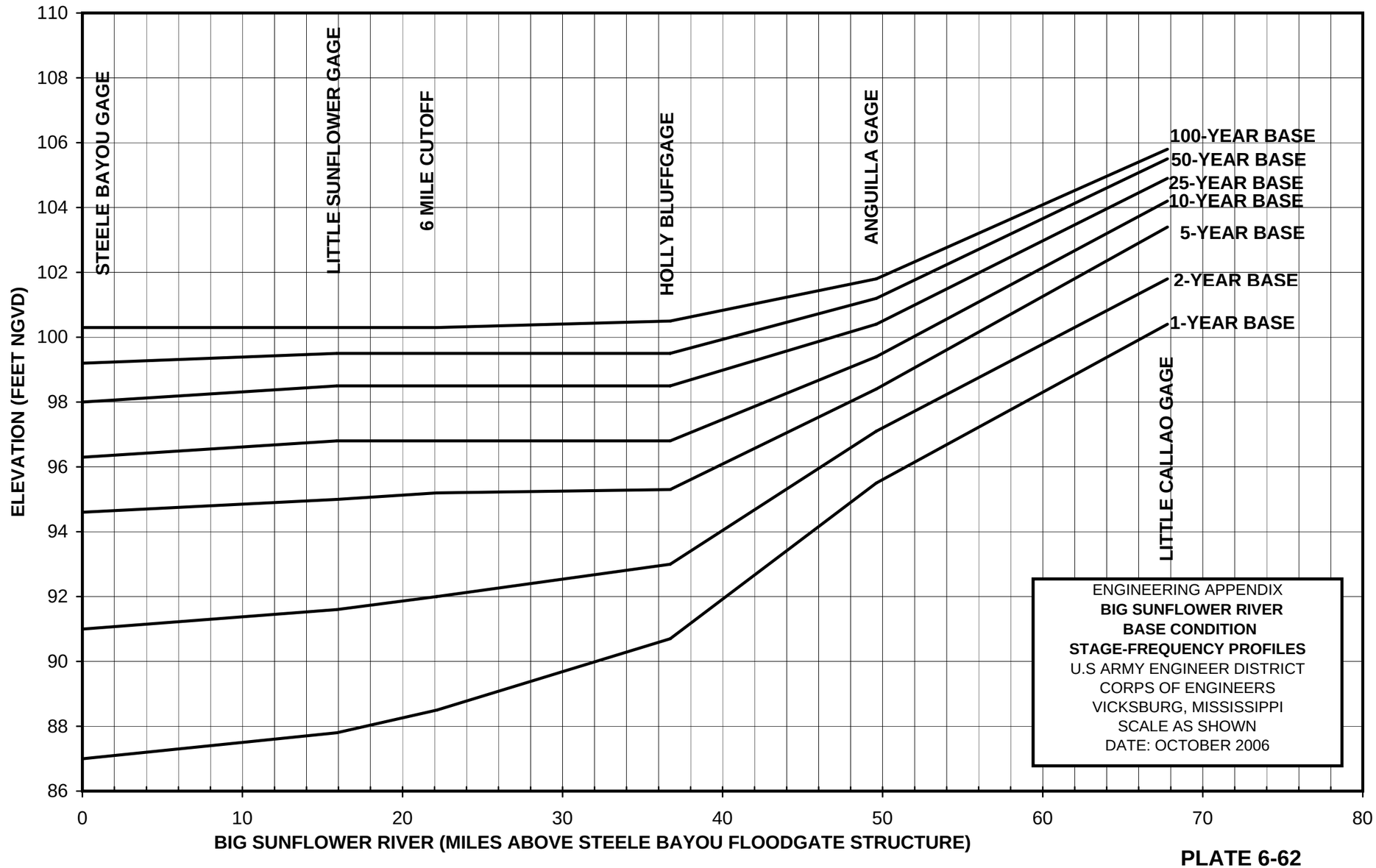
STEELE BAYOU RECOMMENDED PLAN STAGE-FREQUENCY PROFILES



ENGINEERING APPENDIX
STEELE BAYOU
RECOMMENDED PLAN
STAGE-FREQUENCY PROFILES
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

PLATE 6-61

BIG SUNFLOWER RIVER BASE CONDITIONS STAGE-FREQUENCY PROFILES



ENGINEERING APPENDIX
BIG SUNFLOWER RIVER
BASE CONDITION
STAGE-FREQUENCY PROFILES
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

PLATE 6-62

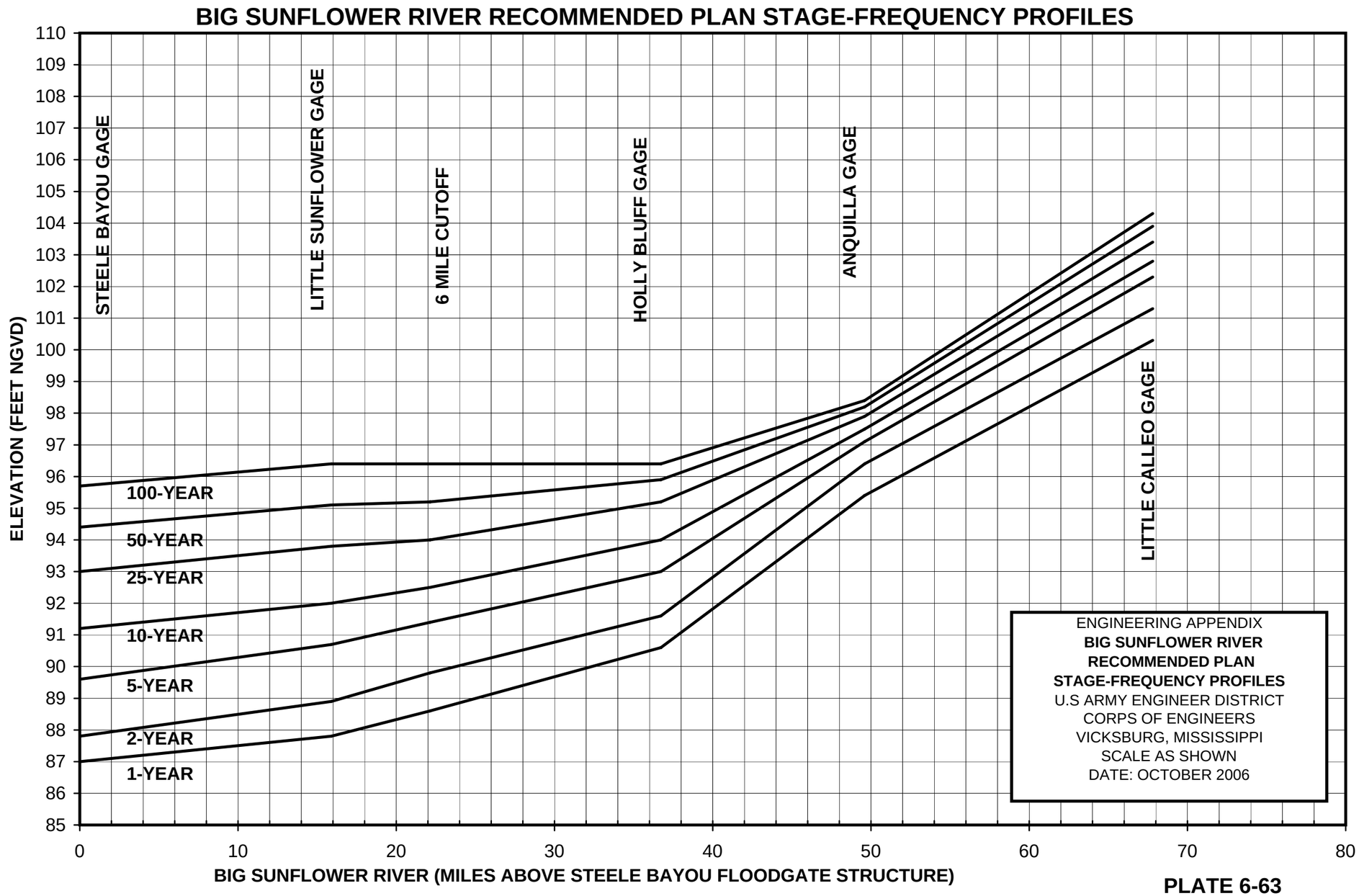
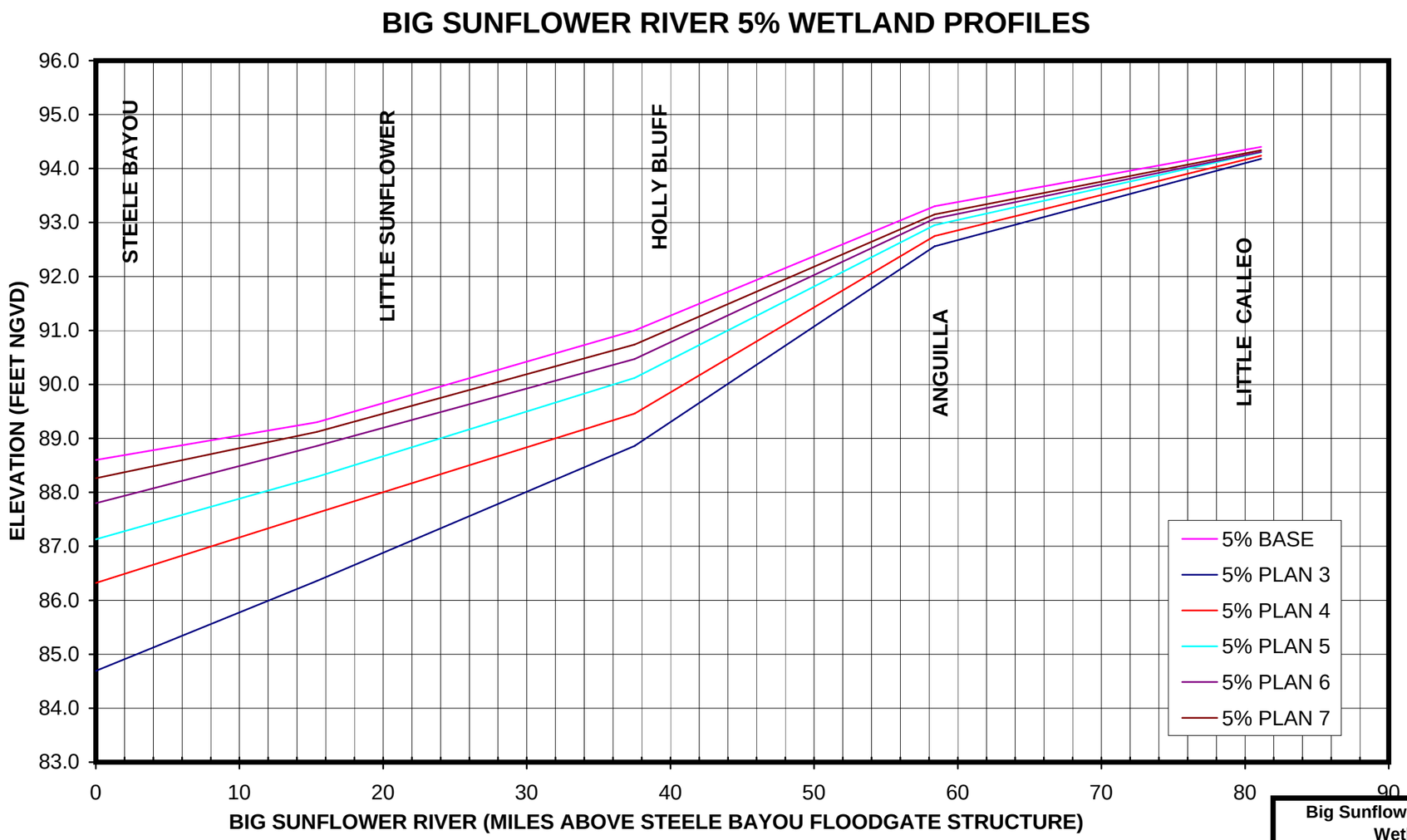
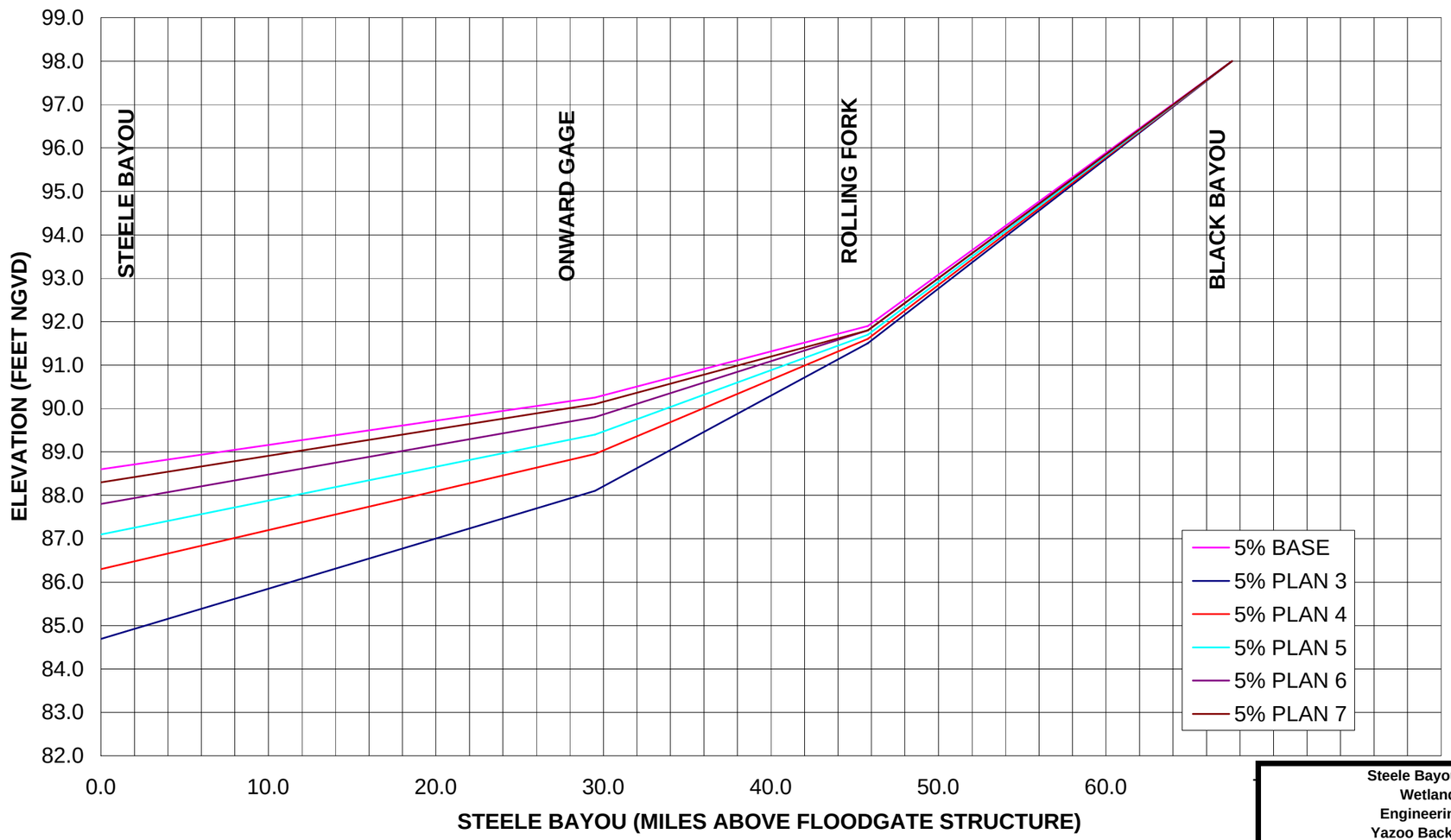

BIG SUNFLOWER RIVER RECOMMENDED PLAN STAGE-FREQUENCY PROFILES
ELEVATION (FEET NGVD)
110
109
108
107
106
105
104
103
102
101
100
99
98
97
96
95
94
93
92
91
90
89
88
87
86
85
STEELE BAYOU GAGE
LITTLE SUNFLOWER GAGE
6 MILE CUTOFF
HOLLY BLUFF GAGE
ANQUILLA GAGE
LITTLE CALLEO GAGE
100-YEAR
50-YEAR
25-YEAR
10-YEAR
5-YEAR
2-YEAR
1-YEAR
0
10
20
30
40
50
60
70
80
BIG SUNFLOWER RIVER (MILES ABOVE STEELE BAYOU FLOODGATE STRUCTURE)
ENGINEERING APPENDIX
BIG SUNFLOWER RIVER
RECOMMENDED PLAN
STAGE-FREQUENCY PROFILES
U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

PLATE 6-63

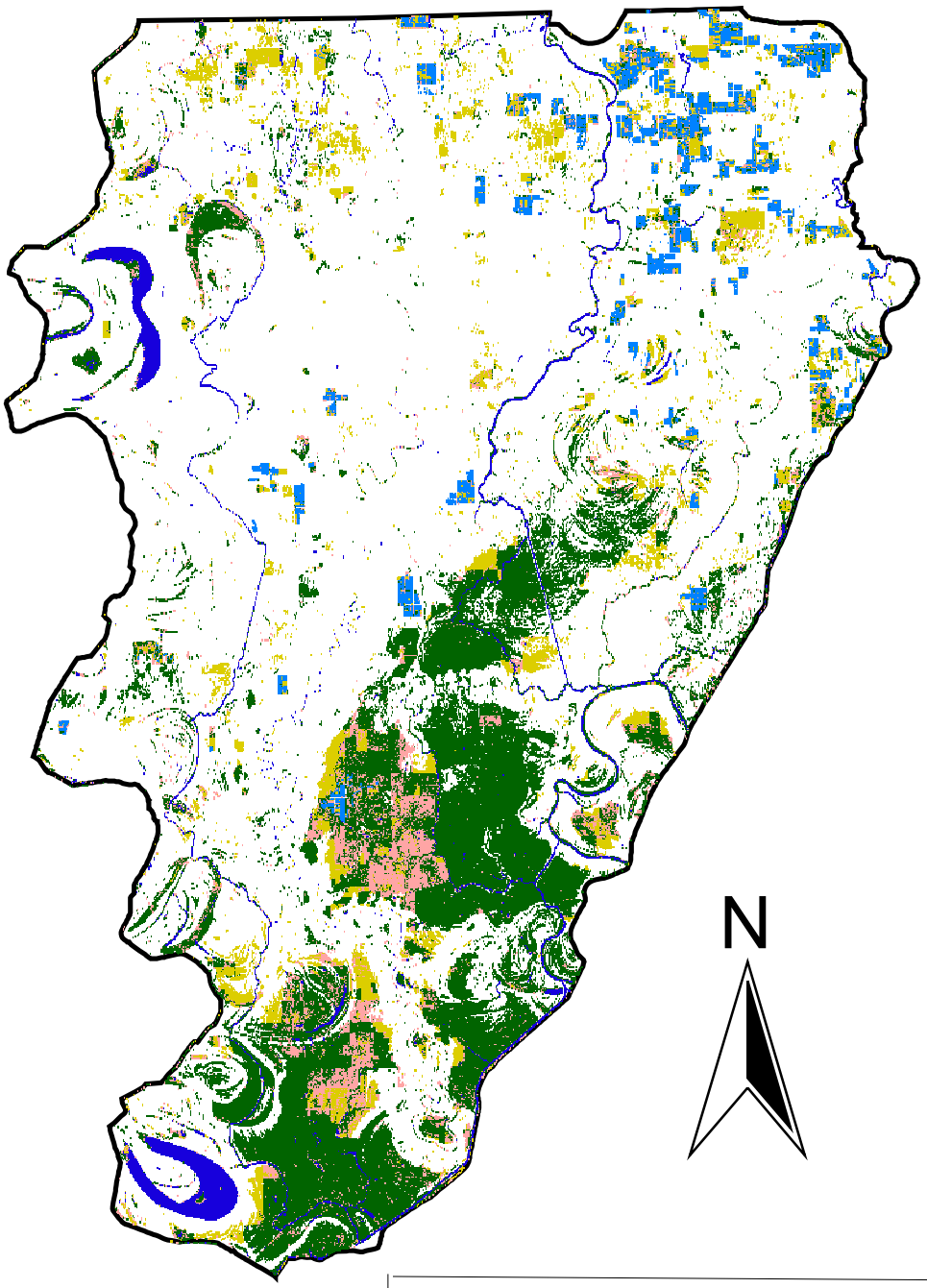


Big Sunflower River 5% Duration
Wetland Profiles
Engineering Appendix
Yazoo Backwater Project
USACED Vicksburg,MS
Date: OCTOBER 2006
Plate 6-64

STEELE BAYOU 5% WETLAND PROFILES



Steele Bayou 5% Duration
Wetland Profiles
Engineering Appendix
Yazoo Backwater Project
USACED Vicksburg, MS
Date: OCTOBER 2006
Plate 6-65

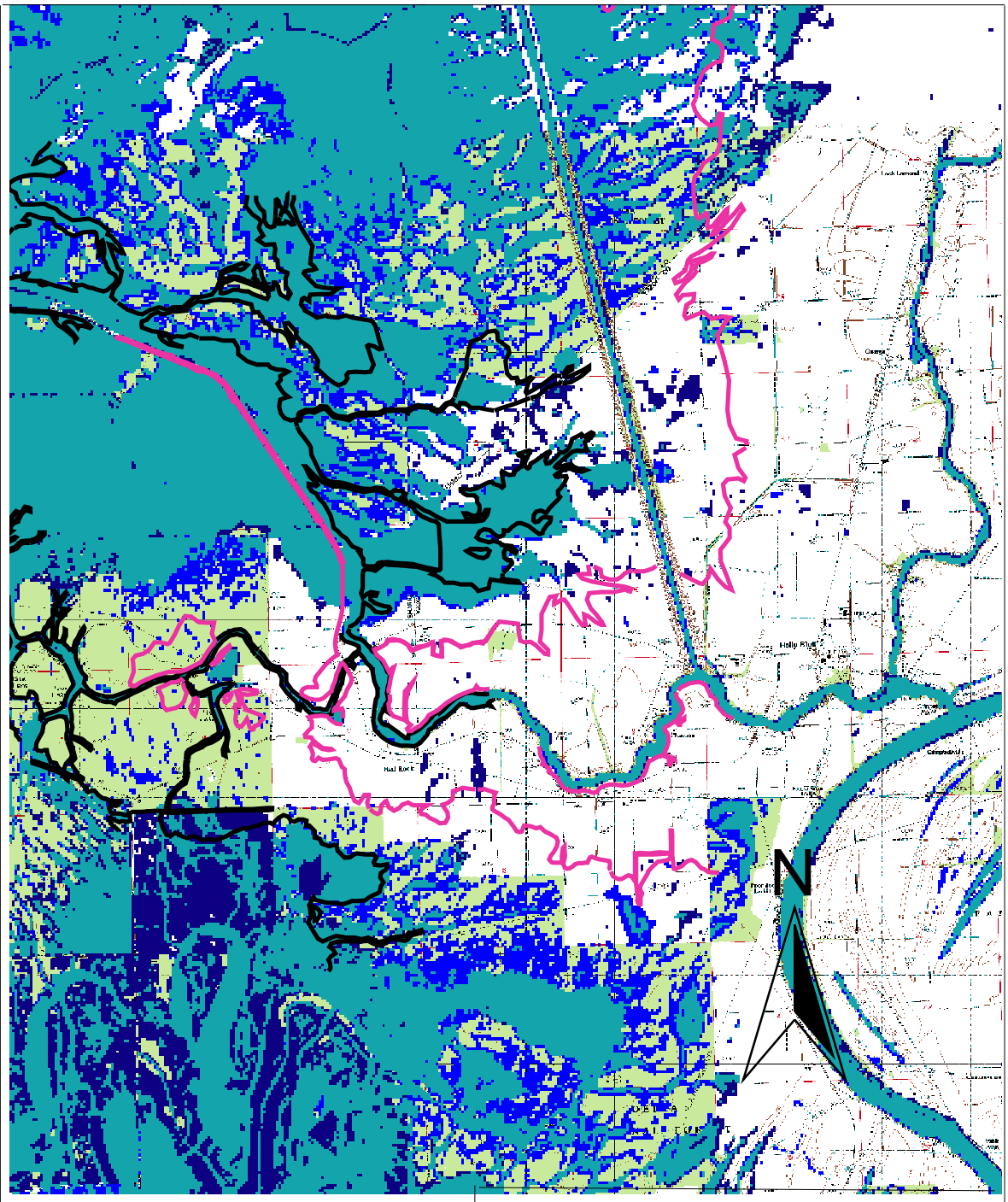


Legend

- Crop
- Non-Crop
- Forest
- Water
- Pond

Backwater Project Area

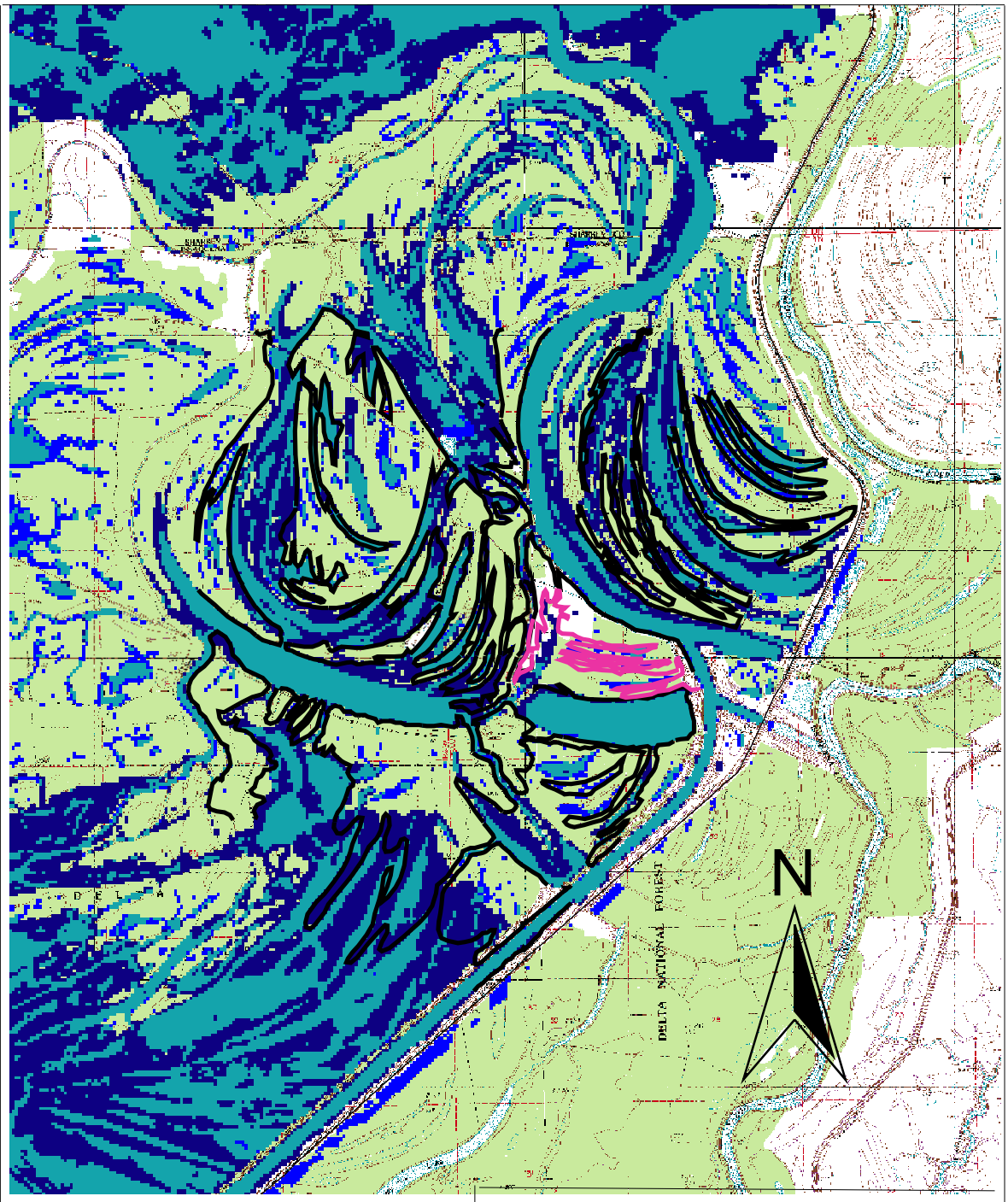
Engineering Appendix
2005 Landuse of
10 Mar 89 Satellite Flood
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006



Legend

- 95 feet NVGD
- 90 feet NVGD
- 21Mar87
- 10Mar89
- Both

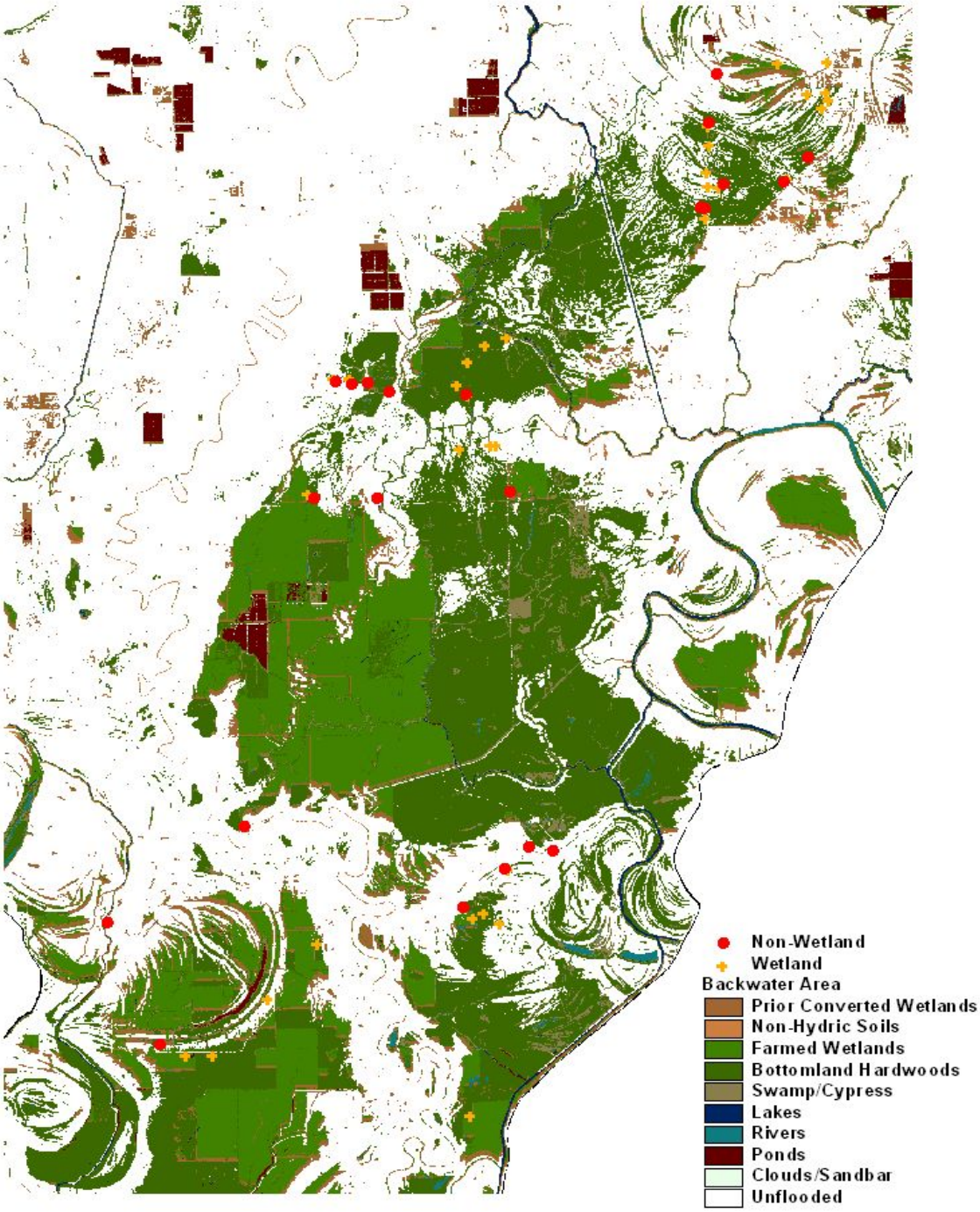
Engineering Appendix
10 Mar 89 and 21 Mar 87 floods
at Holly Bluff
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006



Legend

- 95 feet NVGD
- 90 feet NVGD
- 21Mar87
- 10Mar89
- Both

Engineering Appendix
10 Mar 89 and 21 Mar 87 floods
at the Little Sunflower Structure
U.S. Army Engineer District
Vicksburg, MS
Date: October 2006



ENGINEERING APPENDIX

SITE LOCATIONS USED TO VERIFY JURISDICTIONAL WETLANDS

U.S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
SCALE AS SHOWN
DATE: OCTOBER 2006

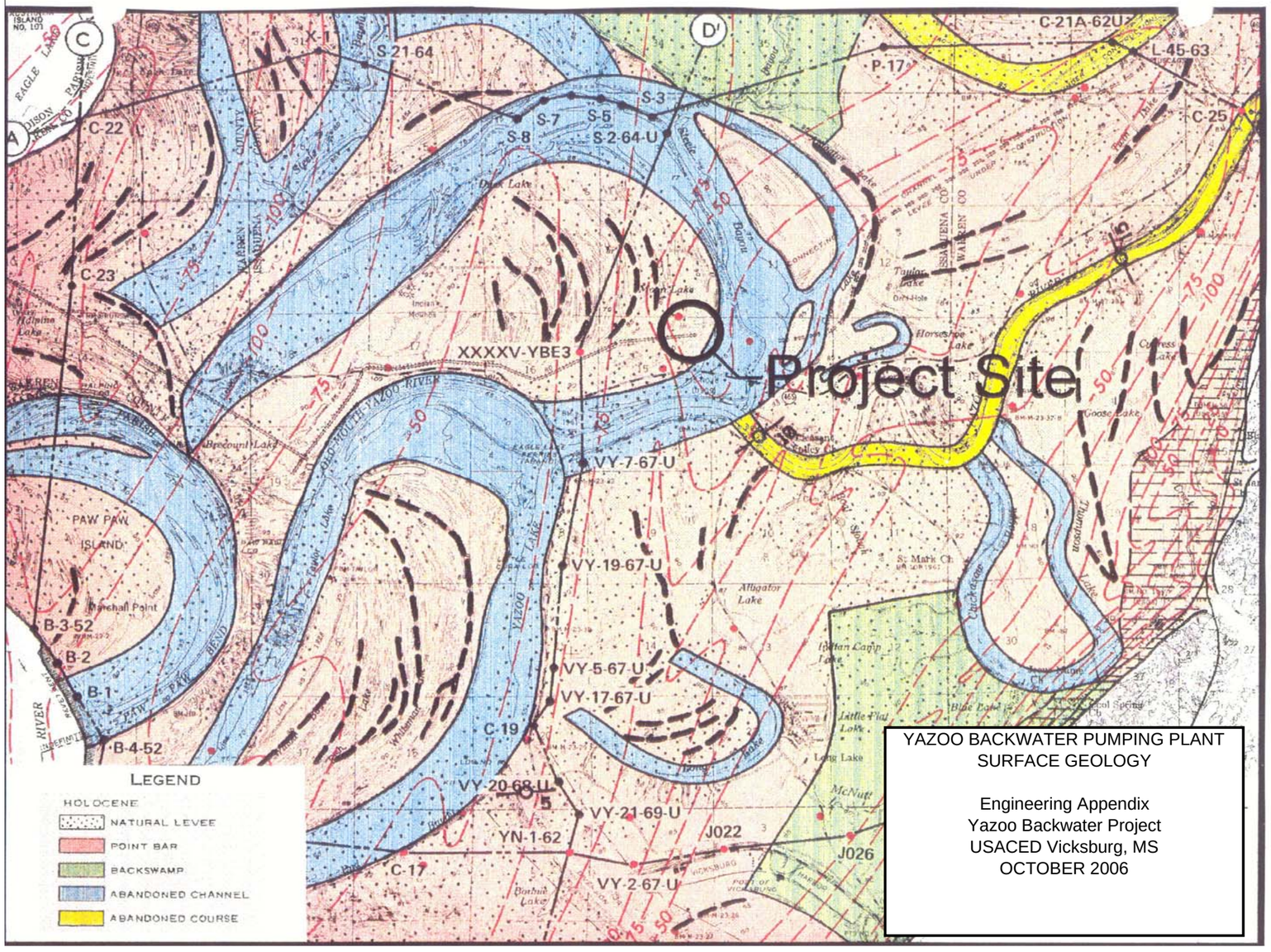
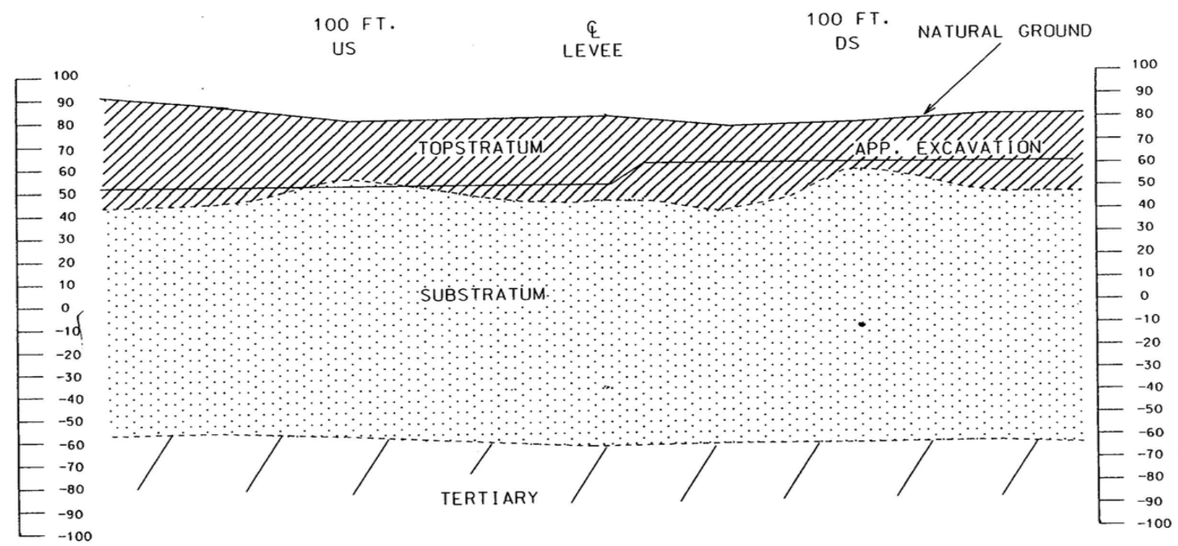

Project Site
LEGEND
HOLOCENE
NATURAL LEVEE
POINT BAR
BACKSWAMP
ABANDONED CHANNEL
ABANDONED COURSE
C-21A-62U
L-45-63
P-17
C-25
C-22
C-23
X-1
S-21-64
S-3
S-7
S-5
S-8
S-2-64-U
XXXXV-YBE3
VY-7-67-U
VY-19-67-U
VY-5-67-U
VY-17-67-U
C-19
VY-20-68-U
VY-21-69-U
YN-1-62
J022
J026
C-17
VY-2-67-U
B-3-52
B-2
B-1
B-4-52
PAW PAW ISLAND
YAZOO BACKWATER PUMPING PLANT
SURFACE GEOLOGY
Engineering Appendix
Yazoo Backwater Project
USACED Vicksburg, MS
OCTOBER 2006

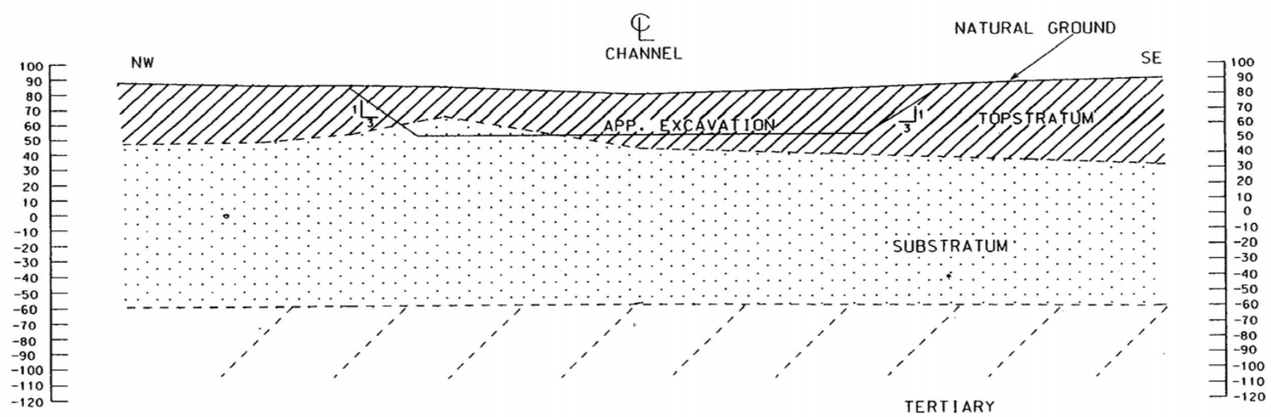
PLATE 6-70



GEOLOGIC SECTION ℄ CHANNEL

GEOLOGICAL SECTION CENTERLINE
PUMPING PLANT

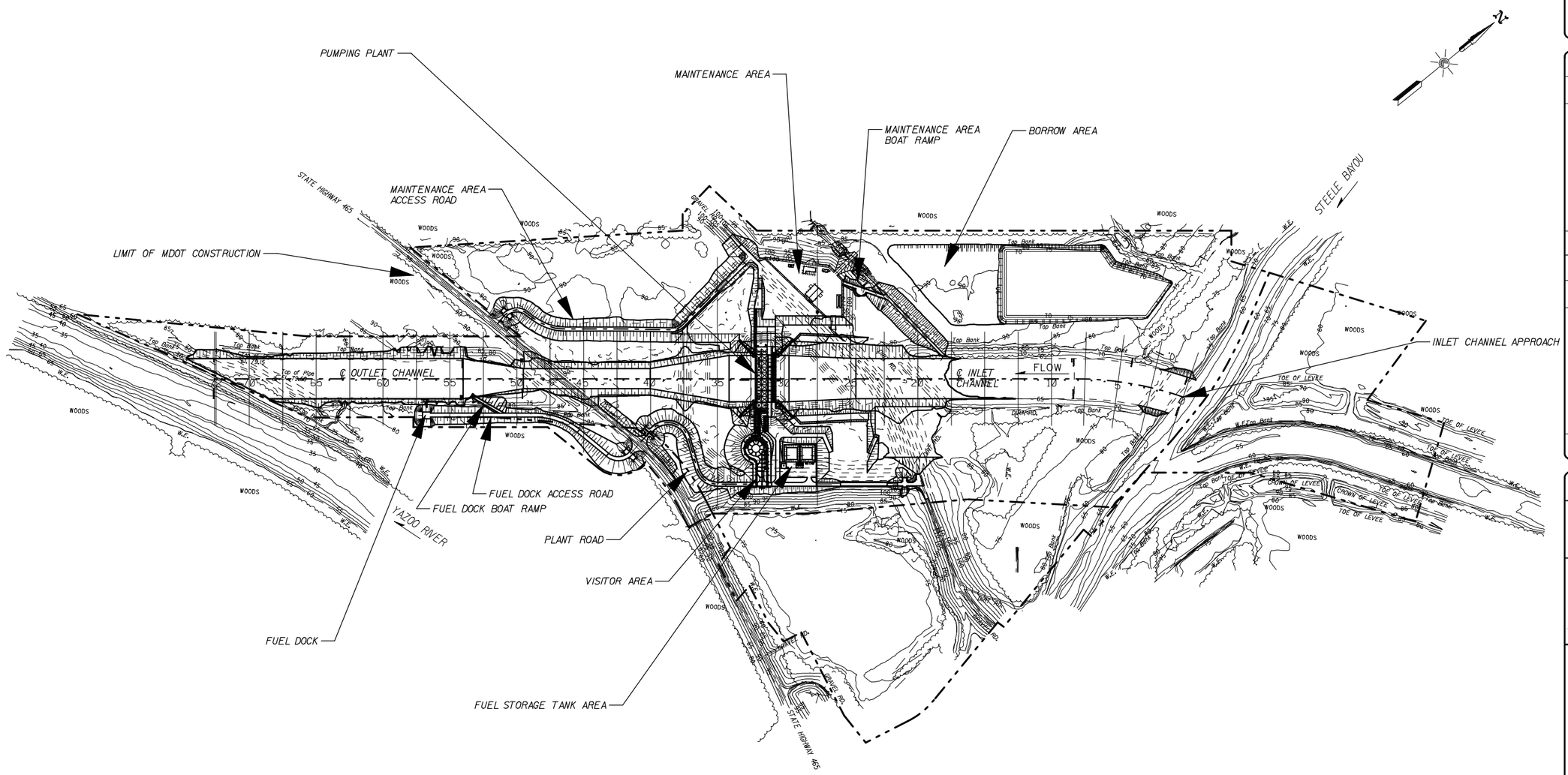
Engineering Appendix
Yazoo Backwater Project
USACED Vicksburg, MS
OCTOBER 2006



GEOLOGIC SECTION ℄ PUMPING PLANT

GEOLOGICAL SECTION CENTERLINE CHANNEL

Engineering Appendix
Yazoo Backwater Project
USACED Vicksburg, MS
OCTOBER 2006



LEGEND

- CL OF ROAD
- PROJECT RIGHTS-OF-WAY
- EDGE OF ROAD
- CROWN OF LEVEE OF LEVEE
- TOE OF LEVEE OF LEVEE
- ROAD SIGN
- HEADWALL
- CULVERT
- TOP BANK
- EDGE OF WATER
- CL OF DITCH
- TREE LINE TOP BANK
- FENCE
- GATE
- CATTEL GUARD
- 65 INDEX CONTOUR
- INTERMEDIATE CONTOUR
- TELEPHONE BOX
- TOP OF PIPE
- WATER METER
- WATER WELL
- POWER LINE & POLE
- .74 SOUNDING
- .78 SPOT SHOT
- AZ.108°14'30.98" 1639.80' 1523.39' TRAVERSE LINE

P.C. IR YPP-5 EL.110.48

GENERAL PLAN

SCALE: 1 IN.= 400 FT

400 200 0 400 800FT

SCALE: 1"= 400'

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

Designed by: TAT
Dwn by: TAT
Ckd by:
Reviewed by:
Submitted by:
Chief, Design Branch
Date: Month, 20xx
Rev.
Design file no. Y_15_278
Solicitation No: DACW38-yy-B-0xxx
File name: yazoo_Lib_7.dgn
Plot date: Month, 20xx
Plot scale: 1=400

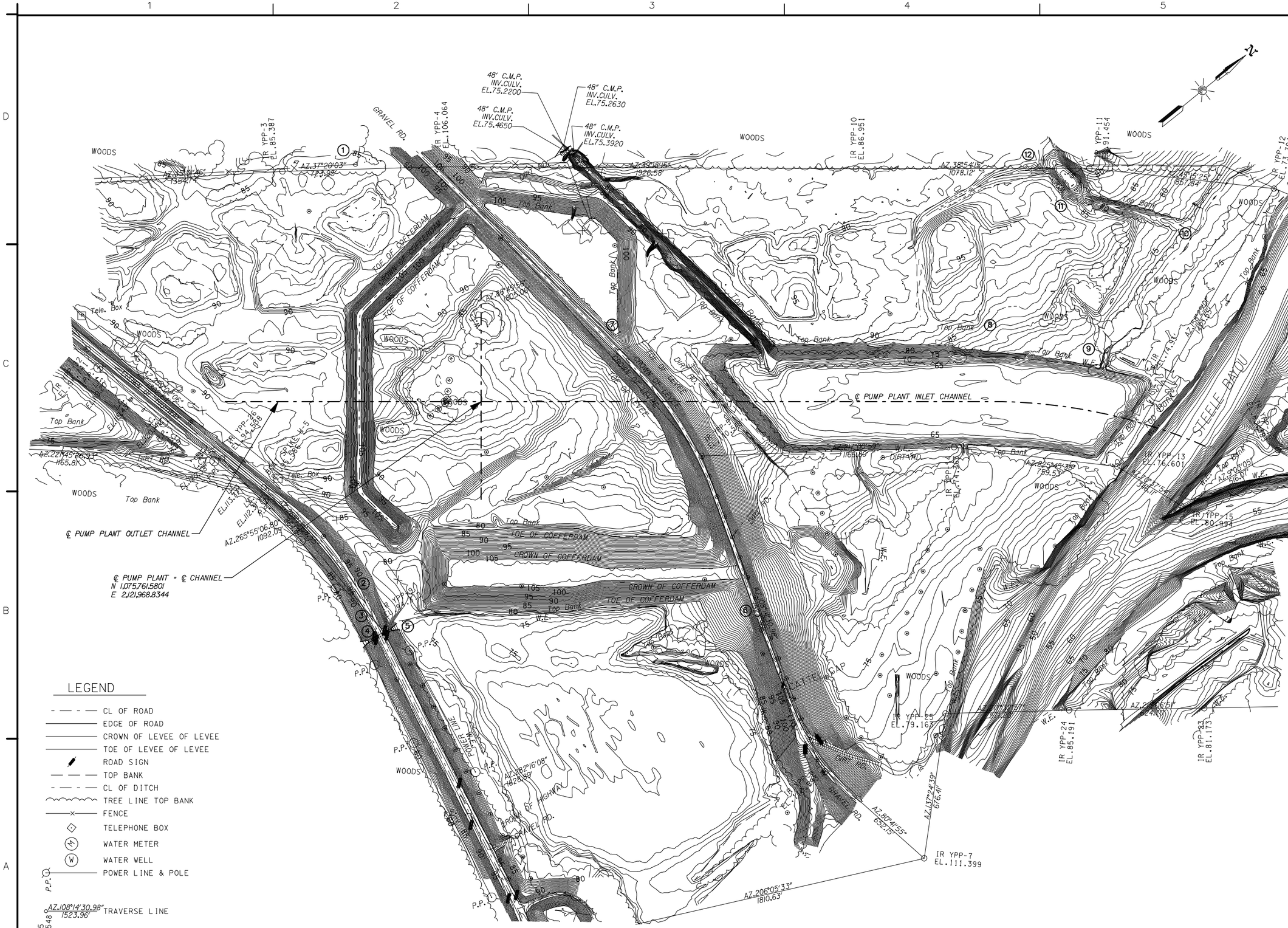
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

GENERAL PLAN

6/73

Sheetxxxof 596



SITE PLAN

SCALE: 1 IN.= 20 FT

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

Designed by: TAT
Dwn by: TAT
Ckd by: INTLS
Reviewed by: —
Submitted by: —
CHecf_Design_Branch —
Date: Month, 20xx
Rev.
Design file no. Y_15.278
Solicitation No: DACW39-yy-B-0xxx
File name: YSPP_dt_74
Plot date: Month, 20xx
Plot scale: 1:200

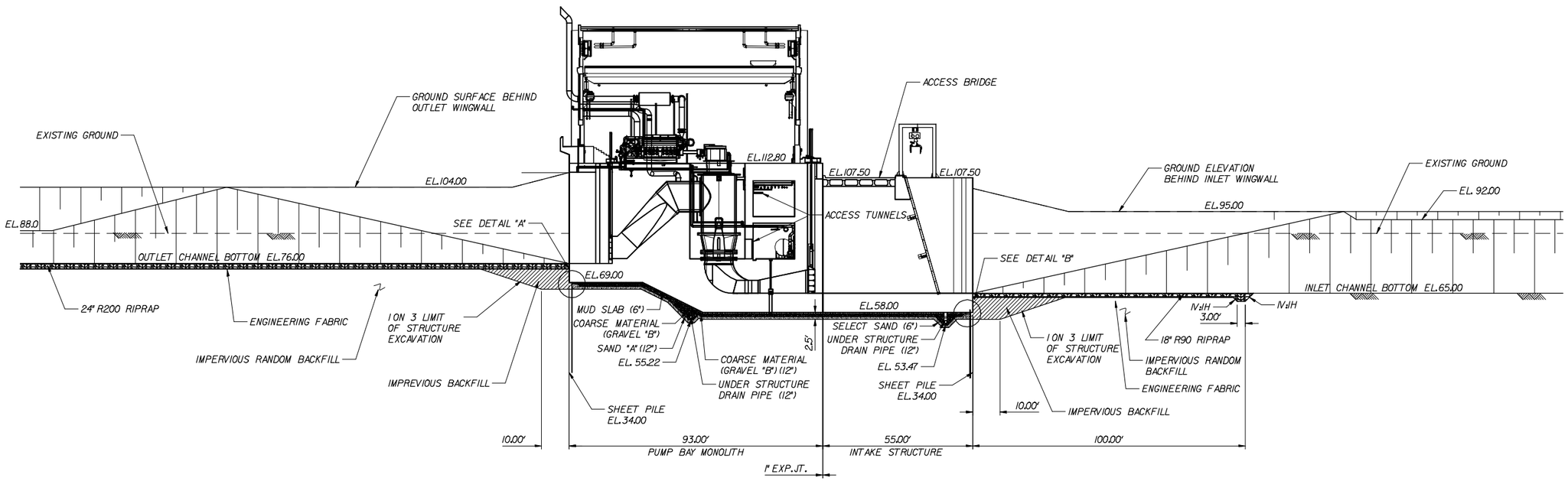
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT SITE WORK

EXISTING CONDITIONS

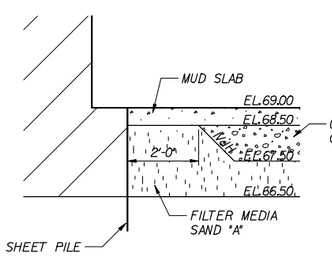
6/74

Sheetxxxof 596



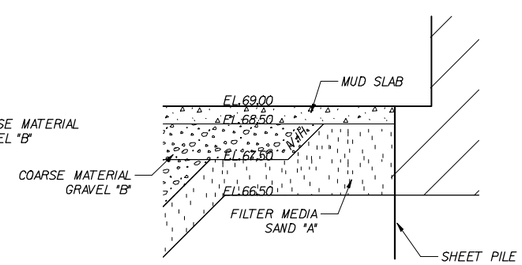
SECTION C 1/11

SCALE: 1 IN.= 20 FT



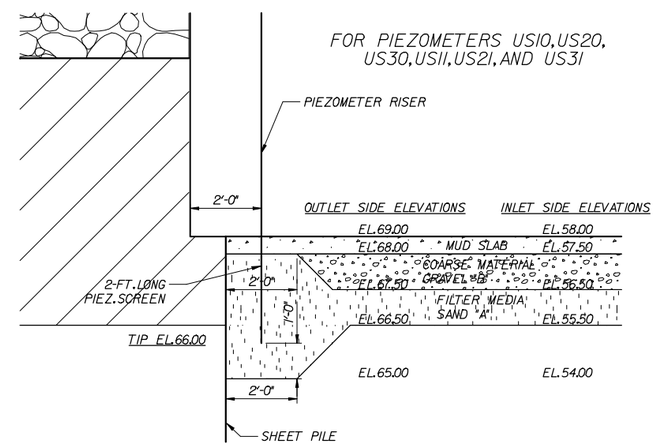
DETAIL "A"

SCALE: 1/2 IN.= 1 FT



DETAIL "B"

SCALE: 1/2 IN.= 1 FT



ALTERNATE FILTERING SYSTEM FOR PIEZOMETERS

SCALE 1/2 IN.= 1 FT

20 10 0 20 40 FT

SCALE: 1" = 20'

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description

This drawing is in the planning stage and should not be used for any other purpose.

Designed by: TAT
Dwn by: TAT
Ckd by: NTLS
Reviewed by: — — — —
Submitted by: — — — —
Date: Month, 20xx
Rev.
Design file no. Y_15_278
Solicitation No.: DACW38-yy-B-0xxx
File name: yazp_06_75.dgn
Plot date: Month, 20xx
Plot scale: 1:1
Cfile: Design_Branch

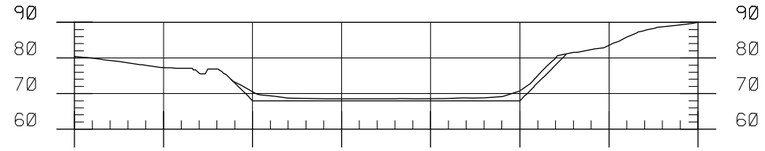
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

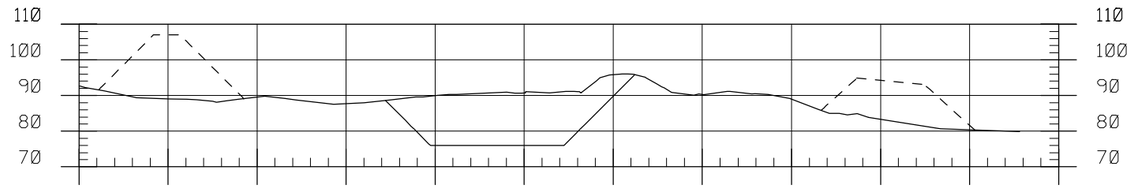
PUMPING PLANT
SECTION

6/75

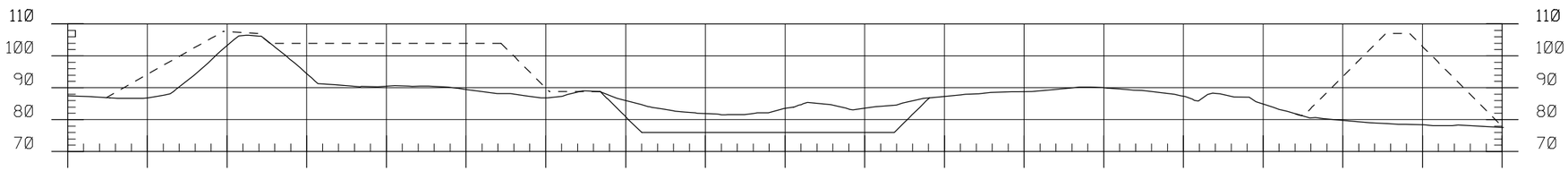
Sheet xxx of 596



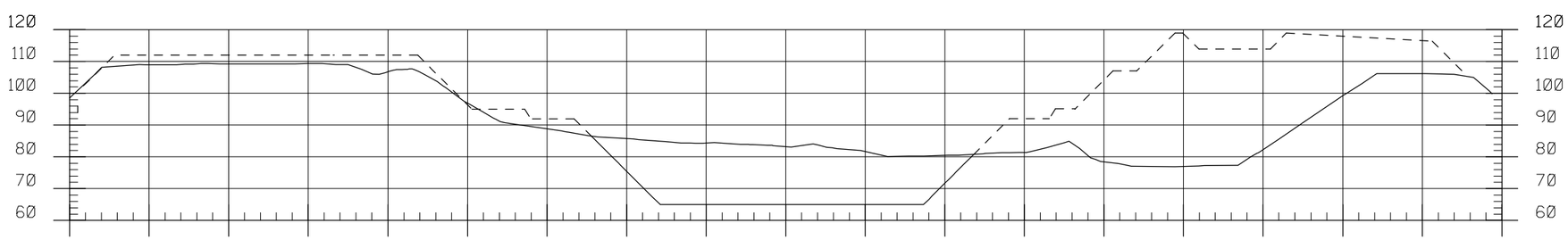
STA. 60+00
SCALE:1"= 50' HORIZONTAL
1"= 20' VERTICAL



STA. 45+00
SCALE:1"= 50' HORIZONTAL
1"= 20' VERTICAL



STA. 35+00
SCALE:1"= 50' HORIZONTAL
1"= 20' VERTICAL



STA. 28+00
SCALE:1"= 50' HORIZONTAL
1"= 20' VERTICAL

EXISTING GROUND
PROPOSED WORK

SECTIONS

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

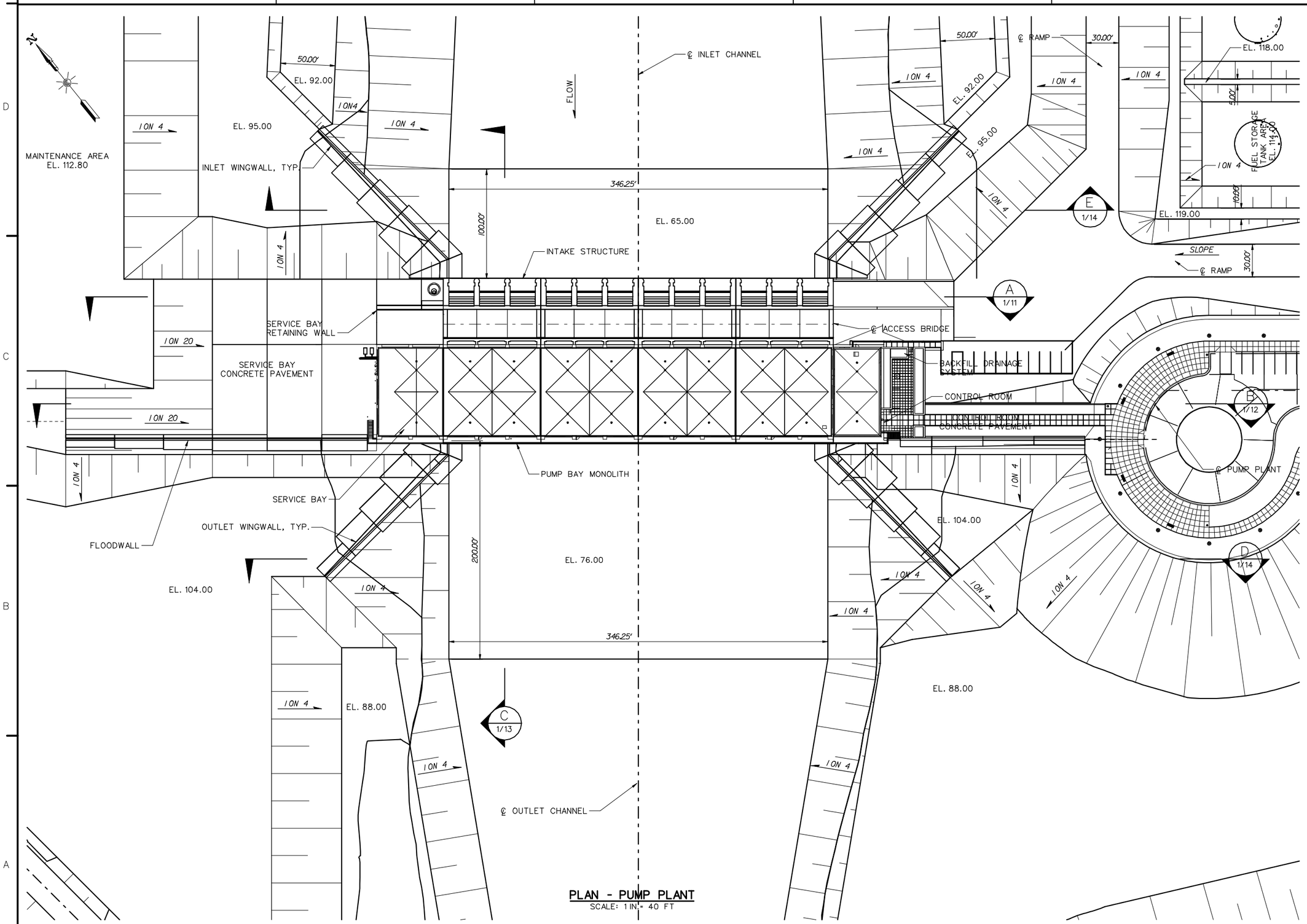
Designed by: TAT
Dwn by: JLB
Ckd by: RHM
Reviewed by:
Submitted by:
Date: Month, 20xx
Rev.
Design file no. Y_15_278
Solicitation No: DACW38-yr-B-0xxx
File name:
Plot date: Month, 20xx
Plot scale:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

SECTIONS

6/76
Sheetxxxof 596



PLAN - PUMP PLANT

SCALE: 1 IN.= 40 FT

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

This drawing is in the planning stage and should not be used for any other purpose.

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

Designed by: TAT
Dwn by: TAT
Ckd by: INTLS
Reviewed by: _ _ _ _
Submitted by: _ _ _ _
Date: Month, 20xx
Design file no. Y_15_278
Solicitation No.: DACW39-yy-B-0xxx
File name: ppp_06_77.dgn
Plot date: Month, 20xx
Plot scale: 1:1
Rev.
CTerr_Design_Branch

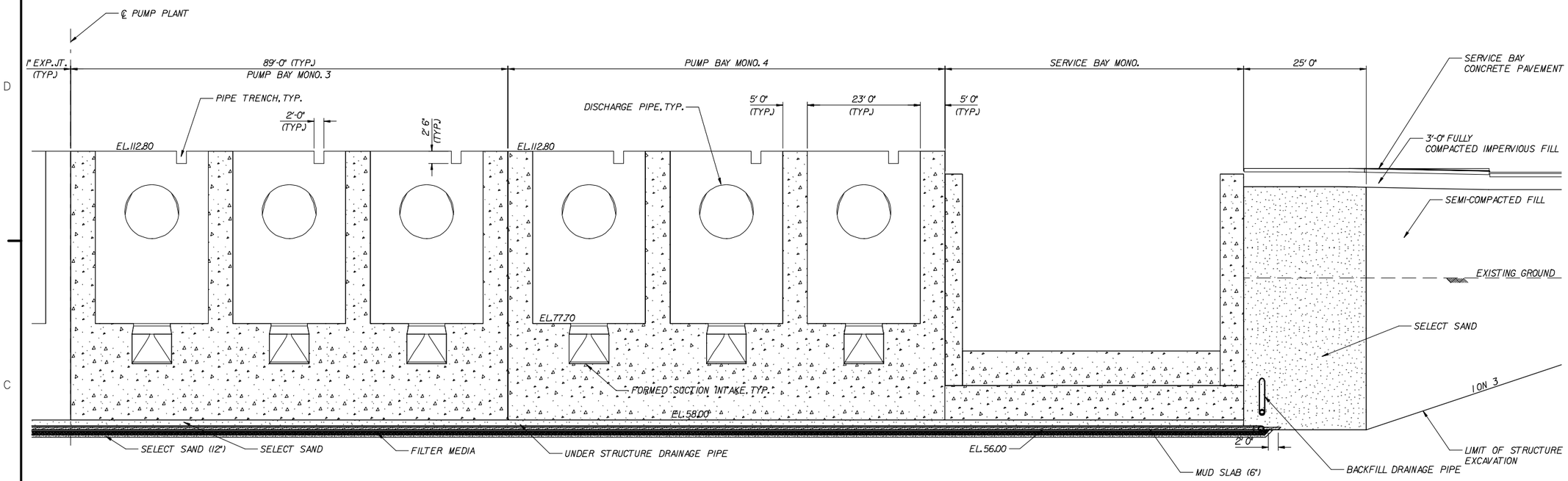
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

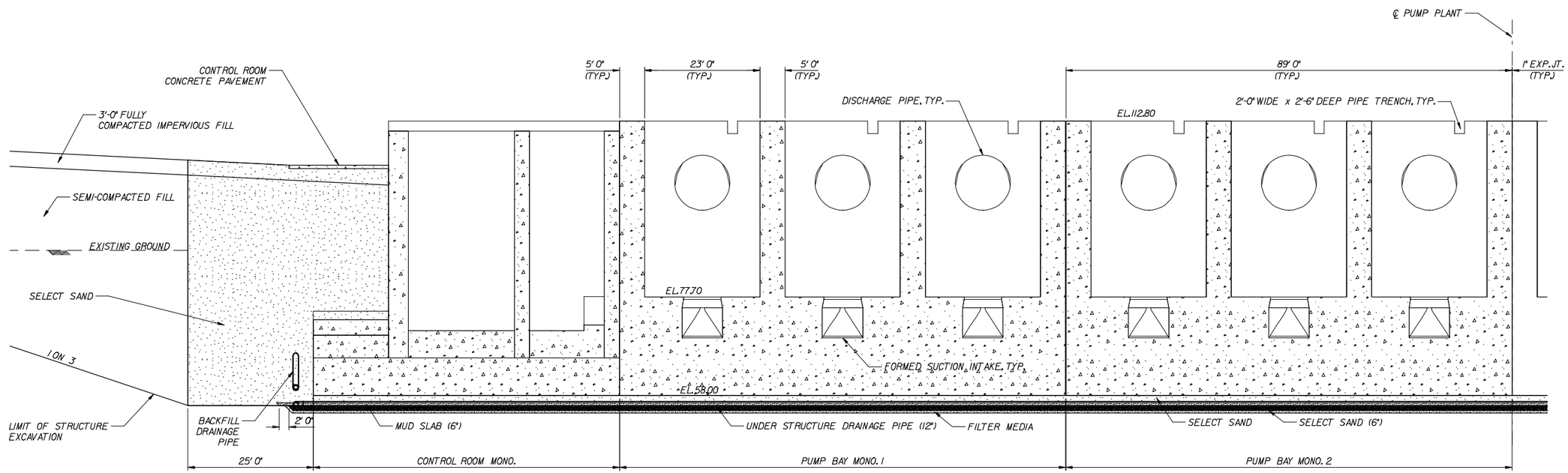
PLAN - PUMP PLANT

6/77

Sheetxxxof 596



HALF SECTION B 1/11
SCALE: 3/32 IN. = 1 FT



HALF SECTION B 1/11
SCALE: 3/32 IN. = 1 FT

SCALE: 3/32" = 1'-0"
12" 0 5' 10' 15' 20'

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

Designed by: TAT | Dwn by: TAT | Ckd by: | Reviewed by: | Submitted by:
Date: Month, 20xx | Rev.
Design file no. Y_15_278
Solicitation No: DACW38-yy-B-0xxx
File name: pump_06_78.dgn
Plot date: Month, 20xx
Plot scale: 1:1

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

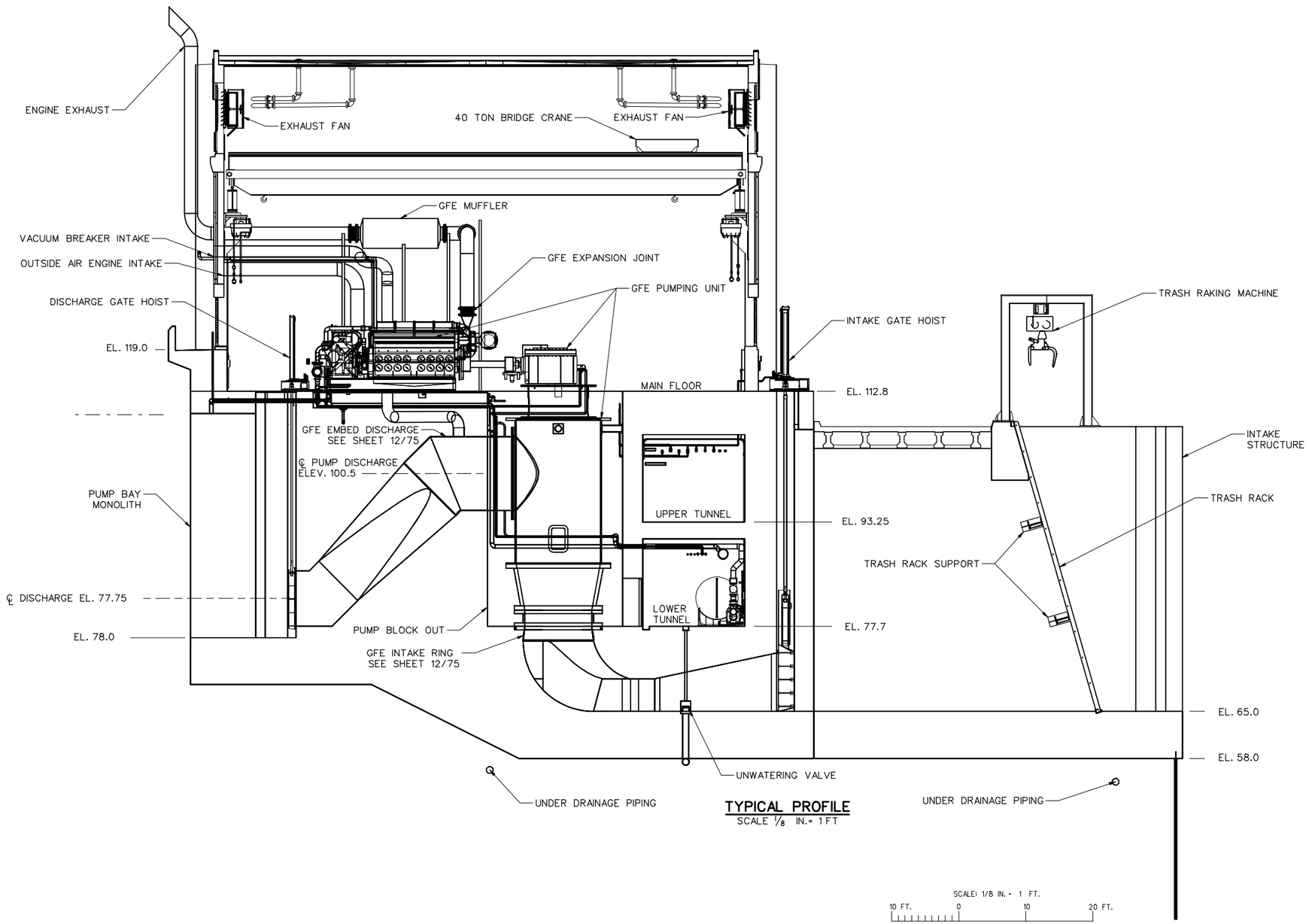
FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

PUMP BAY SECTIONS

6/78

Sheetxxxof 596

NOTE
GFE - GOVERNMENT FURNISHED EQUIPMENT



TYPICAL PROFILE
SCALE 1/8 IN.= 1 FT

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

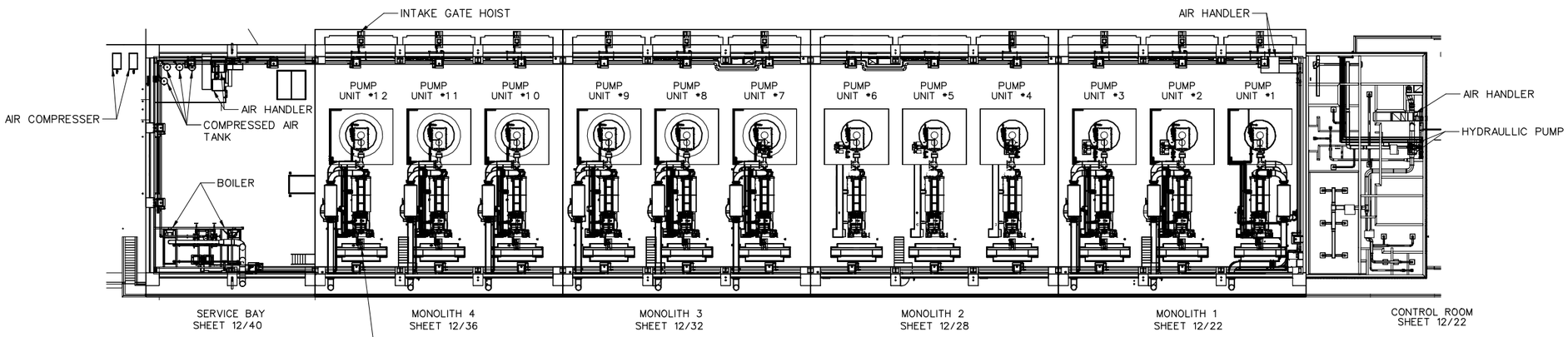
Designed by: FL | Date: Month, 20xx | Rev.
Dwn by: FL | Ckd by: REH | Design file no. Y_15_278
Reviewed by: — — — — | Solicitation No: DACW38-yr-B-0xxx
Submitted by: — — — — | File name: tBPP_06_79 | File date: Month, 20xx | Plot scale: 1xxx

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

PUMPING PLANT TYPICAL PROFILE

6/79
Sheetxxxof 596

When plotted full-size, this line measures 6 inches



MAIN FLOOR @ ELEV. 112.8

SCALE 3/64 IN.= 1 FT

SCALE: 3/64 IN. = 1 FT.

25 FT. 0 25 50 FT.

When plotted full-size, this line measures 6 inches

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

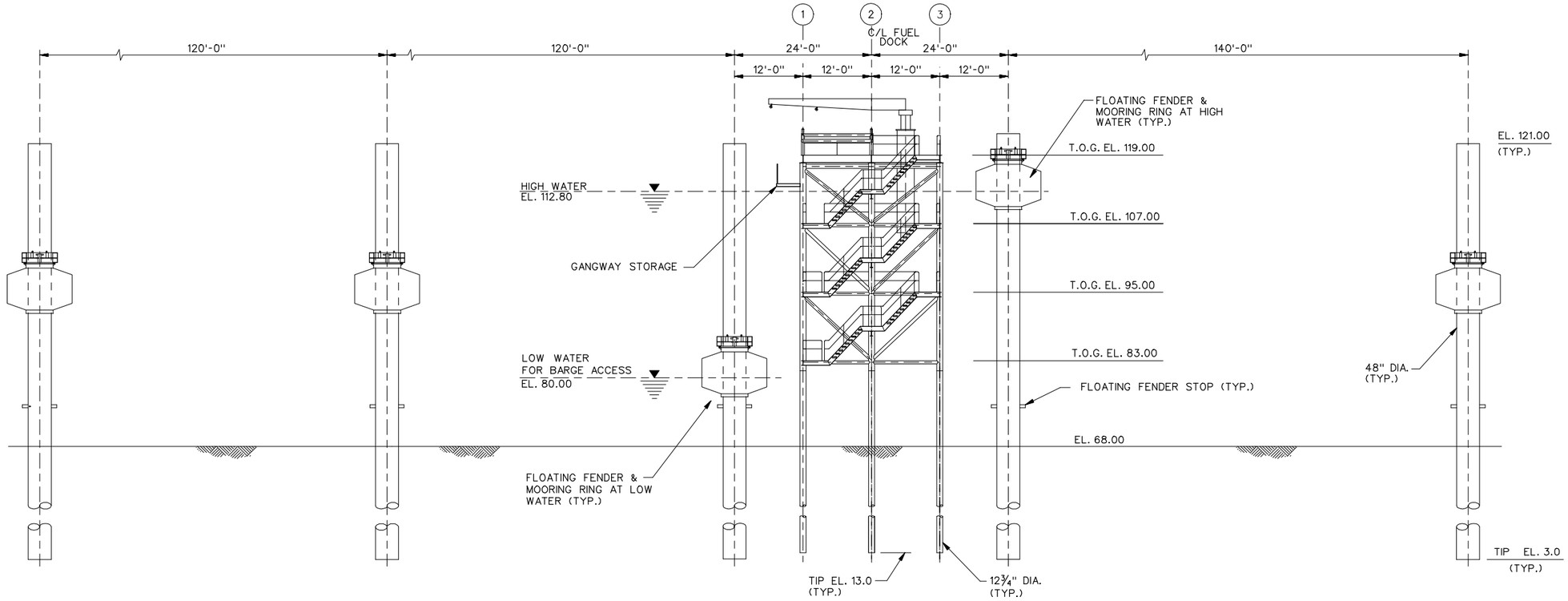
Designed by: FL
Dwn by: FL
Ckd by: REH
Reviewed by: — — — — —
Submitted by: — — — — —
Date: Month, 20xx
Rev.
Design file no. Y_15_278
Solicitation No: DACW38-yy-B-0xxx
File name: YBPP_06_30
Plot date: Month, 20xx
Plot scale: 1xxx

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

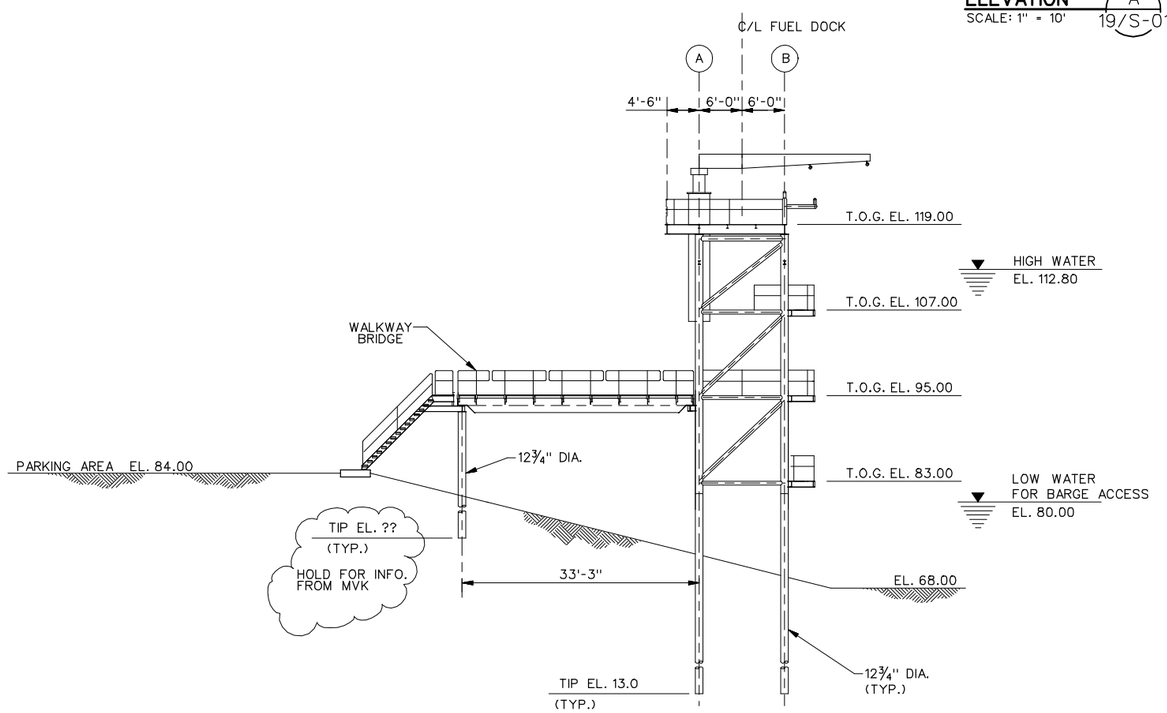
PUMP PLANT
MAIN FLOOR @ ELEV. 112.8'
GENERAL PLAN

6/80

Sheetxxxof 596



ELEVATION A 19/S-01
SCALE: 1" = 10'



ELEVATION B 19/S-01
SCALE: 1" = 10'

NOTES:
1. T.O.G. - TOP OF 1 1/2" GRATING.

10' 5' 0 10'
SCALE: 1"= 10'-0"

US Army Corps of Engineers
Vicksburg District

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

This drawing is in the planning stage and should not be used for any other purpose.

Designed by: RBR
Dwn by: HCH
Ckd by: MKS
Reviewed by:
Submitted by:
Date: Month, 20xx
Rev.
Design file no. Y_15_278
Solicitation No: DACW38-y-B-0xxx
File name: yazp_06_81
Plot date: Month, 20xx
Plot scale: 1:1

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

WALDEMAR S. NELSON AND COMPANY
INCORPORATED
ENGINEERS AND ARCHITECTS

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN
YAZOO BACKWATER AREA
YAZOO BACKWATER PUMPING PLANT

FUEL DOCK
ELEVATIONS

6/81
Sheetxxxof 596

When plotted full-size, this line measures 6 inches

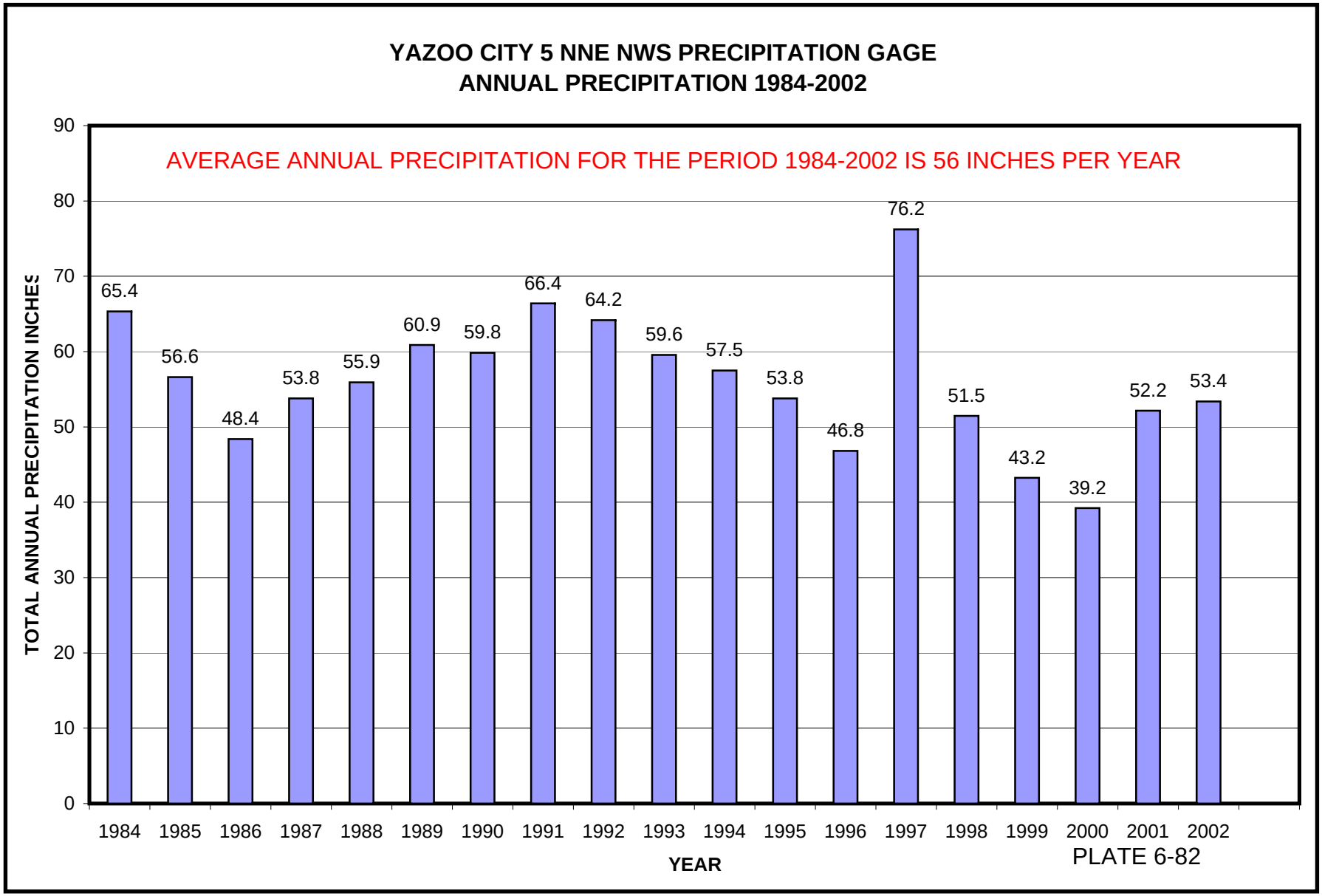

YAZOO CITY 5 NNE NWS PRECIPITATION GAGE
ANNUAL PRECIPITATION 1984-2002
AVERAGE ANNUAL PRECIPITATION FOR THE PERIOD 1984-2002 IS 56 INCHES PER YEAR
TOTAL ANNUAL PRECIPITATION INCHES
0
10
20
30
40
50
60
70
80
90
65.4
56.6
48.4
53.8
55.9
60.9
59.8
66.4
64.2
59.6
57.5
53.8
46.8
76.2
51.5
43.2
39.2
52.2
53.4
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
YEAR

PLATE 6-82

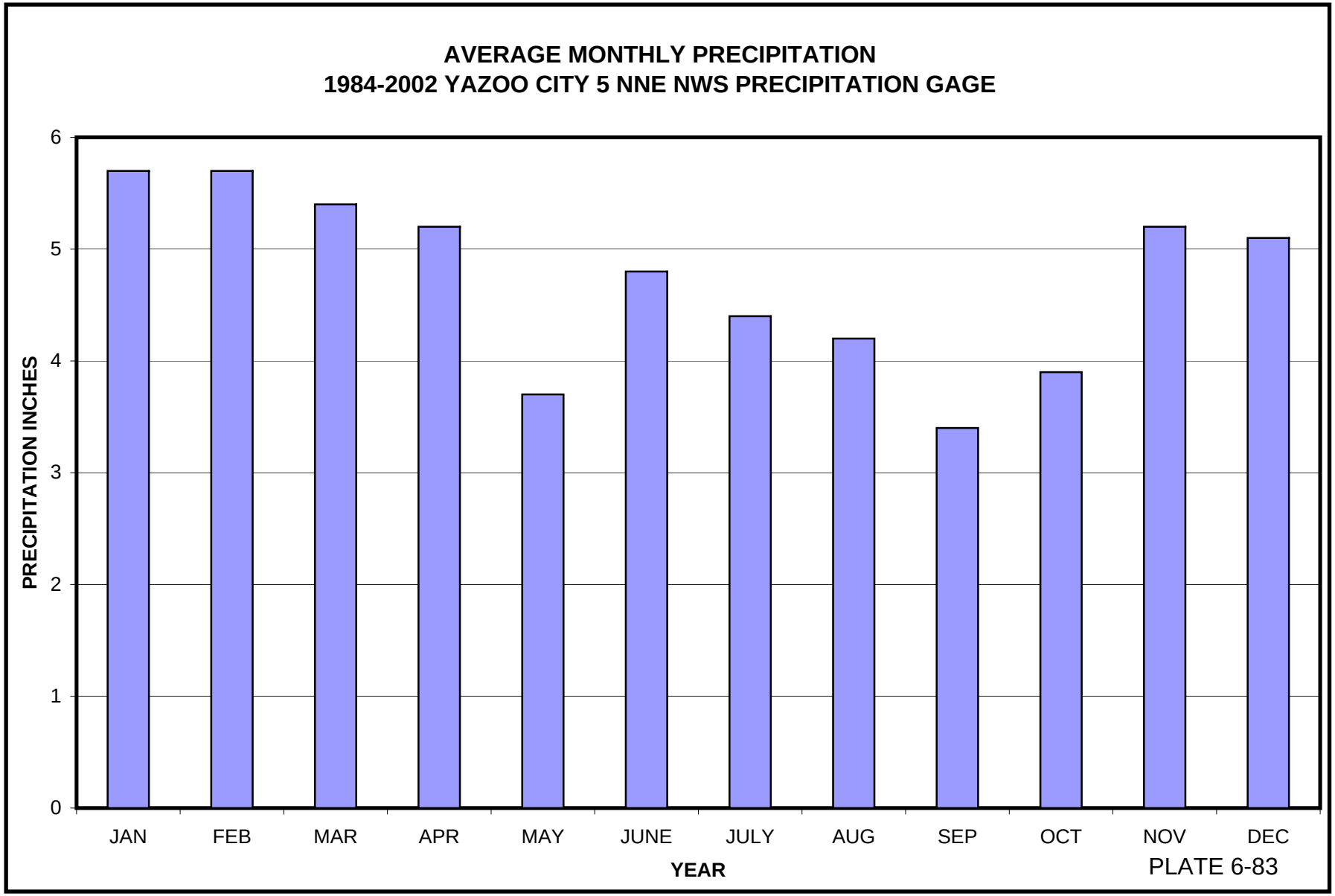
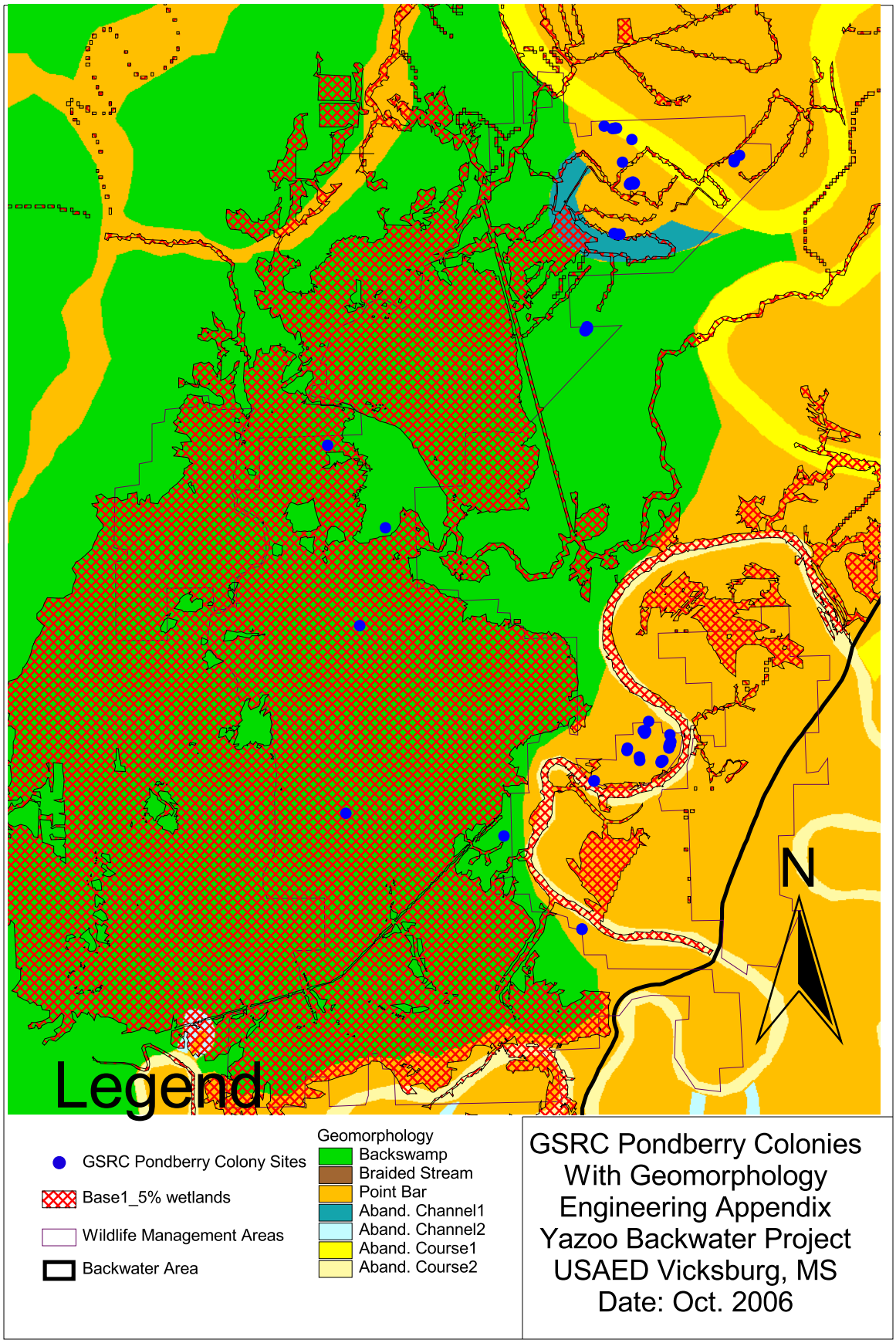
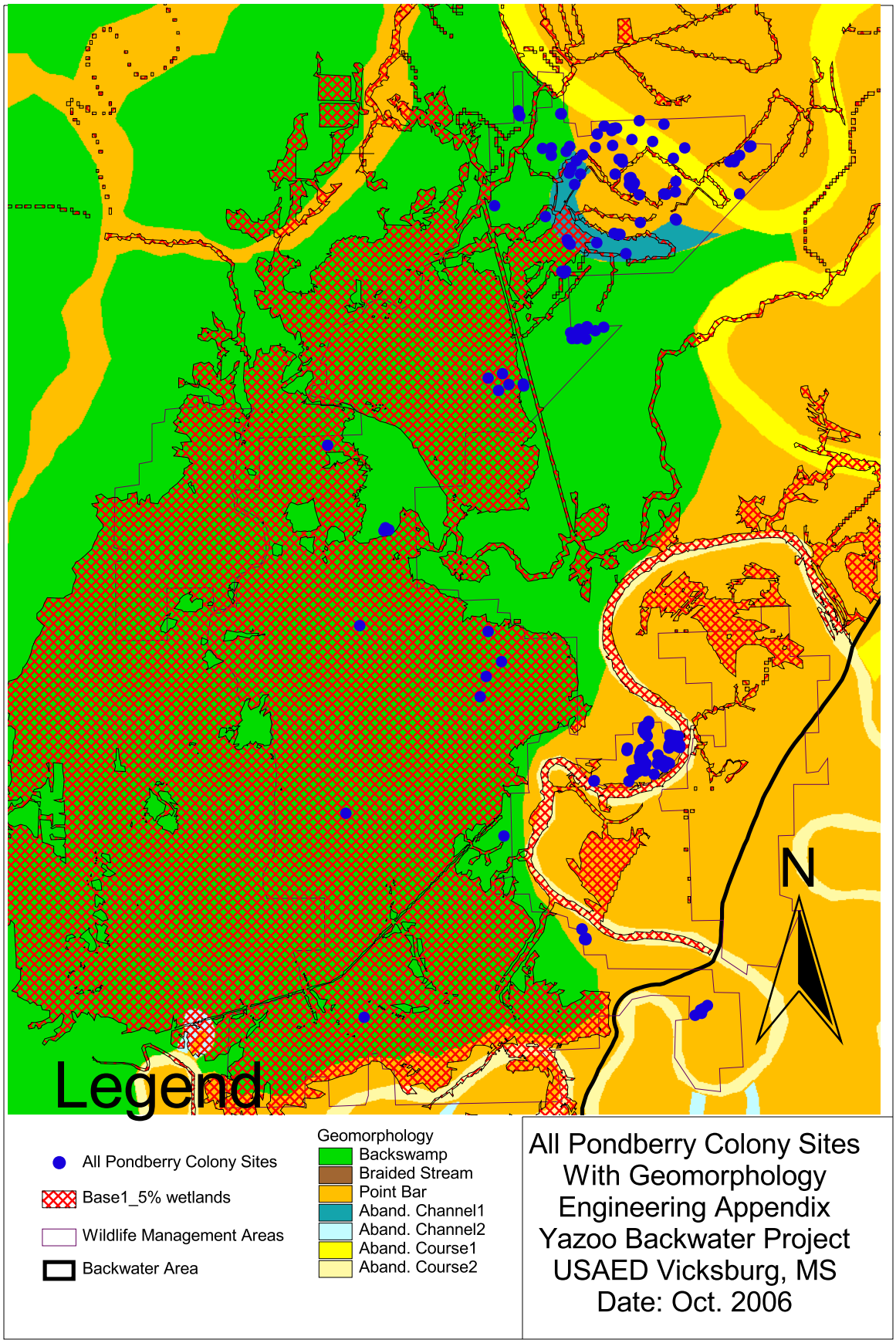

AVERAGE MONTHLY PRECIPITATION
1984-2002 YAZOO CITY 5 NNE NWS PRECIPITATION GAGE
PRECIPITATION INCHES
0
1
2
3
4
5
6
JAN
FEB
MAR
APR
MAY
JUNE
JULY
AUG
SEP
OCT
NOV
DEC
YEAR

PLATE 6-83



GSRC Pondberry Colonies
With Geomorphology
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS
Date: Oct. 2006



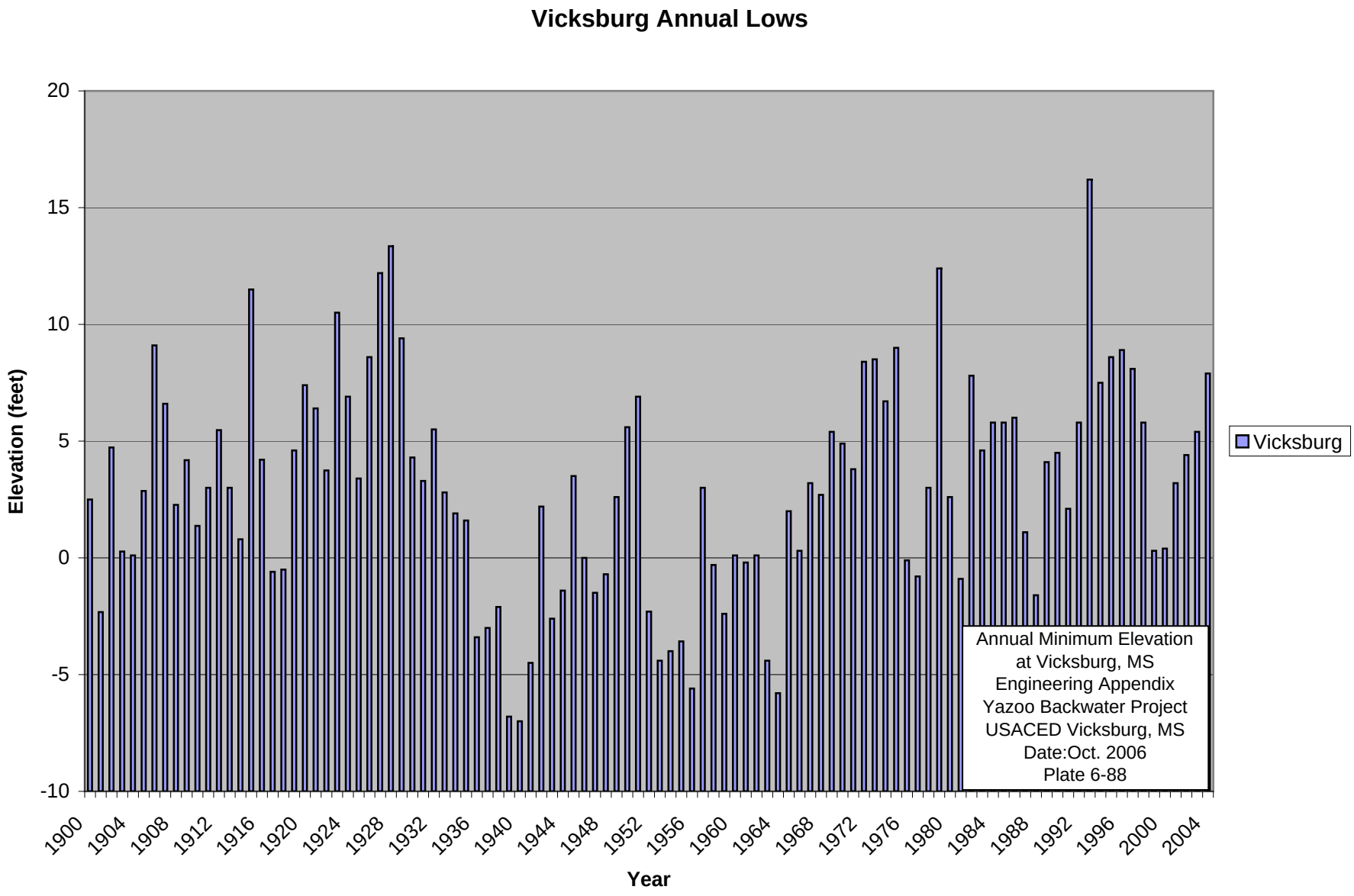
All Pondberry Colony Sites
With Geomorphology
Engineering Appendix
Yazoo Backwater Project
USAED Vicksburg, MS
Date: Oct. 2006

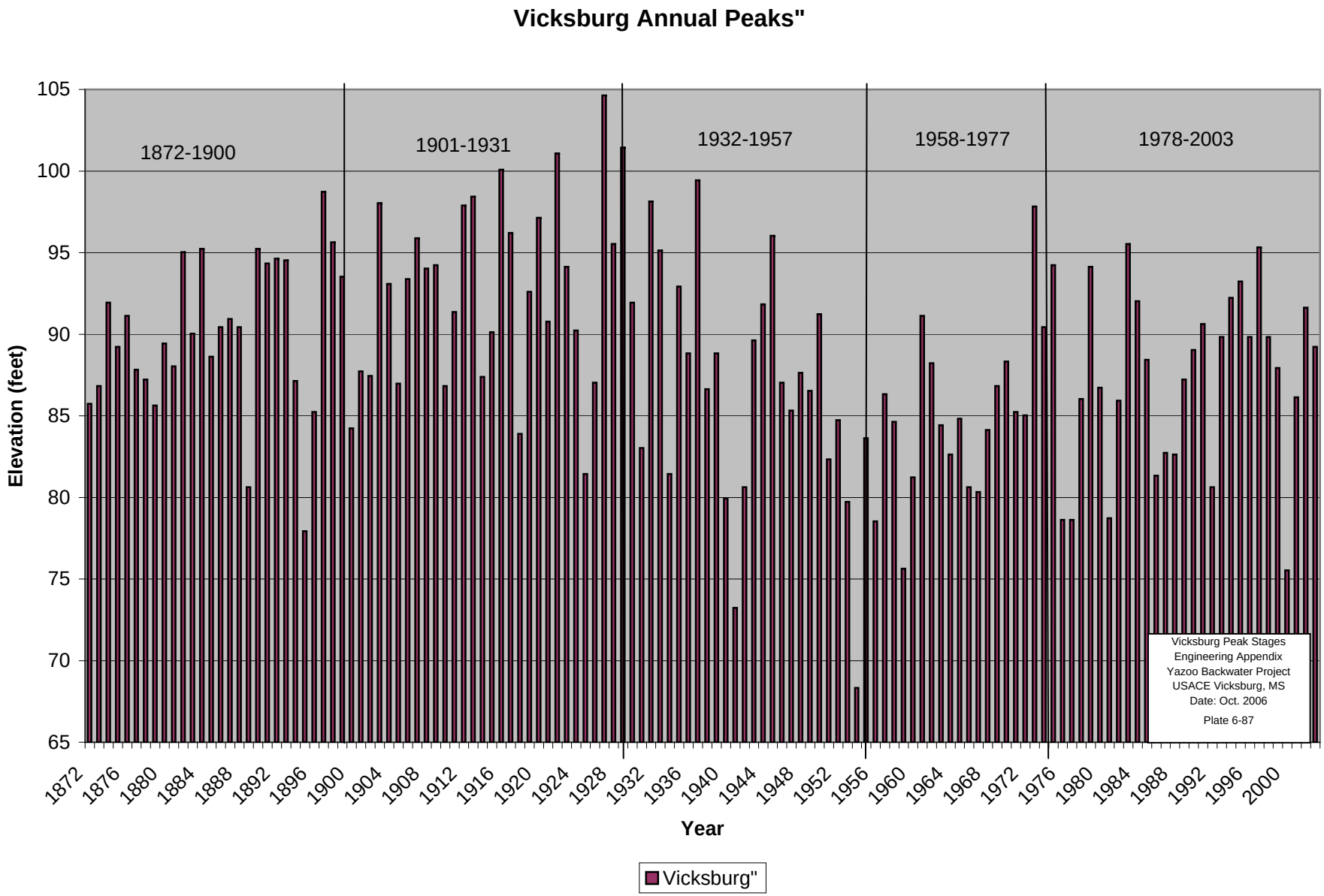
WITHOUT - PROJECT DISTRIBUTION OF PONDBERRY COLONIES
ON DELTA NATIONAL FOREST BY DURATION ZONE

Percent Duration		Days	Pondberry Colonies		GSRC Colonies	
			Number	Percent	Number	Percent
Above 5.0	Outside 2-Year Frequency	< 1	92	50.6	29	59.2
	< 2.5	1 to 6	63	34.6	18	36.7
	2.5 to 5.0	7 to 13	8	4.4	0	0.0
Below 5.0	5.0 to 7.5	14 to 19	5	2.8	0	0.0
	7.5 to 10.0	20 to 26	13	7.1	20	4.1
	10.0 to 12.5	27 to 33	1	0.5	0	0.0
	> 12.5	> 34	0	0.0	0	0.0
Total			182	100.0	49	100.0

WITH - PROJECT DISTRIBUTION OF PONDBERRY COLONIES
ON DELTA NATIONAL FOREST BY DURATION ZONE

Percent Duration		Days	Pondberry Colonies		GSRC Colonies	
			Number	Percent	Number	Percent
Above 5.0	Outside 2-Year Frequency	< 1	118	64.8	34	69.4
	< 2.5	1 to 6	46	25.3	13	26.5
	2.5 to 5.0	7 to 13	2	1.1	0	0.0
Below 5.0	5.0 to 7.5	14 to 19	3	1.6	0	0.0
	7.5 to 10.0	20 to 26	11	6.0	2	4.1
	10.0 to 12.5	27 to 33	0	0.0	0	0.0
	> 12.5	> 34	2	1.2	0	0.0
Total			182	100.0	49	100.0


Vicksburg Annual Lows
Elevation (feet)
20
15
10
5
0
-5
-10
1900
1904
1908
1912
1916
1920
1924
1928
1932
1936
1940
1944
1948
1952
1956
1960
1964
1968
1972
1976
1980
1984
1988
1992
1996
2000
2004
Year
Vicksburg
Annual Minimum Elevation
at Vicksburg, MS
Engineering Appendix
Yazoo Backwater Project
USACED Vicksburg, MS
Date:Oct. 2006
Plate 6-88


Vicksburg Annual Peaks"
1872-1900
1901-1931
1932-1957
1958-1977
1978-2003
Elevation (feet)
105
100
95
90
85
80
75
70
65
1872
1876
1880
1884
1888
1892
1896
1900
1904
1908
1912
1916
1920
1924
1928
1932
1936
1940
1944
1948
1952
1956
1960
1964
1968
1972
1976
1980
1984
1988
1992
1996
2000
Year
Vicksburg"
Vicksburg Peak Stages
Engineering Appendix
Yazoo Backwater Project
USACE Vicksburg, MS
Date: Oct. 2006
Plate 6-87