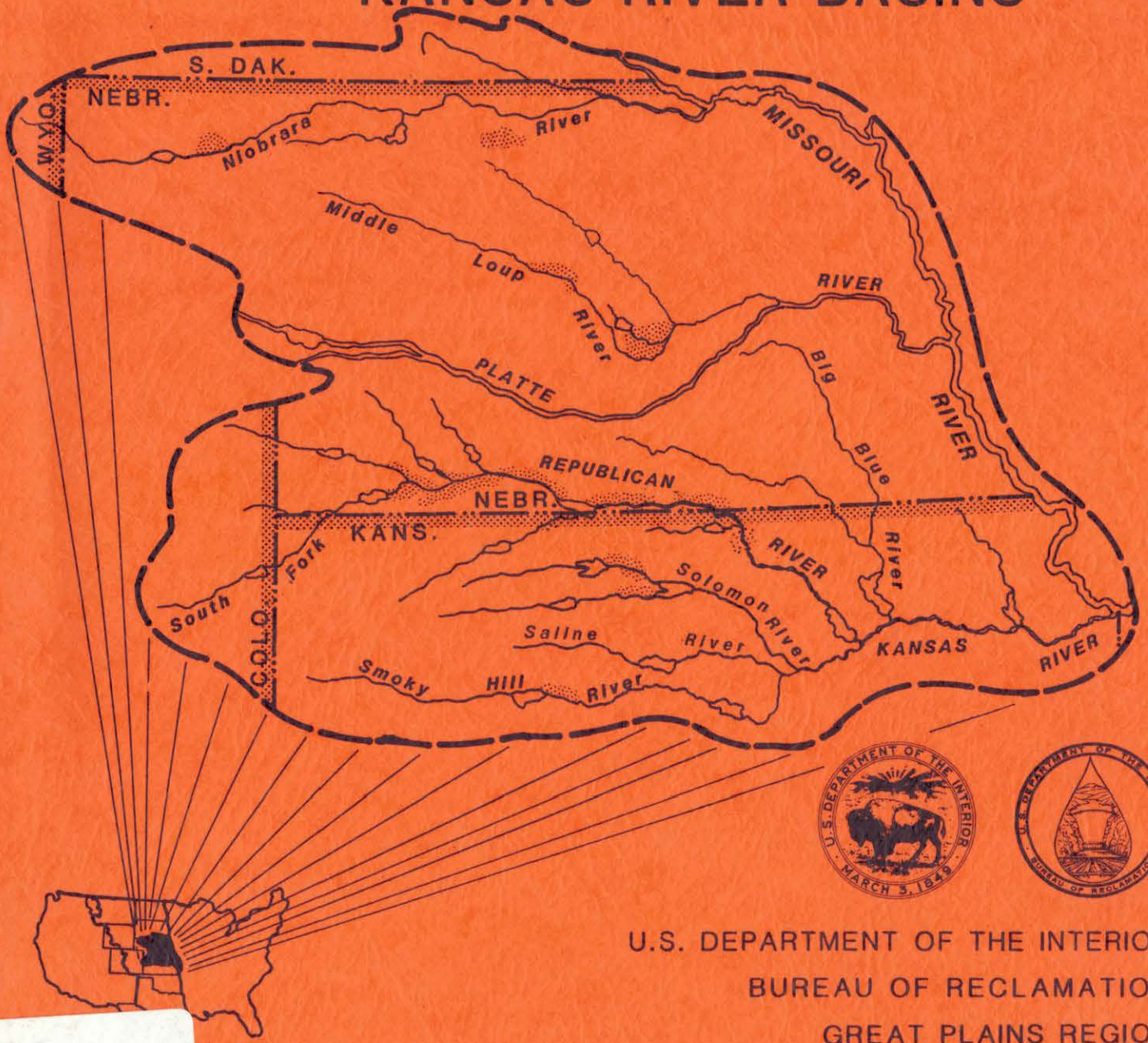
ANNUAL OPERATING PLANS

CALENDAR YEARS
1988-1989

NIOBRARA, LOWER PLATTE, AND KANSAS RIVER BASINS



U.S. DEPARTMENT OF THE INTERIOR
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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION
BILLINGS, MONTANA

ANNUAL OPERATING PLANS

NIOBRARA, LOWER PLATTE, AND KANSAS RIVER BASINS

CALENDAR YEAR--1988
OPERATIONS

CALENDAR YEAR--1989
OUTLOOK

CONTENTS

LIST OF TABLES (all following page 22)

LIST OF EXHIBITS (all following Table 6)

Name of Reservoir	Historical Operation	1988 Actual Operation	1989 Operation Plan
Box Butte Reservoir	1A	1B	1C
Merritt Reservoir	2A	2B	2C
Sherman Reservoir	3A	3B	3C
Calamus Reservoir	4A	4B	4C
Bonny Reservoir	5A	5B	5C
Enders Reservoir	6A	6B	6C
Swanson Lake	7A	7B	7C
Hugh Butler Lake	8A	8B	8C
Harry Strunk Lake	9A	9B	9C
Keith Sebelius Lake	10A	10B	10C
Harlan County Lake	11A	11B	11C
Lovewell Reservoir	12A	12B	12C
Kirwin Reservoir	13A	13B	13C
Webster Reservoir	14A	14B	14C
Waconda Lake	15A	15B	15C
Cedar Bluff Reservoir	16A	16B	16C

Canal Diversions and Acres Irrigated

17 - Mirage Flats Irrigation District
18 - Ainsworth Irrigation District
19 - Sargent Irrigation District
20 - Farwell Irrigation District
21 - Twin Loups Irrigation District
22 - Frenchman Valley Irrigation District
23 - H&RW Irrigation District
24 - Frenchman-Cambridge Irrigation District
25 - Almena Irrigation District
26 - Bostwick Irrigation District in Nebraska
27 - Kansas-Bostwick Irrigation District
28 - Kirwin Irrigation District
29 - Webster Irrigation District
30 - Cedar Bluff Irrigation District

Map - Irrigation and Flood Control Facilities

SYNOPSIS

General

This year is the thirty-sixth consecutive year that an Annual Operating Plan (AOP) has been prepared for the federally owned dams and reservoirs serving an irrigation function in the Niobrara, Lower Platte, and Kansas River Basins. The plan has been developed by the Water Control Field Branch, McCook, Nebraska for the 16 dams and reservoirs that are located in Colorado, Nebraska, and Kansas. These reservoirs, together with 10 diversion dams, 11 pumping plants, and 25 canal systems, serve approximately 307,500 acres of project lands in Nebraska and Kansas. In addition to irrigation, municipal, and industrial water, these features serve flood control, recreation, and fish and wildlife purposes. A map in the appendix of this report shows the location of these features.

The reservoirs in the Niobrara and Lower Platte River Basins are operated by either irrigation or reclamation districts, and the reservoirs in the Kansas River Basin are operated by either the Bureau of Reclamation (Reclamation), or the Corps of Engineers. Calamus Dam is operated and maintained by the Twin Loups Reclamation District under an agreement with Reclamation. Kirwin Irrigation District provides operational and maintenance assistance for Kirwin Dam. The diversion dams, pumping plants, and canal systems are operated by either irrigation or reclamation districts.

A Programmable Master-Station Supervisory Control System located at McCook is used to assist in operational management of all eleven dams under Reclamation's jurisdiction that are located in the Kansas River Basin.

The Headlines 88 that follows this synopsis is indicative of the awareness of the local people of the natural resource development and conservation in the Niobrara, Lower Platte, and Kansas River Basins.

1988 Summary

Climatic Conditions

The total precipitation over the operating area during 1988 ranged from 61 percent of normal at Kirwin Reservoir to 140 percent of normal at Box Butte Reservoir. Precipitation during the early part of the growing season was significantly below normal. The temperatures were above normal during most of the growing season. Planting of crops occurred 10 to 14 days earlier than normal. Fall harvest conditions were excellent.

Storage Reservoirs

1. Conservation Operations. The 1988 inflows were below the dry-year forecast at Bonny, Cedar Bluff, Enders and Webster Reservoirs. Swanson, Hugh Butler, Harry Strunk, Keith Sebelius, Waconda and Harlan County Lakes and Box Butte, Kirwin and Lovewell Reservoirs had inflows between the dry- and normal-year forecasts. Sherman Reservoir had inflows between the normal- and wet-year forecast. Merritt and Calamus Reservoirs had inflows above the wet-year forecasts.

The following summarized data shows a comparison of 1987 and 1988 carryover storage for all reservoirs in the Niobrara, Lower Platte, and Kansas River Basins.

	RESERVOIR DATA SEPTEMBER 30					
	1987		1988		Conservation Capacity	
Reservoir	Elevation (feet)	Storage (acre-ft)	Elevation (feet)	Storage (acre-ft)	Elevation (feet)	Storage (acre-ft)
Box Butte	3977.71	2,716	3976.78	2,384	4007.00	31,060
Merritt	2935.80	48,867	2934.80	46,811	2946.00	74,486
Sherman	2157.00	54,917	2157.20	55,419	2162.30	69,076
Calamus	2235.25	87,574	2237.97	98,904	2244.00	127,400
Bonny	3668.45	34,485	3668.27	34,156	3672.00	41,340
Enders	3089.63	15,507	3090.00	15,830	3112.30	44,480
Swanson	2739.61	60,226	2739.42	59,566	2752.00	112,214
Hugh Butler	2571.55	23,570	2573.43	25,824	2581.80	37,776
Harry Strunk	2356.69	21,625	2356.39	21,262	2366.10	35,705
Keith Sebelius	2284.94	8,450	2283.20	7,126	2304.30	35,935
Harlan County	1940.94	265,657	1937.22	225,719	1946.00	327,639
Lovewell	1579.92	34,230	1578.35	30,320	1582.60	41,690
Kirwin	1711.09	31,857	1704.02	18,830	1729.25	99,435
Webster	1878.40	34,921	1872.08	21,754	1892.45	77,371
Waconda	1454.77	231,129	1450.43	182,047	1455.60	241,460
Cedar Bluff	2106.24	32,146	2102.69	25,482	2144.00	185,090

2. Flood Control Operations. No flood control benefits were accrued by the operation of the Nebraska-Kansas Projects dams during 1988. The accumulative total of flood control benefits for the years 1951 through 1988 by facilities in this report total $71,013,000 (see table 5). To date no benefits have been accrued by the operation of Box Butte, Merritt, Sherman, or Calamus Dams.

Water Service

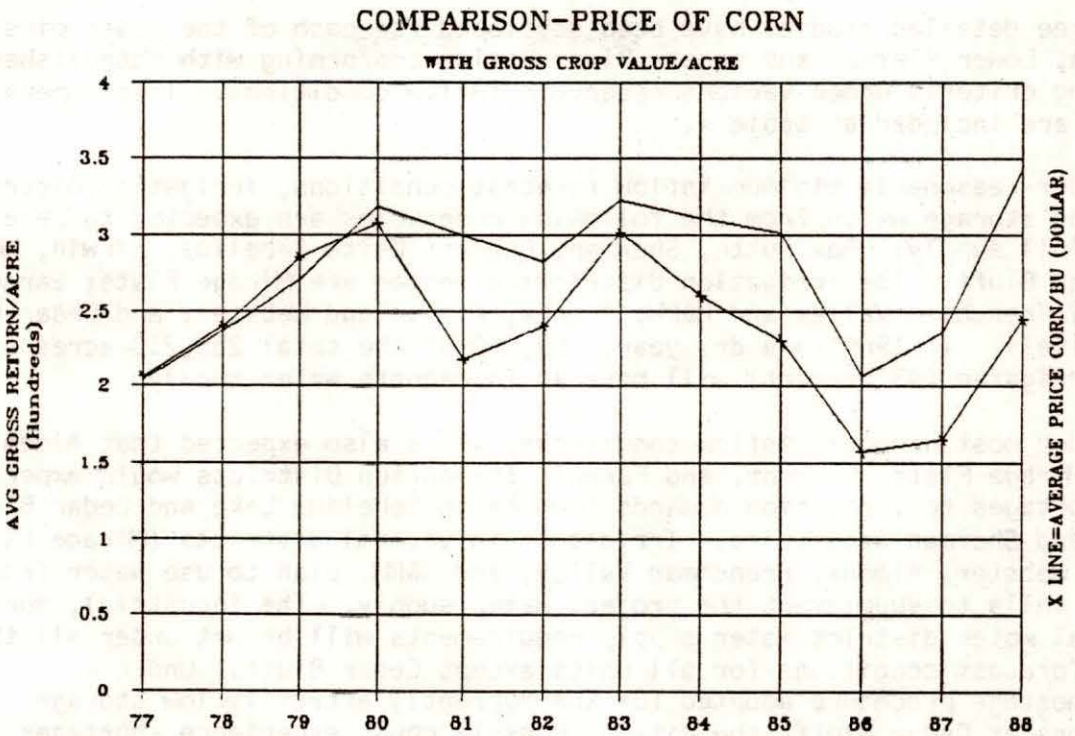
There were 494,434 acre-feet of water diverted to irrigate 221,195 acres of projects lands in 13 of the 14 irrigation districts (see tables 3 and 6). Due to extremely dry conditions early in the growing season, several districts received record high deliveries for the month of June. The project water supply was inadequate for 65,250 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Almena, Kirwin, Webster, and Cedar Bluff Irrigation Districts. No project water was available for delivery to Cedar Bluff Irrigation District. The project water supplies for the other units mentioned in this report were adequate in 1988.

The water requirements of three municipalities, one rural water district, one industrial company, and a fish hatchery facility were furnished from storage releases or natural flows.

Under a long-term contract with Reclamation for use of the Arcadia Diversion Dam, the Middle Loup Public Power and Irrigation District diverted 38,742 acre-feet to irrigate 14,189 acres of non-project lands. These diversions were made under natural-flow water rights granted by the state of Nebraska.

Irrigation Production

The 1988 crop yields from lands receiving project water were lower than 1987 for all districts except Mirage Flats and Twin Loups. Corn, the principal crop, decreased from an average of 138 bushels per acre to 133 bushels per acre. Unit prices for all commodities were higher than those in 1987. The total gross crop value for districts receiving project water was $72,669,071. The average gross crop value per acre increased from $236.15 to $343.55 during 1988. The following graph compares corn prices with the gross crop value per acre.



The following summary shows the comparison of corn yields for each irrigation district.

	Corn Yield (bu/acre)	
Irrigation District	1987	1988
Mirage Flats	134	147
Ainsworth	144	143
Sargent	124	124
Farwell	146	137
Twin Loups	113	128
Frenchman Valley	162	144
H&RW	141	140
Frenchman-Cambridge	143	134
Almena	143	132
Bostwick in Nebraska	140	116
Kansas-Bostwick	137	135
Kirwin	146	131
Webster	122	116
Cedar Bluff	*	*
Average of Districts Reporting	138	133

* No project water supplied; not included in averages.

Fish and Wildlife and Recreation Benefits

During the early part of the 1988 season, normal reservoir operations were favorable for recreation and fish and wildlife uses. Late in the season, irrigation operations lowered reservoir levels at some reservoirs, thereby limiting the recreation benefits.

1989 Outlook

Three detailed studies have been developed for each of the reservoirs in the Niobrara, Lower Platte, and Kansas River Basins conforming with established operating criteria under various reservoir inflow conditions. These operation studies are included as table 4.

Under reasonable minimum inflow forecast conditions, irrigation districts receiving storage water from the following reservoirs are expected to receive less than a full supply: Box Butte, Sherman, Enders, Keith Sebelius, Kirwin, Webster and Cedar Bluff. The irrigation districts affected are Mirage Flats; Sargent and Farwell; Frenchman Valley and H&RW; Almena; Kirwin and Webster; and Cedar Bluff, respectively. If 1989 is a dry year, 109,350 of the total 255,210 acres estimated to be irrigated (43 percent) will have an inadequate water supply.

Under most probable inflow conditions, it is also expected that Almena, Cedar Bluff, Mirage Flats, Sargent, and Farwell Irrigation Districts would experience some shortages to irrigation demands from Keith Sebelius Lake and Cedar Bluff, Box Butte, and Sherman Reservoirs. Irrigators in several districts (Mirage Flats, Kirwin, Webster, Almena, Frenchman Valley, and H&RW) plan to use water from private wells to supplement the project water supply. The industrial, municipal, and rural water district water supply requirements will be met under all three inflow forecast conditions for all units except Cedar Bluff. Under a share-shortage procedure adopted for the currently extremely low storage conditions at Cedar Bluff, the city of Russell could experience shortages in dry-year inflow forecast conditions.

During 1989, under all inflow forecast conditions, storage water will be in excess of project needs at Bonny Reservoir and Waconda Lake. The state of Colorado will make Bonny storage water available to downstream water right appropriators. Reclamation will also make Waconda Lake storage water available under temporary water service contracts.

Even under reasonable minimum inflow conditions, the conservation pools at Merritt, Sherman, Calamus, and Lovewell Reservoirs and Harry Strunk Lake will fill during 1989. Harlan County Lake and Bonny Reservoir will fill under most probable inflow conditions.

Even with low reservoir levels and inadequate water supplies for some project lands, the recommendations of various state agencies will be considered. As in the past, irrigation and reclamation districts will advise state agencies regarding aquatic weed control and canal operations. Reclamation will continue to operate the reservoirs and other facilities under its jurisdiction in the best interests of all project functions and for the optimum public benefit.

HEADLINES 88

Water conference 3rd edition, set March 9

Irrigation district plans bond election

More Funds Sought for Water, Soil Projects

Surface irrigators to get 5 inches

Advised not to settle for 'because'

Feds to support water sales

Irrigated land may reach $2,000

Area farmers receive long-awaited rain

Irrigated land's value may rise

'Irrigation subsidy' report awaited

Storm brings an end to long dry spell

Drought Watch In Critical Time, Experts Caution

Fish Hatchery Is Top Priority

Nebraskans Urge Continued Flow Of Water Funds

McCook Daily Gazette

Wind, hail, rain batter area

Northern Pike Are Biting

Calamus Reservoir Is Hot Spot for Ice Fishing

Debate wages over water in Sebelius Lake

"The promotion committee acts like the city or Bureau of Reclamation owns all the water in the lake. They don't. The irrigation district owns its water rights."
— David Von Patten, irrigation district president

Irrigators to pay off debt

Soil moisture lack may mean trouble

Wildlife Group Proposes Groundwater Protection

State Water-Project Funds May Start Drying Up in '89

Western Kansas lakes haven't lived up to hopes

Water sale plans eyed at meeting

House Retains Funds For Davis Creek Dam

Precipitation at area lakes ahead of last year's totals

Midwest

McCook Daily Gazette Wednesday, February 24, 1988

Court rules against sales of river water

Year's precipitation arrives in 9 months

Water Emphasis Called Growing

Platte water right ensures irrigation

Country may be in worst drought ever

CHAPTER I - INTRODUCTION

Purpose of This Report

This AOP advises water users, cooperating agencies, and other interested groups or persons of the actual operations during 1988 and serves as a guideline for the 1989 operations. This report also describes the responsibilities of Reclamation, Corps of Engineers, and the irrigation and reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins.

Operational Responsibilities

Reclamation is responsible for irrigation operations at all federal reservoirs in the Nebraska-Kansas Projects area. Reclamation is also responsible for the operation and maintenance (O&M), safety of the structure, and reservoir operations not specifically associated with regulation of the flood control storage at the reservoirs constructed by Reclamation. In addition to irrigation and flood control, these reservoirs provide recreation, fish and wildlife, municipal, and industrial benefits.

By contractual arrangements with Reclamation, the irrigation or reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins are responsible for the O&M of the canals and irrigation distribution facilities constructed or rehabilitated by Reclamation. In addition, the appropriate irrigation or reclamation districts are responsible for operating and maintaining Box Butte, Merritt, and Sherman Dams and Reservoirs. The Corps of Engineers operates and maintains Harlan County Dam and Lake. The state of Colorado provides operational guidelines for Bonny Reservoir. Reclamation operates and maintains 12 dams and reservoirs in the Lower Platte, Republican, Solomon, and Smoky Hill River Basins. A three year contract provides for Kirwin Irrigation District to perform certain operational and maintenance functions at Kirwin Dam. Under a contract with Reclamation, the Twin Loups Reclamation District will operate and maintain Calamus Dam during 1989.

The states of Nebraska, Colorado, and Kansas are responsible for the administration and enforcement of their state laws pertaining to the water rights and priorities of all parties concerned with the use of water. The states are also responsible for administering the water surface activities and the federal lands around the reservoir.

Reclamation cooperates with all state agencies and compact commissions to ensure that all operations are in compliance with state laws and compact requirements.

Tables and Exhibits

Records for the facilities reported in the AOP are included as tables and exhibits and are located in the appendix.

Water Supply

For forecasting purposes, values of annual inflows that will be statistically equalled or exceeded 10, 50, and 90 percent of the time were selected from the probability data to be reasonable maximum (wet year), most probable (normal year), and reasonable minimum (dry year) inflow conditions, respectively.

Inflow records from 1956 through 1984 were used for the analysis.

Reservoir Operations

All operations are scheduled for optimum benefits of the authorized project functions. Monthly, or as often as runoff and weather conditions dictate, Reclamation evaluates the carryover storage and estimated inflow at each reservoir to determine whether excess water is anticipated. If excess inflow is apparent, controlled releases will be made to maximize the downstream benefits, including flood control.

Major Features

The Mirage Flats Project was constructed under the Water Conservation and Utilization Act and includes an irrigation storage reservoir, diversion dam, and canal system. The other features discussed in this report are a part of the Pick-Sloan Missouri Basin Program and include multipurpose reservoirs, diversion dams, pump stations, and canal systems. The 16 storage facilities now in operation are listed below.

Constructed by Reclamation

1. Operated by irrigation or reclamation districts--Box Butte and Merritt Dams in the Niobrara River Basin and Sherman Dam in the Lower Platte River Basin. Under a contract with Reclamation, the Twin Loups Reclamation District will operate and maintain Calamus Dam during 1989. Following completion of the North Loup Project distribution works the responsibility for the operation and maintenance of Calamus Dam and Davis Creek Dam, currently under construction, will be transferred to the district.

2. Operated by Reclamation--Bonny, Trenton, Enders, Red Willow, Medicine Creek, Norton, Lovewell, Kirwin, Webster, Glen Elder, and Cedar Bluff Dams in the Kansas River Basin. A three year trial contract provides for Kirwin Irrigation District to perform certain operational and maintenance functions at Kirwin Dam.

Constructed and Operated by the Corps of Engineers

1. Harlan County Dam in the Kansas River Basin.

Irrigation and Reclamation Districts

Fourteen irrigation districts and two reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins have contracted with Reclamation for water supply and irrigation facilities. The Sargent and Farwell Irrigation Districts have contracted their O&M responsibilities to the Loup Basin Reclamation District. The Twin Loups Irrigation District has contracted their O&M responsibilities to the Twin Loups Reclamation District.

The contracted irrigation season for the Mirage Flats Irrigation District is April through September. The contracted irrigation season for Frenchman Valley, H&RW, Frenchman-Cambridge, and Cedar Bluff Irrigation Districts is from May 1 through October 15. The contracted irrigation season for Twin Loups

Reclamation District is May 1 through September 30 or such additional period from April 1 through November 15 of each year as determined between the District and Reclamation. For all other districts, the contracted irrigation season is from May 1 through September 30.

Municipal and Industrial Water

Three municipalities and one rural water district have executed water service contracts for full or supplemental water supplies.

Fish and Wildlife

The state of Kansas is presently using the fish hatchery facility below Cedar Bluff Reservoir. Four high production water wells are currently being drilled and construction of Calamus Fish Hatchery is presently scheduled to begin in the fall of 1989.

State of Colorado Division of Wildlife

The Division of Wildlife provides operational guidelines for Bonny Reservoir. The entire conservation pool storage was purchased by the state of Colorado on June 24, 1982.

Power Interference Considerations

A Power Interference Agreement exists between Reclamation, the Loup River Public Power District, and the Twin Loups Reclamation District. Other agreements exist between Reclamation, the Loup River Public Power District, and the Loup Basin Reclamation District. Provisions of these agreements will be incorporated into the 1989 operations.

Environmental Considerations

A "Statement of Operational Objectives" for Harlan County Lake sets forth the general operational objectives and the specific reservoir uses that are desirable. The operational objectives indicate that fish and wildlife interests are best served by high reservoir levels with minimum fluctuations and regulation of the outflow in excess of the minimum desired flows. Although the statement recognizes flood control and irrigation as primary purposes, it indicates that comprehensive operational plans should be developed for maximum integration of the secondary uses.

These objectives are also considered in the operation of all reservoirs in the Kansas River Basin, Merritt and Box Butte Reservoirs in the Niobrara River Basin, and Sherman and Calamus Reservoirs in the Lower Platte River Basin. The regulated outflow will also benefit farmers, ranchers, industries, cities, and other interests below the reservoirs.

Mirage Flats Project in Nebraska

General

The flow of the Niobrara River and Box Butte Reservoir storage provide a water supply for the 11,662-acre Mirage Flats Project. From 1979 to 1988, the project water supply averaged 15,773 acre-feet, which is about 1.35 acre-foot per irrigable acre. This amount is 0.97 acre-foot per acre short of the average diversion requirement of 2.32 acre-feet per acre. The March 1965 report on the project estimated this amount to be necessary for a full water supply. Many irrigators supplement their water supply by private wells.

The Mirage Flats Irrigation District cooperates with the Nebraska Game and Parks Commission by operating the Box Butte Dam outlet works gates and the Dunlap Diversion Dam gates in a manner to avoid sudden large changes in the flows of the Niobrara River.

1988 Summary

The flows of the Niobrara River plus the carryover storage in Box Butte Reservoir were not adequate to provide a full water supply for the project lands. The total precipitation in the Mirage Flats area was 21.80 inches, which is 140 percent of normal. The total inflow (17,399 acre-feet) was slightly above the dry-year forecast.

From June through August, diversions of 14,647 acre-feet to the Mirage Flats Canal provided irrigation water for 9,491 acres, 81 percent of the service available acreage. The farm deliveries from the project water supply were 7,191 acre-feet (0.62 acre-foot per irrigable acre), which is a delivery efficiency of 49 percent. The reservoir contained only 1,381 acre-feet of water at the end of the irrigation season. Privately owned irrigation wells supplemented the project water supply. The gross crop value was $4,050,681 which is $1,519,058 more than the 1987 value.

1989 Outlook

The project water supply is expected to be inadequate in 1989 like it has been for the last several years. In the spring, the district will announce to their water users the amount of water that will be available from storage in Box Butte Reservoir. However, the district plans for the irrigators to continue the use of water from privately owned irrigation wells as a supplemental supply. In 1989, 10,500 acres are expected to be irrigated.

Ainsworth Unit, Sandhills Division in Nebraska

General

Within the Ainsworth Irrigation District, there are 34,539 acres with service available. The project water supply is provided by storage of Snake River flows in Merritt Reservoir. The reservoir is filled each fall after the irrigation season to elevation 2944.0 feet. This level is approximately 2 feet below the top of conservation capacity. The reservoir is regulated to maintain this level until the ice clears each spring. The reservoir is then slowly

filled. This operation greatly enhances the spring fish spawn. Seepage, pickup and toe drain flow normally result in flows of up to 15 cubic feet per second below Merritt Dam. Whenever possible, daily changes in releases to the river should be made in no more than 50 cubic feet per second increments. This will minimize adverse impacts on the Snake River fishery downstream of the dam.

The basic water supply for the district is 63,712 acre-feet. If available, additional water can be purchased by the district as a supplemental supply.

1988 Summary

Precipitation, as recorded near Merritt Dam, totaled 23.14 inches of rainfall, which was 120 percent of normal. The water supply was more than adequate to meet the project's irrigation requirement. There were 70,858 acre-feet diverted from Merritt Reservoir into the Ainsworth Canal, with 46,909 acre-feet delivered to the farm headgates (delivery efficiency of 66 percent). There were 28,700 acres of land irrigated in 1988. The gross crop value was $10,470,506, which is $2,793,568 more than the previous year.

The district executed several temporary water service contracts which provided a total of 25.33 acre-feet of irrigation water from holding ponds located within the district's service area.

1989 Outlook

Merritt Reservoir will be regulated to maintain an elevation 2.0 feet below the top of conservation capacity during the 1988-89 winter months.

In 1988-89 winter months and future years, the reservoir will be regulated to maintain elevation 2944.0 feet. This elevation is within the repaired area of soil cement on the upstream face of the dam. Holding the reservoir at this elevation during the winter will help avoid ice damage to the older existing soil cement at lower elevations.

In order to alleviate erosive action to the lands around the reservoir and to maximize all benefits associated with the reservoir, releases from Merritt Reservoir will be regulated to slowly fill the conservation capacity during the spring months. The reservoir will be filled to approximately elevation 2944.6 feet by the end of April and filled to the top of conservation pool by late May. The water supply is expected to be adequate in 1989 for the irrigation of 32,000 acres.

Sargent Unit, Middle Loup Division in Nebraska

General

The Sargent Irrigation District has contracted with the Loup Basin Reclamation District for the O&M of the Milburn Diversion Dam and the Sargent Canal system which serves 13,922 acres. The water supply is diverted from the Middle Loup River into the Sargent Canal under an appropriated natural-flow water right from the state of Nebraska. These diversions may exceed the natural-flow water appropriation of 201 cubic feet per second by an exchange of storage from Sherman Reservoir, provided that water is available after all senior appropriations are satisfied, and the excess is not greater than the compensating storage releases from Sherman Reservoir.

1988 Summary

The precipitation over the Sargent Unit (21.17 inches at district headquarters) was 91 percent of normal. The irrigation diversions into the Sargent Canal totaled 27,487 acre-feet (16,335 acre-feet were delivered to the farm headgates--delivery efficiency 59 percent). The diversions exceeded the direct-flow water right for 28 days. There were 11,692 acres irrigated, and the gross crop value totaled $3,081,637, which is $1,207,162 more than in 1987. The irrigators grow corn as the principal crop, creating very high water demands in July and August. The demands cannot be met within canal capacity, so the district institutes a rationing process through the peak period, when necessary.

1989 Outlook

The Loup Basin Reclamation District estimates that 12,000 acres in the Sargent Unit will be irrigated in 1989. Under normal- and dry-year conditions, some shortages could occur. The Farwell and Sargent Irrigation Districts are required to share shortages in accordance with their contract.

Farwell Unit, Middle Loup Division in Nebraska

General

The Loup Basin Reclamation District operates and maintains the Arcadia Diversion Dam, Sherman Feeder Canal, Sherman Dam and Reservoir, and the Farwell Canal system, which serves 50,051 acres of land. Diversions are also made through the Arcadia Diversion Dam to 15,000 acres of non-project lands in the Middle Loup Pubic Power and Irrigation District under their appropriated natural-flow water rights.

Middle Loup Public Power and Irrigation District, Loup Basin Reclamation District, Farwell Irrigation District and Sargent Irrigation District have executed an agreement to temporarily cease diversions when conservation storage space in Sherman Reservoir has been evacuated. The agreement was executed December 10, 1984.

During the winter months, Sherman Reservoir is normally regulated to 5 feet or more below the top of the conservation capacity. Doing so minimizes seepage from the reservoir into the groundwater table. Maintenance of the pool below the top of conservation provides time for seeding of exposed shore areas. This seeding prevents wind erosion. It also provides winter food and cover for wildlife and spawning habitat for fish in the spring when these areas are inundated. Each spring, diversions into Sherman Feeder Canal from the Middle Loup River are regulated to fill the conservation capacity of Sherman Reservoir by mid-June. The gradually rising water surface in the spring is desirable for fish spawning.

Whenever the flows in the Middle Loup River at Arcadia, Nebraska, exceed 6,000 cubic feet per second, flows will be diverted through Sherman Feeder Canal into Sherman Reservoir. Flood control benefits can be accrued to Sherman Reservoir by such operations.

1988 Summary

The diversions from the Middle Loup River at Arcadia Diversion Dam were 38,742 acre-feet to the Middle Loup Pubic Power and Irrigation District and 112,679 acre-feet into the Sherman Feeder Canal. During the fall of 1985 the Middle Loup Public Power and Irrigation District constructed a turnout in the Sherman Feeder Canal near mile post 11.4. The turnout diverts water directly to the Number 4 Canal. Releases to the turnout amounted to 582 acre-feet and the losses charged as a result of these deliveries totaled 58 acre-feet.

Sherman Feeder Canal diversions into Sherman Reservoir were started on April 18, and the conservation capacity was filled on May 31. The precipitation at Sherman Dam was 21.56 inches, which is 99 percent of normal. Releases into the Farwell Canals totaled 82,359 acre-feet (45,173 acre-feet were delivered to the farm headgates--delivery efficiency 55 percent). The Farwell Irrigation District reported that 42,115 acres of land were irrigated in 1988. The gross crop value was $13,640,985, which is $5,284,818 more than in 1987. Sherman Feeder Canal was shut off September 30.

Under an ongoing program the Farwell Irrigation District has installed a total of about 86 miles of pipe to replace open laterals.

1989 Outlook

Diversions from the Middle Loup River into the Sherman Feeder Canal are expected to start in the spring for the normal filling of the conservation capacity of Sherman Reservoir prior to the irrigation season.

Under normal- and dry-year inflow conditions, irrigation shortages are expected in 1989. These shortages are attributable to large irrigation requirements for corn production during the months of July and August. Farwell and Sargent Irrigation Districts are required to share shortages in accordance with their contract.

North Loup Division in Nebraska

General

The North Loup Division is located in the Loup River drainage basin. When completed, water will be diverted from the Calamus and North Loup Rivers. The plan provides for direct surface water service to 53,000 acres of project lands. Operation of the division will also provide a sustained groundwater supply for an additional 17,000 acres. Principal features of the division will include Calamus Dam and Reservoir, Kent Diversion Dam, Davis Creek Dam and Reservoir, five principal canals, one major and one small pumping plant and numerous laterals. Calamus Reservoir was filled to the top of active conservation capacity for the first time in the spring of 1988.

1988 Summary

Third stage filling of Calamus Reservoir was concluded with a water surface elevation of 2244.00 feet on May 3, 1988. The final stage filling had resumed at the end of March after the reservoir was held at approximately 2240.00 feet throughout the winter. As required, bypasses of the inflows were made during July, August, and September.

Precipitation at Calamus Dam was 24.90 inches which is 110 percent of normal. The inflow was 243,189 acre-feet which was slightly over the wet-year forecast. There were 13,508 acre-feet diverted from Calamus Reservoir into the Mirdan Canal, with 5,807 acre-feet delivered to the farm headgates. Land irrigated in 1988 totaled 7,099 acres. The gross crop value was $2,099,893 which is $1,918,614 more than the 1987 value. Substantial releases were made to the river from September 3 through October 17 to provide storage space for early winter inflows while the North Loup Public Power and Irrigation District replaced their diversion dam near Burwell. Normal winter operations resumed in mid-December.

1989 Outlook

The reservoir water surface will be held at the present elevation of approximately 2241.00 feet until late March. Filling will then continue with the elevation of 2244.0 feet (top of conservation capacity) being reached by the end of April. Bypasses of inflows will be made during July, August and September. In the fall the reservoir will be filled to about elevation 2241.00 feet.

Water has been declared available to serve all irrigable acres with service from the Mirdan, Geranium and Scotia Canals and Lateral systems. It is estimated that approximately 4,200 acres will be irrigated from Mirdan Canal, 4,200 acres from Geranium Canal, and 3,200 acres from Scotia Canal. Water supplies will be sufficient to meet the full dry-year requirements.

CHAPTER III - REPUBLICAN RIVER BASIN

Armel Unit, Upper Republican Division in Colorado

General

Normal reservoir operations for Bonny Reservoir are primarily for recreation and fish and wildlife support, although water will be available for water right administration and irrigation purposes.

Bonny Reservoir inflows from the South Fork of the Republican River and Landsman Creek are released into Hale Ditch as requested by the Colorado State Engineer. The state will make Bonny storage water available to Hale Ditch and other natural flow appropriators under short-term water service contracts. Most of the 700 acres served by Hale Ditch are now owned and operated by the Division of Wildlife, Colorado Department of Natural Resources.

The normal operation pattern of Bonny Reservoir, with a slowly rising or stable pool, enhances fish spawning in the spring and affords excellent hunting conditions each fall.

1988 Summary

The 18.16 inches of precipitation during 1988 was 110 percent of normal. The inflow (13,539 acre-feet) to Bonny Reservoir was below the dry-year forecast. As directed by the Colorado Water Commissioner, 315 acre-feet of reservoir inflows from the South Fork of the Republican River and Landsman Creek were passed through Bonny Reservoir into Hale Ditch. In addition, the Colorado Department of Natural Resources requested storage releases of 1,704 acre-feet for irrigation purposes into Hale Ditch.

Under the Safety of Dams (SOD) program, a toe drain was constructed during the fall.

1989 Outlook

Water stored in Bonny Reservoir will be available for sale to Hale Ditch and other private irrigators under short-term water service contracts executed with the state.

Inflows will be stored during the winter until filling of the conservation pool is certain. Releases can be made during this period to maintain a constant reservoir elevation when filling of the reservoir is imminent or if icing were to become a problem.

Frenchman Unit, Frenchman-Cambridge Division in Nebraska

General

The Culbertson Canal and the Culbertson Extension Canal systems serve 9,600 acres in the Frenchman Valley Irrigation District and 11,490 acres in the H&RW Irrigation District. The water supply for these lands is furnished by flows from Frenchman and Stinking Water Creeks and off-season storage in Enders Reservoir.

The normal operation of Enders Reservoir, with the gradual rise in water surface during the spring months, provides desirable fish spawning conditions. Irrigation releases will normally deplete the conservation storage by late summer, thereby limiting the fishing and recreational usage.

1988 Summary

The 17.58 inches of precipitation at Enders Dam was 95 percent of normal. The 1988 inflow into Enders Reservoir (21,581 acre-feet) was below the dry-year forecast. Due to extensive groundwater pumping above the reservoir, the inflow was only 36 percent of the average historical preconstruction runoff at the Enders damsite (60,700 acre-feet from 1929-1947). This year was the twenty-first consecutive year with below-normal inflows in which the conservation pool did not fill. A total of 2,572 acre-feet of water was conserved between the 1987 and 1988 irrigation seasons by pumping seepage back into the reservoir. Irrigation releases were stopped on August 19.

The farm delivery averaged about 0.55 of a foot per irrigated acre for the two districts. Some farmers were able to supplement their project water supply from private irrigation wells. The Frenchman Valley Irrigation District reports that 7,581 acres received water in 1988, and the H&RW Irrigation District reports 9,505 acres, which are 79 and 83 percent, respectively, of the lands with service available. The gross crop value for Frenchman Valley Irrigation District was $2,541,875 which is an increase of $689,281 from the previous year. The gross crop value for the H&RW Irrigation District was $3,083,770, which is an increase of $928,507 from the previous year.

1989 Outlook

The fall and early winter inflows into Enders Reservoir were below the dry-year forecast. If reasonable minimum runoff conditions prevail, the project water supply is expected to be inadequate to irrigate 7,800 acres in the Frenchman Valley Irrigation District and 10,000 acres in the H&RW Irrigation District. Approximately 3,000 acre-feet are expected to be conserved by pumping seepage water back into the Enders Reservoir.

Meeker-Driftwood, Red Willow, and Cambridge Units, Frenchman-Cambridge Division in Nebraska

General

During the spring months, Swanson, Hugh Butler, and Harry Strunk Lakes normally have a rising or stable pool which enhances the spawning of northern pike and walleye. These lakes provide excellent opportunities for fishing, water sports, and recreation.

Service is provided for Frenchman-Cambridge Irrigation District by Meeker-Driftwood Canal to 16,476 acres; Red Willow Canal to 4,932 acres; Bartley Canal to 6,539 acres; and Cambridge Canal to 17,053 acres. The water supply for these lands is provided by storage in Swanson, Hugh Butler, and Harry Strunk Lakes, and flows of the Republican River and Red Willow and Medicine Creeks.

1988 Summary

The precipitation of 25.26 inches at Trenton Dam was 129 percent of normal. The inflow of 56,438 acre-feet to Swanson Lake was between the dry- and normal-year forecasts. The reservoir's conservation pool did not fill in 1988, with the maximum water surface elevation of 2750.42 feet reached on June 8. At the beginning of the 1988 irrigation season (June 8), there was 104,598 acre-feet of water stored in Swanson Lake, which is 7,616 acre-feet below the top of conservation capacity. This storage, river flows, and the inflows furnished full water supplies to project lands served by the Meeker-Driftwood and Bartley Canal systems. The Frenchman-Cambridge Irrigation District diverted 28,324 acre-feet into Meeker-Driftwood Canal to irrigate 14,369 acres and 8,564 acre-feet into Bartley Canal for 5,689 acres.

The precipitation of 23.54 inches at Red Willow Dam was 120 percent of normal, while the inflow of 18,782 acre-feet into Hugh Butler Lake was between the dry- and normal-year forecasts. The reservoir's maximum water surface elevation for the year was 2578.30 feet, reached on June 8 (3.50 feet below top of conservation). The water supply was adequate to meet the diversion requirements for Red Willow Canal. The district diverted 7,845 acre-feet of water to irrigate 4,643 acres of land served by Red Willow Canal.

The precipitation of 21.99 inches was 108 percent of normal at Medicine Creek Dam, while the inflow of 41,698 acre-feet was between the dry- and normal-year forecasts. The reservoir's conservation pool was filled on April 30 with the maximum water surface elevation for the year of 2367.56 feet reached on June 7. Releases were made during February, March and April to defer flows from overtopping the uncontrolled spillway until after the walleye spawning period. These releases were made in cooperation with the Nebraska Game and Parks Commission. The water supply was adequate and 31,728 acre-feet of water was diverted to irrigate 15,455 acres of land served by the Cambridge Canal.

The 1988 gross crop value from the lands served by Meeker-Driftwood, Bartley, Red Willow, and Cambridge Canals was $13,526,699, which is $3,603,306 more than in 1987.

1989 Outlook

Forecasts show that carryover storage, streamflow gains, plus reasonable minimum inflows for the three lakes supplying the Frenchman-Cambridge Irrigation District is adequate to meet the full dry-year irrigation requirement.

It is estimated that 16,160 acres will be served from the Meeker-Driftwood Canal; 16,720 acres will be served from the Cambridge Canal; 4,790 acres will be served from the Red Willow Canal; and 6,290 acres will be served from the Bartley Canal.

Almena Unit, Kanaska Division in Kansas

General

Service is available to 5,763 acres in the Almena Irrigation District. The project water supply is provided by Prairie Dog Creek flows and Keith Sebelius Lake storage.

The water service contract for the city of Norton, Kansas, provides for a maximum annual use of 1,600 acre-feet from Keith Sebelius Lake.

1988 Summary

The precipitation at Norton Dam was 19.31 inches, which is 81 percent of normal. The total inflow was 6,326 acre-feet, which was between dry- and normal-year forecasts. Farm delivery averaged about 0.23 acre-foot per irrigated acre from the project water supply. The remaining demands were supplied from privately owned irrigation wells for the eighteenth consecutive year. The 4,791 acres irrigated in 1988 produced a gross crop value of $1,612,168, which is $566,674 more than in 1987.

The city of Norton used 580 acre-feet of municipal water during 1988.

The maximum content of Keith Sebelius Lake for the year was 10,132 acre-feet, which was reached on May 26, 1988. Timely precipitation during mid-July resulted in lower demands from the reservoir. At the end of irrigation season (August 9) approximately 3,727 acre-feet was still available for release.

1989 Outlook

The district expects to deliver water to 4,750 acres if an adequate water supply is available. If 1989 is a dry year without significant run-off producing storms above Keith Sebelius Lake, it is anticipated that significant irrigation shortages of 12,500 acre-feet would occur. If normal inflow into the lake and normal rainfall over the irrigated area occur in 1989, a shortage of only 500 acre-feet may be experienced.

Requirements for the city of Norton are expected to be met in full in 1989.

Franklin, Superior-Courtland, and Courtland Units, Bostwick Division in Nebraska and Kansas

General

Harlan County Lake storage and Republican River flows provide a project water supply for 22,787 acres in the Bostwick Irrigation District in Nebraska, and 13,550 acres in the Kansas-Bostwick Irrigation District No. 2 above Lovewell Reservoir. These flows, together with White Rock Creek flows and Lovewell Reservoir storage, furnish a water supply for 28,338 acres below Lovewell Reservoir in the Kansas-Bostwick Irrigation District.

The lands in the Franklin and Superior-Courtland Units are in the Bostwick Irrigation District in Nebraska. The lands in the Courtland Unit are in the Kansas-Bostwick Irrigation District.

In accordance with the off-season flow alternative outlined in Reclamation's final environmental assessment dated December 16, 1983, releases will be 10 cubic feet per second during the months of December, January, and February, except when the reservoir is at low levels. During water-short years releases for these three months will be 5 cubic feet per second or zero. At the request of the state of Nebraska, releases of 30 cubic feet per second for a maximum 5-day period may be made to relieve icing conditions in the river. An interagency study is being conducted to collect baseline data to determine the effect different release rates have on ice cover in the river channel below

Harlan County Dam. All field data is complete and when the study results are published, the Field Working Agreement and the Statement of Objectives for Harlan County Lake will be revised.

Natural gain in streamflow, plus irrigation return flows, and operational bypass at Superior-Courtland Diversion Dam will provide some flow downstream.

The Kansas Department of Wildlife and Parks has requested that the Kansas-Bostwick Irrigation District and Reclamation maintain, when possible, a flow of 20 cubic feet per second into Lovewell Reservoir when the Courtland Canal is in operation and the conservation pool is below capacity. This recommended inflow provides excellent fishing around the canal inlet to the reservoir. The seepage below Lovewell Dam into White Rock Creek maintains a small live stream throughout the year.

1988 Summary - Bostwick Division - Harlan County Lake Operations

The precipitation at Harlan County Dam totaled 22.72 inches of rainfall, which is 101 percent of normal. The inflow (146,979 acre-feet) was between the dry- and normal-year forecasts. Releases of 10 cubic feet per second were made during January, February, and December according to the environmental assessment and the annual operating plan. The highest water surface elevation for the year was 1946.65 feet which was reached on May 31 (0.65 feet above the top of conservation). At the end of irrigation season (September 6) 225,000 acre-feet of storage remained in Harlan County Lake.

The 28,075 irrigated acres in the Bostwick Division in Nebraska and Kansas above Lovewell Dam were furnished a full water supply. In addition, 43,581 acre-feet (approximately 64 percent of total inflow) were delivered to Lovewell Reservoir through the Courtland Canal.

1988 Summary - Bostwick Division - Nebraska

The Bostwick Irrigation District in Nebraska diverted 62,288 acre-feet for the irrigation of 18,415 acres. The gross crop value was $5,669,207, which is $1,094,361 more than in 1987.

1988 Summary - Bostwick Division - Kansas

The 1988 precipitation at Lovewell Dam totaled 19.51 inches, which was 69 percent of normal. The reservoir's conservation space filled on February 15. A release of 300 c.f.s. was made from February 18 through March 2, drawing the reservoir down approximately two feet below the active conservation capacity, to provide storage for spring runoff. The maximum elevation of the water surface was 1583.21 feet, which was reached on July 23 after receiving substantial rainfall during mid-July.

The Kansas-Bostwick Irrigation District diverted a total of 90,207 acre-feet to serve 9,660 acres above Lovewell Dam and 20,202 acres below Lovewell Dam. The gross crop value was $9,538,060, which is $2,498,034 more than the previous year.

1989 Outlook - Bostwick Division

The Bostwick Irrigation District in Nebraska and the Kansas-Bostwick Irrigation District No. 2 expect to deliver water to 20,600 and 37,700 acres, respectively. The storage in Harlan County Lake and Lovewell Reservoir and flows of the Republican River and White Rock Creek are expected to furnish an adequate water supply for the Bostwick lands.

Inflow to Lovewell Reservoir from the Courtland Canal will start as necessary to allow for filling the reservoir from natural flow in the Republican River without storage releases from Harlan County Lake.

Kirwin Unit, Solomon Division in Kansas

General

The water supply for the 11,435 acres of land in the Kirwin Irrigation District is furnished by storage from Kirwin Reservoir and inflows from the North Fork of the Solomon River and Bow Creek.

The operation of Kirwin Dam and Reservoir affords many opportunities for recreation, fishing, hunting, water sports, fish spawning, and preservation of waterfowl species.

1988 Summary

The precipitation totaled 14.12 inches, which was 61 percent of normal. The inflow (11,087 acre-feet) was between the dry- and normal-year forecasts. Kirwin Canal was operated from June 20 until August 20. The district diverted 18,101 acre-feet for irrigation of 7,264 acres. Irrigators in the district continued to pump water from private wells to supplement irrigation of project lands. The district reported a gross crop value of $2,137,745, which is a $649,620 increase from the previous year.

1989 Outlook

The district estimates that 7,000 acres may be irrigated in 1989. Normal precipitation and normal forecasted inflows from the North Fork of the Solomon River would be adequate to irrigate these lands. However, under dry-year forecasts, a shortage of about 4,500 acre-feet may be experienced.

Webster Unit, Solomon Division in Kansas

General

The Webster Irrigation District has service available to 8,500 acres. The project water supply is provided by Webster Reservoir storage and flows of the South Fork of the Solomon River.

1988 Summary

In 1988, the precipitation at Webster Dam was 64 percent of normal (14.71 inches). The inflow of 6,872 acre-feet was below the dry-year forecast.

The district diverted 9,466 acre-feet for irrigation of 4,524 acres. Irrigators with private wells provided water for part of the project lands as a supplemental supply. The district reported a gross crop value of $1,215,845, which is $473,090 greater than the previous year.

1989 Outlook

The carryover storage and the flows in the South Fork of the Solomon River are expected to be adequate under normal- or wet-year forecasts to irrigate 4,500 acres in the district in 1989. However, if dry-year inflows continue a shortage of 1,300 acre-feet may be experienced.

Glen Elder Unit, Solomon Division in Kansas

General

Releases from Waconda Lake will be regulated as outlined in two memorandums of understanding between the state of Kansas and Reclamation. Releases are made for the city of Beloit, temporary short-term water service contracts, and water right administration. The water service contract with Beloit, Kansas, provides for the annual use of up to 2,000 acre-feet of Waconda Lake storage. Water is measured at the Glen Elder Dam river outlet works. In any water year that the city's water supply is insufficient and there is surplus water in Waconda Lake, such additional water may be released for the city at a rate of $15.00 per acre-foot.

The water service contract with the WCH&T Rural Water District No. 2 provides for use of storage water as available from Waconda Lake. Water usage is not to exceed 1,009 acre-feet per calendar year.

To lessen ice damage to the upstream face of Glen Elder Dam during winter months, releases from Waconda Lake will be regulated each year to maintain a constant water surface level while the lake is ice-covered. This level will be varied from 0 to 5 feet below the top of conservation capacity.

The available facilities along the shores of Waconda Lake and the large water surface area afford opportunities to thousands of people for picnics, sightseeing, recreation, water sports, hunting, and fishing.

When compatible with flood control operations, the operating criteria for Waconda Lake provide for a stable or rising pool level during the fish spawning period each spring.

When possible, drawdowns will be scheduled for late summer and early fall so that exposed shore areas can be seeded. This seeding prevents wind erosion and provides winter food and cover for wildlife and fish with spawning habitat in the spring when these areas are inundated.

1988 Summary

The precipitation at Glen Elder Dam was 66 percent of normal (16.59 inches). The inflow (87,502 acre-feet) was between dry- and normal-year forecasts. Storage releases of 676 acre-feet were made for the City of Beloit and 4,884 acre-feet was bypassed for quality control as directed by the State Water Commissioner. Other controlled releases were 65,619 acre-feet. This amount includes 3,484 acre-feet purchased by irrigators under temporary contracts. Releases of 690 acre-feet were made to the WCH&T Rural Water District No. 2. In cooperation with the State of Kansas a drawdown of Waconda Lake was accomplished following ice-out in early spring. This drawdown allowed the re-establishment of habitat for both fishery and wildlife management. The lake remained 4 to 6 feet below the top of conservation pool throughout the remainder of the year.

1989 Outlook

The municipal requirement of Beloit and the requirements of the WCH&T Rural Water District No. 2 will be met in full with releases as required from Waconda Lake. It is expected that a Kansas Water Commissioner will request that inflows be passed through the lake for water right administration. Waconda Lake storage water will be available to natural flow appropriators under short-term water service contracts. To minimize ice damage, the reservoir will be regulated to maintain a constant level during the months the reservoir is ice-covered. Waconda Lake will be operated with a stable or slowly rising pool early in the year and refilled with available inflows starting in late spring of 1989. Under normal-year conditions, the lake will be maintained at about 3.0 feet below the top of the conservation pool for next winter.

Cedar Bluff Unit, Smoky Hill Division in Kansas

General

Cedar Bluff Reservoir storage and Smoky Hill River Flows provide a water supply for the 6,800 acres in the Cedar Bluff Irrigation District. If required Cedar Bluff storage also furnishes a maximum of 2,000 acre-feet each year for the city of Russell, Kansas. No water has been available for delivery to the district since 1978.

Following several years of below-normal inflows, a share-shortage procedure was adopted July 31, 1981. Separate pools were established for each user with inflow, outflow, and evaporation allocated on a monthly basis. Inflow and initial pool allocations were made on the basis of perfected maximum annual usage with the maximum accumulated storage being that allowed by each user's water right.

A memorandum of understanding between Reclamation, Fish and Wildlife Service, the State of Kansas and Cedar Bluff Irrigation District No. 6 concerning the reformulation and operation of the Cedar Bluff Unit was executed on December 17, 1987. Implementation of the memorandum of understanding awaits appropriate legislative action by the Congress.

1988 Summary

The precipitation was 12.73 inches which is 62 percent of normal. The inflow (2,953 acre-feet) was below the dry-year forecast. This year's high content of 30,985 acre-feet was reached on February 17 and was 4,335 acre-feet below the bottom of active storage. Due to continuing low water levels, no irrigation releases were made in 1988 (tenth consecutive year). The state of Kansas used the fish hatchery facility with 367 acre-feet released to the facility. No releases were made for the city of Russell.

1989 Outlook

The reservoir elevation of 2102.00 feet on December 31, 1988, remains in the inactive pool. With dry-year inflows, the total irrigation demand of 21,100 acre-feet would be shorted. With normal-year conditions, a shortage of about 6,600 acre-feet would be experienced. No irrigation releases are anticipated during 1989. The fish hatchery facility is expected to use approximately 400 acre-feet of water.

APPENDIX

TABLE 1

RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

RESERVOIR		CAPACITY ALLOCATIONS 1/ DEAD	LIVE CONSERVATION Inactive	LIVE CONSERVATION Active	FLOOD CONTROL
Box Butte	- Elevation Ft.	3969.0	3976.5	4007.0	---
	Total Acre-feet	640	2,275	31,060	---
	Net Acre-feet	640	1,635	28,785	---
Merritt	- Elevation Ft.	2875.0	2896.0	2946.0	---
	Total Acre-feet	1,614	6,800	74,486	---
	Net Acre-feet	1,614	5,186	67,686	---
Sherman	- Elevation Ft.	2118.5	2129.0	2162.3	---
	Total Acre-feet	3,839	10,496	69,076	---
	Net Acre-feet	3,839	6,657	58,580	---
Calamus	- Elevation Ft.	2185.0	2213.3	2244.0	---
	Total Acre-feet	817	24,646	127,400	---
	Net Acre-feet	817	23,829	102,754	---
Bonny	- Elevation Ft.	3635.5	3638.0	3672.0	3710.0
	Total Acre-feet	1,418	2,134	41,340	170,160
	Net Acre-feet	1,418	716	39,206	128,820
Enders	- Elevation Ft.	3080.0	3082.4	3112.3	3127.0
	Total Acre-feet	8,467	9,968	44,480	74,520
	Net Acre-feet	8,467	1,501	34,512	30,040
Swanson Lake	- Elevation Ft.	2710.0	2720.0	2752.0	2773.0
	Total Acre-feet	2,118	12,430	112,214	246,291
	Net Acre-feet	2,118	10,312	99,784	134,077
Hugh Butler Lake	- Elevation Ft.	2552.0	2558.0	2581.8	2604.9
	Total Acre-feet	6,313	10,450	37,776	86,627
	Net Acre-feet	6,313	4,137	27,326	48,851
Harry Strunk Lake	- Elevation Ft.	2335.0	2343.0	2366.1	2386.2
	Total Acre-feet	4,160	8,859	35,705	88,420
	Net Acre-feet	4,160	4,699	26,846	52,715
Keith Sebelius Lake	- Elevation Ft.	2275.0	2280.4	2304.3	2331.4
	Total Acre-feet	2,718	5,284	35,935	134,738
	Net Acre-feet	2,718	2,566	30,651	98,803
Harlan County Lake	- Elevation Ft.	1885.0	1927.0	1946.0	1973.5
	Total Acre-feet	0	134,661	327,639	825,782
	Net Acre-feet	0	134,661	192,978	498,143
Lovewell	- Elevation Ft.	1562.0	1571.7	1582.6	1595.3
	Total Acre-feet	5,054	16,760	41,690	92,150
	Net Acre-feet	5,054	11,706	24,930	50,460
Kirwin	- Elevation Ft.	1693.0	1697.0	1729.25	1757.3
	Total Acre-feet	6,385	9,785	99,435	314,550
	Net Acre-feet	6,385	3,400	89,650	215,115
Webster	- Elevation Ft.	1855.5	1860.0	1892.45	1923.7
	Total Acre-feet	2,184	5,300	77,371	260,740
	Net Acre-feet	2,184	3,116	72,071	183,369
Waconda Lake	- Elevation Ft.	1407.8	1428.0	1455.6	1488.3
	Total Acre-feet	1,236	36,671	241,460	963,775
	Net Acre-feet	1,236	35,435	204,789	722,315
Cedar Bluff	- Elevation Ft.	2090.0	2107.8	2144.0	2166.0
	Total Acre-feet	8,261	35,320	185,090	376,950
	Net Acre-feet	8,261	27,059	149,770	191,860
Total Storage (A.F.)		55,224	331,839	1,582,157	3,936,725 2/
Total Net Acre-feet		55,224	276,615	1,250,318	2,354,568

1/ Includes space for sediment storage.

2/ Includes total active storage for Box Butte, Merritt, Sherman and Calamus Reservoirs.

TABLE 2
SUMMARY OF 1988 OPERATIONS

MIRAGE FLATS PROJECT
BOX BUTTE RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	MIRAGE FLATS CANAL Diversions To Canal (AF)	MIRAGE FLATS CANAL Delivered To Farms (AF)
Jan.	1,332	50	60	0.49	7,746	0	0
Feb.	1,331	52	84	0.66	8,941	0	0
Mar.	3,153	52	168	0.73	11,874	0	0
Apr.	2,503	57	310	1.36	14,010	0	0
May	2,463	61	518	5.80	15,894	0	0
June	0	1,105	1,073	2.12	13,716	1,048	100
July	0	6,706	556	4.97	6,454	6,783	3,148
Aug.	1,295	6,177	191	2.71	1,381	6,816	3,943
Sep.	1,122	47	72	1.49	2,384	0	0
Oct.	1,300	45	102	0.02	3,537	0	0
Nov.	1,349	42	69	1.20	4,775	0	0
Dec.	1,551	43	47	0.25	6,236	0	0
TOTAL	17,399	14,437	3,250	21.80	---	14,647	7,191

NOTE.--Mirage Flats Canal: Acres irrigated 1988 -- 9,491

SANDHILLS DIVISION
AINSWORTH UNIT
MERRITT RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	AINSWORTH CANAL Release To Canal (AF)	AINSWORTH CANAL Delivered To Farms (AF)
Jan.	15,266	15,025	241	1.16	68,831	0	0
Feb.	16,402	15,818	305	0.52	69,110	0	0
Mar.	17,631	17,486	424	0.45	68,831	0	0
Apr.	16,619	11,101	723	2.52	73,626	0	0
May	19,958	18,456	1,215	5.90	73,913	2,375	17
June	14,695	17,831	1,667	2.42	69,110	12,846	7,193
July	17,016	27,277	1,397	3.59	57,452	24,314	16,914
Aug.	16,168	28,096	1,073	3.27	44,451	25,363	18,954
Sep.	16,072	13,081	631	2.22	46,811	5,960	3,831
Oct.	16,758	3,749	655	0.23	59,165	0	0
Nov.	15,239	5,137	436	0.72	68,831	0	0
Dec.	14,848	14,529	319	0.14	68,831	0	0
TOTAL	196,672	187,586	9,086	23.14	---	70,858	46,909

NOTE.--Ainsworth Canal: Acres irrigated 1988 -- 28,700

MIDDLE LOUP DIVISION

SARGENT UNIT
SARGENT CANAL

Month	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	0	0
Feb.	0	0
Mar.	0	0
Apr.	0	0
May	0	0
June	6,327	2,660
July	10,687	7,103
Aug.	8,519	5,663
Sep.	1,954	909
Oct.	0	0
Nov.	0	0
Dec.	0	0
TOTAL	27,487	16,335

MIDDLE LOUP UNIT 1/
MIDDLE LOUP PUBLIC POWER CANALS

Month	Diversions To Canals (AF)
Jan.	0
Feb.	0
Mar.	0
Apr.	0
May	2,197
June	8,697
July	11,870
Aug.	12,053
Sep.	3,571
Oct.	354
Nov.	0
Dec.	0
TOTAL	38,742

FARWELL UNIT
SHERMAN RESERVOIR

Month	Diversions To Sherman Feeder Canal (AF)	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)
Jan.	0	853	1,309	254	1.06	50,347
Feb.	0	678	1,291	313	0.23	49,421
Mar.	0	475	1,309	545	0.06	48,042
Apr.	5,833	5,212	1,303	894	2.05	51,057
May	22,953	20,583	1,533	1,031	3.90	69,076
June	17,988	15,869	26,864	1,155	3.06	56,926
July	20,680	20,521	29,907	842	3.08	46,698
Aug.	22,423	18,907	28,040	784	2.47	36,781
Sep.	22,802	20,254	1,097	519	3.99	55,419
Oct.	0	0	1,083	1,126	0.04	53,210
Nov.	0	272	1,303	411	0.84	51,768
Dec.	0	1,544	1,309	235	0.78	51,768
TOTAL	112,679	105,168	96,348	8,109	21.56	---

FARWELL CANALS

Month	Release To Canals (AF)	Delivered To Farms (AF)
Jan.	0	0
Feb.	0	0
Mar.	0	0
Apr.	0	0
May	0	0
June	25,268	9,323
July	28,917	16,761
Aug.	28,015	18,590
Sep.	159	499
Oct.	0	0
Nov.	0	0
Dec.	0	0
TOTAL	82,359	45,173

1/ Non-Project. Includes 582 a.f. diverted from Sherman Feeder Canal and 58 a.f. loss.
NOTE.--Sargent Canal: Acres irrigated 1988 -- 11,692
Middle Loup P.P. Canals: Acres irrigated 1988 -- 14,189
Farwell Canals: Acres irrigated 1988 -- 42,115

NORTH LOUP DIVISION
CALAMUS RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	MIRDAN CANAL Release To Canal (AF)	MIRDAN CANAL Delivered To Farms (AF)
Jan.	19,090	18,502	449	0.80	108,474	0	0
Feb.	18,380	17,220	560	0.22	109,074	0	0
Mar.	22,772	20,569	996	0.22	110,281	0	0
Apr.	21,231	4,610	1,693	2.07	125,209	0	0
May	26,942	23,199	1,347	5.63	127,605	474	0
June	18,331	11,609	3,412	3.29	130,915	3,769	963
July	21,285	22,865	2,855	5.59	126,480	5,627	2,953
Aug.	20,769	23,659	2,589	2.89	121,001	3,322	1,658
Sep.	18,011	38,715	1,393	3.20	98,904	316	233
Oct.	17,629	22,346	1,222	0.17	92,965	0	0
Nov.	17,603	2,239	683	0.53	107,646	0	0
Dec.	21,146	15,560	416	0.29	112,816	0	0
TOTAL	243,189	221,093	17,615	24.90	---	13,508	5,807

NOTE.--Mirdan & Geranium Canals: Acres irrigated 1988 -- 7,099

TABLE 2
SUMMARY OF 1988 OPERATIONS

UPPER REPUBLICAN DIVISION
ARMEL UNIT
BONNY RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Outflow To Hale Ditch (AF)
Jan.	1,465	321	170	0.86	36,384	0
Feb.	1,556	322	190	0.27	37,428	0
Mar.	1,052	344	308	0.44	37,828	0
Apr.	2,458	333	762	2.11	39,191	0
May	2,874	344	1,159	5.66	40,562	0
June	957	638	1,294	1.82	39,587	303
July	509	1,235	1,338	3.56	37,523	891
Aug.	167	937	1,289	1.61	35,464	593
Sep.	111	561	858	1.44	34,156	232
Oct.	349	344	599	0.00	33,562	0
Nov.	888	333	338	0.25	33,779	0
Dec.	1,153	348	211	0.14	34,373	0
TOTAL	13,539	6,060	8,516	18.16	---	2,019

TABLE 2
SUMMARY OF 1988 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION
FRENCHMAN UNIT

ENDERS RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	CULBERTSON CANAL Diversions To Canal (AF)	CULBERTSON CANAL Delivered To Farms (AF)	CULBERTSON EXT.CANAL Diversions To Canal (AF)	CULBERTSON EXT.CANAL Delivered To Farms (AF)
Jan.	1,935	133	79	1.07	22,594	0	0	0	0
Feb.	2,226	58	89	0.13	24,673	0	0	0	0
Mar.	1,789	61	170	0.28	26,231	0	0	0	0
Apr.	1,978	60	416	2.23	27,733	1,012	0	0	0
May	2,345	61	625	4.38	29,392	2,889	0	459	0
June	1,630	5,923	715	1.04	24,384	2,248	1,464	4,233	1,137
July	1,513	5,710	697	2.89	19,490	2,549	1,904	5,350	2,368
Aug.	1,392	5,833	534	3.61	14,515	3,395	2,287	4,644	2,447
Sep.	1,680	60	305	1.37	15,830	0	0	0	0
Oct.	1,705	61	197	0.19	17,277	0	0	0	0
Nov.	1,723	60	160	0.33	18,780	0	0	0	0
Dec.	1,665	61	98	0.06	20,286	0	0	0	0
TOTAL	21,581	18,081	4,085	17.58	---	12,093	5,655	14,686	5,952

NOTE.--Culbertson Canal: Acres irrigated 1988 -- 7,581
Culbertson Extension Canal: Acres irrigated 1988 -- 9,505

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
MEEKER-DRIFTWOOD UNIT

SWANSON LAKE

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	MEEKER-DRIFTWOOD Release To Canal (AF)	MEEKER-DRIFTWOOD Delivered To Farms (AF)	BARTLEY CANAL Diversions To Canal (AF)	BARTLEY CANAL Delivered To Farms (AF)
Jan.	4,121	61	267	1.36	69,953	0	0	0	0
Feb.	7,422	58	304	0.11	77,013	0	0	0	0
Mar.	7,317	61	581	0.35	83,688	0	0	0	0
Apr.	10,081	60	1,339	1.65	92,370	0	0	0	0
May	11,953	61	1,728	4.56	102,534	0	0	0	0
June	4,778	13,375	2,447	2.92	91,490	8,064	3,612	2,851	1,715
July	2,926	15,951	2,291	7.41	76,174	9,322	5,530	2,687	1,676
Aug.	1,449	14,616	2,013	3.60	60,994	10,616	7,435	2,962	1,862
Sep.	288	422	1,294	2.17	59,566	322	330	64	67
Oct.	182	61	699	0.07	58,988	0	0	0	0
Nov.	2,052	60	580	0.29	60,400	0	0	0	0
Dec.	3,869	61	339	0.77	63,869	0	0	0	0
TOTAL	56,438	44,847	13,882	25.26	---	28,324	16,907	8,564	5,320

NOTE.--Meeker-Driftwood Canal: Acres irrigated 1988 -- 14,369
Bartley Canal: Acres irrigated 1988 -- 5,689

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
RED WILLOW UNIT

HUGH BUTLER LAKE

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	RED WILLOW CANAL Diversions To Canal (AF)	RED WILLOW CANAL Delivered To Farms (AF)
Jan.	1,188	246	80	0.99	26,871	0	0
Feb.	2,449	230	92	0.02	28,998	0	0
Mar.	1,454	246	182	0.19	30,034	0	0
Apr.	1,635	238	863	1.54	30,868	0	0
May	2,361	246	769	4.26	32,214	0	0
June	1,293	3,540	942	3.48	29,025	2,790	1,866
July	1,437	3,059	684	4.60	26,719	2,483	1,324
Aug.	3,177	3,354	706	5.41	25,836	2,492	1,655
Sep.	773	321	464	2.04	25,824	80	84
Oct.	781	246	239	0.06	26,120	0	0
Nov.	1,063	238	201	0.21	26,744	0	0
Dec.	1,161	246	113	0.74	27,546	0	0
TOTAL	18,782	12,210	5,035	23.54	---	7,845	4,929

NOTE.--Red Willow Canal: Acres irrigated 1988 -- 4,643

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
CAMBRIDGE UNIT

HARRY STRUNK LAKE

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	CAMBRIDGE CANAL Diversions To Canal (AF)	CAMBRIDGE CANAL Delivered To Farms (AF)
Jan.	2,835	61	104	1.14	31,876	0	0
Feb.	5,274	2,290	119	0.07	34,741	0	0
Mar.	3,370	3,277	237	0.14	34,597	0	0
Apr.	3,519	1,674	737	1.17	35,705	0	0
May	4,125	724	1,060	3.50	38,046	0	0
June	2,863	10,889	1,289	3.29	28,731	9,860	6,024
July	3,850	8,980	835	4.14	22,766	11,512	7,329
Aug.	6,272	8,405	727	6.39	19,906	10,195	7,025
Sep.	1,991	94	541	1.02	21,262	161	71
Oct.	2,358	19	301	0.16	23,300	0	0
Nov.	2,578	18	208	0.46	25,652	0	0
Dec.	2,663	19	123	0.51	28,173	0	0
TOTAL	41,698	36,450	6,281	21.99	---	31,728	20,449

NOTE.--Cambridge Canal: Acres irrigated 1988 -- 15,455

TABLE 2
SUMMARY OF 1988 OPERATIONS

KANASKA DIVISION
ALMENA UNIT
KEITH SEBELIUS LAKE

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To City Of Norton (AF)	ALMENA CANAL Diversions To Canal (AF)	ALMENA CANAL Delivered To Farms (AF)
Jan.	547	26	54	1.26	8,917	26	0	0
Feb.	438	25	67	0.28	9,263	25	0	0
Mar.	343	7	121	0.14	9,478	7	0	0
Apr.	711	26	380	3.32	9,783	26	0	0
May	936	50	546	4.84	10,123	50	0	0
June	388	1,830	621	0.39	8,060	89	922	479
July	2,266	667	536	4.79	9,123	82	499	175
Aug.	228	1,340	531	2.11	7,480	88	852	648
Sep.	84	64	374	1.62	7,126	64	0	0
Oct.	43	51	216	0.16	6,902	51	0	0
Nov.	169	39	116	0.40	6,916	39	0	0
Dec.	173	33	63	0.00	6,993	33	0	0
TOTAL	6,326	4,158	3,625	19.31	---	580	2,273	1,302

NOTE.--Almena Canal: Acres irrigated 1988 -- 4,791

BOSTWICK DIVISION
FRANKLIN UNIT
HARLAN COUNTY LAKE

Month	Data from Corps of Engineers: Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	FRANKLIN CANAL Release To Canal (AF)	FRANKLIN CANAL Delivered To Farms (AF)	NAPONEE CANAL Release To Canal (AF)	NAPONEE CANAL Delivered To Farms (AF)
Jan.	7,012	1,090	676	0.75	284,198	0	0	0	0
Feb.	17,542	575	744	0.19	300,421	0	0	0	0
Mar.	15,862	21	1,226	0.07	315,036	0	0	0	0
Apr.	16,639	78	3,427	1.48	328,170	0	0	0	0
May	13,612	615	4,867	3.45	336,300	0	0	0	0
June	6,407	46,810	7,426	2.39	288,471	7,966	3,845	1,170	749
July	26,606	56,708	5,464	4.72	252,905	12,435	5,762	1,226	832
Aug.	19,601	36,997	6,605	6.96	228,904	11,670	5,451	926	542
Sep.	4,754	2,768	5,171	2.44	225,719	1,182	220	0	0
Oct.	3,759	0	2,939	0.08	226,539	0	0	0	0
Nov.	7,325	0	2,362	0.65	231,502	0	0	0	0
Dec.	7,860	511	2,148	0.00	236,703	0	0	0	0
TOTAL	146,979	146,173	43,055	23.18	---	33,253	15,278	3,322	2,123

NOTE.--Franklin Canal: Acres irrigated 1988 -- 9,146
Naponee Canal: Acres irrigated 1988 -- 1,527

BOSTWICK DIVISION (Continued)
SUPERIOR-COURTLAND UNIT

Month	FRANKLIN PUMP CANAL Div. To Canal (AF)	FRANKLIN PUMP CANAL Del. To Farms (AF)	SUPERIOR CANAL Div. To Canal (AF)	SUPERIOR CANAL Del. To Farms (AF)	Total Div. (AF)	COURTLAND CANAL - ABOVE LOVEWELL: NEBRASKA USE Total (AF)	NEBRASKA USE Delivered To Farms (AF)	KANSAS USE Diversion To Canal (AF)	KANSAS USE Delivered To Farms (AF)
Jan.	0	0	0	0	0	0	0	0	0
Feb.	0	0	0	0	0	0	0	0	0
Mar.	0	0	0	0	0	0	0	0	0
Apr.	0	0	0	0	0	0	0	0	0
May	0	0	0	0	3,140	0	0	0	0
June	1,432	971	5,225	2,924	25,496	1,026	761	13,388	6,339
July	1,724	1,102	7,290	3,108	35,325	636	465	9,595	5,768
Aug.	1,366	783	6,072	2,059	20,302	625	404	9,376	4,844
Sep.	33	3	226	17	7,289	58	42	602	208
Oct.	0	0	0	0	3,015	0	0	0	0
Nov.	0	0	0	0	0	0	0	0	0
Dec.	0	0	0	0	0	0	0	0	0
TOTAL	4,555	2,859	18,813	8,108	94,567	2,345	1,672	32,961	17,159

NOTE.--Franklin Pump Canal: Acres irrigated 1988 -- 1,919
Superior Canal: Acres irrigated 1988 -- 4,710
NOTE.--Courtland Canal--Nebraska Use: Acres irrigated 1988 -- 1,113
Courtland Canal--Kansas Use: Acres irrigated 1988 -- 9,660

BOSTWICK DIVISION (Continued)
COURTLAND UNIT
LOVEWELL RESERVOIR

Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	COURTLAND (Below) Release To Canal (AF)	COURTLAND (Below) Delivered To Farms (AF)
Jan.	2,769	0	159	0.61	40,180	0	0
Feb.	3,908	6,651	197	0.38	37,240	0	0
Mar.	1,252	1,178	354	0.13	36,960	0	0
Apr.	2,266	0	816	1.91	38,410	0	0
May	1,792	440	1,332	1.57	38,430	480	0
June	7,825	18,385	1,530	2.49	26,340	18,492	11,186
July	32,177	18,280	1,207	7.08	39,030	18,068	11,509
Aug.	8,251	17,716	1,135	1.98	28,430	17,651	10,148
Sep.	5,146	2,575	681	1.71	30,320	2,555	594
Oct.	2,406	12	382	0.05	32,332	0	0
Nov.	509	12	379	1.29	32,450	0	0
Dec.	294	6	188	0.31	32,550	0	0
TOTAL	68,595	65,255	8,360	19.51	---	57,246	33,437

NOTE.--Courtland Canal below Lovewell: Acres irrigated 1988 -- 20,202

TABLE 2
SUMMARY OF 1988 OPERATIONS

SOLOMON DIVISION
KIRWIN UNIT

	KIRWIN RESERVOIR					KIRWIN CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,155	0	151	0.79	34,586	0	0
Feb.	2,271	0	207	0.43	36,650	0	0
Mar.	1,518	0	372	0.21	37,796	0	0
Apr.	2,215	0	931	1.57	39,080	0	0
May	1,988	0	1,400	2.69	39,668	0	0
June	226	3,088	1,266	1.31	35,540	3,118	1,515
July	1,076	9,527	1,131	2.61	25,958	9,503	5,148
Aug.	0	5,459	1,089	1.83	19,410	5,480	3,204
Sep.	37	0	617	1.38	18,830	0	0
Oct.	0	0	505	0.15	18,325	0	0
Nov.	335	0	240	1.00	18,420	0	0
Dec.	266	0	126	0.15	18,560	0	0
TOTAL	11,087	18,074	8,035	14.12	---	18,101	9,867

NOTE.--Kirwin Canal: Acres irrigated 1988 -- 7,264

SOLOMON DIVISION (Continued)
WEBSTER UNIT

	WEBSTER RESERVOIR					OSBORNE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	423	0	158	0.89	35,329	0	0
Feb.	1,239	0	194	0.43	36,374	0	0
Mar.	1,051	0	355	0.27	37,070	0	0
Apr.	2,279	0	809	2.54	38,540	0	0
May	1,659	0	1,334	2.40	38,865	0	0
June	38	2,692	1,636	0.93	34,575	1,381	399
July	1	5,591	1,543	2.34	27,442	4,834	2,236
Aug.	0	3,483	1,483	1.86	22,476	3,251	1,814
Sep.	71	0	793	2.00	21,754	0	0
Oct.	0	0	666	0.14	21,088	0	0
Nov.	111	0	309	0.78	20,890	0	0
Dec.	0	0	198	0.13	20,692	0	0
TOTAL	6,872	11,766	9,478	14.71	---	9,466	4,449

NOTE.--Osborne Canal: Acres irrigated 1988 -- 4,524

SOLOMON DIVISION (Continued)
GLEN ELDER UNIT

	WACONDA LAKE					OUTFLOW TO RIVER			
						City of Beloit			
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Storage Release (AF)	Quality Bypass (AF)	Other Controlled Releases 1/ (AF)	Release To WCH&T RWD No.2 (AF)
Jan.	10,637	10,313	662	0.85	209,401	0	0	10,263	50
Feb.	15,111	8,677	843	0.49	214,992	0	0	8,629	48
Mar.	9,329	19,081	1,583	0.25	203,657	0	0	19,028	53
Apr.	12,297	5,950	4,319	1.99	205,685	0	0	5,899	51
May	10,445	6,209	6,714	2.63	203,207	0	0	6,149	60
June	7,426	5,307	9,112	3.53	196,214	0	0	5,235	72
July	5,793	4,992	6,975	2.80	190,040	0	0	4,933	59
Aug.	9,382	4,773	7,916	1.32	186,733	0	0	4,705	68
Sep.	2,543	1,674	5,555	1.78	182,047	0	837	778	59
Oct.	0	1,754	2,619	0.15	177,674	309	1,389	0	56
Nov.	2,143	1,544	1,605	0.59	176,668	178	1,310	0	56
Dec.	2,396	1,595	801	0.21	176,668	189	1,348	0	58
TOTAL	87,502	71,869	48,704	16.59	---	676	4,884	65,619	690

1/ Includes releases for water right administration and 3,484 acre-feet delivered under Temporary Contracts.

SMOKY HILL DIVISION
ELLIS UNIT
CEDAR BLUFF RESERVOIR

						STORAGES 1/			
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Fish & Wildlife (AF)	City of Russell (AF)	Irrigation (AF)	Release To Fish Hatchery (AF)
Jan.	321	0	142	0.82	30,909	3,188	1,852	17,608	0
Feb.	166	36	169	0.23	30,870	3,155	1,851	17,603	36
Mar.	0	110	450	0.45	30,310	2,982	1,814	17,253	110
Apr.	1,076	115	733	1.93	30,538	2,957	1,838	17,482	95
May	508	147	1,264	1.07	29,635	2,777	1,770	16,827	85
June	122	70	1,353	0.37	28,334	2,575	1,666	15,832	41
July	314	0	1,348	2.67	27,300	2,452	1,579	15,008	0
Aug.	42	0	1,240	1.81	26,102	2,299	1,479	14,063	0
Sep.	325	0	945	2.64	25,482	2,229	1,427	13,565	0
Oct.	0	0	794	0.09	24,688	2,126	1,361	12,940	0
Nov.	79	0	300	0.53	24,467	2,100	1,342	12,764	0
Dec.	0	0	197	0.12	24,270	2,074	1,326	12,609	0
TOTAL	2,953	478	8,935	12.73	---	---	---	---	367

1/ Total Storage = 8,261 A.F. + Fish & Wildlife + City of Russell + Irrigation.

NOTE.--Cedar Bluff Canal: Due to the shortage of storage water in Cedar Bluff Reservoir, Cedar Bluff Canal was not in operation during the 1988 irrigation season. No releases were made for the City of Russell, Kansas.

TABLE 3
ACRES IRRIGATED IN 1988 AND ESTIMATES FOR 1989

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 1988	Estimated Acres to be Irrigated in 1989
Mirage Flats Irrigation District			
Mirage Flats Canal	11,662	9,491	10,500
Ainsworth Irrigation District			
Ainsworth Canal	34,539	28,700	32,000
Sargent Irrigation District			
Sargent Canal	13,922	11,692	12,000
Farwell Irrigation District			
Farwell Canal	50,051	42,115	46,000
Twin Loups Irrigation District			
Above Davis Creek	34,012	7,099	11,600
Below Davis Creek	0	0	0
Total Twin Loups Irrigation District	34,012	7,099	11,600
Frenchman Valley Irrigation District			
Culbertson Canal	9,600	7,581	7,800
H & RW Irrigation District			
Culbertson Extension Canal	11,490	9,505	10,000
Frenchman-Cambridge Irrigation District			
Meeker-Driftwood Canal	16,476	14,369	16,160
Red Willow Canal	4,932	5,689	4,790
Bartley Canal	6,539	4,643	6,290
Cambridge Canal	17,053	15,455	16,720
Total Frenchman-Cambridge Irrigation Dist.	45,000	40,156	43,960
Almena Irrigation District			
Almena Canal	5,763	4,791	4,750
Bostwick Irrigation District in Nebraska			
Franklin Canal	11,116	9,146	10,100
Naponee Canal	1,737	1,527	1,700
Franklin Pump Canal	2,091	1,919	2,050
Superior Canal	5,863	4,710	5,150
Courtland Canal (Nebraska)	1,980	1,113	1,600
Total Bostwick Irrigation Dist. in Nebraska	22,787	18,415	20,600
Kansas-Bostwick Irrigation District			
Courtland Canal above Lovewell	13,550	9,660	12,700
Courtland Canal below Lovewell	28,338	20,202	25,000
Total Kansas-Bostwick Irrigation District	41,888	29,862	37,700
Kirwin Irrigation District			
Kirwin Canal	11,435	7,264	7,000
Webster Irrigation District			
Osborne Canal	8,500	4,524	4,500
Cedar Bluff Irrigation District			
Cedar Bluff Canal	6,800	0	6,800
TOTAL PROJECT USES	307,449	221,195	255,210
Non-Project Uses			
Middle Loup Public Power & I.D. Canals	15,000	14,189	14,400
Hale Ditch	700	700	700
TOTAL NON-PROJECT USES	15,700	14,889	15,100
TOTAL PROJECT AND NON-PROJECT	323,149	236,084	270,310

BOX BUTTE RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	24.	1.5	.97	.1	2.	.1	.0	.0	3986.5	7.5	1.3
FEB	34.	1.9	1.32	.1	2.	.1	.0	.0	3988.7	9.2	1.7
MAR	42.	2.6	1.95	.1	2.	.1	.0	.0	3991.5	11.6	2.4
APR	34.	2.0	2.12	.2	25.	1.5	.0	.0	3991.8	11.9	.3
MAY	23.	1.4	2.99	.2	54.	3.3	.0	.0	3989.4	9.8	-2.1
JUN	17.	1.0	3.99	.3	55.	3.3	.0	.0	3986.0	7.2	-2.6
JUL	13.	.8	5.90	.3	158.	9.7	.0	4.3	3976.5	2.3	-4.9
AUG	15.	.9	5.90	.2	159.	9.8	.0	9.1	3976.5	2.3	.0
SEP	13.	.8	4.51	.1	81.	4.8	.0	4.1	3976.5	2.3	.0
OCT	16.	1.0	2.71	.1	2.	.1	.0	.0	3978.6	3.1	.8
NOV	27.	1.6	1.46	.1	2.	.1	.0	.0	3981.5	4.5	1.4
DEC	28.	1.7	.90	.0	2.	.1	.0	.0	3984.3	6.1	1.6
TOTAL		17.2	34.72	1.8		33.0	.0	17.5			-.1
MOST PROBABLE INFLOW CONDITIONS											
JAN	29.	1.8	.80	.0	2.	.1	.0	.0	3987.1	7.9	1.7
FEB	40.	2.2	1.09	.1	2.	.1	.0	.0	3989.6	9.9	2.0
MAR	49.	3.0	1.60	.1	2.	.1	.0	.0	3992.6	12.7	2.8
APR	40.	2.4	1.74	.1	20.	1.2	.0	.0	3993.7	13.8	1.1
MAY	26.	1.6	2.46	.2	18.	1.1	.0	.0	3994.0	14.1	.3
JUN	20.	1.2	3.28	.3	39.	2.3	.0	.0	3992.6	12.7	-1.4
JUL	16.	1.0	4.85	.3	133.	8.2	.0	.0	3982.8	5.2	-7.5
AUG	16.	1.0	4.85	.2	137.	8.4	.0	4.7	3976.5	2.3	-2.9
SEP	17.	1.0	3.71	.1	39.	2.3	.0	1.4	3976.5	2.3	.0
OCT	18.	1.1	2.23	.1	2.	.1	.0	.0	3978.9	3.2	.9
NOV	32.	1.9	1.20	.0	2.	.1	.0	.0	3982.4	5.0	1.8
DEC	33.	2.0	.74	.0	2.	.1	.0	.0	3985.6	6.9	1.9
TOTAL		20.2	28.55	1.5		24.1	.0	6.1			.7
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	36.	2.2	.69	.0	2.	.1	.0	.0	3987.6	8.3	2.1
FEB	50.	2.8	.94	.1	2.	.1	.0	.0	3990.7	10.9	2.6
MAR	60.	3.7	1.38	.1	2.	.1	.0	.0	3994.3	14.4	3.5
APR	49.	2.9	1.50	.1	8.	.5	.0	.0	3996.4	16.7	2.3
MAY	34.	2.1	2.12	.2	11.	.7	.0	.0	3997.5	17.9	1.2
JUN	25.	1.5	2.84	.3	25.	1.5	.0	.0	3997.2	17.6	-.3
JUL	20.	1.2	4.19	.4	102.	6.3	.0	.0	3992.0	12.1	-5.5
AUG	21.	1.3	4.19	.3	101.	6.2	.0	.0	3985.6	6.9	-5.2
SEP	20.	1.2	3.21	.2	27.	1.6	.0	.0	3984.7	6.3	-.6
OCT	23.	1.4	1.92	.1	2.	.1	.0	.0	3986.5	7.5	1.2
NOV	39.	2.3	1.04	.1	2.	.1	.0	.0	3989.2	9.6	2.1
DEC	41.	2.5	.64	.0	2.	.1	.0	.0	3991.9	12.0	2.4
TOTAL		25.1	24.66	1.9		17.4	.0	.0			5.8

MERRITT RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	RELEASE REQUIREMENT TOTAL MEAN CFS	RELEASE REQUIREMENT TOTAL 1000 AF	RES SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	192.	11.8	.84	.2	.0	11.6	189.	11.6	.0	.0	2944.0	68.8	.0
FEB	212.	11.8	1.15	.3	.0	11.5	207.	11.5	.0	.0	2944.0	68.8	.0
MAR	236.	14.5	.95	.2	.0	14.3	233.	14.3	.0	.0	2944.0	68.8	.0
APR	235.	14.0	1.09	.3	.0	11.9	200.	11.9	.0	.0	2944.6	70.6	1.8
MAY	218.	13.4	1.82	.4	5.1	1.0	99.	6.1	3.0	.0	2946.0	74.5	3.9
JUN	208.	12.4	2.10	.5	8.3	1.0	156.	9.3	2.6	.0	2946.0	74.5	.0
JUL	210.	12.9	3.39	.7	40.7	1.0	678.	41.7	.0	.0	2933.9	45.0	-29.5
AUG	210.	12.9	2.95	.3	40.7	1.0	678.	41.7	.0	.0	2911.5	15.9	-29.1
SEP	208.	12.4	2.68	.2	7.0	1.0	134.	8.0	.0	.0	2916.1	20.1	4.2
OCT	208.	12.8	2.55	.3	.0	1.0	16.	1.0	.0	.0	2925.9	31.6	11.5
NOV	207.	12.3	1.51	.2	.0	1.0	17.	1.0	.0	.0	2932.7	42.7	11.1
DEC	203.	12.5	1.13	.2	.0	1.0	16.	1.0	.0	.0	2938.1	54.0	11.3
TOTAL		153.7	22.16	3.8	101.8	57.3		159.1	5.6	.0			-14.8
					MOST PROBABLE INFLOW CONDITIONS								
JAN	216.	13.3	.52	.1	.0	13.2	215.	13.2	.0	.0	2944.0	68.8	.0
FEB	239.	13.3	.71	.2	.0	13.1	236.	13.1	.0	.0	2944.0	68.8	.0
MAR	267.	16.4	.58	.1	.0	16.3	265.	16.3	.0	.0	2944.0	68.8	.0
APR	266.	15.8	.67	.2	.0	13.8	232.	13.8	.0	.0	2944.6	70.6	1.8
MAY	247.	15.2	1.11	.3	3.8	1.0	78.	4.8	6.2	.0	2946.0	74.5	3.9
JUN	237.	14.1	1.29	.3	6.4	1.0	124.	7.4	6.4	.0	2946.0	74.5	.0
JUL	236.	14.5	2.08	.5	29.8	1.0	501.	30.8	.0	.0	2939.7	57.7	-16.8
AUG	236.	14.5	1.81	.3	29.8	1.0	501.	30.8	.0	.0	2931.8	41.1	-16.6
SEP	235.	14.0	1.65	.3	5.1	1.0	103.	6.1	.0	.0	2935.7	48.7	7.6
OCT	234.	14.4	1.56	.3	.0	1.0	16.	1.0	.0	.0	2941.3	61.8	13.1
NOV	234.	13.9	.92	.2	.0	6.7	113.	6.7	.0	.0	2944.0	68.8	7.0
DEC	228.	14.0	.69	.2	.0	13.8	224.	13.8	.0	.0	2944.0	68.8	.0
TOTAL		173.4	13.59	3.0	74.9	82.9		157.8	12.6	.0			.0
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	241.	14.8	.24	.1	.0	14.7	239.	14.7	.0	.0	2944.0	68.8	.0
FEB	266.	14.8	.33	.1	.0	14.7	265.	14.7	.0	.0	2944.0	68.8	.0
MAR	294.	18.1	.27	.1	.0	18.0	293.	18.0	.0	.0	2944.0	68.8	.0
APR	294.	17.5	.31	.1	.0	15.6	262.	15.6	.0	.0	2944.6	70.6	1.8
MAY	273.	16.8	.51	.1	2.2	1.0	52.	3.2	9.6	.0	2946.0	74.5	3.9
JUN	262.	15.6	.60	.1	3.9	1.0	82.	4.9	10.6	.0	2946.0	74.5	.0
JUL	263.	16.2	.96	.2	19.2	1.0	329.	20.2	.0	.0	2944.5	70.3	-4.2
AUG	263.	16.2	.84	.2	19.2	1.0	329.	20.2	.0	.0	2943.0	66.1	-4.2
SEP	262.	15.6	.76	.2	3.2	9.5	213.	12.7	.0	.0	2944.0	68.8	2.7
OCT	260.	16.0	.72	.2	.0	15.8	257.	15.8	.0	.0	2944.0	68.8	.0
NOV	260.	15.5	.43	.1	.0	15.4	259.	15.4	.0	.0	2944.0	68.8	.0
DEC	254.	15.6	.32	.1	.0	15.5	252.	15.5	.0	.0	2944.0	68.8	.0
TOTAL		192.7	6.29	1.6	47.7	123.2		170.9	20.2	.0			.0

SHERMAN RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	0.	.0	1.17	.2	21.	1.3	.0	.0	2155.1	50.3	-1.5
FEB	0.	.0	1.44	.3	23.	1.3	.0	.0	2154.4	48.7	-1.6
MAR	0.	.0	1.55	.3	21.	1.3	.0	.0	2153.7	47.1	-1.6
APR	252.	15.0	2.12	.4	22.	1.3	.0	.0	2159.1	60.4	13.3
MAY	176.	10.8	2.69	.6	24.	1.5	.0	.0	2162.3	69.1	8.7
JUN	183.	10.9	3.89	.9	168.	10.0	.0	.0	2162.3	69.1	.0
JUL	47.	2.9	5.32	.9	1212.	74.5	.0	13.9	2129.0	10.5	-58.6
AUG	197.	12.1	4.49	.3	1184.	72.8	.0	61.0	2129.0	10.5	.0
SEP	424.	25.2	3.17	.3	176.	10.5	.0	.0	2141.6	24.9	14.4
OCT	473.	29.1	2.15	.4	18.	1.1	.0	.0	2156.0	52.5	27.6
NOV	0.	.0	1.23	.2	22.	1.3	.0	.0	2155.4	51.0	-1.5
DEC	0.	.0	.69	.1	21.	1.3	.0	.0	2154.8	49.6	-1.4
TOTAL		106.0	29.91	4.9		178.2	.0	74.9			-2.2
					MOST PROBABLE INFLOW CONDITIONS						
JAN	0.	.0	.74	.1	21.	1.3	.0	.0	2155.1	50.4	-1.4
FEB	0.	.0	.90	.2	23.	1.3	.0	.0	2154.5	48.9	-1.5
MAR	0.	.0	.98	.2	21.	1.3	.0	.0	2153.8	47.4	-1.5
APR	235.	14.0	1.34	.3	22.	1.3	.0	.0	2158.9	59.8	12.4
MAY	182.	11.2	1.70	.4	24.	1.5	.0	.0	2162.3	69.1	9.3
JUN	131.	7.8	2.45	.6	121.	7.2	.0	.0	2162.3	69.1	.0
JUL	194.	11.9	3.36	.6	831.	51.1	.0	.0	2144.5	29.3	-39.8
AUG	309.	19.0	2.83	.3	812.	49.9	.0	12.4	2129.0	10.5	-18.8
SEP	464.	27.6	2.00	.2	121.	7.2	.0	.0	2145.3	30.7	20.2
OCT	376.	23.1	1.36	.2	18.	1.1	.0	.0	2156.0	52.5	21.8
NOV	0.	.0	.77	.2	22.	1.3	.0	.0	2155.4	51.0	-1.5
DEC	0.	.0	.43	.1	21.	1.3	.0	.0	2154.8	49.6	-1.4
TOTAL		114.6	18.86	3.4		125.8	.0	12.4			-2.2
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	0.	.0	.43	.1	21.	1.3	.0	.0	2155.1	50.4	-1.4
FEB	0.	.0	.53	.1	23.	1.3	.0	.0	2154.5	49.0	-1.4
MAR	0.	.0	.57	.1	21.	1.3	.0	.0	2153.9	47.6	-1.4
APR	218.	13.0	.78	.2	22.	1.3	.0	.0	2158.6	59.1	11.5
MAY	190.	11.7	.99	.2	24.	1.5	.0	.0	2162.3	69.1	10.0
JUN	96.	5.7	1.44	.3	91.	5.4	.0	.0	2162.3	69.1	.0
JUL	384.	23.6	1.97	.4	569.	35.0	.0	.0	2157.9	57.3	-11.8
AUG	207.	12.7	1.66	.3	548.	33.7	.0	.0	2148.3	36.0	-21.3
SEP	393.	23.4	1.17	.2	91.	5.4	.0	.0	2156.5	53.8	17.8
OCT	0.	.0	.80	.2	18.	1.1	.0	.0	2156.0	52.5	-1.3
NOV	0.	.0	.45	.1	22.	1.3	.0	.0	2155.4	51.1	-1.4
DEC	0.	.0	.25	.0	21.	1.3	.0	.0	2154.9	49.8	-1.3
TOTAL		90.1	11.04	2.2		89.9	.0	.0			-2.0

CALAMUS RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	RELEASE REQUIREMENT TOTAL MEAN CFS	RELEASE REQUIREMENT TOTAL 1000 AF	RES SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	267.	16.4	.99	.4	.0	16.0	260.	16.0	.0	.0	2241.0	112.8	.0
FEB	288.	16.0	1.08	.4	.0	15.6	281.	15.6	.0	.0	2241.0	112.8	.0
MAR	309.	19.0	1.79	.7	.0	13.0	211.	13.0	.0	.0	2242.1	118.1	5.3
APR	304.	18.1	2.36	1.0	.0	7.8	131.	7.8	.0	.0	2244.0	127.4	9.3
MAY	294.	18.1	2.75	1.2	.0	16.9	275.	16.9	.0	.0	2244.0	127.4	.0
JUN	289.	17.2	3.08	1.3	5.5	10.4	267.	15.9	.0	.0	2244.0	127.4	.0
JUL	254.	15.6	5.26	2.2	11.0	15.6	433.	26.6	.0	.0	2241.3	114.2	-13.2
AUG	254.	15.6	4.22	1.6	11.0	15.6	433.	26.6	.0	.0	2238.6	101.6	-12.6
SEP	262.	15.6	3.23	1.2	7.9	15.6	395.	23.5	.0	.0	2236.4	92.5	-9.1
OCT	263.	16.2	3.02	1.1	.0	5.1	83.	5.1	.0	.0	2238.8	102.5	10.0
NOV	269.	16.0	1.44	.5	.0	5.4	91.	5.4	.0	.0	2241.0	112.6	10.1
DEC	260.	16.0	.69	.3	.0	15.7	255.	15.7	.0	.0	2241.0	112.6	.0
TOTAL		199.8	29.91	11.9	35.4	152.7		188.1	.0	.0			-.2
MOST PROBABLE INFLOW CONDITIONS													
JAN	286.	17.6	.62	.2	.0	17.4	283.	17.4	.0	.0	2241.0	112.8	.0
FEB	308.	17.1	.68	.3	.0	16.8	303.	16.8	.0	.0	2241.0	112.8	.0
MAR	330.	20.3	1.13	.5	.0	14.6	237.	14.6	.0	.0	2242.1	118.0	5.2
APR	328.	19.5	1.49	.6	.0	9.5	160.	9.5	.0	.0	2244.0	127.4	9.4
MAY	317.	19.5	1.74	.7	.0	18.8	306.	18.8	.0	.0	2244.0	127.4	.0
JUN	311.	18.5	1.94	.8	.0	17.7	297.	17.7	.0	.0	2244.0	127.4	.0
JUL	272.	16.7	3.32	1.4	8.0	16.7	402.	24.7	.0	.0	2242.1	118.0	-9.4
AUG	272.	16.7	2.66	1.1	8.3	16.7	407.	25.0	.0	.0	2240.1	108.6	-9.4
SEP	281.	16.7	2.04	.8	5.5	16.7	373.	22.2	.0	.0	2238.7	102.3	-6.3
OCT	283.	17.4	1.90	.7	.0	11.5	187.	11.5	.0	.0	2239.9	107.5	5.2
NOV	287.	17.1	.91	.4	.0	11.6	195.	11.6	.0	.0	2241.0	112.6	5.1
DEC	278.	17.1	.43	.2	.0	16.9	275.	16.9	.0	.0	2241.0	112.6	.0
TOTAL		214.2	18.86	7.7	21.8	184.9		206.7	.0	.0			-.2
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	320.	19.7	.36	.1	.0	19.6	319.	19.6	.0	.0	2241.0	112.8	.0
FEB	346.	19.2	.40	.2	.0	19.0	342.	19.0	.0	.0	2241.0	112.8	.0
MAR	371.	22.8	.66	.3	.0	17.2	280.	17.2	.0	.0	2242.1	118.1	5.3
APR	366.	21.8	.87	.4	.0	12.1	203.	12.1	.0	.0	2244.0	127.4	9.3
MAY	355.	21.8	1.02	.4	.0	21.4	348.	21.4	.0	.0	2244.0	127.4	.0
JUN	346.	20.6	1.14	.5	.0	20.1	338.	20.1	.0	.0	2244.0	127.4	.0
JUL	306.	18.8	1.94	.8	4.5	18.8	379.	23.3	.0	.0	2243.0	122.1	-5.3
AUG	306.	18.8	1.56	.6	5.3	18.8	392.	24.1	.0	.0	2241.7	116.2	-5.9
SEP	316.	18.8	1.19	.5	.0	18.8	316.	18.8	.0	.0	2241.6	115.7	-.5
OCT	316.	19.4	1.12	.4	.0	20.6	335.	20.6	.0	.0	2241.3	114.1	-1.6
NOV	323.	19.2	.53	.2	.0	20.5	345.	20.5	.0	.0	2241.0	112.6	-1.5
DEC	312.	19.2	.25	.1	.0	19.1	311.	19.1	.0	.0	2241.0	112.6	.0
TOTAL		240.1	11.04	4.5	9.8	226.0		235.8	.0	.0			-.2

BONNY RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT CANAL 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	RELEASE REQUIREMENT TOTAL MEAN CFS	RELEASE REQUIREMENT TOTAL 1000 AF	RES SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	21.	1.3	1.00	.2	.0	.4	7.	.4	.0	.0	3668.8	35.1	.7
FEB	22.	1.2	1.13	.2	.0	.4	7.	.4	.0	.0	3669.1	35.7	.6
MAR	24.	1.5	1.14	.2	.0	.4	7.	.4	.0	.0	3669.6	36.6	.9
APR	25.	1.5	4.01	.6	.0	.4	7.	.4	.0	.0	3669.8	37.1	.5
MAY	39.	2.4	3.75	.6	.0	.4	7.	.4	.0	.0	3670.6	38.5	1.4
JUN	32.	1.9	5.85	.9	.9	.4	22.	1.3	.0	.0	3670.4	38.2	-.3
JUL	24.	1.5	7.24	1.2	.9	.4	21.	1.3	.0	.0	3669.9	37.2	-1.0
AUG	15.	.9	6.81	1.1	.8	.4	20.	1.2	.0	.0	3669.1	35.8	-1.4
SEP	12.	.7	5.50	.8	.6	.4	17.	1.0	.0	.0	3668.6	34.7	-1.1
OCT	15.	.9	3.75	.6	.0	.4	7.	.4	.0	.0	3668.5	34.6	-.1
NOV	22.	1.3	2.18	.3	.0	.4	7.	.4	.0	.0	3668.8	35.2	.6
DEC	21.	1.3	1.26	.2	.0	.4	7.	.4	.0	.0	3669.2	35.9	.7
TOTAL		16.4	43.62	6.9	3.2	4.8		8.0	.0	.0			1.5
MOST PROBABLE INFLOW CONDITIONS													
JAN	26.	1.6	.76	.1	.0	.4	7.	.4	.0	.0	3669.0	35.5	1.1
FEB	27.	1.5	.86	.1	.0	.4	7.	.4	.0	.0	3669.5	36.5	1.0
MAR	33.	2.0	.86	.1	.0	.4	7.	.4	.0	.0	3670.3	38.0	1.5
APR	34.	2.0	3.04	.5	.0	.4	7.	.4	.0	.0	3670.9	39.1	1.1
MAY	52.	3.2	2.85	.5	.0	.4	7.	.4	.1	.0	3672.0	41.3	2.2
JUN	42.	2.5	4.43	.8	.4	.4	13.	.8	.9	.0	3672.0	41.3	.0
JUL	29.	1.8	5.49	.9	.6	.4	16.	1.0	.0	.0	3671.9	41.2	-.1
AUG	21.	1.3	5.16	.9	.6	.4	16.	1.0	.0	.0	3671.6	40.6	-.6
SEP	15.	.9	4.17	.7	.4	.4	13.	.8	.0	.0	3671.3	40.0	-.6
OCT	20.	1.2	2.85	.5	.0	.4	7.	.4	.0	.0	3671.5	40.3	.3
NOV	27.	1.6	1.65	.3	.0	.4	7.	.4	.0	.0	3671.9	41.2	.9
DEC	26.	1.6	.96	.2	.0	.4	7.	.4	.9	.0	3672.0	41.3	.1
TOTAL		21.2	33.08	5.6	2.0	4.8		6.8	1.9	.0			6.9
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	44.	2.7	.54	.1	.0	.4	7.	.4	.0	.0	3669.6	36.6	2.2
FEB	47.	2.6	.61	.1	.0	.4	7.	.4	.0	.0	3670.7	38.7	2.1
MAR	52.	3.2	.62	.1	.0	.4	7.	.4	.1	.0	3672.0	41.3	2.6
APR	55.	3.3	2.17	.4	.0	.4	7.	.4	2.5	.0	3672.0	41.3	.0
MAY	86.	5.3	2.03	.3	.0	.4	7.	.4	4.6	.0	3672.0	41.3	.0
JUN	69.	4.1	3.17	.5	.2	.4	10.	.6	3.0	.0	3672.0	41.3	.0
JUL	50.	3.1	3.92	.7	.2	.4	10.	.6	1.8	.0	3672.0	41.3	.0
AUG	36.	2.2	3.69	.6	.4	.4	13.	.8	.8	.0	3672.0	41.3	.0
SEP	24.	1.4	2.98	.5	.4	.4	13.	.8	.1	.0	3672.0	41.3	.0
OCT	33.	2.0	2.03	.3	.0	.4	7.	.4	1.3	.0	3672.0	41.3	.0
NOV	47.	2.8	1.18	.2	.0	.4	7.	.4	2.2	.0	3672.0	41.3	.0
DEC	44.	2.7	.69	.1	.0	.4	7.	.4	2.2	.0	3672.0	41.3	.0
TOTAL		35.4	23.63	3.9	1.2	4.8		6.0	18.6	.0			6.9

ENDERS RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	42.	2.6	.60	.1	0.	.0	.0	.0	3096.8	22.8	2.5
FEB	43.	2.4	.75	.1	0.	.0	.0	.0	3098.8	25.1	2.3
MAR	42.	2.6	.67	.1	0.	.0	.0	.0	3100.8	27.6	2.5
APR	39.	2.3	3.41	.4	0.	.0	.0	.0	3102.3	29.5	1.9
MAY	39.	2.4	3.19	.3	47.	2.9	.0	.0	3101.7	28.7	-.8
JUN	44.	2.6	4.51	.5	55.	3.3	.0	.0	3100.8	27.5	-1.2
JUL	39.	2.4	6.39	.5	306.	18.8	.0	.0	3083.3	10.6	-16.9
AUG	37.	2.3	6.14	.3	286.	17.6	.0	15.0	3082.4	10.0	-.6
SEP	40.	2.4	4.22	.2	111.	6.6	.0	4.4	3082.4	10.0	.0
OCT	37.	2.3	2.91	.2	2.	.1	.0	.0	3085.3	12.0	2.0
NOV	42.	2.5	1.85	.1	0.	.0	.0	.0	3088.3	14.4	2.4
DEC	41.	2.5	.85	.1	0.	.0	.0	.0	3091.0	16.8	2.4
TOTAL		29.3	35.49	2.9		49.3	.0	19.4			-3.5
MOST PROBABLE INFLOW CONDITIONS											
JAN	52.	3.2	.44	.0	0.	.0	.0	.0	3097.5	23.5	3.2
FEB	54.	3.0	.54	.1	0.	.0	.0	.0	3099.9	26.4	2.9
MAR	54.	3.3	.49	.1	0.	.0	.0	.0	3102.4	29.6	3.2
APR	49.	2.9	2.47	.3	0.	.0	.0	.0	3104.3	32.2	2.6
MAY	52.	3.2	2.31	.3	10.	.6	.0	.0	3106.0	34.5	2.3
JUN	57.	3.4	3.26	.4	12.	.7	.0	.0	3107.5	36.8	2.3
JUL	52.	3.2	4.62	.5	216.	13.3	.0	.0	3099.7	26.2	-10.6
AUG	47.	2.9	4.44	.4	231.	14.2	.0	.0	3088.5	14.5	-11.7
SEP	50.	3.0	3.06	.2	47.	2.8	.0	.0	3088.5	14.5	.0
OCT	49.	3.0	2.11	.2	0.	.0	.0	.0	3091.6	17.3	2.8
NOV	52.	3.1	1.33	.1	0.	.0	.0	.0	3094.6	20.3	3.0
DEC	52.	3.2	.62	.1	0.	.0	.0	.0	3097.4	23.4	3.1
TOTAL		37.4	25.69	2.7		31.6	.0	.0			3.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	63.	3.9	.31	.0	0.	.0	.0	.0	3098.1	24.2	3.9
FEB	63.	3.5	.38	.0	0.	.0	.0	.0	3100.9	27.7	3.5
MAR	63.	3.9	.34	.0	0.	.0	.0	.0	3103.9	31.6	3.9
APR	59.	3.5	1.75	.2	0.	.0	.0	.0	3106.2	34.9	3.3
MAY	60.	3.7	1.64	.2	0.	.0	.0	.0	3108.6	38.4	3.5
JUN	67.	4.0	2.31	.3	0.	.0	.0	.0	3110.9	42.1	3.7
JUL	59.	3.6	3.28	.4	122.	7.5	.0	.0	3108.2	37.8	-4.3
AUG	54.	3.3	3.15	.4	137.	8.4	.0	.0	3104.4	32.3	-5.5
SEP	57.	3.4	2.16	.3	18.	1.1	.0	.0	3105.8	34.3	2.0
OCT	55.	3.4	1.49	.2	0.	.0	.0	.0	3108.0	37.5	3.2
NOV	61.	3.6	.95	.1	0.	.0	.0	.0	3110.2	41.0	3.5
DEC	60.	3.7	.44	.1	0.	.0	.1	.0	3112.3	44.5	3.5
TOTAL		43.5	18.20	2.2		17.0	.1	.0			24.2

SWANSON LAKE OPERATION ESTIMATES - 1989

MONTH	UNDEPLETED INFLOW 1000 AF	UPSTREAM DEPLETIONS 1000 AF	DEPLETED INFLOW MEAN CFS	DEPLETED INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	3.4	.0	55.	3.4	.69	.2	2.	.1	.0	.0	2741.5	67.0	3.1
FEB	4.9	.0	88.	4.9	.73	.2	2.	.1	.0	.0	2742.7	71.6	4.6
MAR	7.4	.0	120.	7.4	.55	.2	2.	.1	.0	.0	2744.5	78.7	7.1
APR	6.8	.0	114.	6.8	3.90	1.3	2.	.1	.0	.0	2745.8	84.1	5.4
MAY	7.2	.0	117.	7.2	2.95	1.0	98.	6.0	.0	.0	2745.9	84.3	.2
JUN	6.4	.0	108.	6.4	4.48	1.6	114.	6.8	.0	.0	2745.4	82.3	-2.0
JUL	5.0	.0	81.	5.0	6.41	2.1	348.	21.4	.0	.0	2740.6	63.8	-18.5
AUG	3.4	.0	55.	3.4	6.85	1.9	342.	21.0	.0	.0	2734.7	44.3	-19.5
SEP	1.7	.0	29.	1.7	4.63	1.1	203.	12.1	.0	.0	2730.4	32.8	-11.5
OCT	2.0	.0	33.	2.0	2.69	.5	57.	3.5	.0	.0	2729.6	30.8	-2.0
NOV	3.2	.0	54.	3.2	1.75	.4	2.	.1	.0	.0	2730.7	33.5	2.7
DEC	3.2	.0	52.	3.2	.80	.2	2.	.1	.0	.0	2731.9	36.4	2.9
TOTAL	54.6	.0		54.6	36.43	10.7		71.4	.0	.0			-27.5
					MOST PROBABLE INFLOW CONDITIONS								
JAN	5.1	.0	83.	5.1	.49	.2	2.	.1	.0	.0	2742.0	68.7	4.8
FEB	7.5	.0	135.	7.5	.51	.2	2.	.1	.0	.0	2743.8	75.9	7.2
MAR	11.2	.0	182.	11.2	.38	.1	2.	.1	.0	.0	2746.5	86.9	11.0
APR	10.2	.0	171.	10.2	2.74	1.0	2.	.1	.0	.0	2748.5	96.0	9.1
MAY	10.8	.0	176.	10.8	2.08	.8	23.	1.4	.0	.0	2750.4	104.6	8.6
JUN	9.5	.0	160.	9.5	3.15	1.3	27.	1.6	.0	.0	2751.8	111.2	6.6
JUL	7.6	.0	124.	7.6	4.51	1.8	263.	16.2	.0	.0	2749.6	100.8	-10.4
AUG	5.1	.0	83.	5.1	4.82	1.8	296.	18.2	.0	.0	2746.2	85.9	-14.9
SEP	2.5	.0	42.	2.5	3.26	1.1	84.	5.0	.0	.0	2745.4	82.3	-3.6
OCT	3.0	.0	49.	3.0	1.90	.7	26.	1.6	.0	.0	2745.5	83.0	.7
NOV	4.7	.0	79.	4.7	1.23	.4	2.	.1	.0	.0	2746.5	87.2	4.2
DEC	4.8	.0	78.	4.8	.56	.2	2.	.1	.0	.0	2747.6	91.7	4.5
TOTAL	82.0	.0		82.0	25.63	9.6		44.6	.0	.0			27.8
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	8.6	.0	140.	8.6	.33	.1	2.	.1	.0	.0	2742.9	72.3	8.4
FEB	12.7	.0	229.	12.7	.35	.1	2.	.1	.0	.0	2746.0	84.8	12.5
MAR	18.9	.0	307.	18.9	.26	.1	2.	.1	.0	.0	2750.2	103.5	18.7
APR	17.4	.0	292.	17.4	1.89	.8	2.	.1	7.8	.0	2752.0	112.2	8.7
MAY	18.3	.0	298.	18.3	1.43	.6	13.	.8	16.9	.0	2752.0	112.2	.0
JUN	16.1	.0	271.	16.1	2.17	.9	17.	1.0	14.2	.0	2752.0	112.2	.0
JUL	13.0	.0	211.	13.0	3.10	1.3	140.	8.6	3.1	.0	2752.0	112.2	.0
AUG	8.6	.0	140.	8.6	3.31	1.3	163.	10.0	.0	.0	2751.4	109.5	-2.7
SEP	4.1	.0	69.	4.1	2.24	.9	30.	1.8	.0	.0	2751.7	110.9	1.4
OCT	5.1	.0	83.	5.1	1.31	.5	15.	.9	2.4	.0	2752.0	112.2	1.3
NOV	8.2	.0	138.	8.2	.85	.3	2.	.1	7.8	.0	2752.0	112.2	.0
DEC	8.2	.0	133.	8.2	.39	.2	2.	.1	7.9	.0	2752.0	112.2	.0
TOTAL	139.2	.0		139.2	17.63	7.1		23.7	60.1	.0			48.3

HUGH BUTLER LAKE OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	18.	1.1	.64	.1	5.	.3	.0	.0	2575.3	28.2	.7
FEB	23.	1.3	.72	.1	5.	.3	.0	.0	2576.0	29.1	.9
MAR	31.	1.9	.53	.1	5.	.3	.0	.0	2577.1	30.6	1.5
APR	29.	1.7	3.86	.5	5.	.3	.0	.0	2577.7	31.5	.9
MAY	29.	1.8	3.98	.5	28.	1.7	.0	.0	2577.4	31.1	-.4
JUN	35.	2.1	4.96	.6	29.	1.7	.0	.0	2577.3	30.9	-.2
JUL	28.	1.7	6.67	.7	72.	4.4	.0	.0	2574.8	27.5	-3.4
AUG	18.	1.1	6.44	.7	72.	4.4	.0	.0	2571.5	23.5	-4.0
SEP	18.	1.1	4.51	.4	40.	2.4	.0	.0	2570.0	21.8	-1.7
OCT	15.	.9	3.11	.3	15.	.9	.0	.0	2569.7	21.5	-.3
NOV	18.	1.1	1.74	.2	5.	.3	.0	.0	2570.3	22.1	.6
DEC	18.	1.1	.72	.1	5.	.3	.0	.0	2570.9	22.8	.7
TOTAL		16.9	37.88	4.3		17.3	.0	.0			-4.7
MOST PROBABLE INFLOW CONDITIONS											
JAN	23.	1.4	.46	.1	5.	.3	.0	.0	2575.5	28.5	1.0
FEB	31.	1.7	.51	.1	5.	.3	.0	.0	2576.5	29.8	1.3
MAR	37.	2.3	.38	.0	5.	.3	.0	.0	2577.9	31.8	2.0
APR	34.	2.0	2.77	.3	5.	.3	.0	.0	2578.9	33.2	1.4
MAY	34.	2.1	2.85	.4	11.	.7	.0	.0	2579.5	34.2	1.0
JUN	44.	2.6	3.56	.5	12.	.7	.0	.0	2580.4	35.6	1.4
JUL	34.	2.1	4.78	.6	59.	3.6	.0	.0	2579.1	33.5	-2.1
AUG	23.	1.4	4.62	.6	68.	4.2	.0	.0	2576.7	30.1	-3.4
SEP	24.	1.4	3.23	.4	22.	1.3	.0	.0	2576.5	29.8	-.3
OCT	20.	1.2	2.23	.3	11.	.7	.0	.0	2576.6	30.0	.2
NOV	24.	1.4	1.25	.1	5.	.3	.0	.0	2577.4	31.0	1.0
DEC	23.	1.4	.52	.1	5.	.3	.0	.0	2578.1	32.0	1.0
TOTAL		21.0	27.16	3.5		13.0	.0	.0			4.5
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	29.	1.8	.31	.0	5.	.3	.0	.0	2575.9	29.0	1.5
FEB	38.	2.1	.35	.0	5.	.3	.0	.0	2577.2	30.8	1.8
MAR	50.	3.1	.26	.0	5.	.3	.0	.0	2579.1	33.6	2.8
APR	45.	2.7	1.88	.2	5.	.3	.0	.0	2580.6	35.8	2.2
MAY	47.	2.9	1.94	.3	8.	.5	.1	.0	2581.8	37.8	2.0
JUN	57.	3.4	2.42	.3	10.	.6	2.5	.0	2581.8	37.8	.0
JUL	46.	2.8	3.24	.4	37.	2.3	.1	.0	2581.8	37.8	.0
AUG	29.	1.8	3.13	.4	41.	2.5	.0	.0	2581.1	36.7	-1.1
SEP	30.	1.8	2.19	.3	15.	.9	.0	.0	2581.5	37.3	.6
OCT	28.	1.7	1.51	.2	8.	.5	.5	.0	2581.8	37.8	.5
NOV	30.	1.8	.85	.1	5.	.3	1.4	.0	2581.8	37.8	.0
DEC	29.	1.8	.35	.0	5.	.3	1.5	.0	2581.8	37.8	.0
TOTAL		27.7	18.43	2.2		9.1	6.1	.0			10.3

HARRY STRUNK LAKE OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	37.	2.3	.62	.1	2.	.1	.0	.0	2362.9	30.3	2.1
FEB	54.	3.0	.66	.1	2.	.1	.0	.0	2364.6	33.1	2.8
MAR	65.	4.0	.42	.1	36.	2.2	.0	.0	2365.6	34.8	1.7
APR	57.	3.4	3.67	.6	32.	1.9	.0	.0	2366.1	35.7	.9
MAY	67.	4.1	3.08	.5	60.	3.7	.0	.0	2366.0	35.6	-.1
JUN	91.	5.4	4.33	.7	62.	3.7	.9	.0	2366.1	35.7	.1
JUL	75.	4.6	6.31	.8	229.	14.1	.0	.0	2359.6	25.4	-10.3
AUG	44.	2.7	6.13	.6	234.	14.4	.0	.0	2348.4	13.1	-12.3
SEP	34.	2.0	4.12	.3	99.	5.9	.0	.0	2343.0	8.9	-4.2
OCT	36.	2.2	3.02	.2	21.	1.3	.0	.0	2344.0	9.6	.7
NOV	39.	2.3	1.56	.1	2.	.1	.0	.0	2346.8	11.7	2.1
DEC	37.	2.3	.73	.1	2.	.1	.0	.0	2349.2	13.8	2.1
TOTAL		38.3	34.65	4.2		47.6	.9	.0			-14.4
					MOST PROBABLE INFLOW CONDITIONS						
JAN	47.	2.9	.43	.1	2.	.1	.0	.0	2363.3	30.9	2.7
FEB	68.	3.8	.46	.1	2.	.1	.0	.0	2365.4	34.5	3.6
MAR	80.	4.9	.29	.0	75.	4.6	.0	.0	2365.6	34.8	.3
APR	71.	4.2	2.56	.4	49.	2.9	.0	.0	2366.1	35.7	.9
MAY	83.	5.1	2.15	.3	2.	.1	4.7	.0	2366.1	35.7	.0
JUN	111.	6.6	3.01	.5	7.	.4	5.7	.0	2366.1	35.7	.0
JUL	91.	5.6	4.39	.6	179.	11.0	.0	.0	2362.5	29.7	-6.0
AUG	55.	3.4	4.27	.5	208.	12.8	.0	.0	2355.2	19.8	-9.9
SEP	42.	2.5	2.87	.3	35.	2.1	.0	.0	2355.2	19.9	.1
OCT	44.	2.7	2.10	.2	2.	.1	.0	.0	2357.2	22.3	2.4
NOV	50.	3.0	1.08	.1	2.	.1	.0	.0	2359.4	25.1	2.8
DEC	47.	2.9	.51	.1	2.	.1	.0	.0	2361.3	27.8	2.7
TOTAL		47.6	24.12	3.2		34.4	10.4	.0			-.4
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	70.	4.3	.29	.0	2.	.1	.0	.0	2364.2	32.4	4.2
FEB	101.	5.6	.30	.0	58.	3.2	.0	.0	2365.6	34.8	2.4
MAR	115.	7.1	.19	.0	115.	7.1	.0	.0	2365.6	34.8	.0
APR	103.	6.1	1.70	.3	82.	4.9	.0	.0	2366.1	35.7	.9
MAY	119.	7.3	1.43	.2	2.	.1	7.0	.0	2366.1	35.7	.0
JUN	161.	9.6	2.01	.3	2.	.1	9.2	.0	2366.1	35.7	.0
JUL	135.	8.3	2.92	.4	96.	5.9	2.0	.0	2366.1	35.7	.0
AUG	80.	4.9	2.84	.4	112.	6.9	.0	.0	2364.8	33.3	-2.4
SEP	62.	3.7	1.91	.3	10.	.6	.4	.0	2366.1	35.7	2.4
OCT	65.	4.0	1.39	.2	2.	.1	3.7	.0	2366.1	35.7	.0
NOV	72.	4.3	.72	.1	2.	.1	4.1	.0	2366.1	35.7	.0
DEC	70.	4.3	.34	.1	2.	.1	4.1	.0	2366.1	35.7	.0
TOTAL		69.5	16.04	2.3		29.2	30.5	.0			7.5

KEITH SEBELIUS OPERATIONS ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	2.	.1	.77	.0	2.	.1	.0	.0	2283.0	7.0	.0
FEB	2.	.1	.77	.0	2.	.1	.0	.0	2283.0	7.0	.0
MAR	5.	.3	.48	.0	2.	.1	.0	.0	2283.3	7.2	.2
APR	2.	.1	3.72	.2	2.	.1	.0	.0	2283.0	7.0	-.2
MAY	5.	.3	2.95	.2	2.	.1	.0	.0	2283.0	7.0	.0
JUN	17.	1.0	5.05	.3	2.	.1	.0	.0	2283.8	7.6	.6
JUL	8.	.5	7.44	.4	102.	6.3	.0	2.9	2278.6	4.3	-3.3
AUG	3.	.2	6.38	.3	102.	6.3	.0	6.1	2278.0	4.0	-.3
SEP	3.	.2	3.98	.2	45.	2.7	.0	2.6	2277.7	3.9	-.1
OCT	2.	.1	2.80	.1	16.	1.0	.0	0.9	2277.5	3.8	-.1
NOV	2.	.1	1.55	.1	2.	.1	.0	.0	2277.3	3.7	-.1
DEC	2.	.1	.96	.0	2.	.1	.0	.0	2277.3	3.7	.0
TOTAL		3.1	36.85	1.8		17.1	.0	12.5			-3.3
MOST PROBABLE INFLOW CONDITIONS											
JAN	2.	.1	.52	.0	2.	.1	.0	.0	2283.0	7.0	.0
FEB	5.	.3	.52	.0	2.	.1	.0	.0	2283.3	7.2	.2
MAR	11.	.7	.32	.0	2.	.1	.0	.0	2284.1	7.8	.6
APR	7.	.4	2.48	.2	2.	.1	.0	.0	2284.2	7.9	.1
MAY	13.	.8	1.97	.1	2.	.1	.0	.0	2285.0	8.5	.6
JUN	44.	2.6	3.37	.2	2.	.1	.0	.0	2287.6	10.8	2.3
JUL	23.	1.4	4.97	.4	60.	3.7	.0	.0	2284.5	8.1	-2.7
AUG	10.	.6	4.26	.2	68.	4.2	.0	.0	2278.6	4.3	-3.8
SEP	12.	.7	2.66	.1	17.	1.0	.0	.4	2278.6	4.3	.0
OCT	5.	.3	1.87	.1	5.	.3	.0	.1	2278.6	4.3	.0
NOV	3.	.2	1.03	.0	2.	.1	.0	.0	2278.7	4.4	.1
DEC	3.	.2	.64	.0	2.	.1	.0	.0	2278.9	4.5	.1
TOTAL		8.3	24.61	1.3		10.0	.0	.5			-2.5
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	7.	.4	.35	.0	2.	.1	.0	.0	2283.4	7.3	.3
FEB	16.	.9	.35	.0	2.	.1	.0	.0	2284.5	8.1	.8
MAR	36.	2.2	.22	.0	2.	.1	.0	.0	2287.0	10.2	2.1
APR	20.	1.2	1.70	.1	2.	.1	.0	.0	2288.1	11.2	1.0
MAY	39.	2.4	1.34	.1	2.	.1	.0	.0	2290.2	13.4	2.2
JUN	134.	8.0	2.30	.3	2.	.1	.0	.0	2296.1	21.0	7.6
JUL	73.	4.5	3.39	.5	10.	.6	.0	.0	2298.2	24.4	3.4
AUG	31.	1.9	2.91	.4	28.	1.7	.0	.0	2298.1	24.2	-.2
SEP	34.	2.0	1.81	.3	2.	.1	.0	.0	2299.1	25.8	1.6
OCT	18.	1.1	1.28	.2	2.	.1	.0	.0	2299.5	26.6	.8
NOV	7.	.4	.71	.1	2.	.1	.0	.0	2299.7	26.8	.2
DEC	8.	.5	.44	.1	2.	.1	.0	.0	2299.8	27.1	.3
TOTAL		25.5	16.80	2.1		3.3	.0	.0			20.1

HARLAN COUNTY LAKE OPERATION ESTIMATES - 1989

MONTH	UNDEPLETED INFLOW 1000 AF	UPSTREAM DEPLETIONS 1000 AF	DEPLETED INFLOW MEAN CFS	DEPLETED INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	5.3	.0	86.	5.3	.86	.8	10.	.6	.0	.0	1938.6	240.6	3.9
FEB	8.9	.0	160.	8.9	.82	.7	11.	.6	.0	.0	1939.3	248.2	7.6
MAR	14.7	.0	239.	14.7	.59	.5	0.	.0	.0	.0	1940.6	262.4	14.2
APR	13.0	.0	218.	13.0	4.84	4.6	0.	.0	.0	.0	1941.4	270.8	8.4
MAY	16.9	.0	275.	16.9	3.62	3.4	330.	20.3	.0	.0	1940.8	264.0	-6.8
JUN	26.4	.0	444.	26.4	5.61	5.4	173.	10.3	.0	.0	1941.7	274.7	10.7
JUL	13.6	.0	221.	13.6	9.14	8.4	685.	42.1	.0	.0	1938.4	237.8	-36.9
AUG	9.0	.0	146.	9.0	7.65	6.4	746.	45.9	.0	.0	1934.0	194.5	-43.3
SEP	6.6	.0	111.	6.6	4.44	3.4	266.	15.8	.0	.0	1932.6	181.9	-12.6
OCT	6.1	.0	99.	6.1	4.07	3.1	0.	.0	.0	.0	1933.0	184.9	3.0
NOV	5.3	.0	89.	5.3	2.58	2.0	0.	.0	.0	.0	1933.3	188.2	3.3
DEC	5.1	.0	83.	5.1	1.04	.8	0.	.0	.0	.0	1933.8	192.5	4.3
TOTAL	130.9	.0		130.9	45.26	39.5		135.6	.0	.0			-44.2
					MOST PROBABLE INFLOW CONDITIONS								
JAN	9.2	.0	150.	9.2	.59	.5	10.	.6	.0	.0	1939.0	244.8	8.1
FEB	15.3	.0	275.	15.3	.55	.5	11.	.6	.0	.0	1940.3	259.0	14.2
MAR	25.3	.0	411.	25.3	.40	.4	0.	.0	.0	.0	1942.5	283.9	24.9
APR	22.3	.0	375.	22.3	3.30	3.4	0.	.0	.0	.0	1944.1	302.8	18.9
MAY	29.1	.0	473.	29.1	2.47	2.7	24.	1.5	.1	.0	1946.0	327.6	24.8
JUN	45.5	.0	765.	45.5	3.82	4.2	29.	1.7	39.6	.0	1946.0	327.6	.0
JUL	23.4	.0	381.	23.4	6.23	6.8	429.	26.4	.0	.0	1945.2	317.8	-9.8
AUG	15.6	.0	254.	15.6	5.21	5.5	462.	28.4	.0	.0	1943.8	299.5	-18.3
SEP	11.5	.0	193.	11.5	3.02	3.1	101.	6.0	.0	.0	1944.0	301.9	2.4
OCT	10.6	.0	172.	10.6	2.77	2.9	0.	.0	.0	.0	1944.6	309.6	7.7
NOV	9.2	.0	155.	9.2	1.76	1.9	0.	.0	.0	.0	1945.2	316.9	7.3
DEC	8.9	.0	145.	8.9	.71	.8	10.	.6	.0	.0	1945.7	324.4	7.5
TOTAL	225.9	.0		225.9	30.83	32.7		65.8	39.7	.0			87.7
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	18.1	.0	294.	18.1	.39	.3	10.	.6	.0	.0	1939.9	253.9	17.2
FEB	30.2	.0	544.	30.2	.37	.4	11.	.6	.0	.0	1942.4	283.1	29.2
MAR	49.9	.0	812.	49.9	.27	.3	0.	.0	5.1	.0	1946.0	327.6	44.5
APR	44.0	.0	739.	44.0	2.20	2.4	0.	.0	41.6	.0	1946.0	327.6	.0
MAY	57.2	.0	930.	57.2	1.65	1.8	13.	.8	54.6	.0	1946.0	327.6	.0
JUN	89.7	.0	1507.	89.7	2.55	2.8	13.	.8	86.1	.0	1946.0	327.6	.0
JUL	46.1	.0	750.	46.1	4.15	4.6	99.	6.1	35.4	.0	1946.0	327.6	.0
AUG	30.8	.0	501.	30.8	3.47	3.8	104.	6.4	20.6	.0	1946.0	327.6	.0
SEP	22.7	.0	381.	22.7	2.02	2.2	25.	1.5	19.0	.0	1946.0	327.6	.0
OCT	20.9	.0	340.	20.9	1.85	2.0	0.	.0	18.9	.0	1946.0	327.6	.0
NOV	18.2	.0	306.	18.2	1.17	1.3	0.	.0	16.9	.0	1946.0	327.6	.0
DEC	17.6	.0	286.	17.6	.47	.5	10.	.6	16.5	.0	1946.0	327.6	.0
TOTAL	445.4	.0		445.4	20.56	22.4		17.4	314.7	.0			90.9

LOVEWELL RESERVOIR OPERATION ESTIMATES - 1989

MONTH	WHITE ROCK CREEK INFLOW 1000 AF	COURTLAND CANAL INFLOW 1000 AF	TOTAL INFLOW MEAN CFS	TOTAL INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	.1	.0	2.	.1	.38	.1	0.	.0	.0	.0	1579.3	32.6	.0
FEB	.6	.0	11.	.6	.14	.0	0.	.0	.0	.0	1579.5	33.2	.6
MAR	.8	.0	13.	.8	.11	.0	0.	.0	.0	.0	1579.8	34.0	.8
APR	.8	.0	13.	.8	3.34	.7	0.	.0	.0	.0	1579.9	34.1	.1
MAY	2.0	12.6	237.	14.6	2.11	.5	106.	6.5	.0	.0	1582.6	41.7	7.6
JUN	4.2	3.3	126.	7.5	4.11	1.0	109.	6.5	.0	.0	1582.6	41.7	.0
JUL	2.8	12.7	252.	15.5	7.37	1.7	314.	19.3	.0	.0	1580.7	36.2	-5.5
AUG	1.5	11.2	207.	12.7	5.50	1.1	366.	22.5	.0	.0	1576.1	25.3	-10.9
SEP	1.4	1.2	44.	2.6	.93	.2	163.	9.7	.0	.0	1572.4	18.0	-7.3
OCT	.8	.0	13.	.8	1.44	.2	0.	.0	.0	.0	1572.7	18.6	.6
NOV	.3	.0	5.	.3	1.68	.3	0.	.0	.0	.0	1572.7	18.6	.0
DEC	.1	.0	2.	.1	.40	.1	0.	.0	.0	.0	1572.7	18.6	.0
TOTAL	15.4	41.0		56.4	27.51	5.9		64.5	.0	.0			-14.0
MOST PROBABLE INFLOW CONDITIONS													
JAN	.4	.0	7.	.4	.16	.0	0.	.0	.0	.0	1579.4	33.0	.4
FEB	1.6	.0	29.	1.6	.06	.0	0.	.0	.0	.0	1580.1	34.6	1.6
MAR	1.7	.0	28.	1.7	-.30	-.1	0.	.0	.0	.0	1580.7	36.4	1.8
APR	1.9	.0	32.	1.9	1.45	.3	0.	.0	.0	.0	1581.3	38.0	1.6
MAY	5.1	1.2	102.	6.3	.92	.2	36.	2.2	.2	.0	1582.6	41.7	3.7
JUN	10.2	1.2	192.	11.4	1.79	.4	39.	2.3	8.7	.0	1582.6	41.7	.0
JUL	6.7	6.3	211.	13.0	3.21	.8	301.	18.5	.0	.0	1580.4	35.4	-6.3
AUG	3.6	5.4	146.	9.0	2.39	.5	306.	18.8	.0	.0	1576.1	25.1	-10.3
SEP	3.5	1.2	79.	4.7	.41	.1	79.	4.7	.0	.0	1576.0	25.0	-.1
OCT	2.0	.0	33.	2.0	.63	.1	0.	.0	.0	.0	1576.9	26.9	1.9
NOV	.6	.0	10.	.6	.73	.1	0.	.0	.0	.0	1577.1	27.4	.5
DEC	.4	.0	7.	.4	.17	.0	0.	.0	.0	.0	1577.3	27.8	.4
TOTAL	37.7	15.3		53.0	11.62	2.4		46.5	8.9	.0			-4.8
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	1.1	.0	18.	1.1	.04	.0	0.	.0	.0	.0	1579.7	33.7	1.1
FEB	3.6	.0	65.	3.6	.01	.0	0.	.0	.0	.0	1581.1	37.3	3.6
MAR	4.3	.0	70.	4.3	-.54	-.1	0.	.0	.0	.0	1582.6	41.7	4.4
APR	4.4	.0	74.	4.4	.35	.1	0.	.0	4.3	.0	1582.6	41.7	.0
MAY	12.3	.0	200.	12.3	.22	.1	16.	1.0	11.2	.0	1582.6	41.7	.0
JUN	24.1	.0	405.	24.1	.43	.1	22.	1.3	22.7	.0	1582.6	41.7	.0
JUL	15.8	1.2	276.	17.0	.75	.2	146.	9.0	7.8	.0	1582.6	41.7	.0
AUG	8.7	1.2	161.	9.9	.58	.1	146.	9.0	.8	.0	1582.6	41.7	.0
SEP	8.3	.0	139.	8.3	.10	.0	37.	2.2	6.1	.0	1582.6	41.7	.0
OCT	4.8	.0	78.	4.8	.16	.0	0.	.0	4.8	.0	1582.6	41.7	.0
NOV	1.6	.0	27.	1.6	.18	.0	0.	.0	1.6	.0	1582.6	41.7	.0
DEC	1.1	.0	18.	1.1	.05	.0	0.	.0	1.1	.0	1582.6	41.7	.0
TOTAL	90.1	2.4		92.5	2.33	.5		22.5	60.4	.0			9.1

KIRWIN RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	2.	.1	.58	.1	0.	.0	.0	.0	1703.8	18.6	.0
FEB	7.	.4	.58	.1	0.	.0	.0	.0	1704.0	18.9	.3
MAR	13.	.8	.08	.0	0.	.0	.0	.0	1704.6	19.7	.8
APR	12.	.7	3.04	.4	0.	.0	.0	.0	1704.8	20.0	.3
MAY	23.	1.4	1.32	.2	31.	1.9	.0	.0	1704.3	19.3	-.7
JUN	39.	2.3	3.84	.5	32.	1.9	.0	.0	1704.2	19.2	-.1
JUL	18.	1.1	6.46	.8	91.	5.6	.0	.0	1700.5	13.9	-5.3
AUG	15.	.9	5.27	.5	106.	6.5	.0	2.0	1697.0	9.8	-4.1
SEP	8.	.5	2.37	.2	47.	2.8	.0	2.5	1697.0	9.8	.0
OCT	7.	.4	1.77	.2	0.	.0	.0	.0	1697.2	10.0	.2
NOV	3.	.2	1.60	.1	0.	.0	.0	.0	1697.3	10.1	.1
DEC	2.	.1	.69	.1	0.	.0	.0	.0	1697.3	10.1	.0
TOTAL		8.9	27.60	3.2		18.7	.0	4.5			-8.5
					MOST PROBABLE INFLOW CONDITIONS						
JAN	8.	.5	.38	.0	0.	.0	.0	.0	1704.2	19.1	.5
FEB	22.	1.2	.38	.0	0.	.0	.0	.0	1705.0	20.3	1.2
MAR	36.	2.2	.06	.0	0.	.0	.0	.0	1706.3	22.5	2.2
APR	32.	1.9	2.00	.3	0.	.0	.0	.0	1707.2	24.1	1.6
MAY	63.	3.9	.87	.1	10.	.6	.0	.0	1708.9	27.3	3.2
JUN	109.	6.5	2.52	.5	10.	.6	.0	.0	1711.4	32.7	5.4
JUL	52.	3.2	4.24	.8	81.	5.0	.0	.0	1710.3	30.1	-2.6
AUG	41.	2.5	3.46	.6	83.	5.1	.0	.0	1708.7	26.9	-3.2
SEP	24.	1.4	1.56	.3	22.	1.3	.0	.0	1708.6	26.7	-.2
OCT	16.	1.0	1.16	.2	0.	.0	.0	.0	1709.0	27.5	.8
NOV	8.	.5	1.05	.2	0.	.0	.0	.0	1709.2	27.8	.3
DEC	8.	.5	.45	.1	0.	.0	.0	.0	1709.3	28.2	.4
TOTAL		25.3	18.13	3.1		12.6	.0	.0			9.6
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	20.	1.2	.21	.0	0.	.0	.0	.0	1704.6	19.8	1.2
FEB	58.	3.2	.22	.0	0.	.0	.0	.0	1706.6	23.0	3.2
MAR	98.	6.0	.03	.0	0.	.0	.0	.0	1709.7	29.0	6.0
APR	86.	5.1	1.13	.2	0.	.0	.0	.0	1711.9	33.9	4.9
MAY	171.	10.5	.49	.1	7.	.4	.0	.0	1715.6	43.9	10.0
JUN	294.	17.5	1.42	.4	7.	.4	.0	.0	1720.4	60.6	16.7
JUL	141.	8.7	2.39	.8	50.	3.1	.0	.0	1721.7	65.4	4.8
AUG	106.	6.5	1.95	.7	50.	3.1	.0	.0	1722.3	68.1	2.7
SEP	62.	3.7	.88	.3	13.	.8	.0	.0	1723.0	70.7	2.6
OCT	47.	2.9	.66	.2	0.	.0	.0	.0	1723.6	73.4	2.7
NOV	24.	1.4	.59	.2	0.	.0	.0	.0	1723.9	74.6	1.2
DEC	21.	1.3	.26	.1	0.	.0	.0	.0	1724.2	75.8	1.2
TOTAL		68.0	10.23	3.0		7.8	.0	.0			57.2

WEBSTER RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	3.	.2	.54	.1	0.	.0	.0	.0	1871.5	20.8	.1
FEB	7.	.4	.47	.1	0.	.0	.0	.0	1871.7	21.1	.3
MAR	13.	.8	.32	.0	0.	.0	.0	.0	1872.1	21.9	.8
APR	13.	.8	3.85	.6	0.	.0	.0	.0	1872.2	22.1	.2
MAY	21.	1.3	2.70	.4	33.	2.0	.0	.0	1871.6	21.0	-1.1
JUN	32.	1.9	5.50	.8	49.	2.9	.0	.0	1870.6	19.2	-1.8
JUL	21.	1.3	7.16	1.0	91.	5.6	.0	.0	1867.3	13.9	-5.3
AUG	13.	.8	6.19	.7	104.	6.4	.0	.0	1862.3	7.6	-6.3
SEP	5.	.3	3.96	.3	61.	3.6	.0	1.3	1860.0	5.3	-2.3
OCT	5.	.3	2.80	.2	0.	.0	.0	.0	1860.1	5.4	.1
NOV	3.	.2	1.80	.1	0.	.0	.0	.0	1860.2	5.5	.1
DEC	5.	.3	.68	.1	0.	.0	.0	.0	1860.4	5.7	.2
TOTAL		8.6	35.97	4.4		20.5	.0	1.3			-15.0
					MOST PROBABLE INFLOW CONDITIONS						
JAN	10.	.6	.34	.1	0.	.0	.0	.0	1871.8	21.2	.5
FEB	18.	1.0	.30	.0	0.	.0	.0	.0	1872.3	22.2	1.0
MAR	29.	1.8	.20	.0	0.	.0	.0	.0	1873.3	24.0	1.8
APR	32.	1.9	2.44	.4	0.	.0	.0	.0	1874.0	25.5	1.5
MAY	54.	3.3	1.71	.3	10.	.6	.0	.0	1875.2	27.9	2.4
JUN	81.	4.8	3.48	.6	10.	.6	.0	.0	1876.9	31.5	3.6
JUL	52.	3.2	4.53	.8	81.	5.0	.0	.0	1875.7	28.9	-2.6
AUG	33.	2.0	3.91	.7	81.	5.0	.0	.0	1873.9	25.2	-3.7
SEP	15.	.9	2.50	.4	24.	1.4	.0	.0	1873.4	24.3	-.9
OCT	15.	.9	1.78	.3	0.	.0	.0	.0	1873.7	24.9	.6
NOV	8.	.5	1.14	.2	0.	.0	.0	.0	1873.9	25.2	.3
DEC	10.	.6	.43	.1	0.	.0	.0	.0	1874.1	25.7	.5
TOTAL		21.5	22.76	3.9		12.6	.0	.0			5.0
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	33.	2.0	.21	.0	0.	.0	.0	.0	1872.6	22.7	2.0
FEB	63.	3.5	.18	.0	0.	.0	.0	.0	1874.4	26.2	3.5
MAR	99.	6.1	.12	.0	0.	.0	.0	.0	1877.3	32.3	6.1
APR	104.	6.2	1.46	.3	0.	.0	.0	.0	1879.7	38.2	5.9
MAY	177.	10.9	1.03	.2	0.	.0	.0	.0	1883.8	48.9	10.7
JUN	266.	15.8	2.09	.5	0.	.0	.0	.0	1888.7	64.2	15.3
JUL	179.	11.0	2.72	.8	37.	2.3	.0	.0	1891.0	72.1	7.9
AUG	106.	6.5	2.35	.7	37.	2.3	.0	.0	1892.0	75.6	3.5
SEP	52.	3.1	1.50	.5	0.	.0	.8	.0	1892.4	77.4	1.8
OCT	52.	3.2	1.07	.3	0.	.0	2.9	.0	1892.4	77.4	.0
NOV	30.	1.8	.68	.2	0.	.0	1.6	.0	1892.4	77.4	.0
DEC	31.	1.9	.26	.1	0.	.0	1.8	.0	1892.4	77.4	.0
TOTAL		72.0	13.67	3.6		4.6	7.1	.0			56.7

WACONDA LAKE OPERATION ESTIMATES - 1989

MONTH	UNDEPLETED INFLOW 1000 AF	UPSTREAM DEPLETIONS 1000 AF	DEPLETED INFLOW MEAN CFS	DEPLETED INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	2.3	.0	37.	2.3	.33	.3	33.	2.0	.0	.0	1449.9	176.7	.0
FEB	2.9	.0	52.	2.9	.52	.4	45.	2.5	.0	.0	1449.9	176.7	.0
MAR	6.4	.0	104.	6.4	-.06	-.1	11.	.7	.0	.0	1450.5	182.5	5.8
APR	4.6	.0	77.	4.6	3.46	3.0	2.	.1	.0	.0	1450.6	184.0	1.5
MAY	7.8	.0	127.	7.8	3.06	2.7	2.	.1	.0	.0	1451.1	189.0	5.0
JUN	11.5	.0	193.	11.5	6.08	5.4	35.	2.1	.0	.0	1451.5	193.0	4.0
JUL	6.2	.0	101.	6.2	8.76	7.8	99.	6.1	.0	.0	1450.7	185.3	-7.7
AUG	3.7	.0	60.	3.7	7.45	6.4	99.	6.1	.0	.0	1449.9	176.5	-8.8
SEP	5.4	.0	91.	5.4	3.80	3.2	35.	2.1	.0	.0	1449.9	176.6	.1
OCT	3.4	.0	55.	3.4	2.02	1.7	2.	.1	.0	.0	1450.0	178.2	1.6
NOV	2.0	.0	34.	2.0	1.22	1.0	2.	.1	.0	.0	1450.1	179.1	.9
DEC	1.8	.0	29.	1.8	.33	.3	24.	1.5	.0	.0	1450.1	179.1	.0
TOTAL	58.0	.0		58.0	36.97	32.1		23.5	.0	.0			2.4
					MOST PROBABLE INFLOW CONDITIONS								
JAN	5.2	.0	85.	5.2	.21	.2	81.	5.0	.0	.0	1449.9	176.7	.0
FEB	6.4	.0	115.	6.4	.32	.3	110.	6.1	.0	.0	1449.9	176.7	.0
MAR	14.2	.0	231.	14.2	-.12	-.1	11.	.7	.0	.0	1451.2	190.3	13.6
APR	10.1	.0	170.	10.1	2.19	2.0	2.	.1	.0	.0	1451.9	198.3	8.0
MAY	17.4	.0	283.	17.4	1.93	1.8	2.	.1	.0	.0	1453.3	213.8	15.5
JUN	25.7	.0	432.	25.7	3.84	3.8	25.	1.5	.0	.0	1455.0	234.2	20.4
JUL	13.7	.0	223.	13.7	5.54	5.7	70.	4.3	.0	.0	1455.3	237.9	3.7
AUG	8.2	.0	133.	8.2	4.70	4.9	70.	4.3	.0	.0	1455.2	236.9	-1.0
SEP	12.5	.0	210.	12.5	2.40	2.5	193.	11.5	.0	.0	1455.1	235.4	-1.5
OCT	7.5	.0	122.	7.5	1.28	1.3	299.	18.4	.0	.0	1454.1	223.2	-12.2
NOV	4.6	.0	77.	4.6	.77	.8	301.	17.9	.0	.0	1452.9	209.1	-14.1
DEC	3.8	.0	62.	3.8	.21	.2	59.	3.6	.0	.0	1452.9	209.1	.0
TOTAL	129.3	.0		129.3	23.27	23.4		73.5	.0	.0			32.4
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	13.7	.0	223.	13.7	.09	.1	221.	13.6	.0	.0	1449.9	176.7	.0
FEB	16.8	.0	303.	16.8	.15	.1	301.	16.7	.0	.0	1449.9	176.7	.0
MAR	37.3	.0	607.	37.3	-.19	-.2	299.	18.4	.0	.0	1451.7	195.8	19.1
APR	26.9	.0	452.	26.9	.98	.9	301.	17.9	.0	.0	1452.4	203.9	8.1
MAY	46.0	.0	748.	46.0	.87	.9	2.	.1	7.4	.0	1455.6	241.5	37.6
JUN	67.6	.0	1136.	67.6	1.73	1.8	2.	.1	65.7	.0	1455.6	241.5	.0
JUL	35.9	.0	584.	35.9	2.50	2.6	2.	.1	33.2	.0	1455.6	241.5	.0
AUG	21.5	.0	350.	21.5	2.12	2.2	2.	.1	19.2	.0	1455.6	241.5	.0
SEP	31.8	.0	534.	31.8	1.08	1.1	2.	.1	30.6	.0	1455.6	241.5	.0
OCT	19.9	.0	324.	19.9	.58	.6	299.	18.4	.9	.0	1455.6	241.5	.0
NOV	12.1	.0	203.	12.1	.35	.4	301.	17.9	.0	.0	1455.1	235.3	-6.2
DEC	10.0	.0	163.	10.0	.09	.1	161.	9.9	.0	.0	1455.1	235.3	.0
TOTAL	339.5	.0		339.5	10.35	10.6		113.3	157.0	.0			58.6

CEDAR BLUFF RESERVOIR OPERATION ESTIMATES - 1989

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	2.	.1	.76	.1	0.	.0	.0	.0	2102.0	24.3	.0
FEB	4.	.2	.77	.1	0.	.0	.0	.0	2102.1	24.4	.1
MAR	8.	.5	.63	.1	2.	.1	.0	.0	2102.2	24.7	.3
APR	8.	.5	4.72	.7	2.	.1	.0	.0	2102.1	24.4	-.3
MAY	20.	1.2	4.50	.7	41.	2.5	.0	2.1	2102.1	24.5	.1
JUN	30.	1.8	6.12	.9	42.	2.5	.0	2.1	2102.4	25.0	.5
JUL	24.	1.5	7.96	1.2	115.	7.1	.0	6.3	2102.1	24.5	-.5
AUG	16.	1.0	7.29	1.0	114.	7.0	.0	6.3	2101.7	23.8	-.7
SEP	10.	.6	5.53	.8	57.	3.4	.0	3.2	2101.5	23.4	-.4
OCT	5.	.3	4.14	.6	18.	1.1	.0	1.1	2101.3	23.1	-.3
NOV	2.	.1	1.71	.2	0.	.0	.0	.0	2101.3	23.0	-.1
DEC	2.	.1	.85	.1	0.	.0	.0	.0	2101.3	23.0	.0
TOTAL		7.9	44.98	6.5		23.8	.0	21.1			-1.3
					MOST PROBABLE INFLOW CONDITIONS						
JAN	5.	.3	.57	.1	0.	.0	.0	.0	2102.1	24.5	.2
FEB	13.	.7	.57	.1	0.	.0	.0	.0	2102.5	25.1	.6
MAR	29.	1.8	.47	.1	2.	.1	.0	.0	2103.4	26.7	1.6
APR	29.	1.7	3.53	.5	2.	.1	.0	.0	2104.0	27.8	1.1
MAY	65.	4.0	3.36	.5	15.	.9	.0	.7	2105.7	31.1	3.3
JUN	108.	6.4	4.57	.8	17.	1.0	.0	.0	2108.0	35.7	4.6
JUL	83.	5.1	5.95	1.0	94.	5.8	.0	1.3	2107.8	35.3	-.4
AUG	54.	3.3	5.45	.9	104.	6.4	.0	4.0	2107.8	35.3	.0
SEP	30.	1.8	4.14	.7	27.	1.6	.0	.5	2107.8	35.3	.0
OCT	20.	1.2	3.10	.5	13.	.8	.0	.1	2107.8	35.3	.0
NOV	5.	.3	1.28	.2	0.	.0	.0	.0	2107.8	35.4	.1
DEC	5.	.3	.64	.1	0.	.0	.0	.0	2107.9	35.6	.2
TOTAL		26.9	33.63	5.5		16.7	.0	6.6			11.3
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	15.	.9	.40	.1	0.	.0	.0	.0	2102.5	25.1	.8
FEB	40.	2.2	.41	.1	0.	.0	.0	.0	2103.6	27.2	2.1
MAR	104.	6.4	.33	.1	2.	.1	.0	.0	2106.9	33.4	6.2
APR	104.	6.2	2.49	.4	2.	.1	.0	.0	2109.5	39.1	5.7
MAY	228.	14.0	2.37	.5	11.	.7	.0	.0	2114.8	51.9	12.8
JUN	381.	22.7	3.23	.8	12.	.7	.0	.0	2121.8	73.1	21.2
JUL	294.	18.1	4.20	1.3	55.	3.4	.0	.0	2125.5	86.5	13.4
AUG	190.	11.7	3.85	1.3	62.	3.8	.0	.0	2127.1	93.1	6.6
SEP	109.	6.5	2.92	1.0	15.	.9	.0	.0	2128.2	97.7	4.6
OCT	68.	4.2	2.18	.8	8.	.5	.0	.0	2128.9	100.6	2.9
NOV	22.	1.3	.90	.3	0.	.0	.0	.0	2129.1	101.6	1.0
DEC	18.	1.1	.45	.2	0.	.0	.0	.0	2129.3	102.5	.9
TOTAL		95.3	23.73	6.9		10.2	.0	.0			78.2

TABLE 5
FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS

BONNY

Year	$ Damages Prevented	Cumulative Total
1951	293,000	293,000
1953	135,000	428,000
1957	1,050,000	1,478,000
1960	169,000	1,647,000
1965	273,000	1,920,000
1967	42,000	1,962,000
1969	200,000	2,162,000

ENDERS

Year	$ Damages Prevented	Cumulative Total
1951	220,000	220,000
1956	104,000	324,000
1960	412,000	736,000
1962	37,000	773,000
1965	137,000	910,000
1967	42,000	952,000
1969	1,000	953,000

SWANSON

Year	$ Damages Prevented	Cumulative Total
1957	233,000	233,000
1960	900,000	1,133,000
1962	126,000	1,259,000
1964	50,000	1,309,000
1965	477,000	1,786,000
1967	182,000	1,968,000
1969	1,000	1,969,000

HUGH BUTLER

Year	$ Damages Prevented	Cumulative Total
1962	2,000	2,000
1965	137,000	139,000
1967	42,000	181,000

HARRY STRUNK

Year	$ Damages Prevented	Cumulative Total
1951	14,000	14,000
1957	5,000	19,000
1960	198,000	217,000
1962	29,000	246,000
1967	129,000	375,000
1969	6,000	381,000

KEITH SEBELIUS

Year	$ Damages Prevented	Cumulative Total
1966	132,000	132,000
1967	885,000	1,017,000
1972	498,000	1,515,000

HARLAN COUNTY

Year	$ Damages Prevented	Cumulative Total
1957	1,045,000	1,045,000
1960	4,853,000	5,898,000
1961	255,000	6,153,000
1962	45,000	6,198,000
1964	182,000	6,380,000
1965	60,000	6,440,000
1966	1,658,000	8,098,000
1967	3,539,000	11,637,000
1969	14,000	11,651,000
1971	64,000	11,715,000
1973	1,310,000	13,025,000
1974	1,000	13,026,000
1975	200,000	13,226,000
1976	1,000	13,227,000
1978	100,000	13,327,000
1979	21,000	13,348,000
1981	21,000	13,369,000
1982	465,000	13,834,000
1983	1,874,000	15,708,000
1984	1,639,000	17,347,000
1986	6,756,000	24,103,000
1987	2,336,000	26,439,000

LOVEWELL

Year	$ Damages Prevented	Cumulative Total
1957	349,000	349,000
1960	178,000	527,000
1961	165,000	692,000
1962	5,000	697,000
1971	9,000	706,000
1973	1,728,000	2,434,000
1975	98,000	2,532,000
1978	25,000	2,557,000
1979	13,000	2,570,000
1981	8,000	2,578,000
1982	18,000	2,596,000
1983	511,000	3,107,000
1984	276,000	3,383,000
1985	140,000	3,523,000
1986	354,000	3,877,000
1987	1,185,000	5,062,000

KIRWIN

Year	$ Damages Prevented	Cumulative Total
1957	522,000	522,000
1958	10,000	532,000
1960	499,000	1,031,000
1961	1,000	1,032,000
1962	1,000	1,033,000
1964	34,000	1,067,000
1965	325,000	1,392,000
1967	191,000	1,583,000
1968	44,000	1,627,000
1969	2,000	1,629,000
1971	3,000	1,632,000
1973	40,000	1,672,000
1975	618,000	2,290,000
1978	4,000	2,294,000
1979	35,000	2,329,000
1982	25,000	2,354,000
1983	1,000	2,355,000
1985	60,000	2,415,000
1986	60,000	2,475,000
1987	441,000	2,916,000

WEBSTER

Year	$ Damages Prevented	Cumulative Total
1957	326,000	326,000
1958	114,000	440,000
1960	1,018,000	1,458,000
1961	1,000	1,459,000
1962	1,000	1,460,000
1964	17,000	1,477,000
1965	325,000	1,802,000
1967	85,000	1,887,000
1968	2,000	1,889,000
1969	1,000	1,890,000
1971	3,000	1,893,000
1973	54,000	1,947,000
1975	885,000	2,832,000
1978	2,000	2,834,000
1979	16,000	2,850,000
1982	36,000	2,886,000
1987	447,000	3,333,000

WACONDA

Year	$ Damages Prevented	Cumulative Total
1968	280,000	280,000
1969	606,000	886,000
1971	9,000	895,000
1973	3,797,000	4,692,000
1974	1,000	4,693,000
1975	967,000	5,660,000
1978	11,000	5,671,000
1979	959,000	6,630,000
1981	24,000	6,654,000
1982	1,398,000	8,052,000
1983	360,000	8,412,000
1984	1,363,000	9,775,000
1985	331,000	10,106,000
1986	1,269,000	11,375,000
1987	5,699,000	17,074,000

CEDAR BLUFF

Year	$ Damages Prevented	Cumulative Total
1951	597,000	597,000
1955	357,000	954,000
1956	19,000	973,000
1957	4,812,000	5,785,000
1958	829,000	6,614,000
1960	1,573,000	8,187,000
1961	101,000	8,288,000
1962	1,000	8,289,000
1964	17,000	8,306,000
1965	38,000	8,344,000
1967	42,000	8,386,000
1969	1,000	8,387,000
1971	8,000	8,395,000
1973	536,000	8,931,000
1975	11,000	8,942,000
1979	2,000	8,944,000
1981	1,000	8,945,000
1982	48,000	8,993,000
1983	1,000	8,994,000
1985	3,000	8,997,000
1987	31,000	9,028,000

PROJECT TOTALS

Year	$ Damages Prevented	Cumulative Total
1951	1,124,000	1,124,000
1953	135,000	1,259,000
1955	357,000	1,616,000
1956	123,000	1,739,000
1957	8,342,000	10,081,000
1958	953,000	11,034,000
1960	9,800,000	20,834,000
1961	523,000	21,357,000
1962	247,000	21,604,000
1964	300,000	21,904,000
1965	1,772,000	23,676,000
1966	1,790,000	25,466,000
1967	5,179,000	30,645,000
1968	326,000	30,971,000
1969	832,000	31,803,000
1971	96,000	31,899,000
1972	498,000	32,397,000
1973	7,465,000	39,862,000
1974	2,000	39,864,000
1975	2,779,000	42,643,000
1976	1,000	42,644,000
1978	142,000	42,786,000
1979	1,046,000	43,832,000
1981	54,000	43,886,000
1982	1,990,000	45,876,000
1983	2,747,000	48,623,000
1984	3,278,000	51,901,000
1985	534,000	52,435,000
1986	8,439,000	60,874,000
1987	10,139,000	71,013,000

NOTE: Construction cost of storage dams -- $208,954,130.
No flood damages prevented during 1988.

TABLE 6
WATER DIVERTED IN 1988 AND THE
ESTIMATED DIVERSION FOR 1989
(Units - Acre-feet)

Irrigation District and Canal	1988 Irrigation Operations From	To	10-Year Average Diversion (1978-87)	1988 Diversions	Estimated Diversion in 1989
Mirage Flats Irrigation District					
Mirage Flats Canal	6/27	8/31	16,149	14,647	11,000
Ainsworth Irrigation District					
Ainsworth Canal	5/15	9/18	63,808	70,858	70,000
Sargent Irrigation District					
Sargent Canal	6/13	9/14	25,708	27,487	25,000
Farwell Irrigation District					
Farwell Canal	6/03	9/01	76,385	82,359	80,000
Twin Loups Irrigation District					
Above Davis Creek	5/10	9/05	--	13,508	30,000
Below Davis Creek	--	--	--	0	0
Total Twin Loups Irrigation District				13,508	30,000
Frenchman Valley Irrigation District					
Culbertson Canal	4/21	8/30	12,618	12,093	11,000
H & RW Irrigation District					
Culbertson Extension Canal	5/26	8/31	18,125	14,686	13,000
Frenchman-Cambridge Irrigation District					
Meeker-Driftwood Canal	6/08	9/02	30,399	28,324	31,000
Red Willow Canal	6/09	9/02	7,912	7,845	9,000
Bartley Canal	6/14	9/02	9,311	8,564	9,000
Cambridge Canal	6/06	9/02	27,407	31,728	29,000
Total Frenchman-Cambridge Irrigation District			75,029	76,461	78,000
Almena Irrigation District					
Almena Canal	6/24	8/10	900	2,273	2,400
Bostwick Irrigation District in Nebraska					
Franklin Canal	6/10	9/06	26,310	33,253	26,000
Naponee Canal	6/09	8/29	3,005	3,322	3,000
Franklin Pump Canal	6/13	9/02	2,898	4,555	3,000
Superior Canal	6/10	9/03	13,671	18,813	14,000
Courtland Canal (Nebraska)	5/11	10/17	1,649	2,345	1,700
Total Bostwick Irrigation District in Nebraska			47,533	62,288	47,700
Kansas-Bostwick Irrigation District					
Courtland Canal above Lovewell	5/12	10/20	24,785	32,961	26,000
Courtland Canal below Lovewell	5/24	9/15	44,753	57,246	46,000
Total Kansas-Bostwick Irrigation District			69,538	90,207	72,000
Kirwin Irrigation District					
Kirwin Canal	6/20	8/20	9,108	18,101	12,000
Webster Irrigation District					
Osborne Canal	6/20	8/20	4,804	9,466	9,000
Cedar Bluff Irrigation District					
Cedar Bluff Canal	No irrigation in 1988		1,904	0	0
TOTAL			421,609	494,434	461,100

EXHIBIT 1A

BOX BUTTE RESERVOIR OPERATION

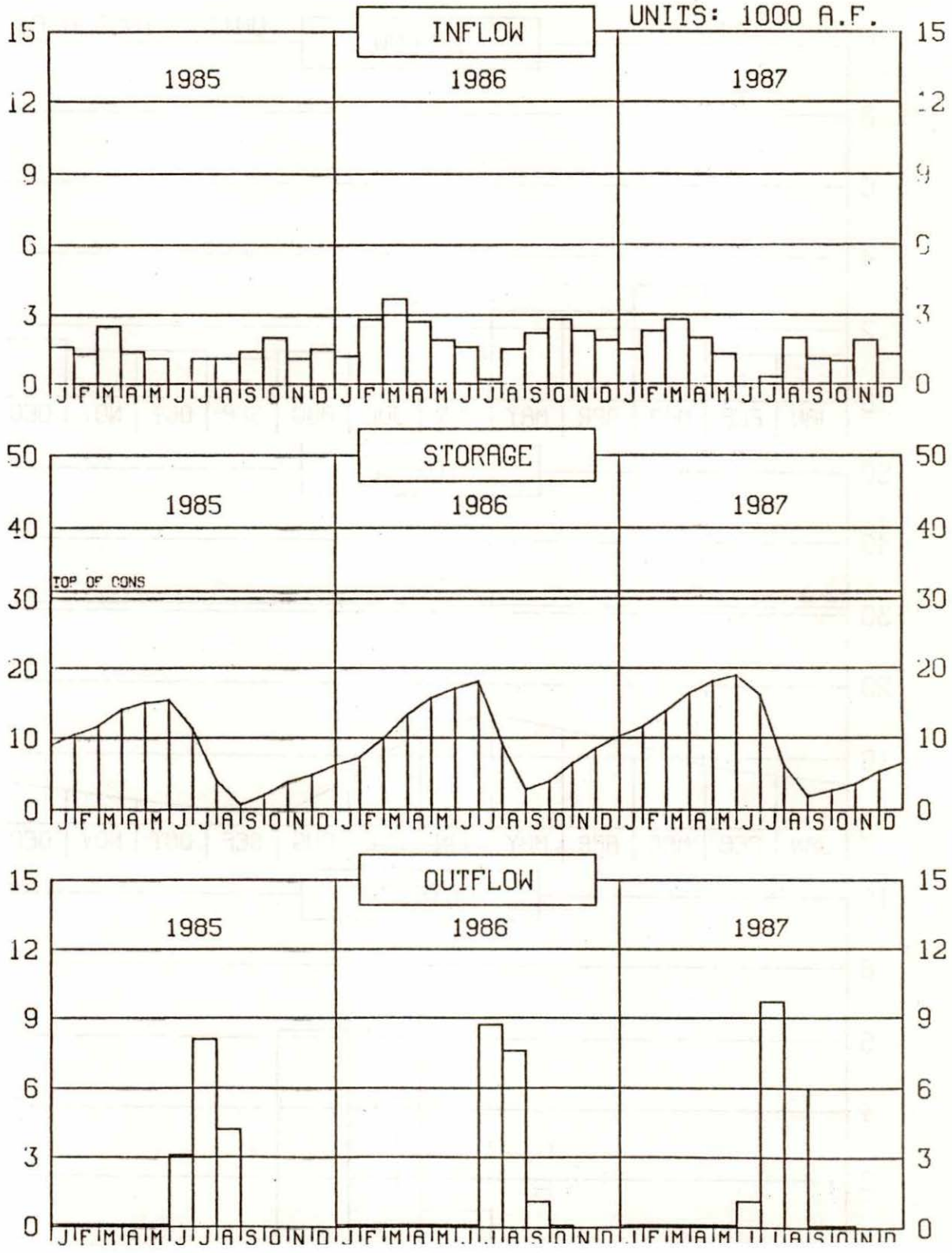
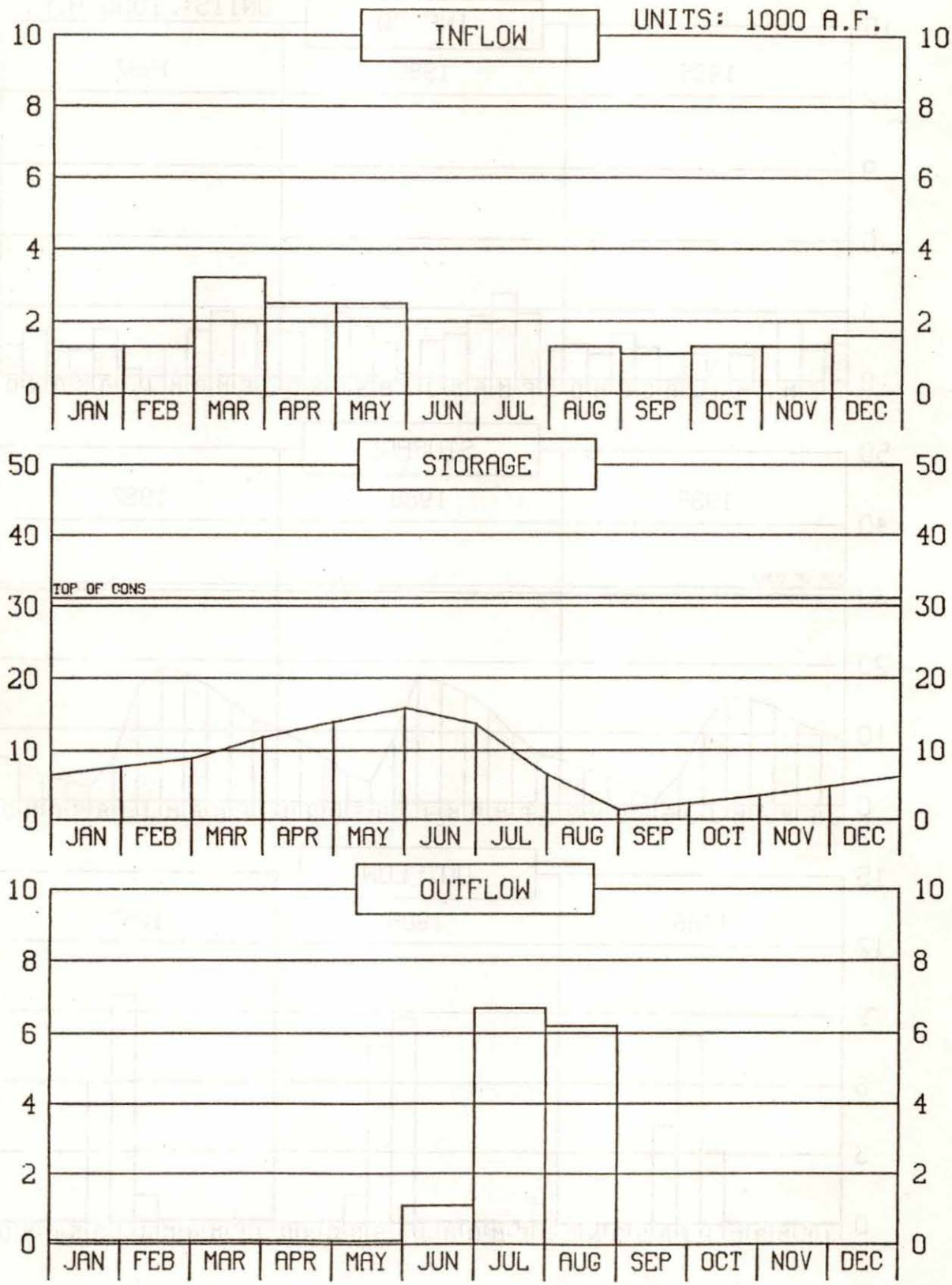


EXHIBIT 1B

BOX BUTTE RESERVOIR 1988 OPERATION



BOX BUTTE RESERVOIR

CAL YEAR 1989 OPERATION PLAN

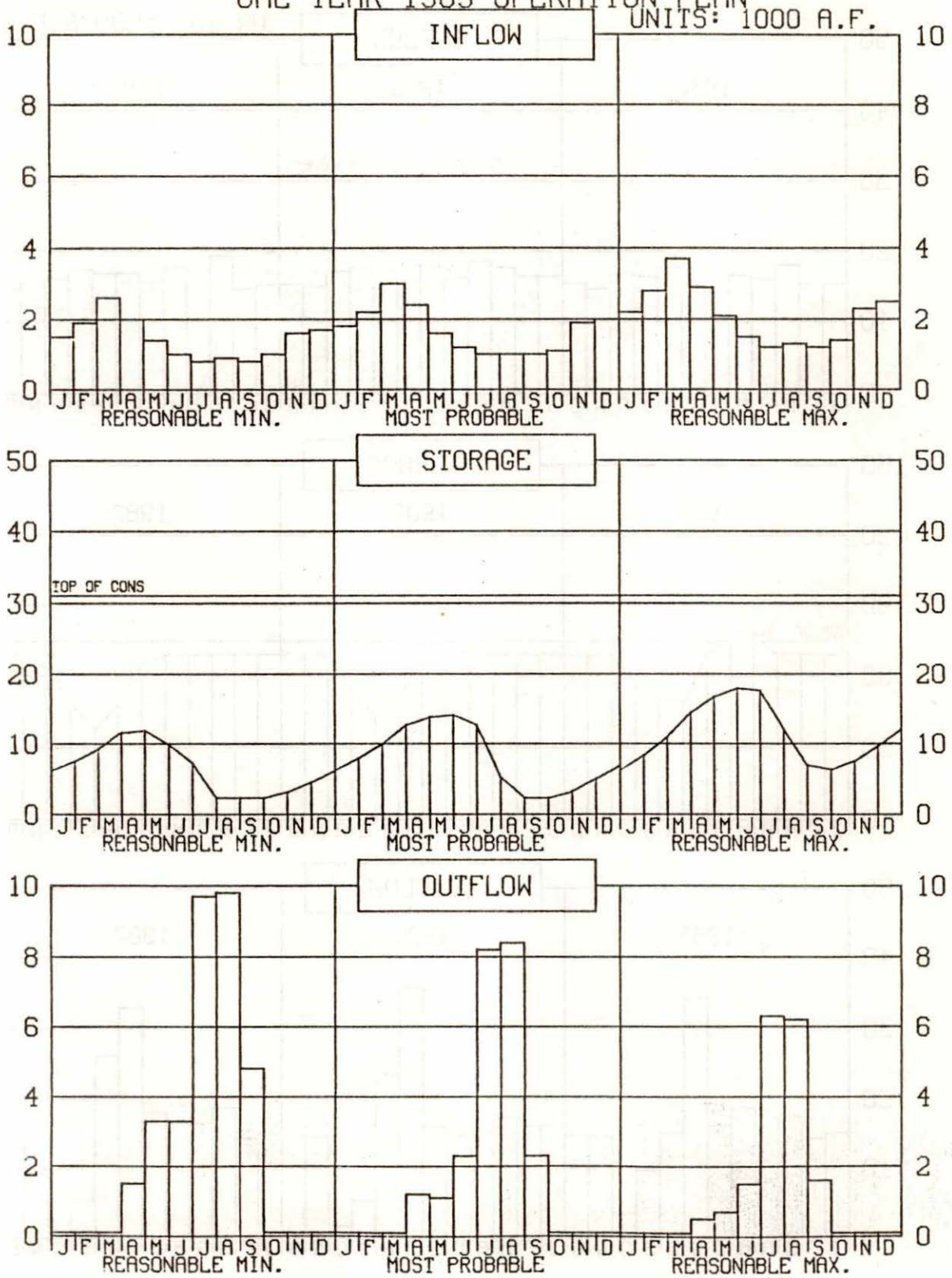
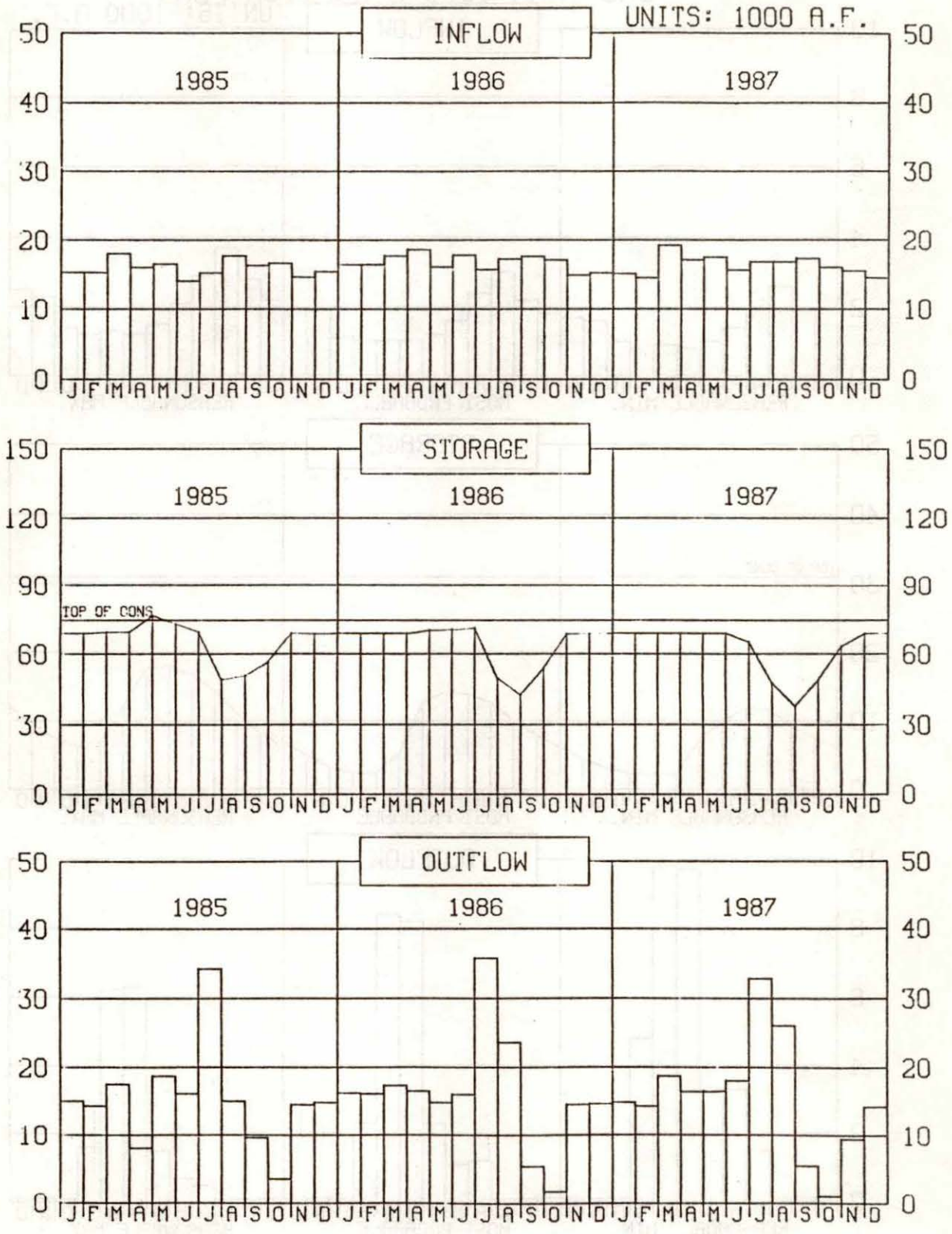


EXHIBIT 2A

MERRITT RESERVOIR OPERATION



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MERRITT RESERVOIR 1988 OPERATION

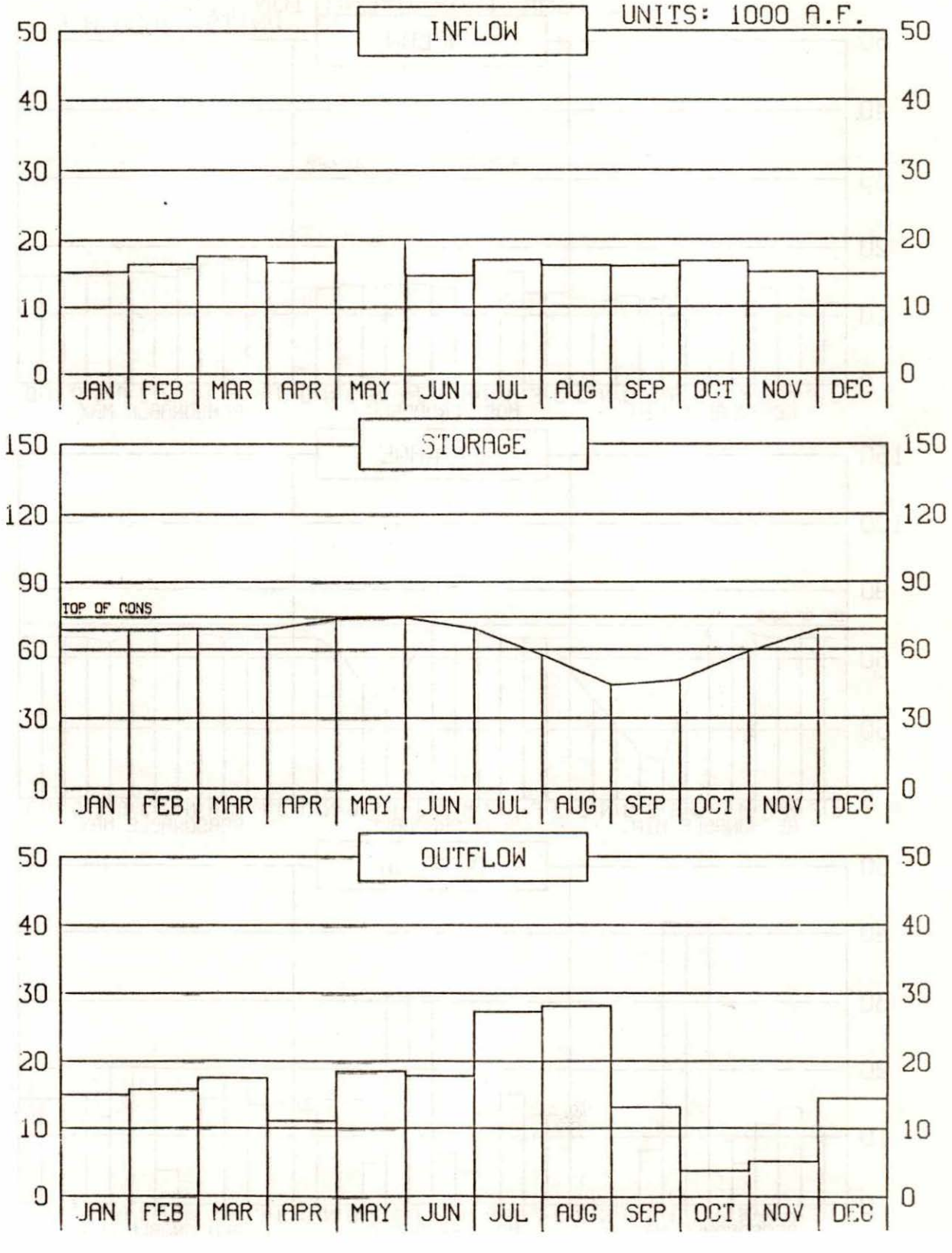


EXHIBIT 2C

MERRITT RESERVOIR

CAL YEAR 1989 OPERATION PLAN

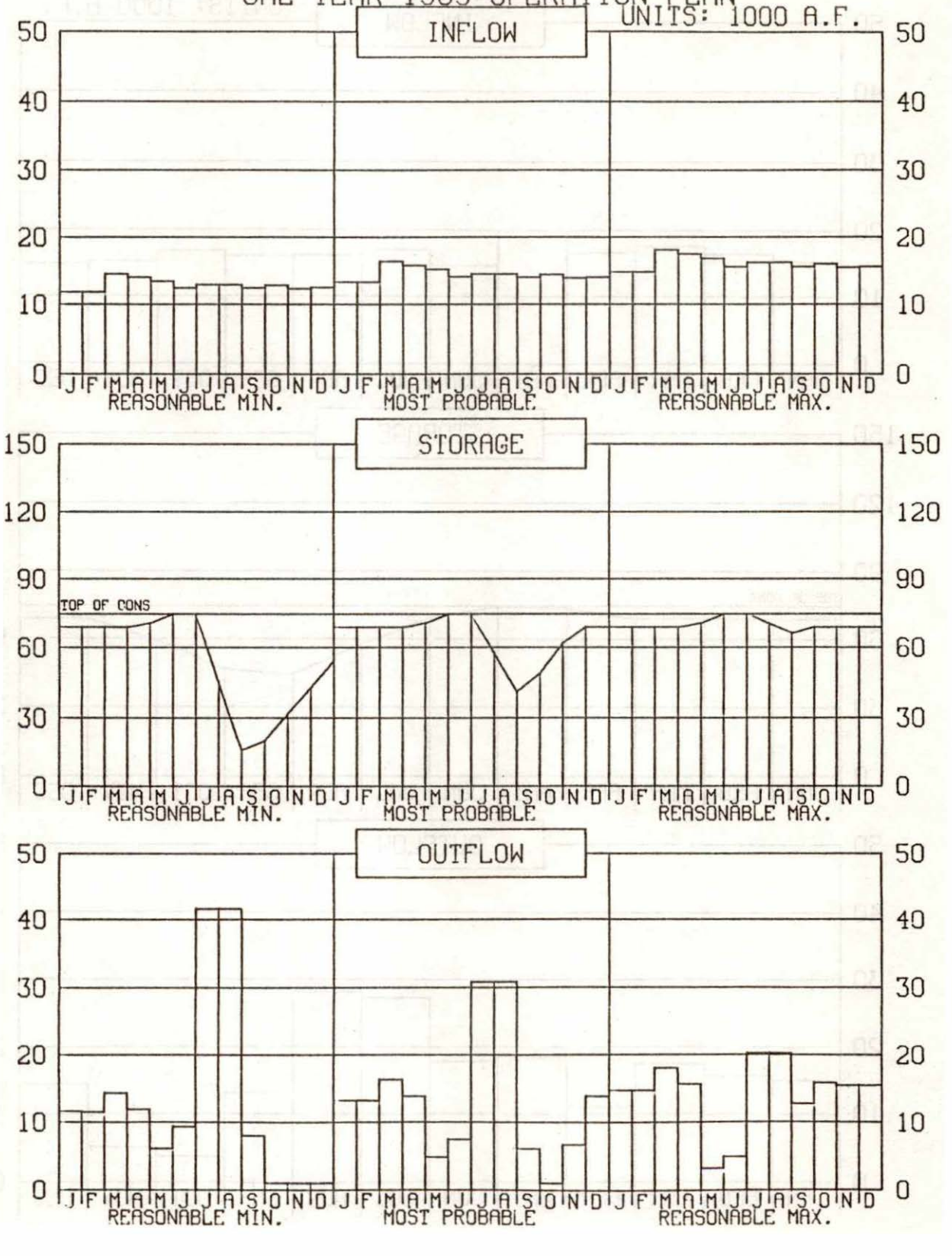
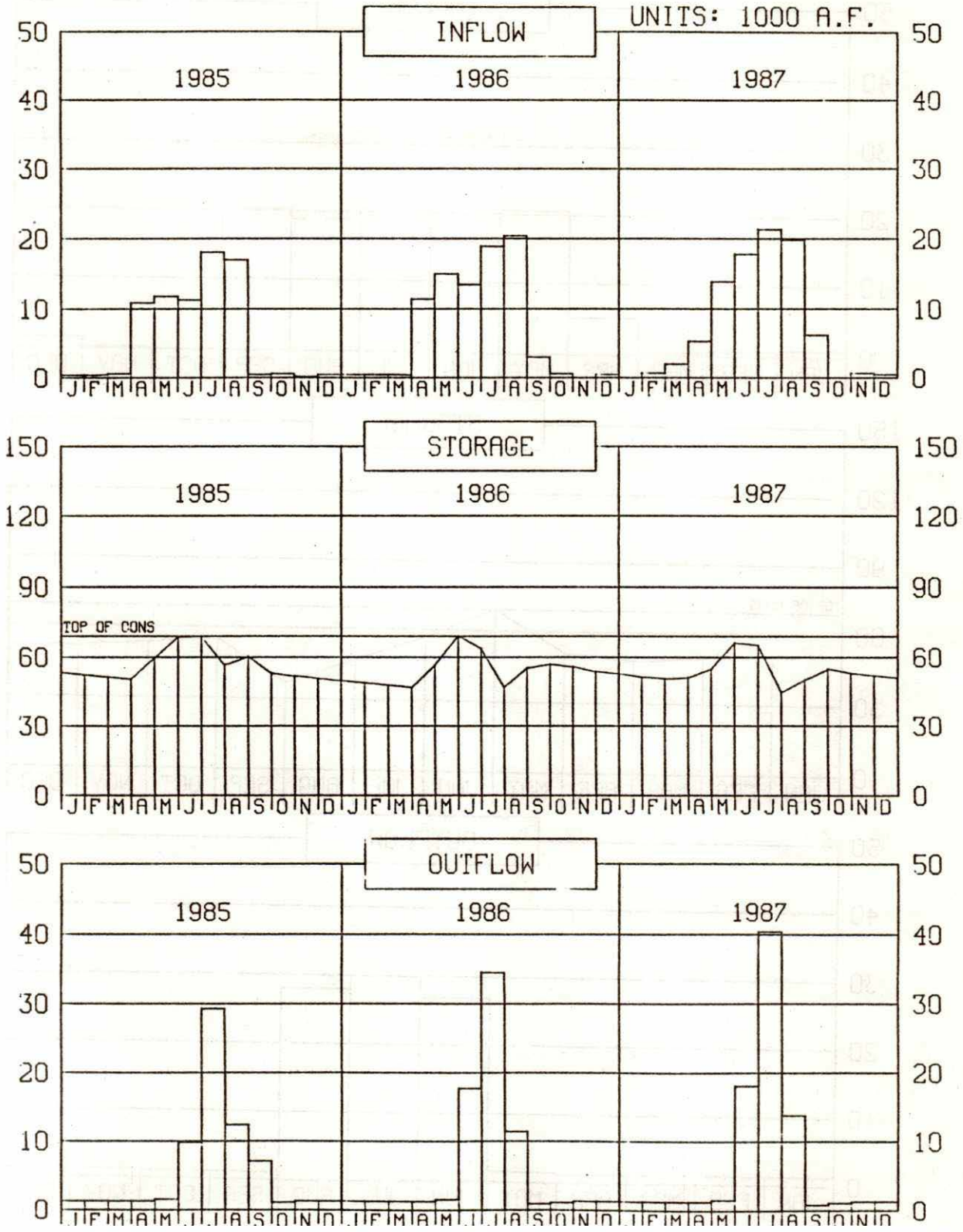


EXHIBIT 3A

SHERMAN RESERVOIR OPERATION



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SHERMAN RESERVOIR 1988 OPERATION

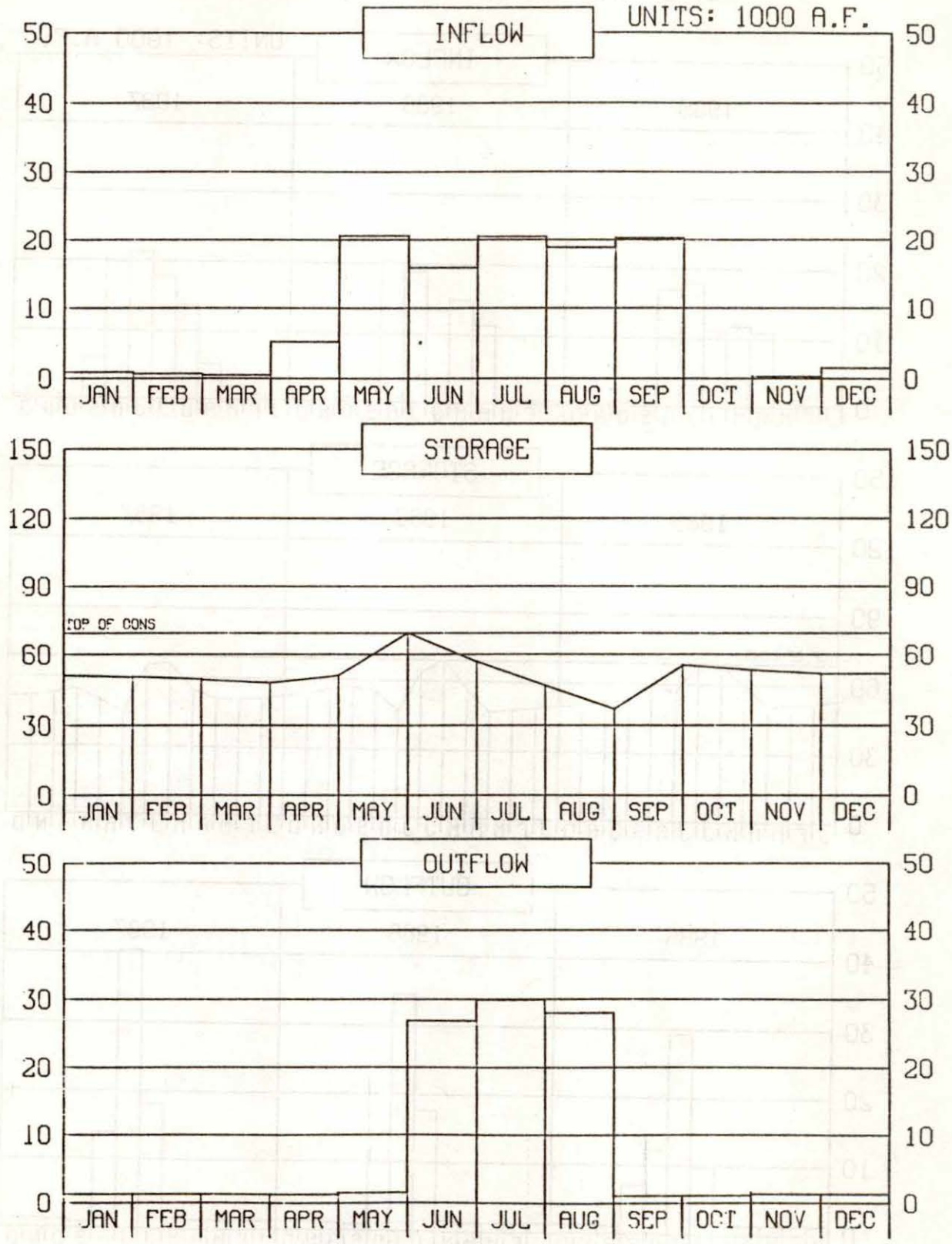


EXHIBIT 3C

SHERMAN RESERVOIR

CAL YEAR 1989 OPERATION PLAN

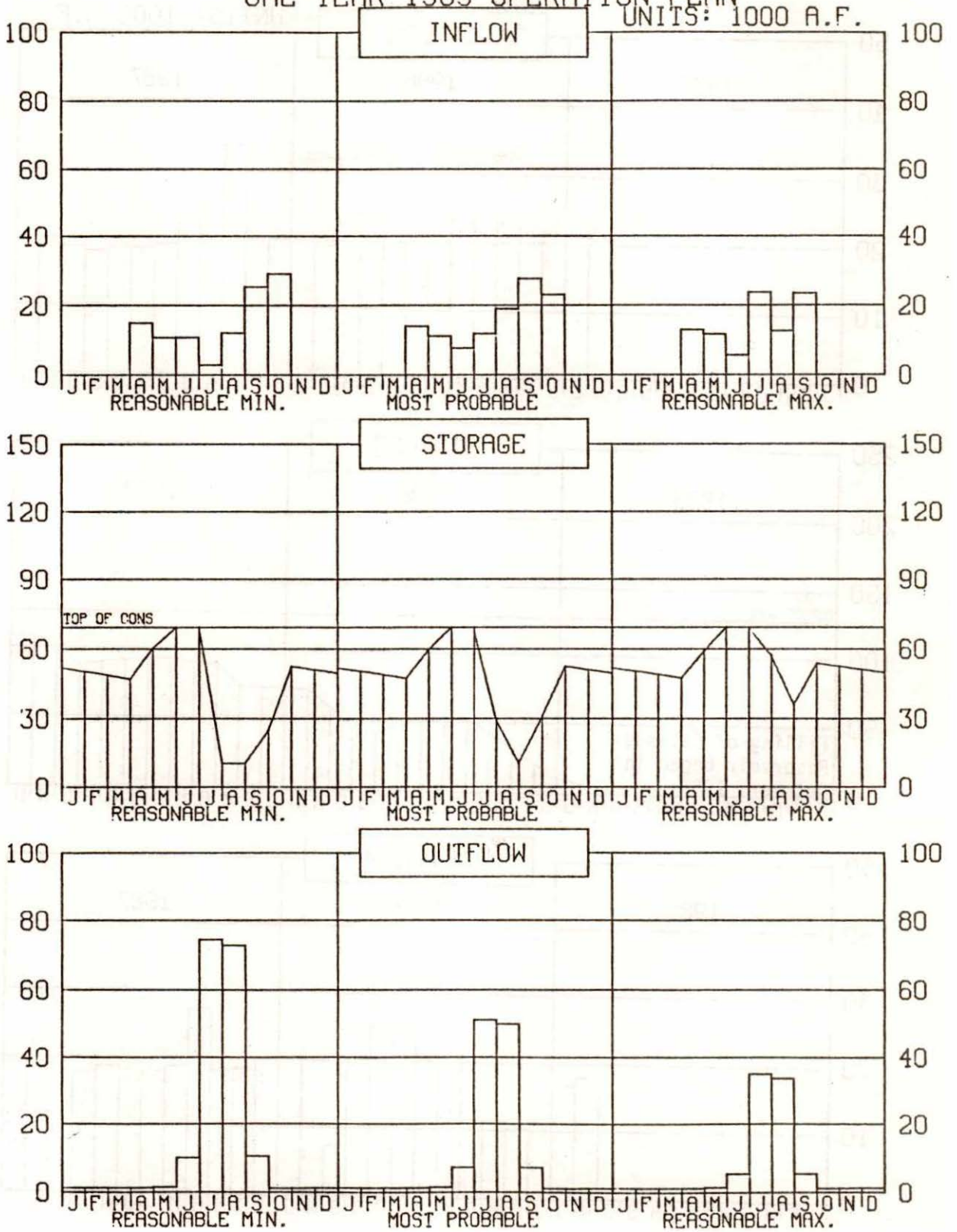
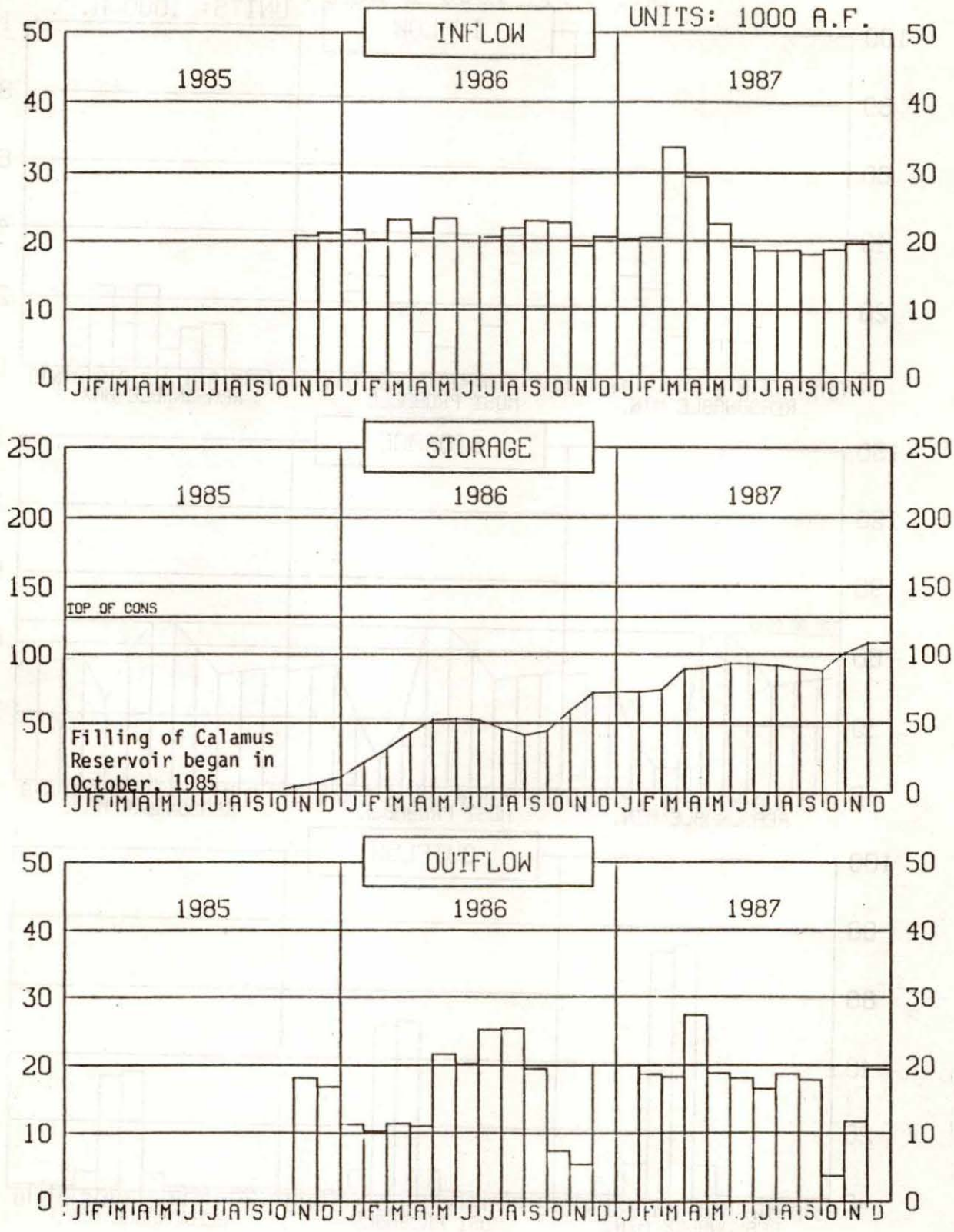


EXHIBIT 4A

CALAMUS RESERVOIR OPERATION



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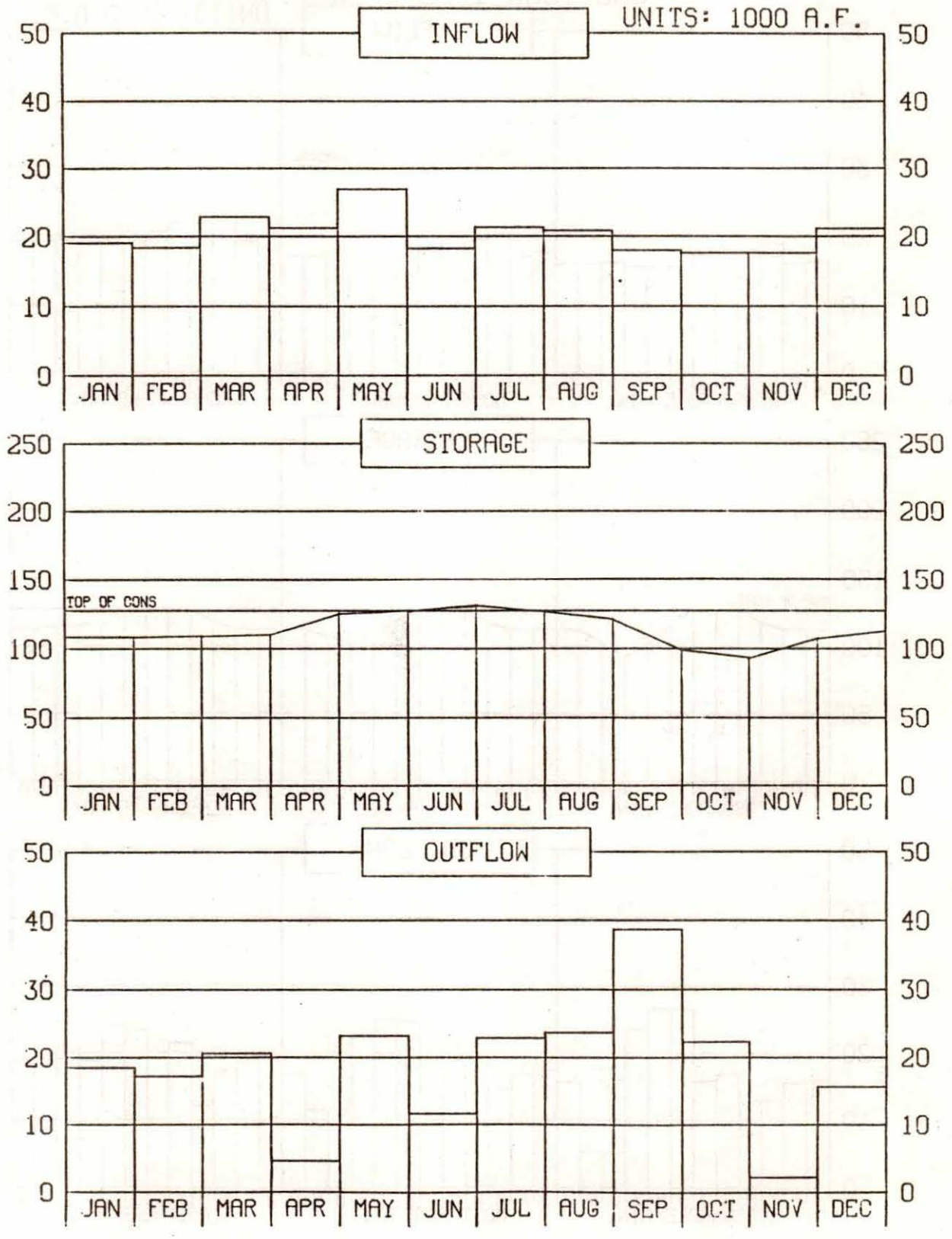


EXHIBIT 4C

CALAMUS RESERVOIR

CAL YEAR 1989 OPERATION PLAN

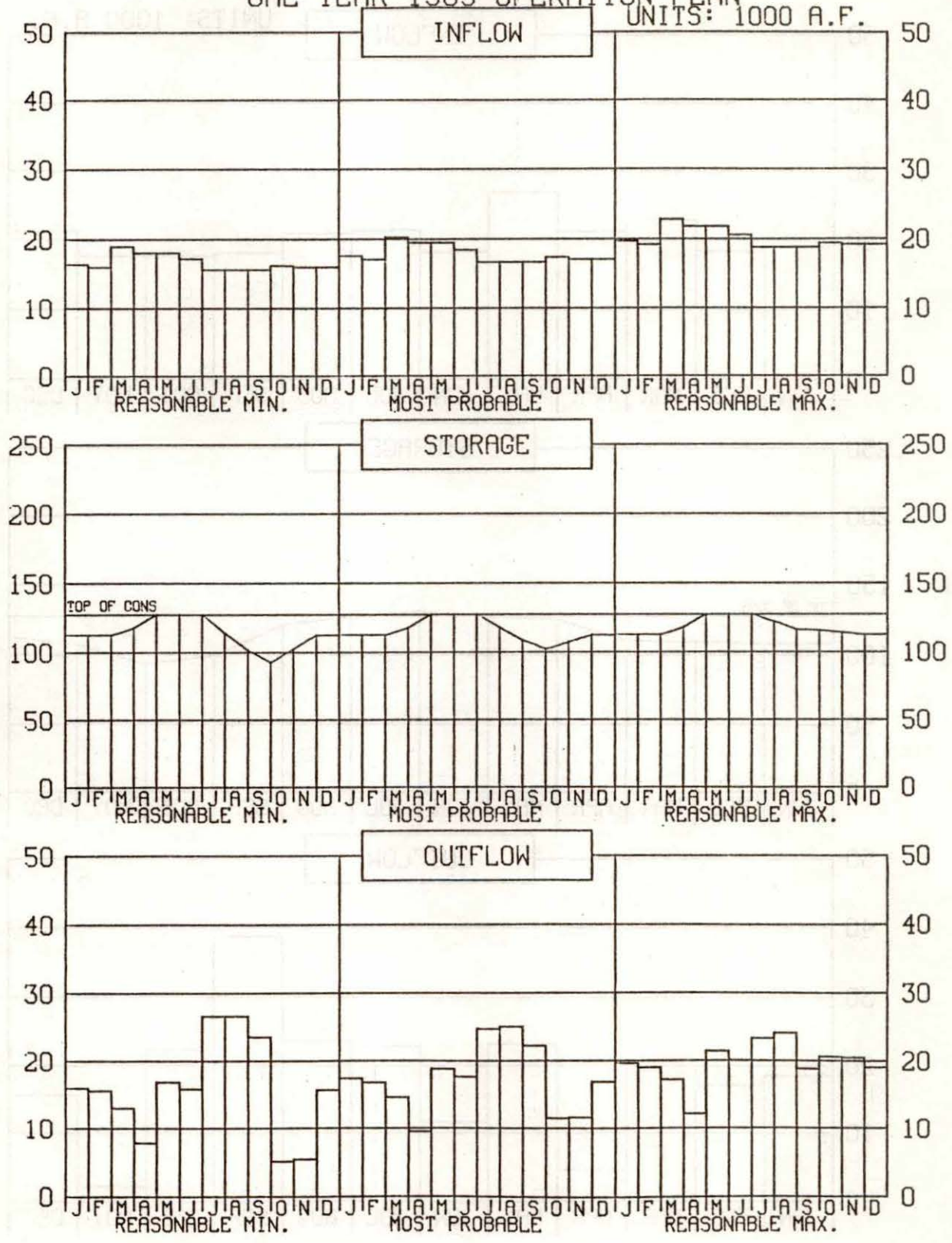
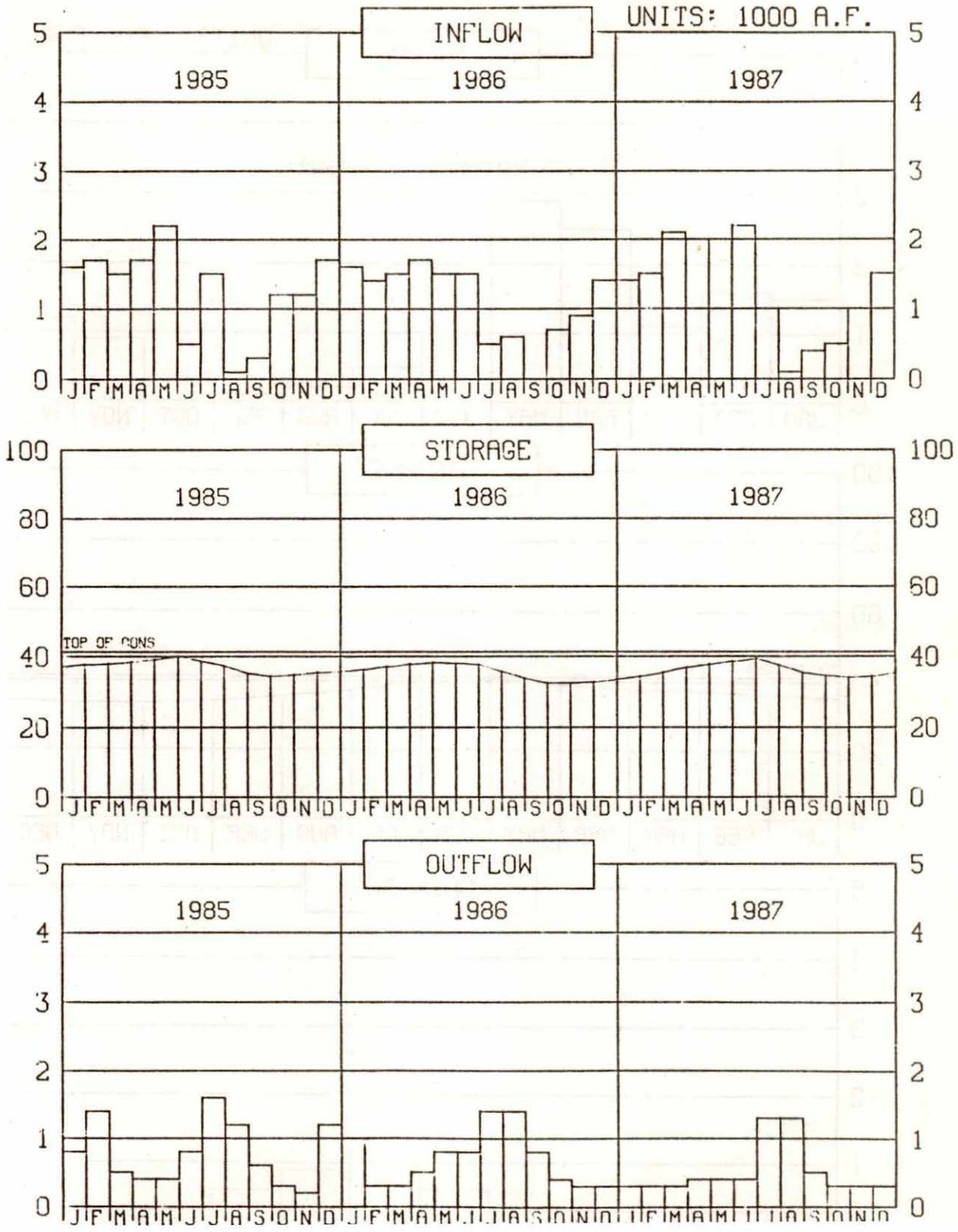


EXHIBIT 5A

BONNY RESERVOIR OPERATION



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BONNY RESERVOIR 1988 OPERATION

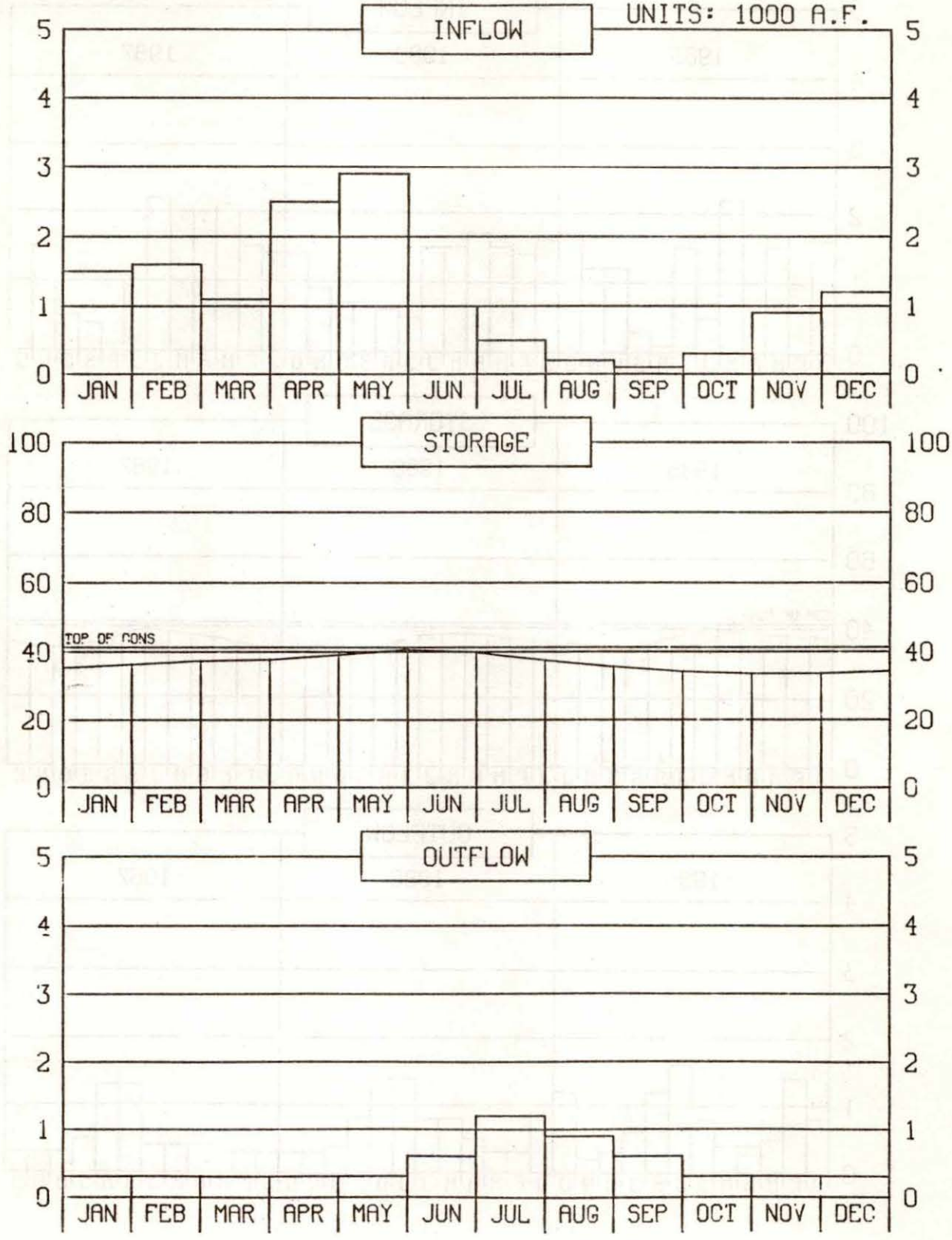

EXHIBIT 5C

BONNY RESERVOIR

CAL YEAR 1989 OPERATION PLAN

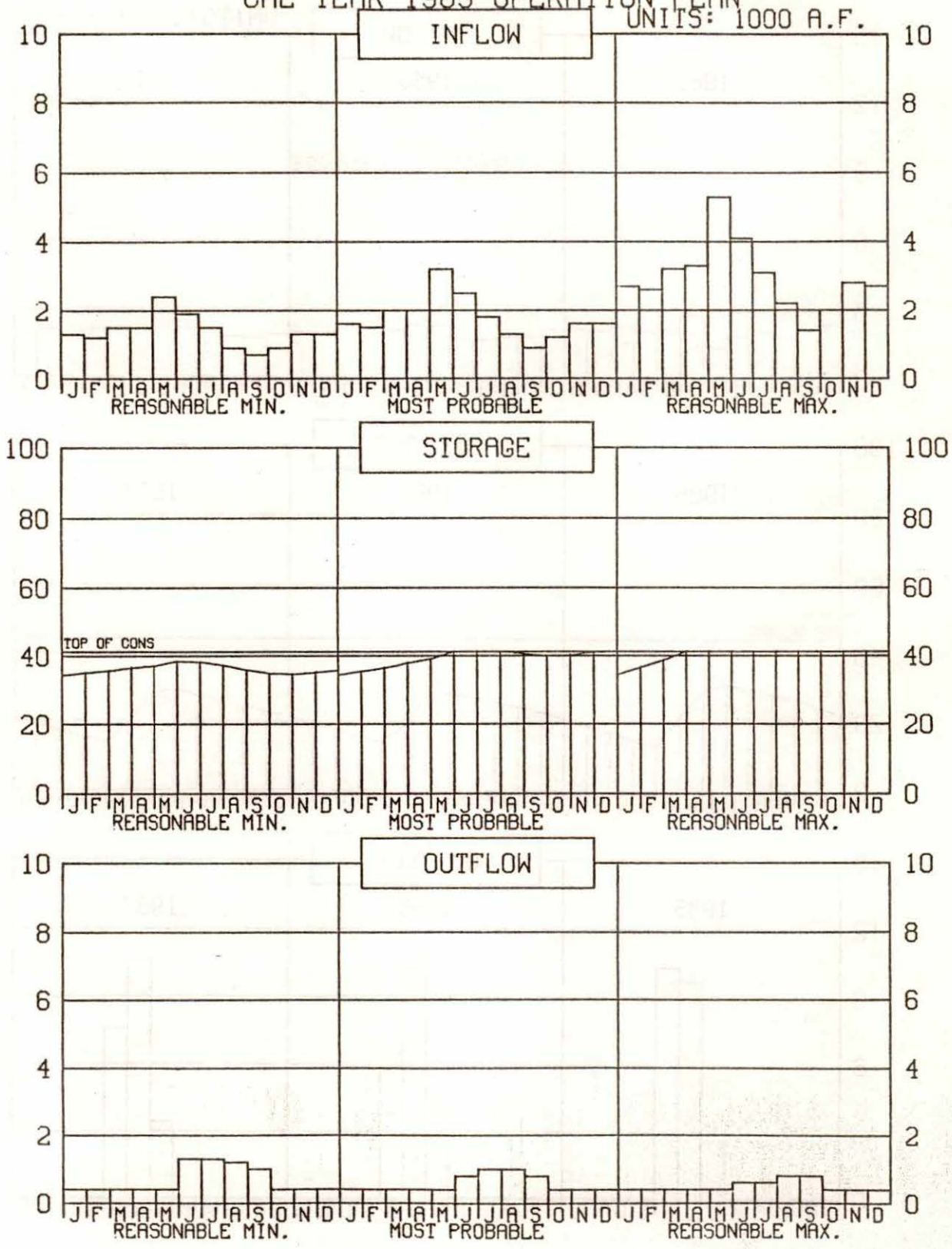

EXHIBIT 6A

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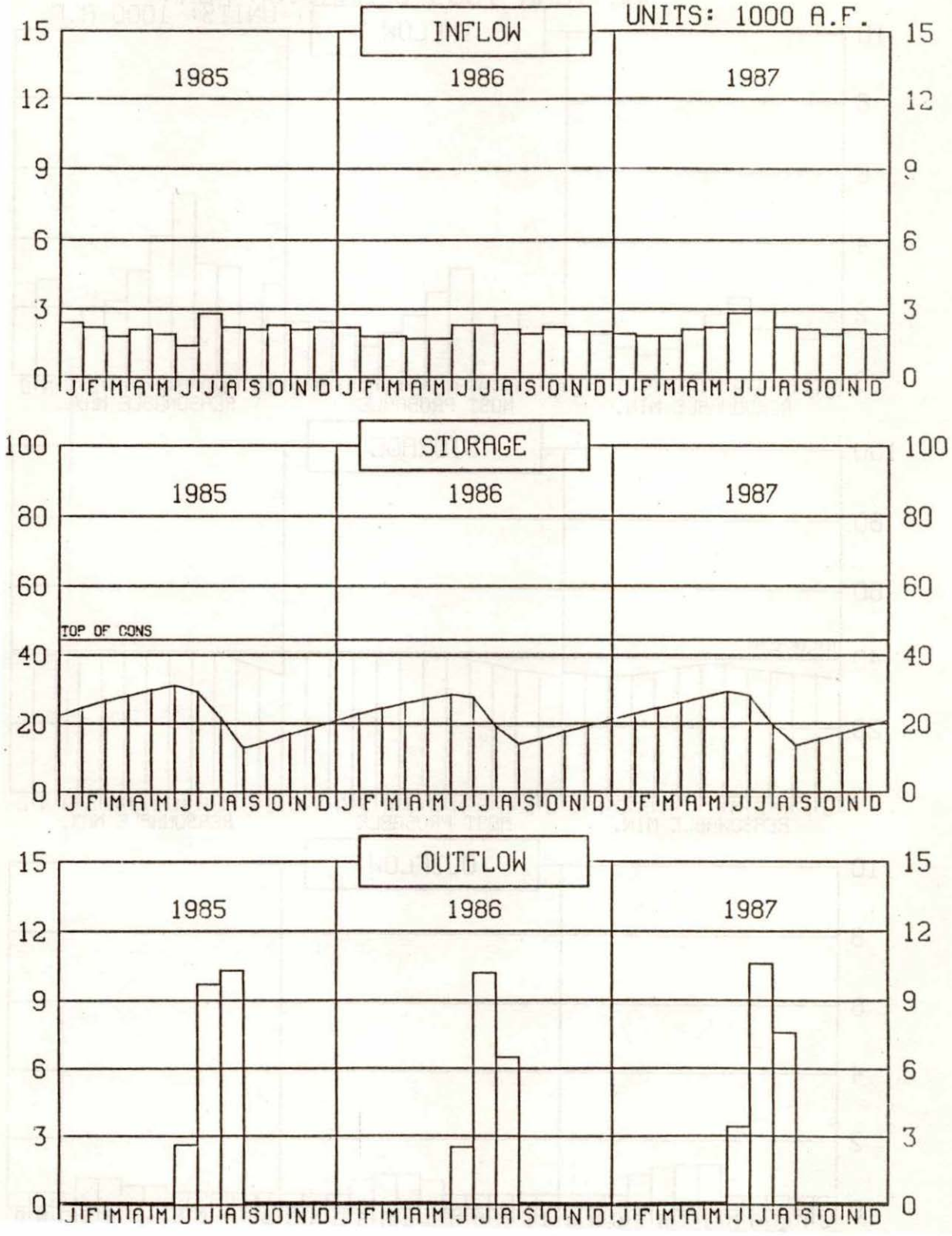

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ENDERS RESERVOIR 1988 OPERATION

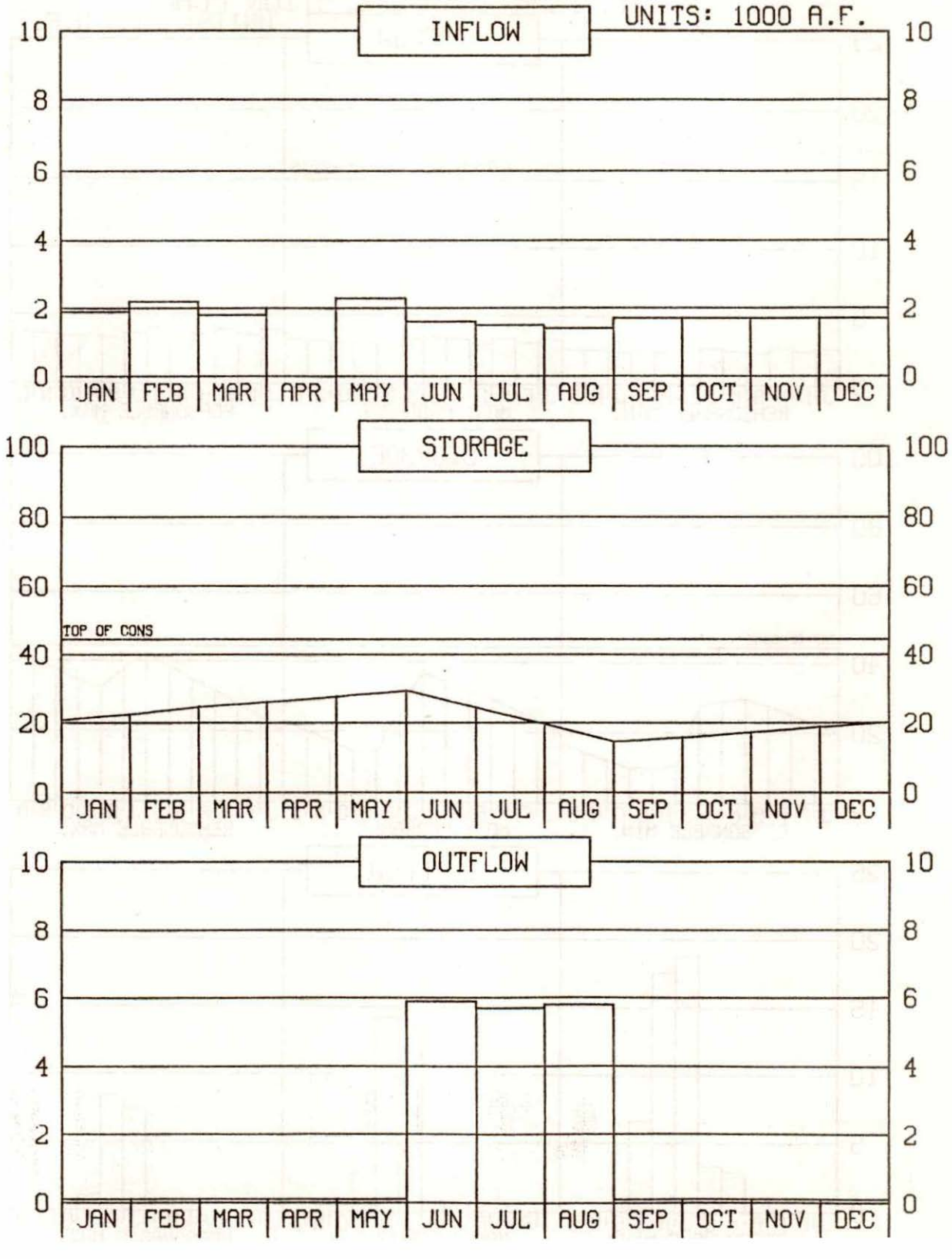


EXHIBIT 6C

ENDERS RESERVOIR

CAL. YEAR 1989 OPERATION PLAN

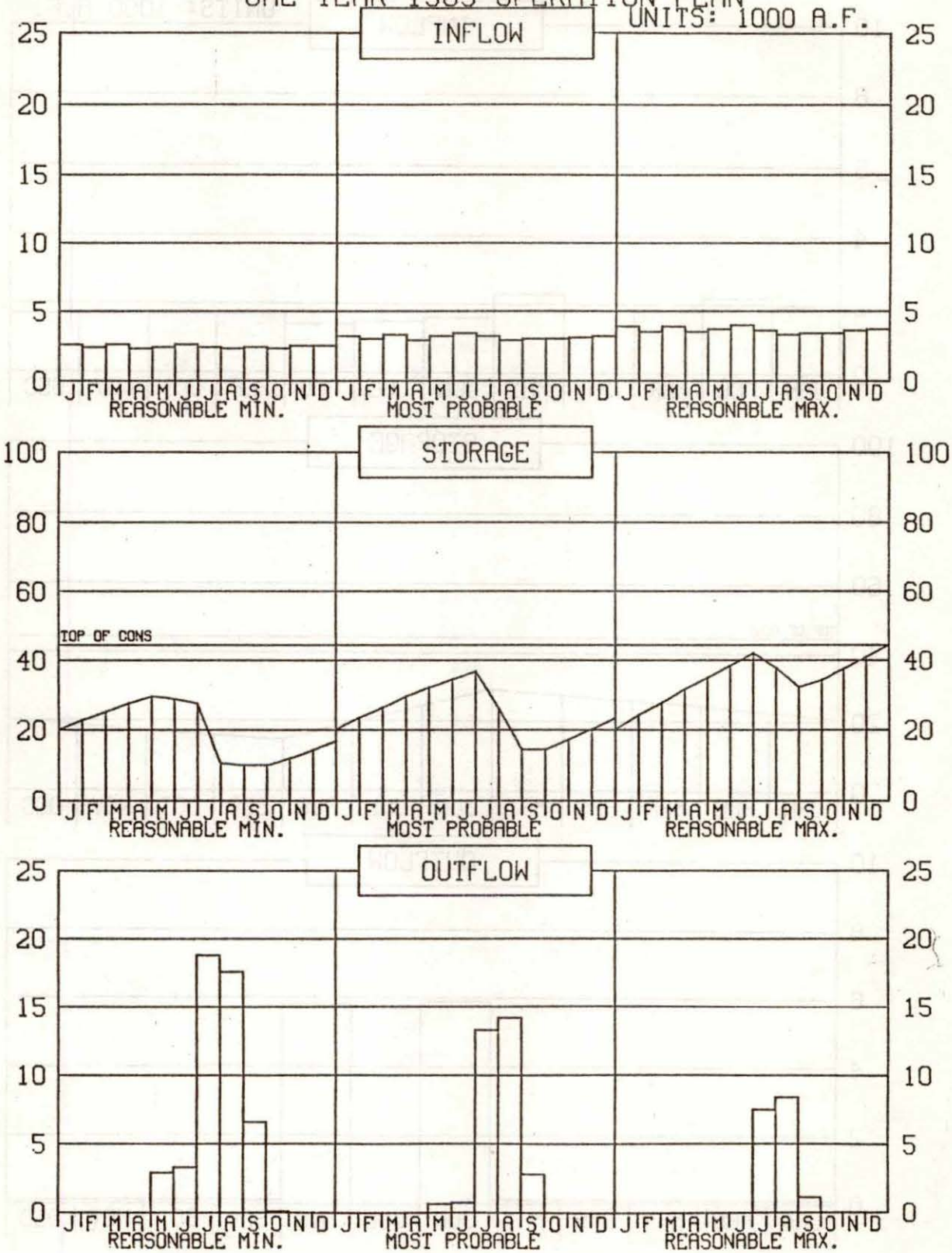


EXHIBIT 7A

SWANSON LAKE OPERATION

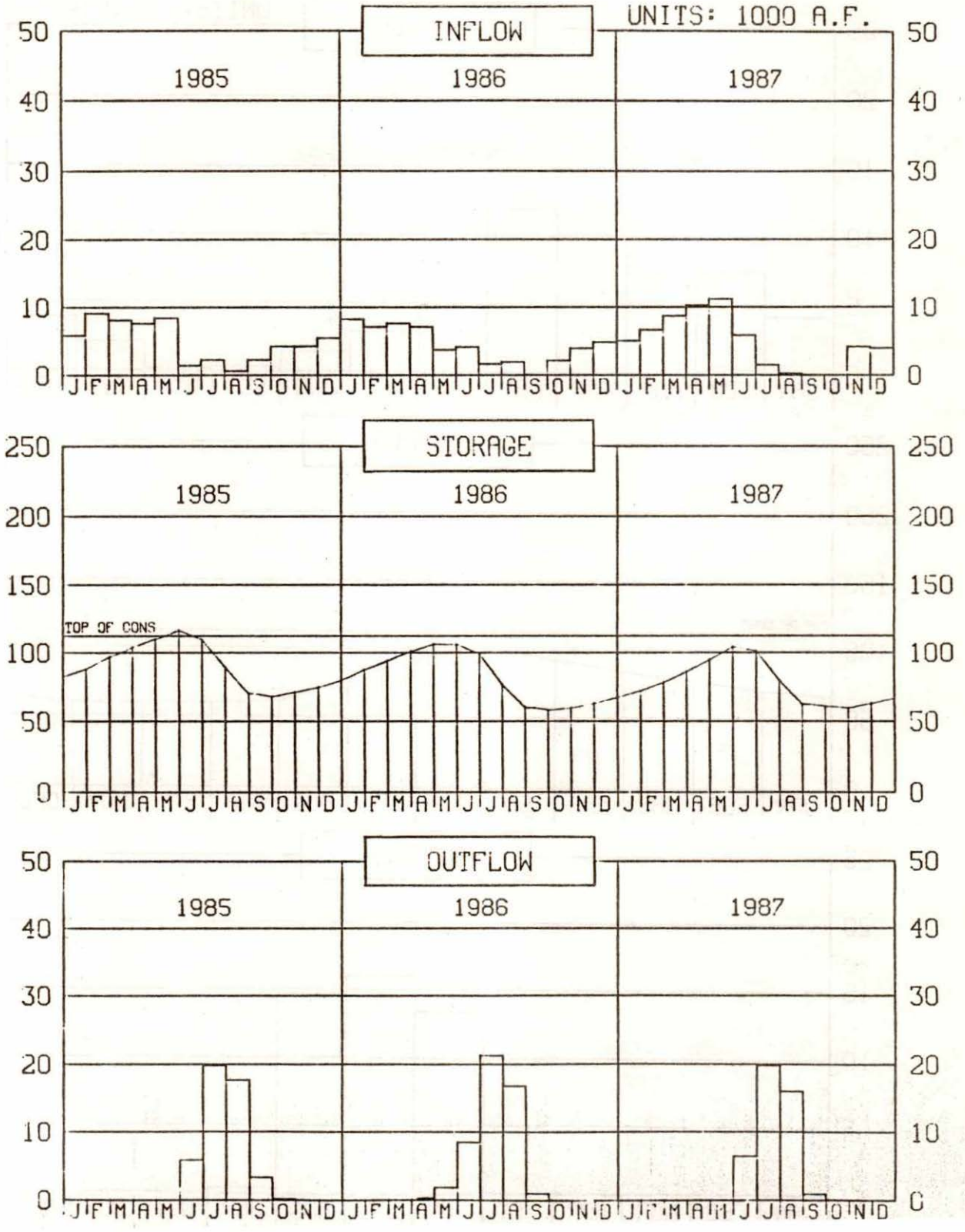


EXHIBIT 7B

SWANSON LAKE 1988 OPERATION

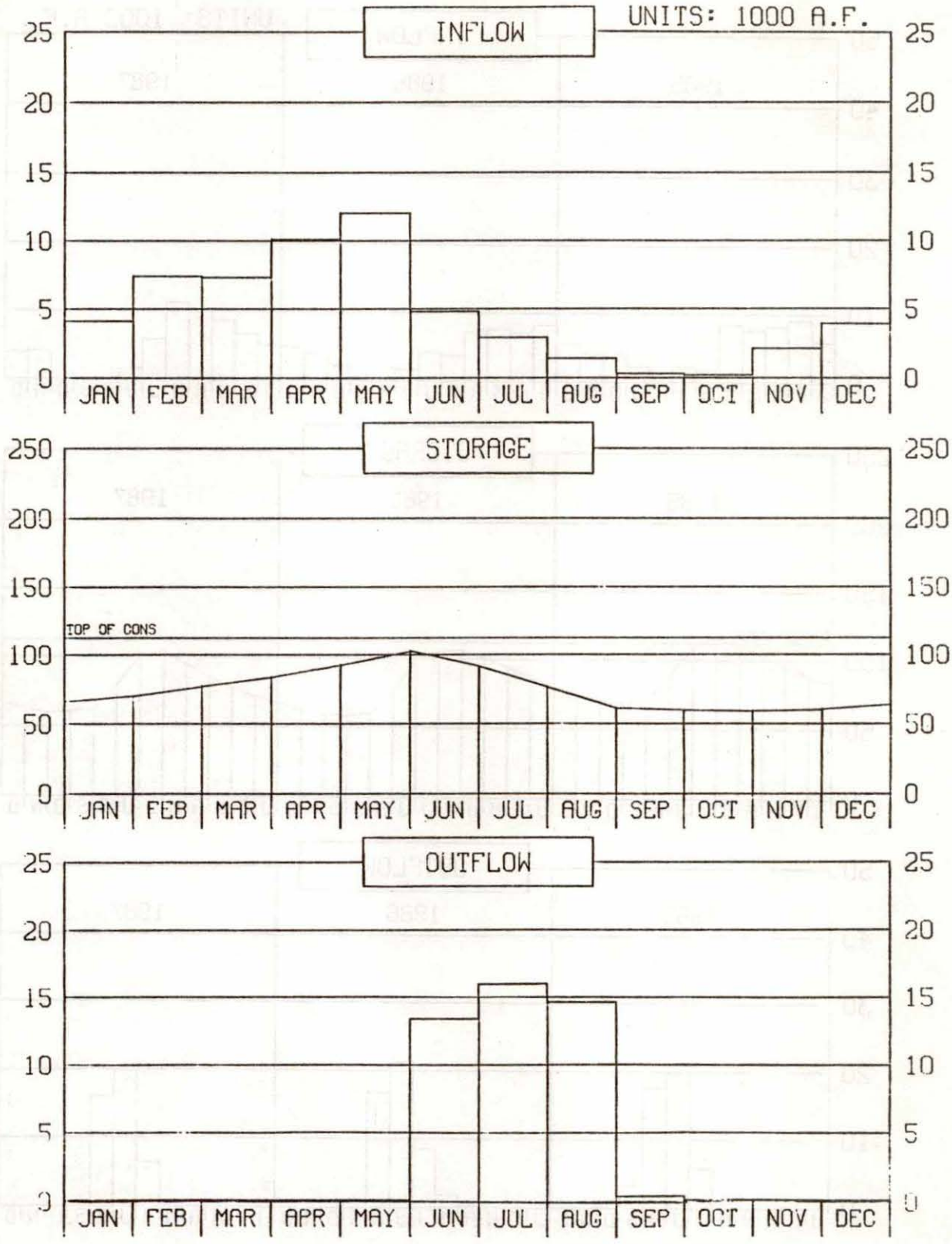


EXHIBIT 7C

SWANSON LAKE

CAL YEAR 1989 OPERATION PLAN

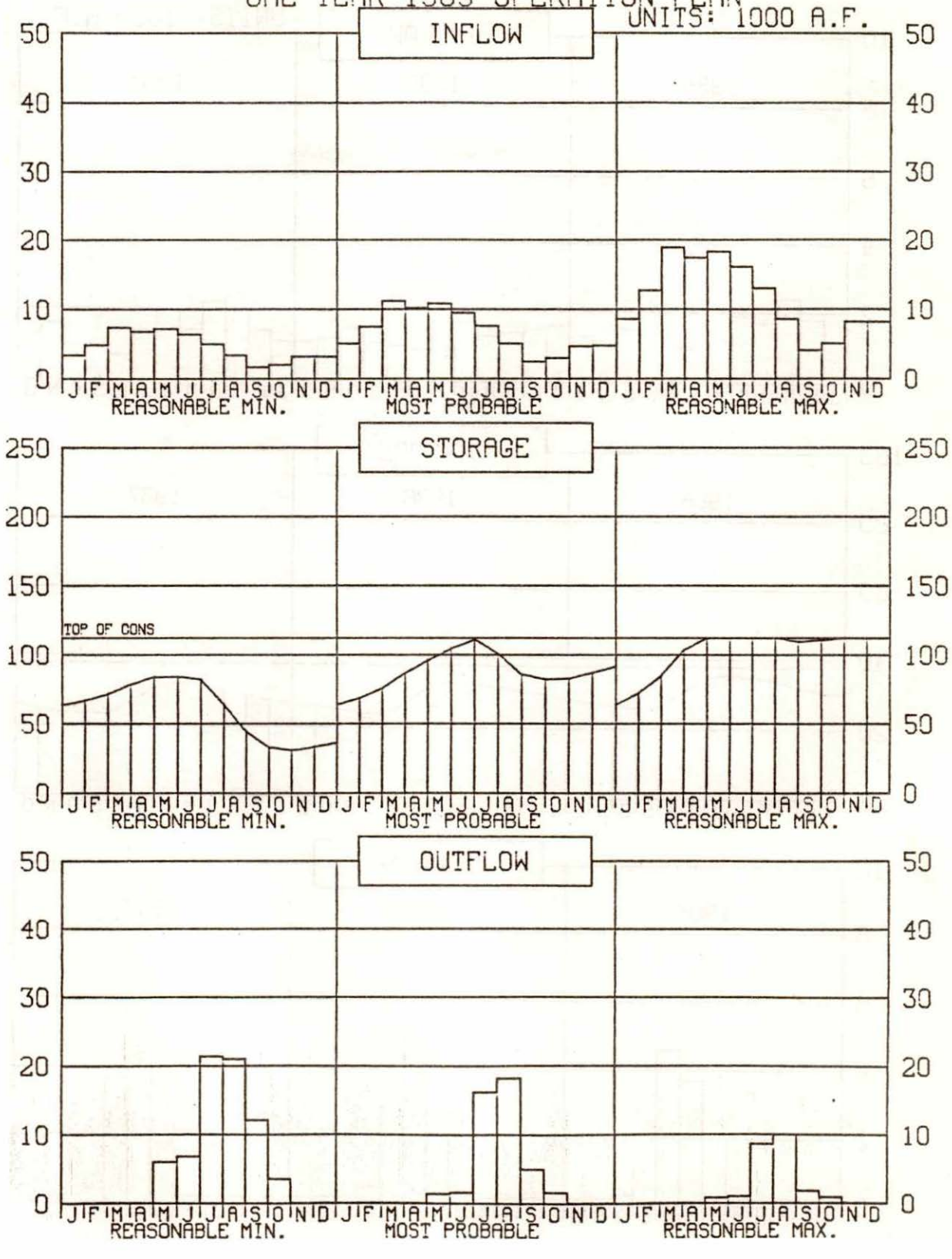
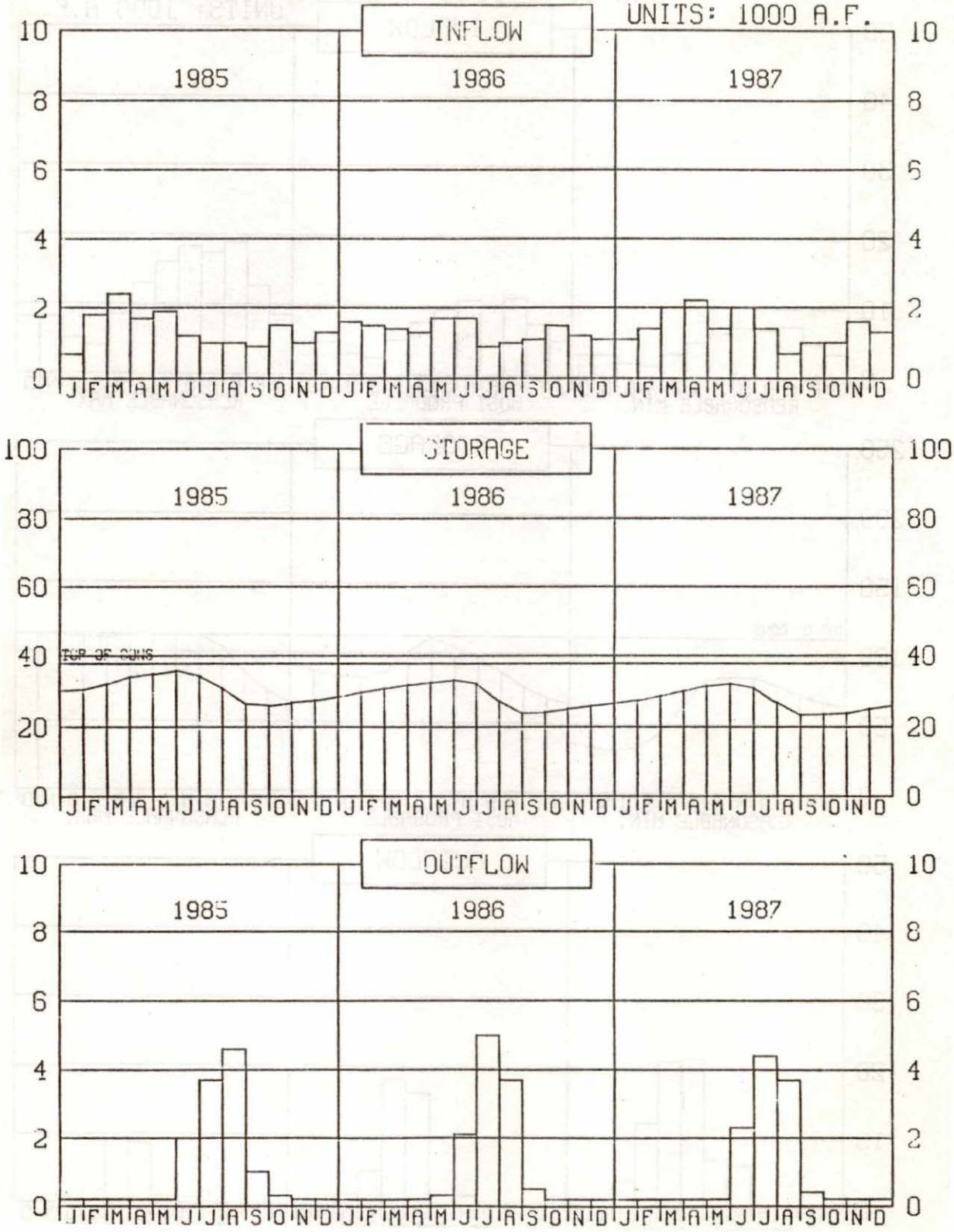


EXHIBIT 8A

HUGH BUTLER LAKE OPERATION



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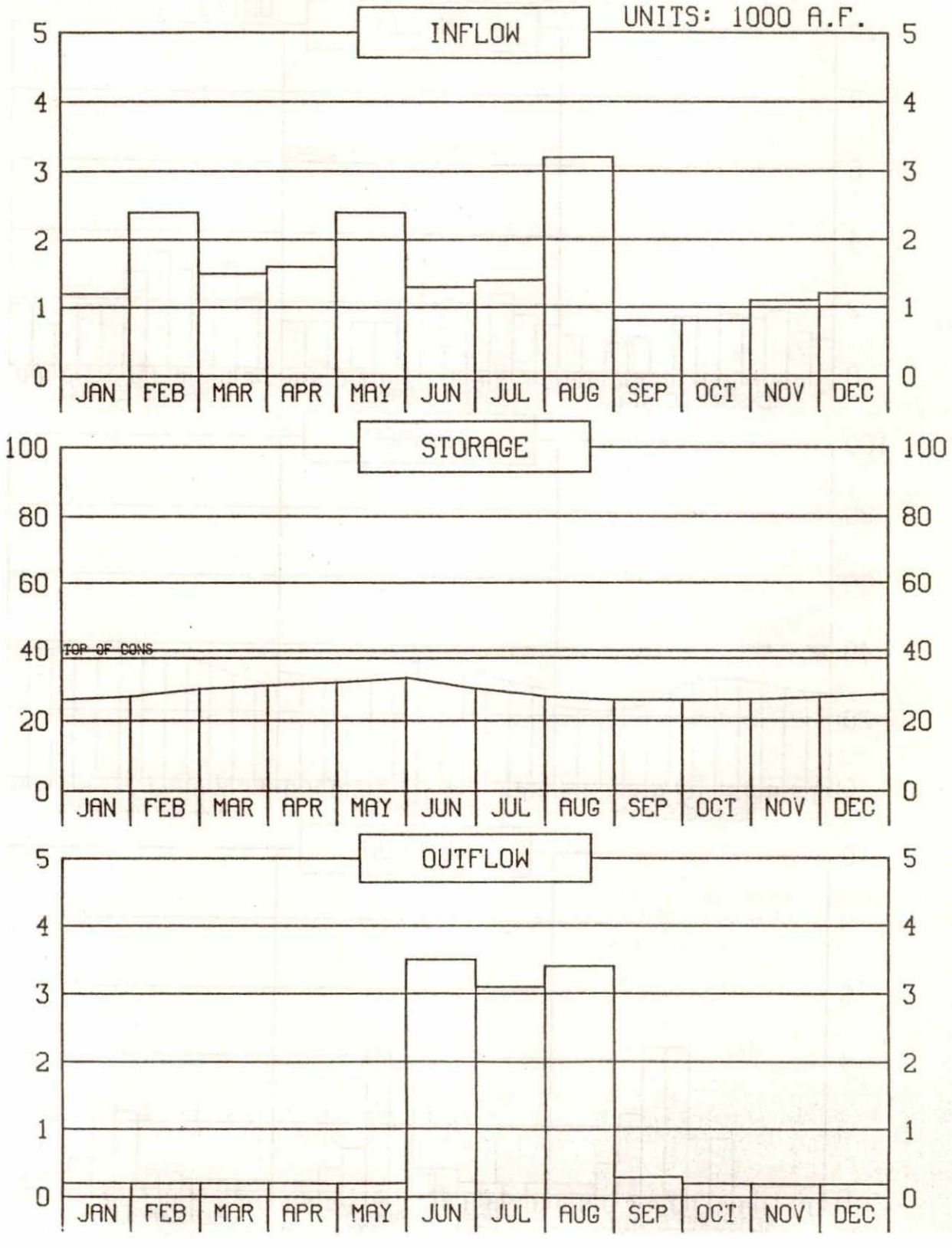

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HUGH BUTLER LAKE

CAL YEAR 1989 OPERATION PLAN

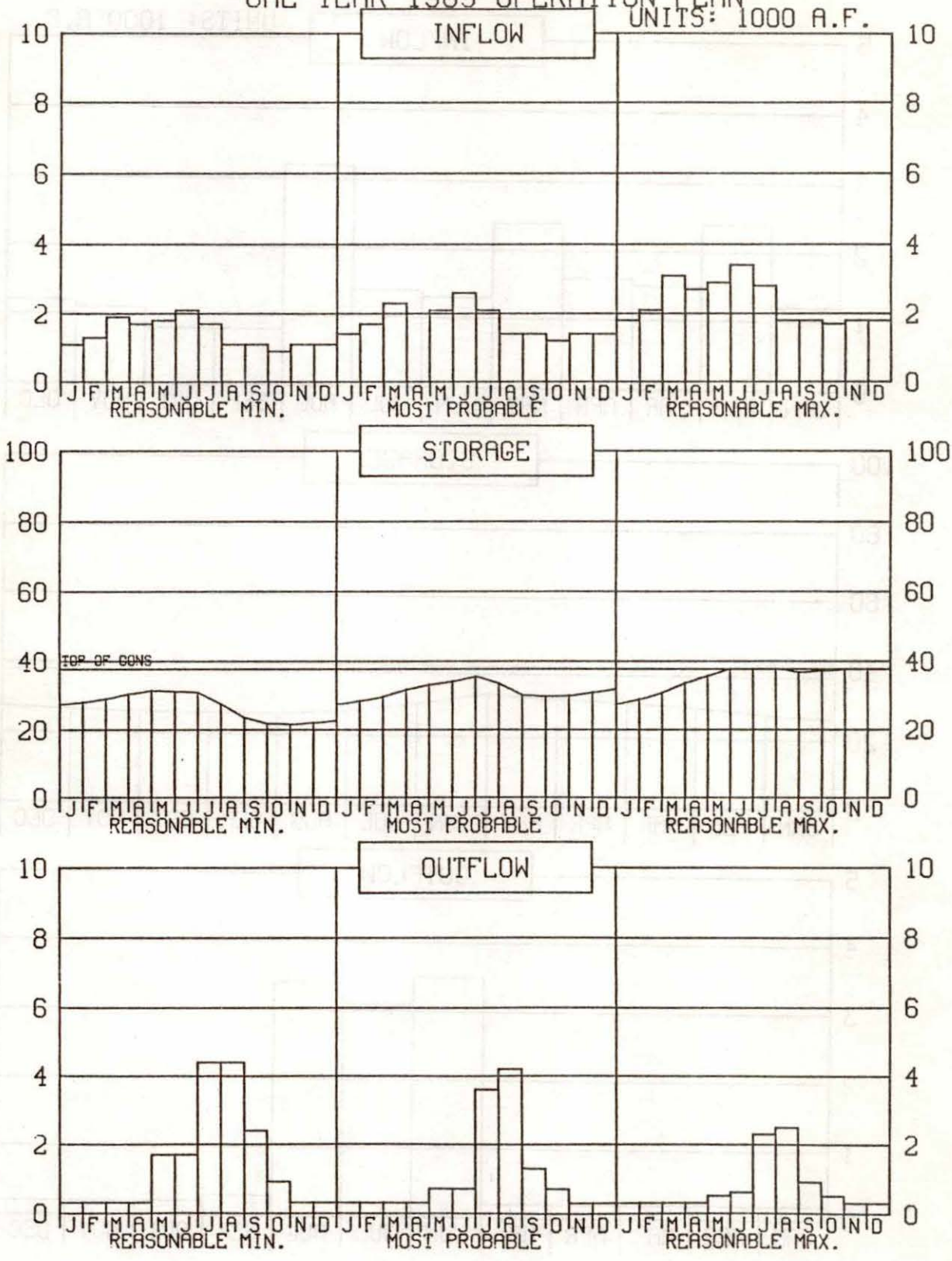


EXHIBIT 9A

HARRY STRUNK LAKE OPERATION

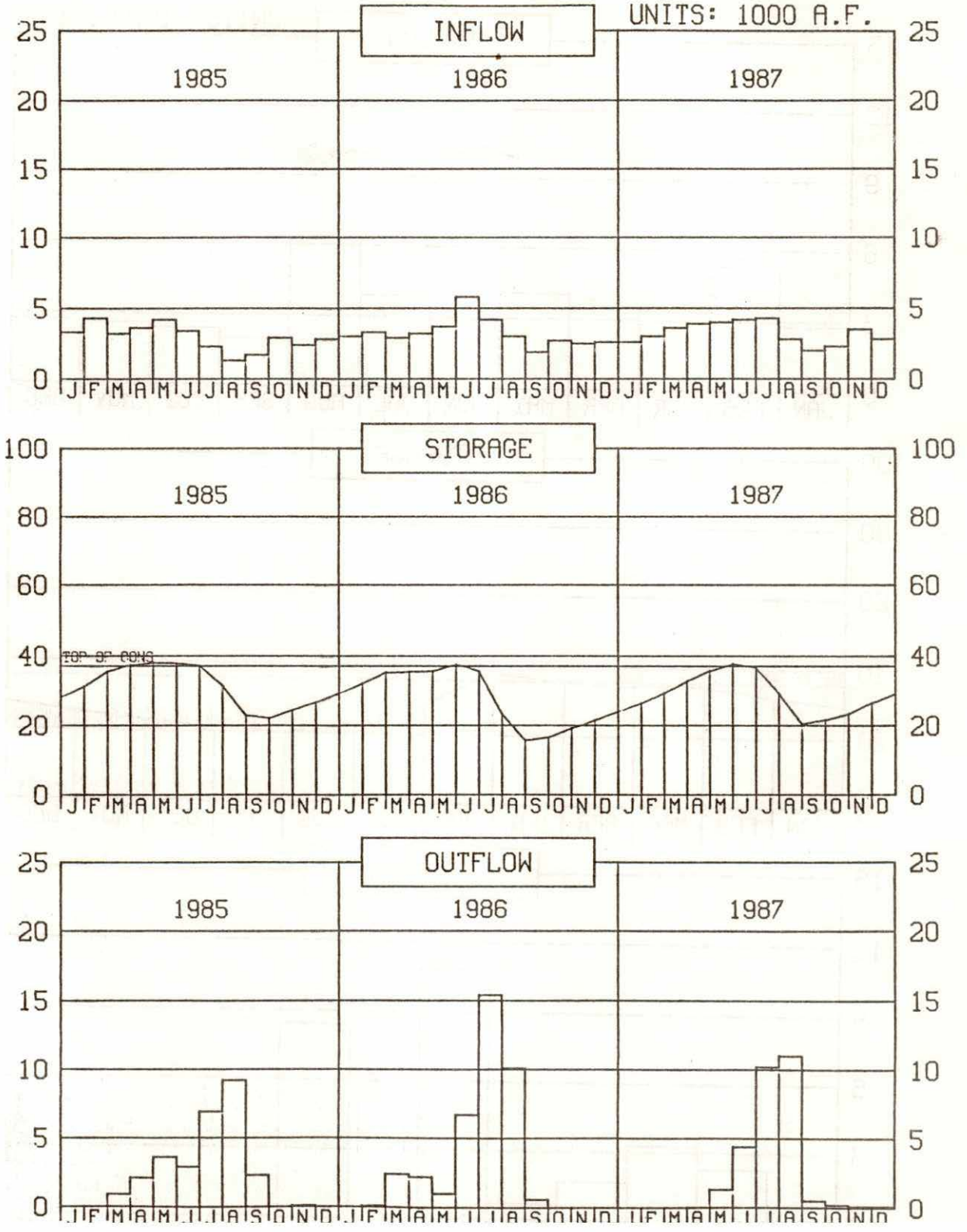
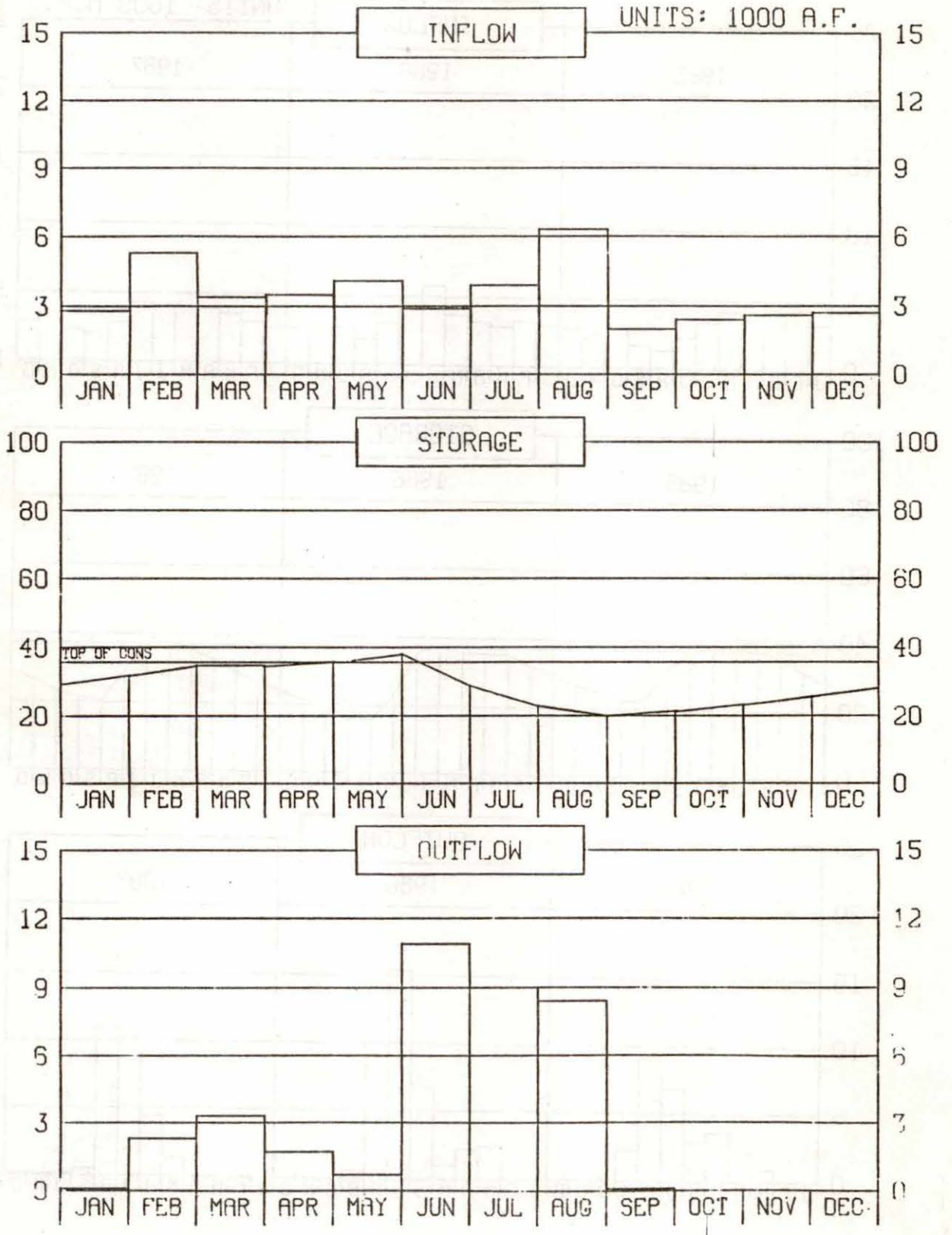


EXHIBIT 9B

HARRY STRUNK LAKE 1988 OPERATION



HARRY STRUNK LAKE

CAL YEAR 1989 OPERATION PLAN

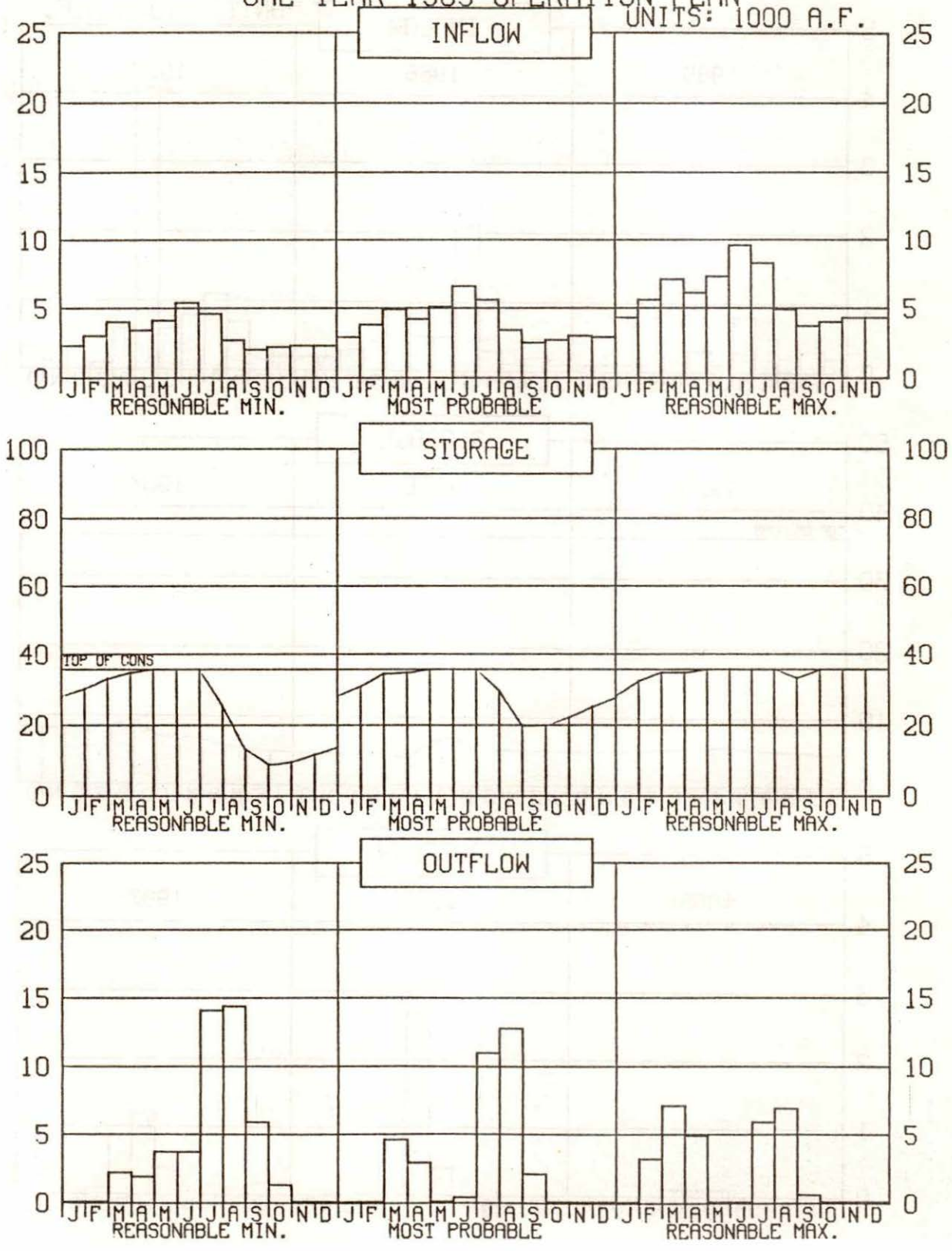


EXHIBIT 10A

KEITH SEBELIUS LAKE OPERATION

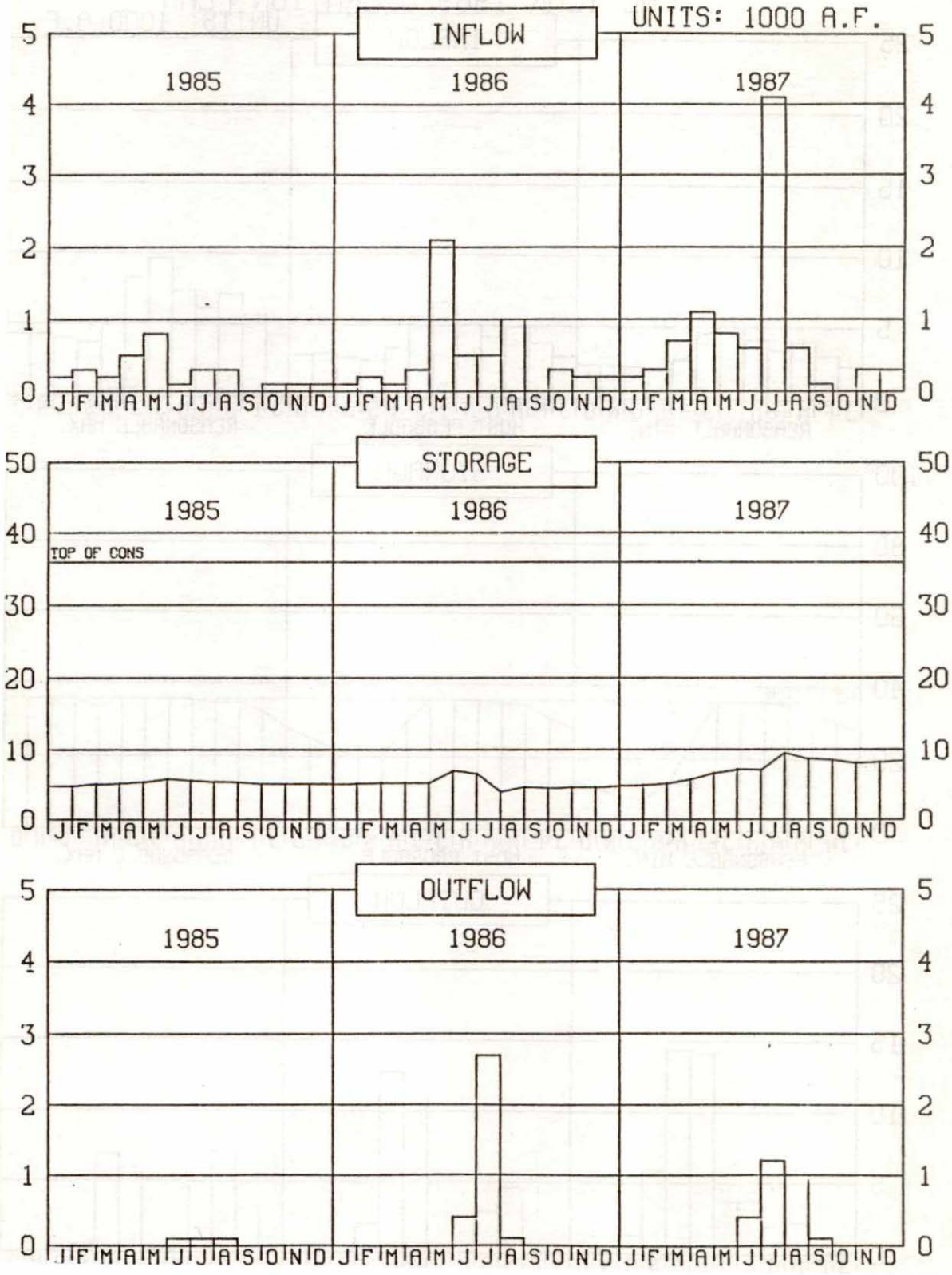


EXHIBIT 10B

KEITH SEBELIUS LAKE 1988 OPERATION

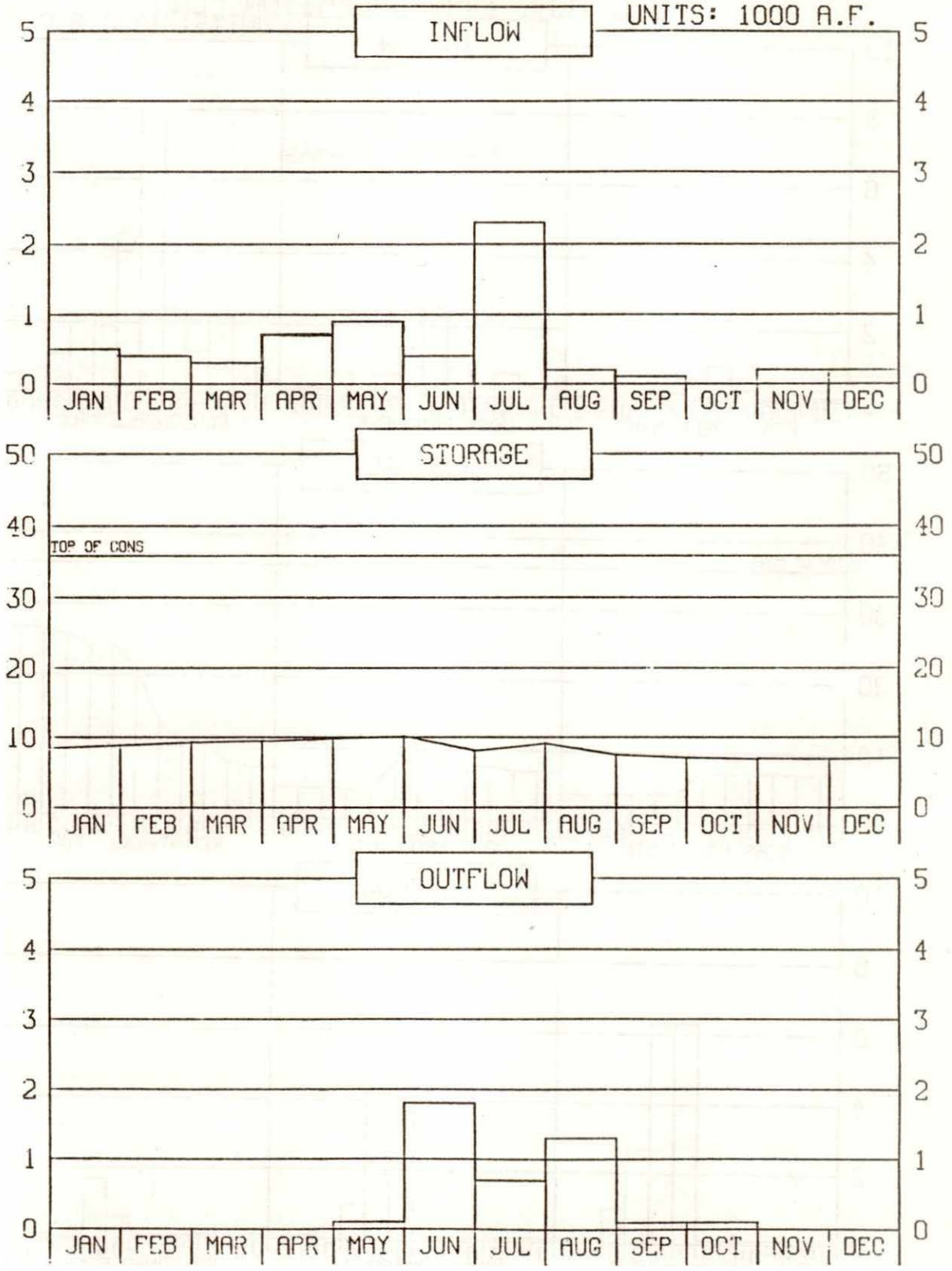


EXHIBIT 10C

KEITH SEBELIUS LAKE

CAL YEAR 1989 OPERATION PLAN

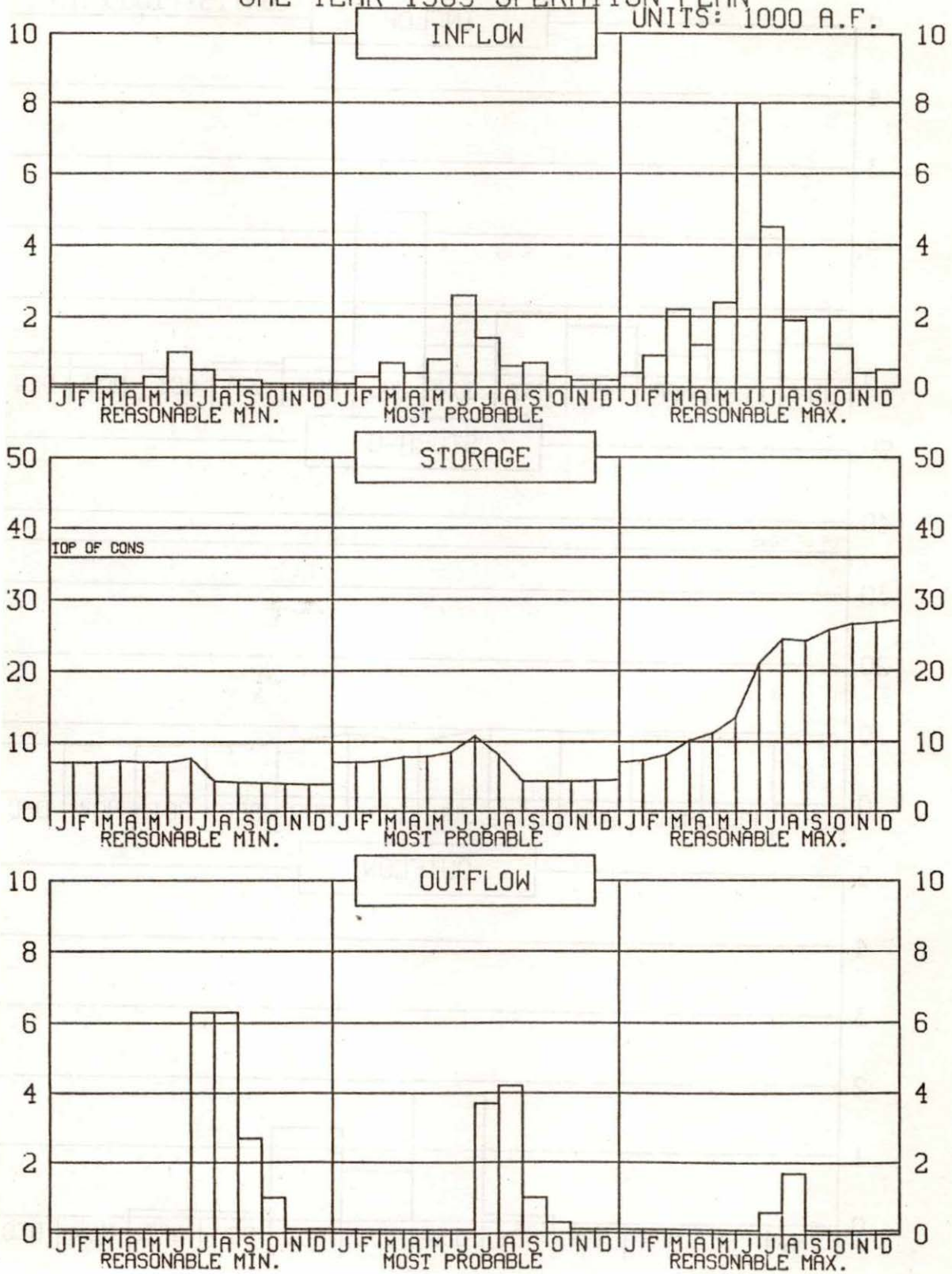


EXHIBIT 11A

HARLAN COUNTY LAKE OPERATION

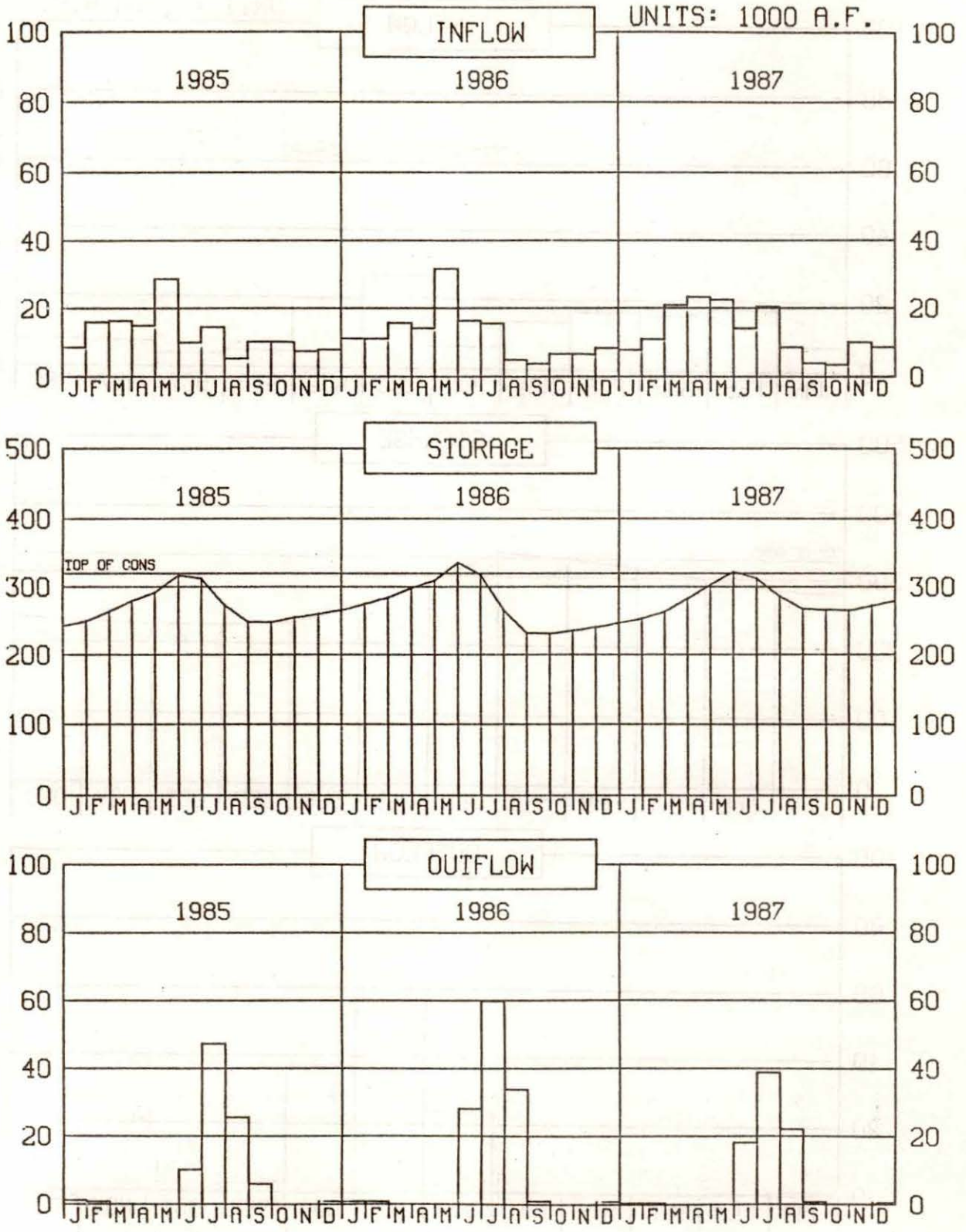


EXHIBIT 11B

HARLAN COUNTY LAKE 1988 OPERATION

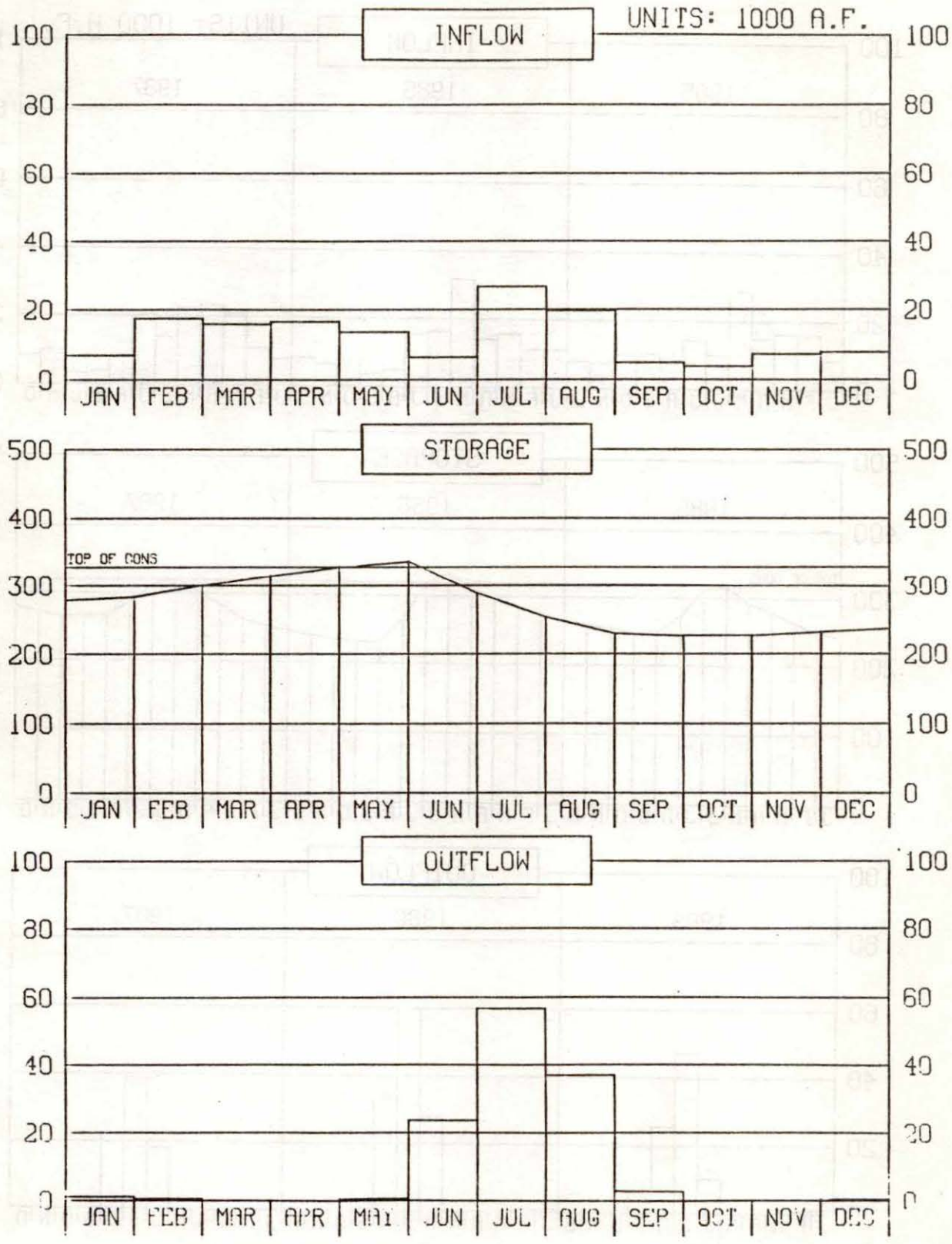


EXHIBIT 11C

HARLAN COUNTY LAKE

CAL YEAR 1989 OPERATION PLAN

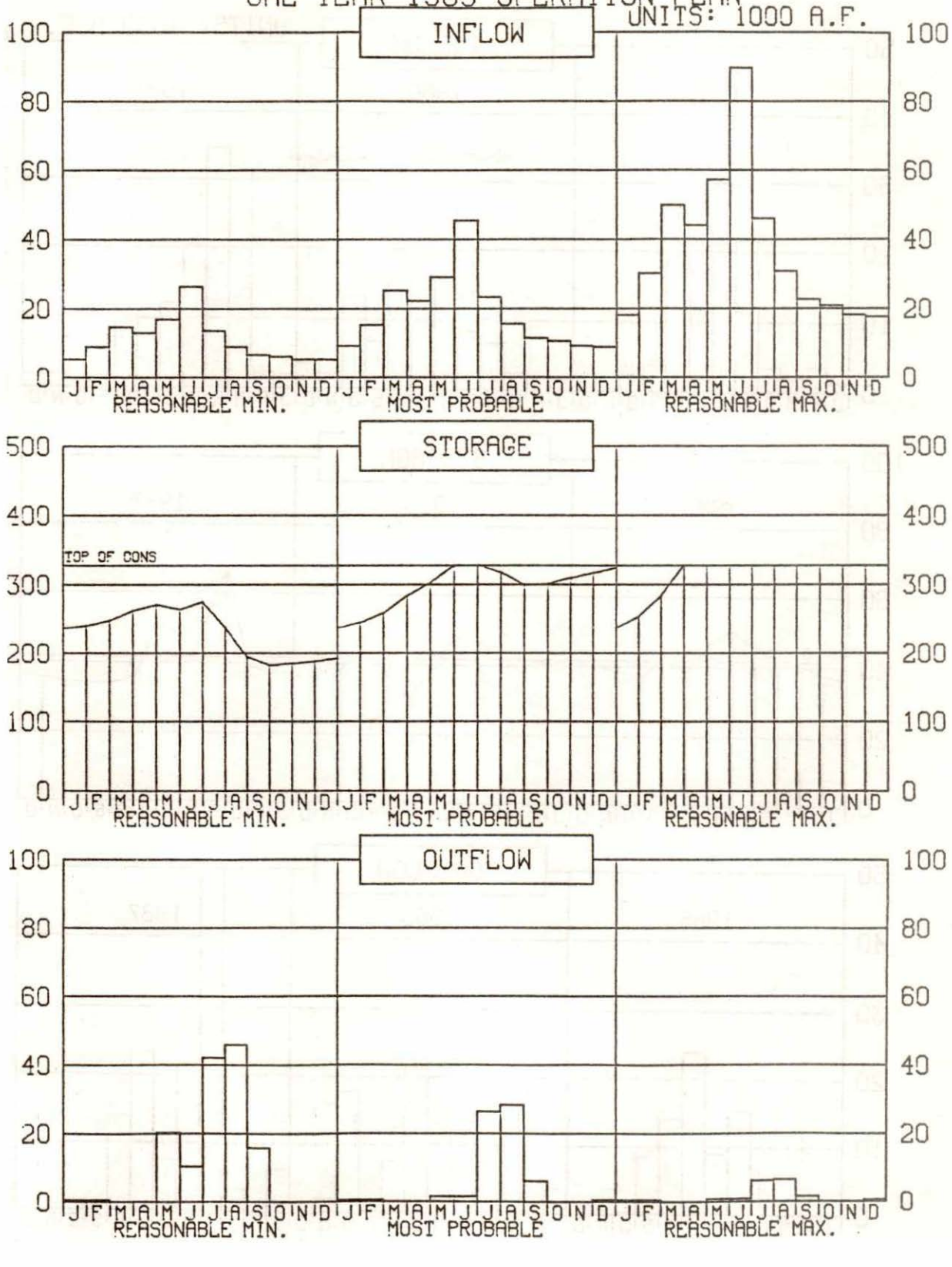


EXHIBIT 12A

LOVEWELL RESERVOIR OPERATION

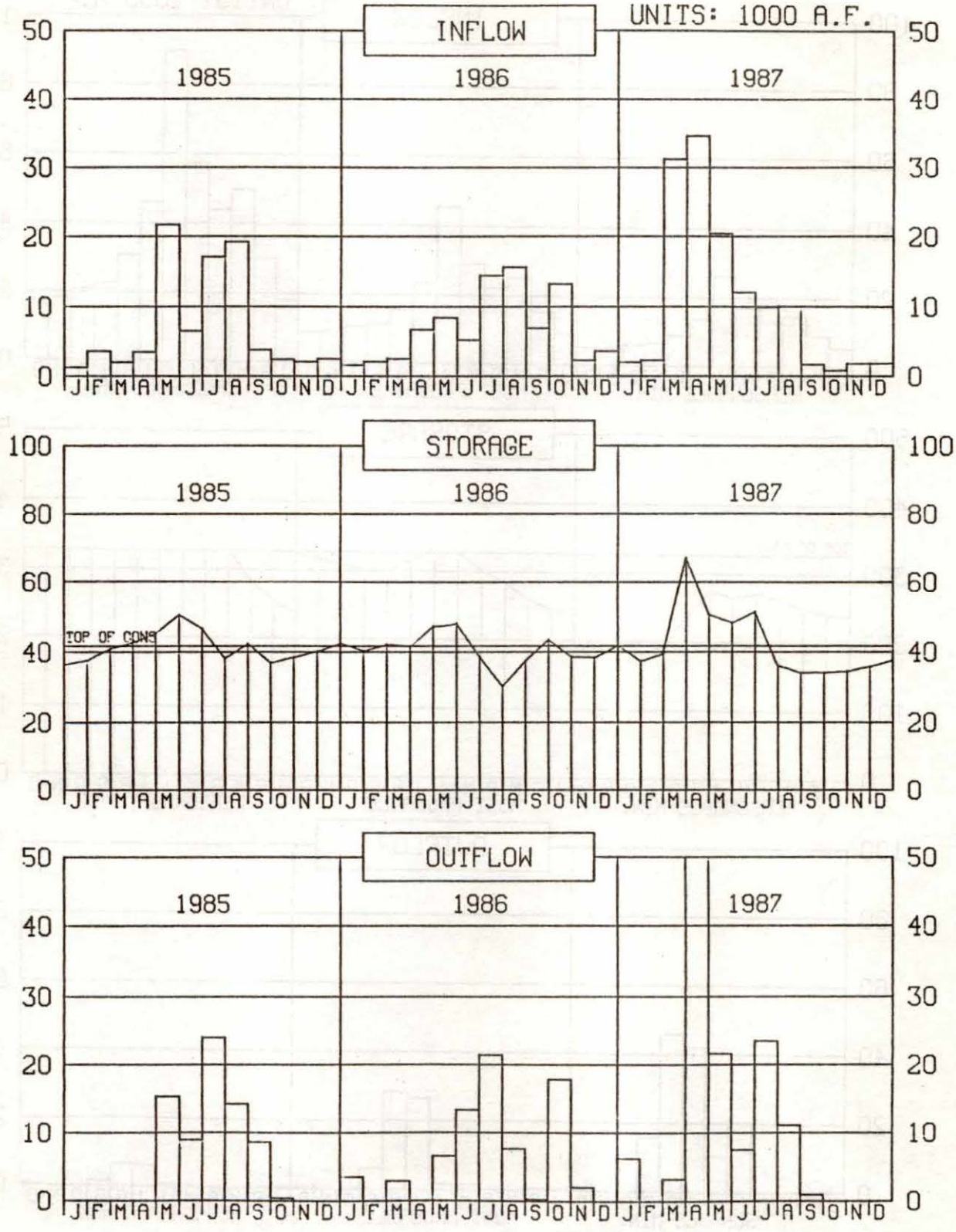


EXHIBIT 12B

LOVEWELL RESERVOIR 1988 OPERATION

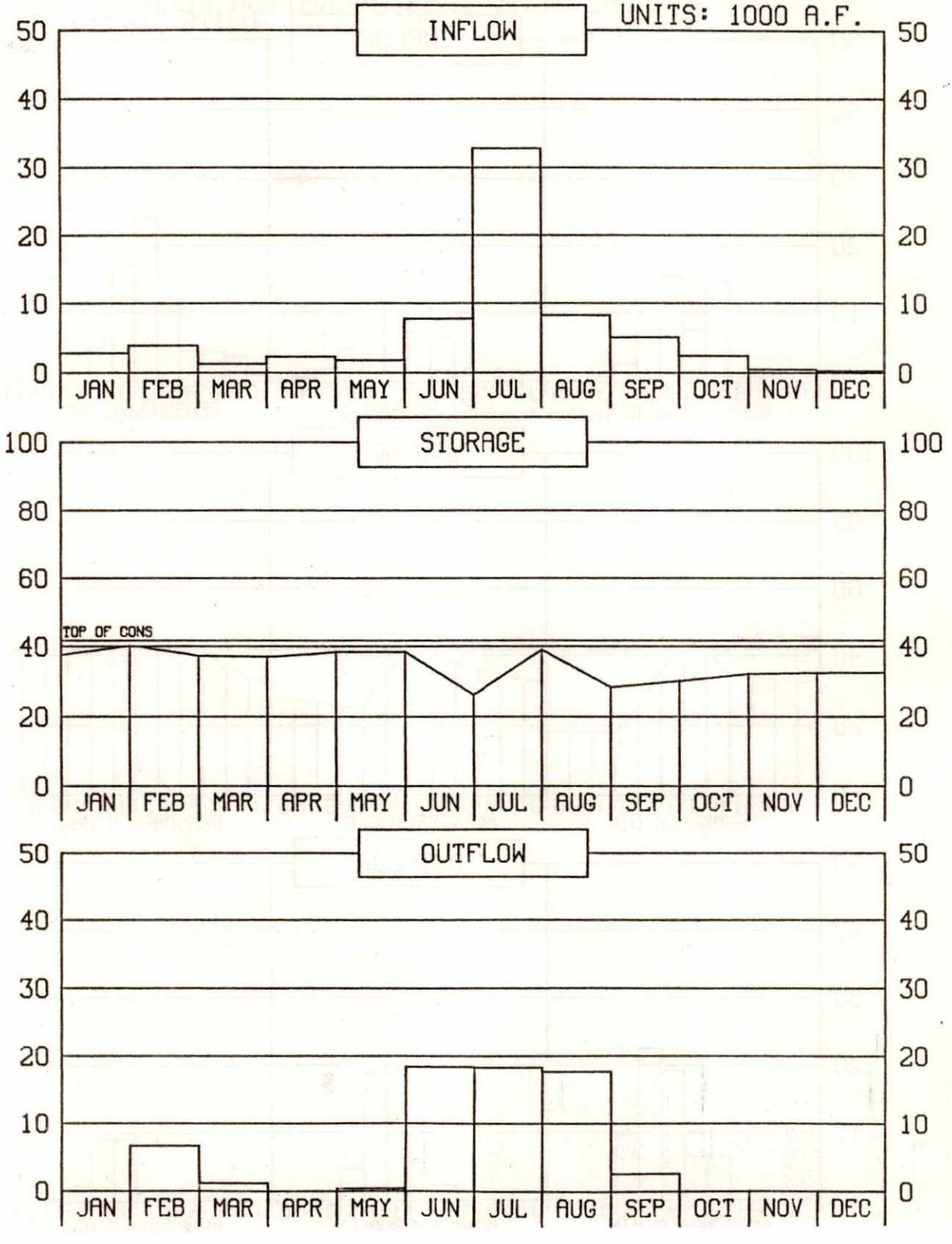


EXHIBIT 12C

LOVEWELL RESERVOIR

CAL YEAR 1989 OPERATION PLAN

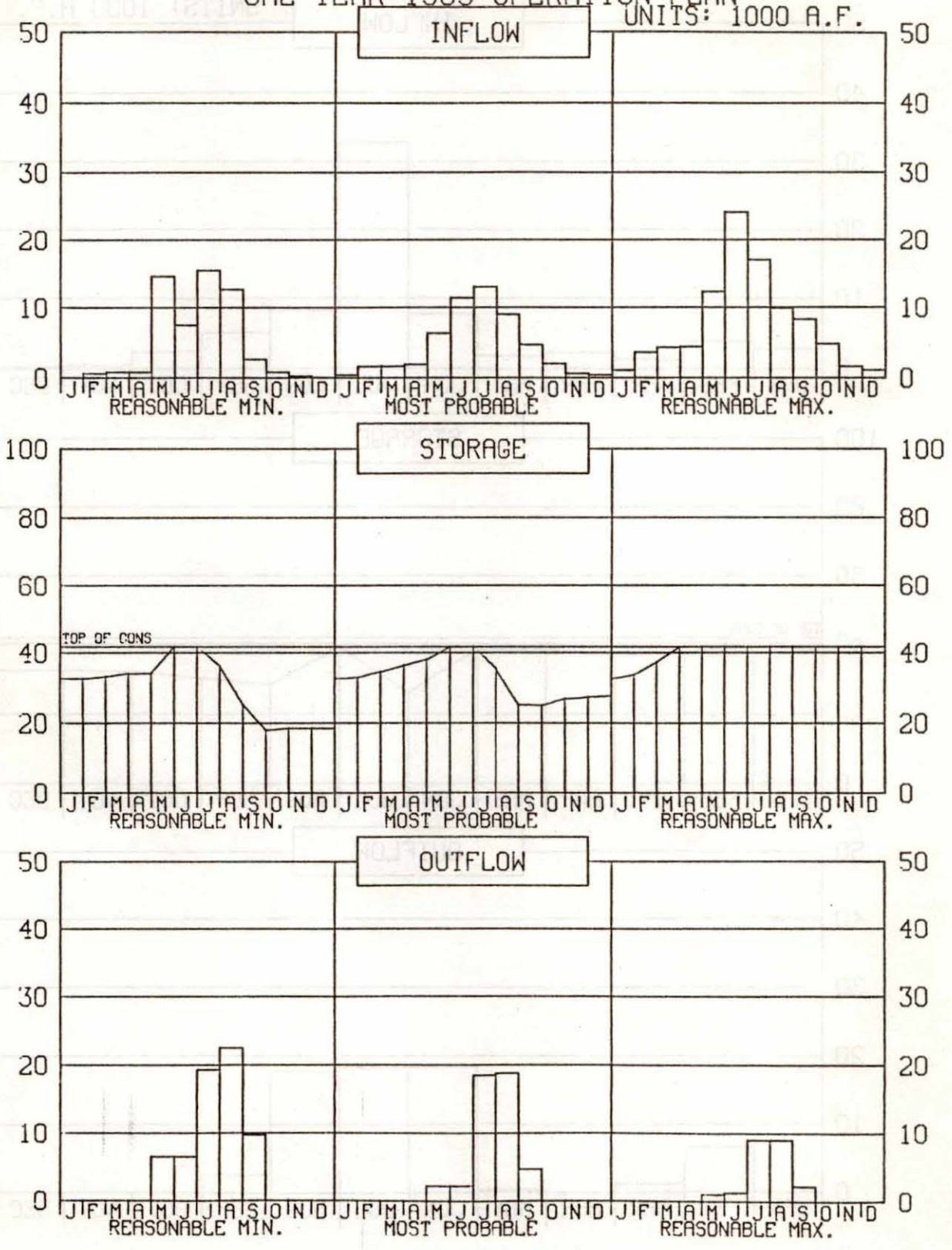


EXHIBIT 13A

KIRWIN RESERVOIR OPERATION

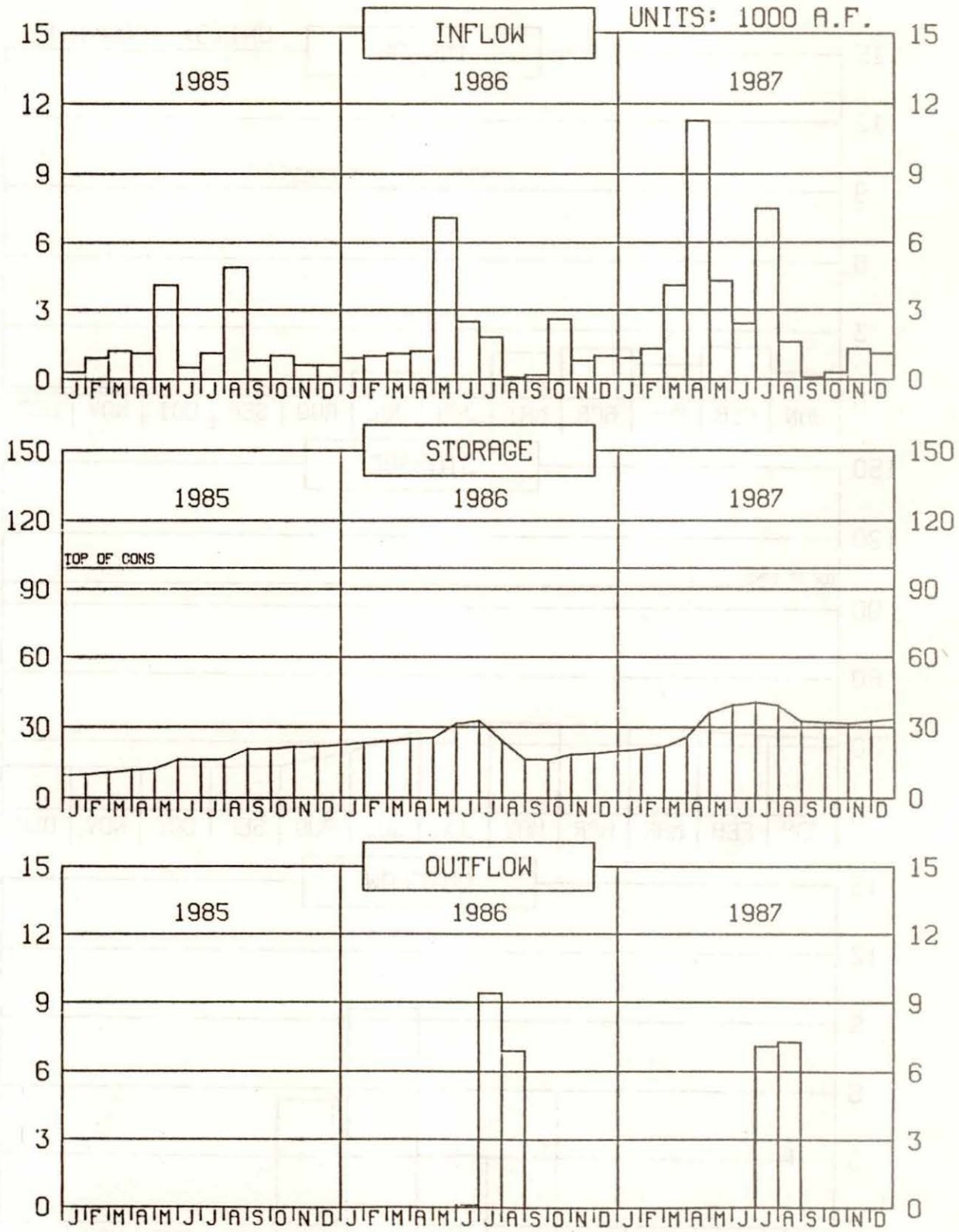


EXHIBIT 13B

KIRWIN RESERVOIR 1988 OPERATION

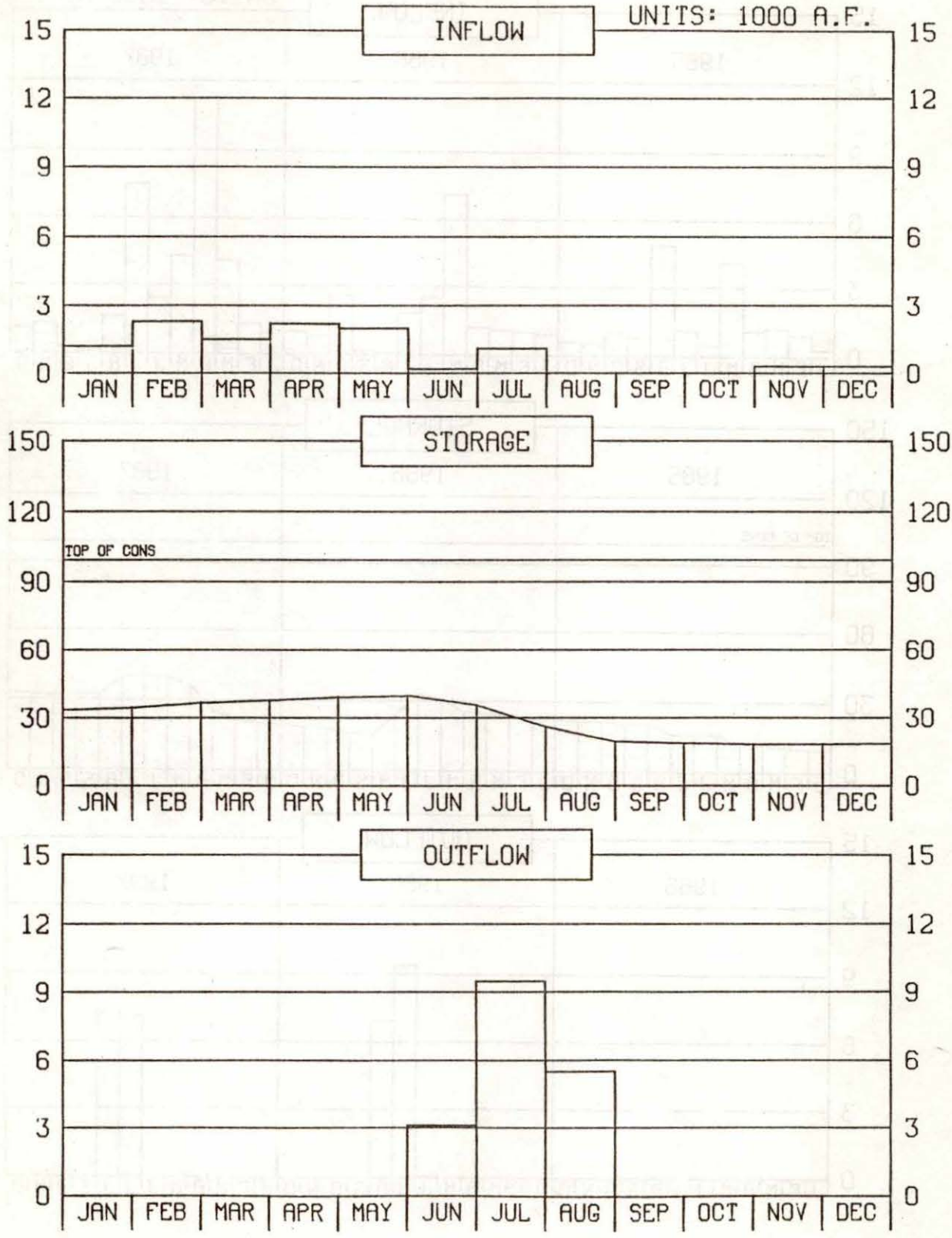


EXHIBIT 13C

KIRWIN RESERVOIR

CAL YEAR 1989 OPERATION PLAN

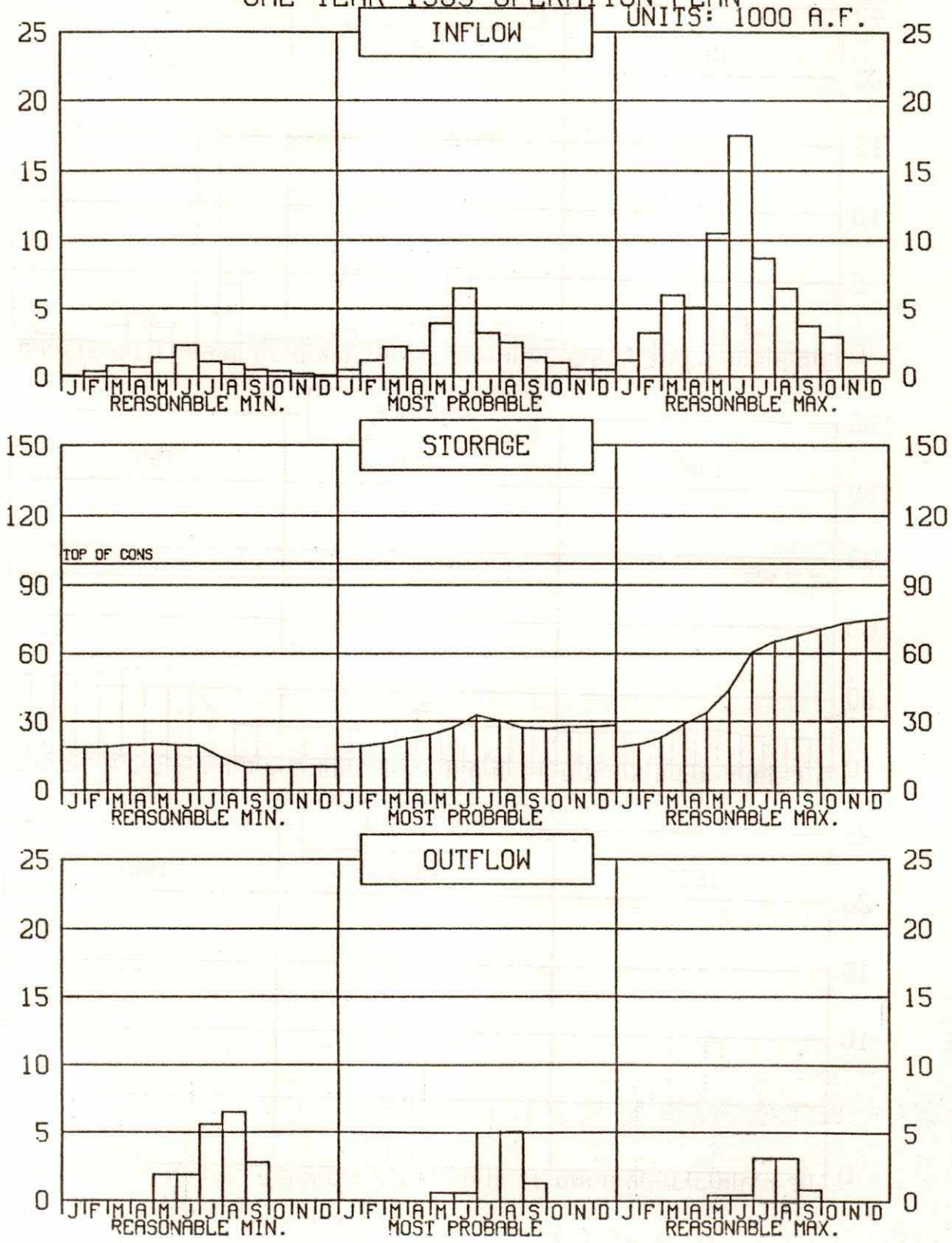


EXHIBIT 14A

WEBSTER RESERVOIR OPERATION

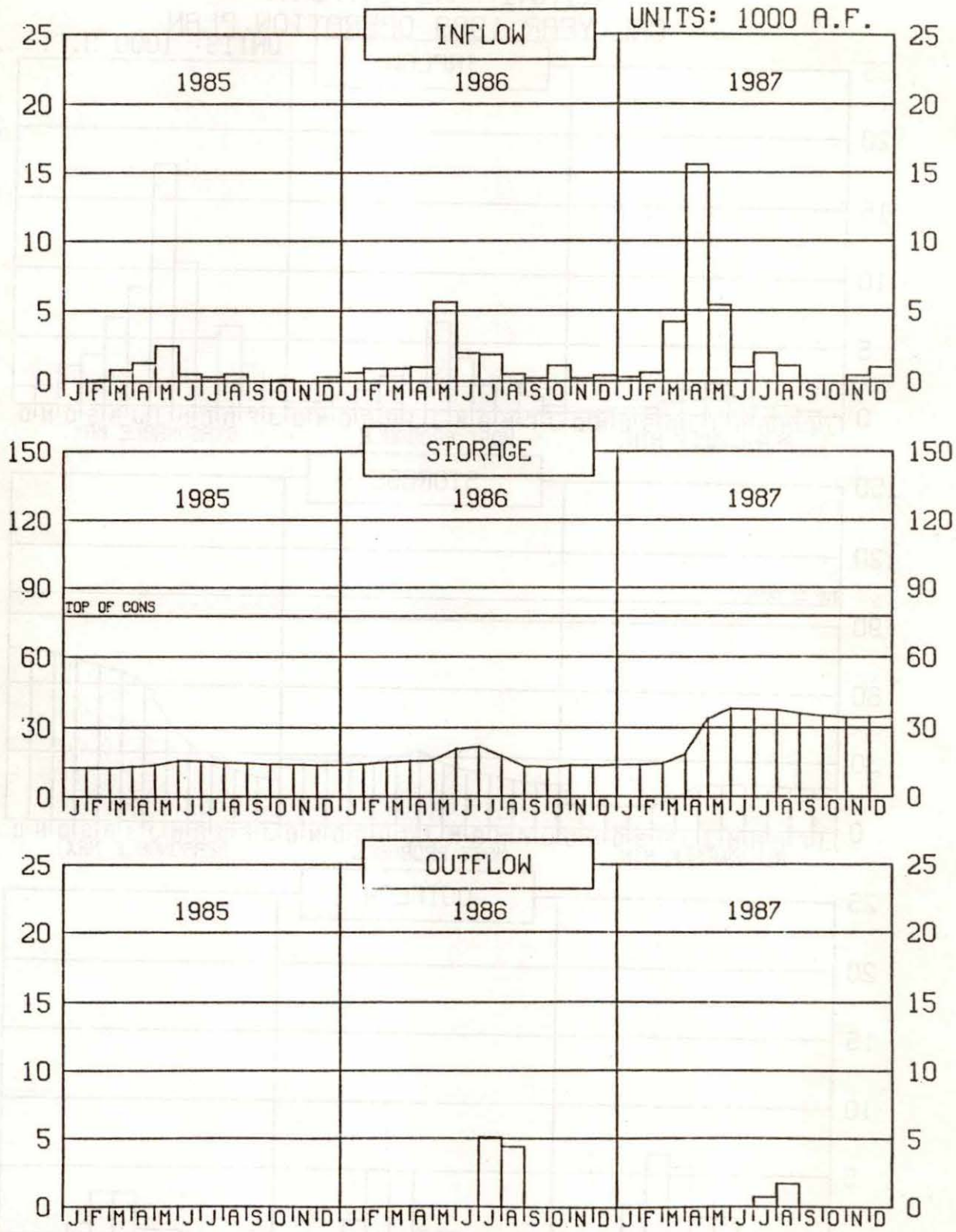


EXHIBIT 14B

WEBSTER RESERVOIR 1988 OPERATION

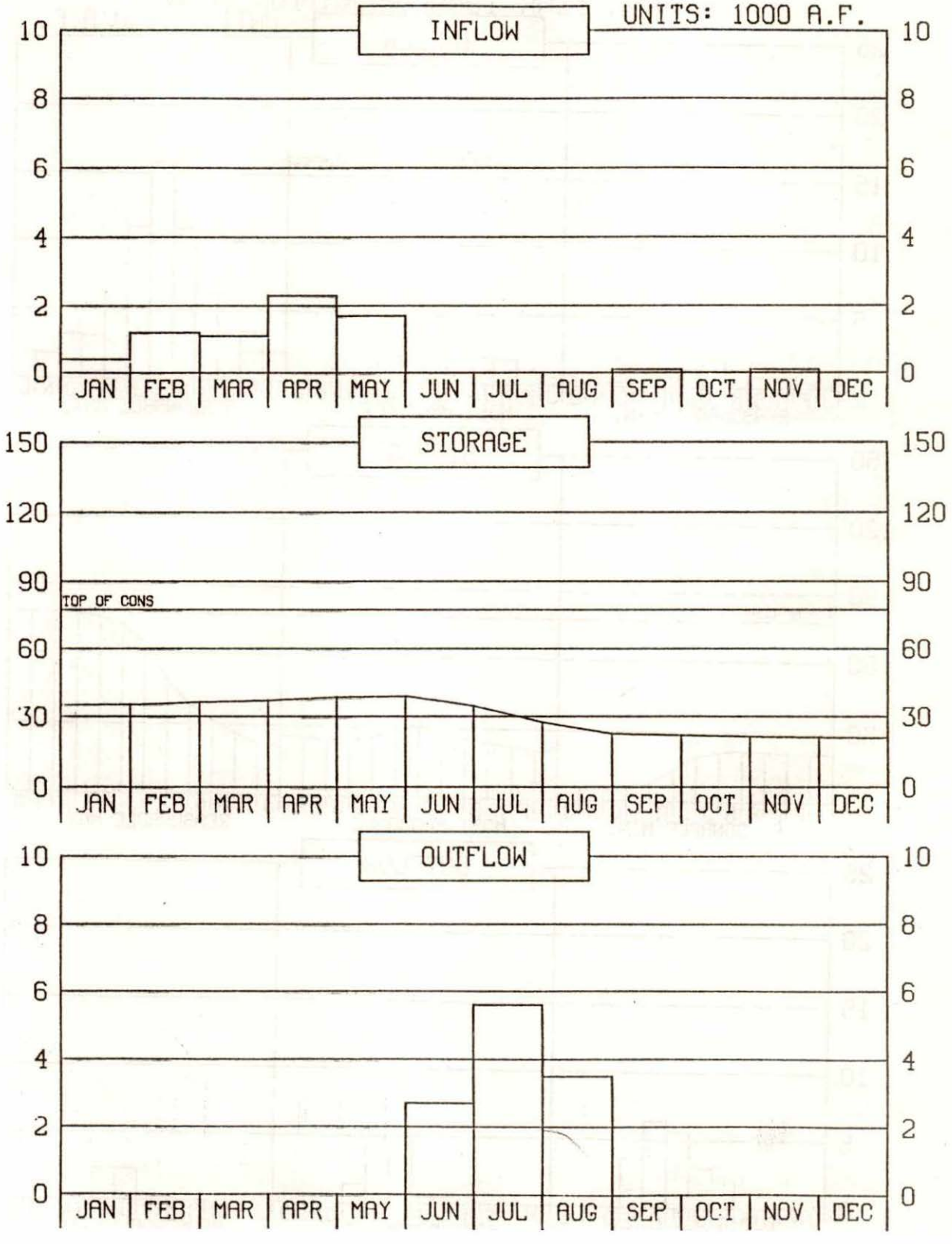


EXHIBIT 14C

WEBSTER RESERVOIR

CAL YEAR 1989 OPERATION PLAN

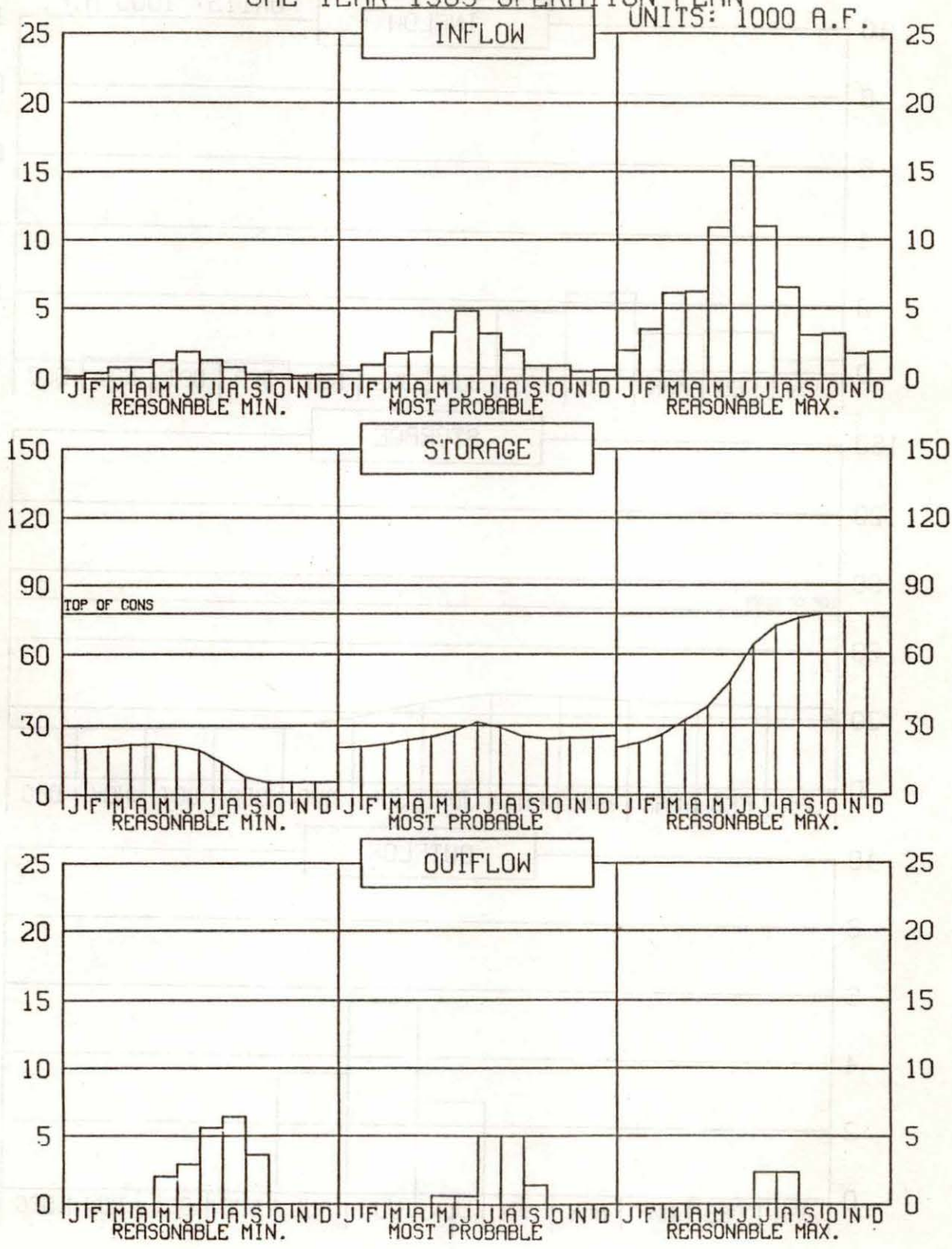


EXHIBIT 15A

WACONDA LAKE OPERATION

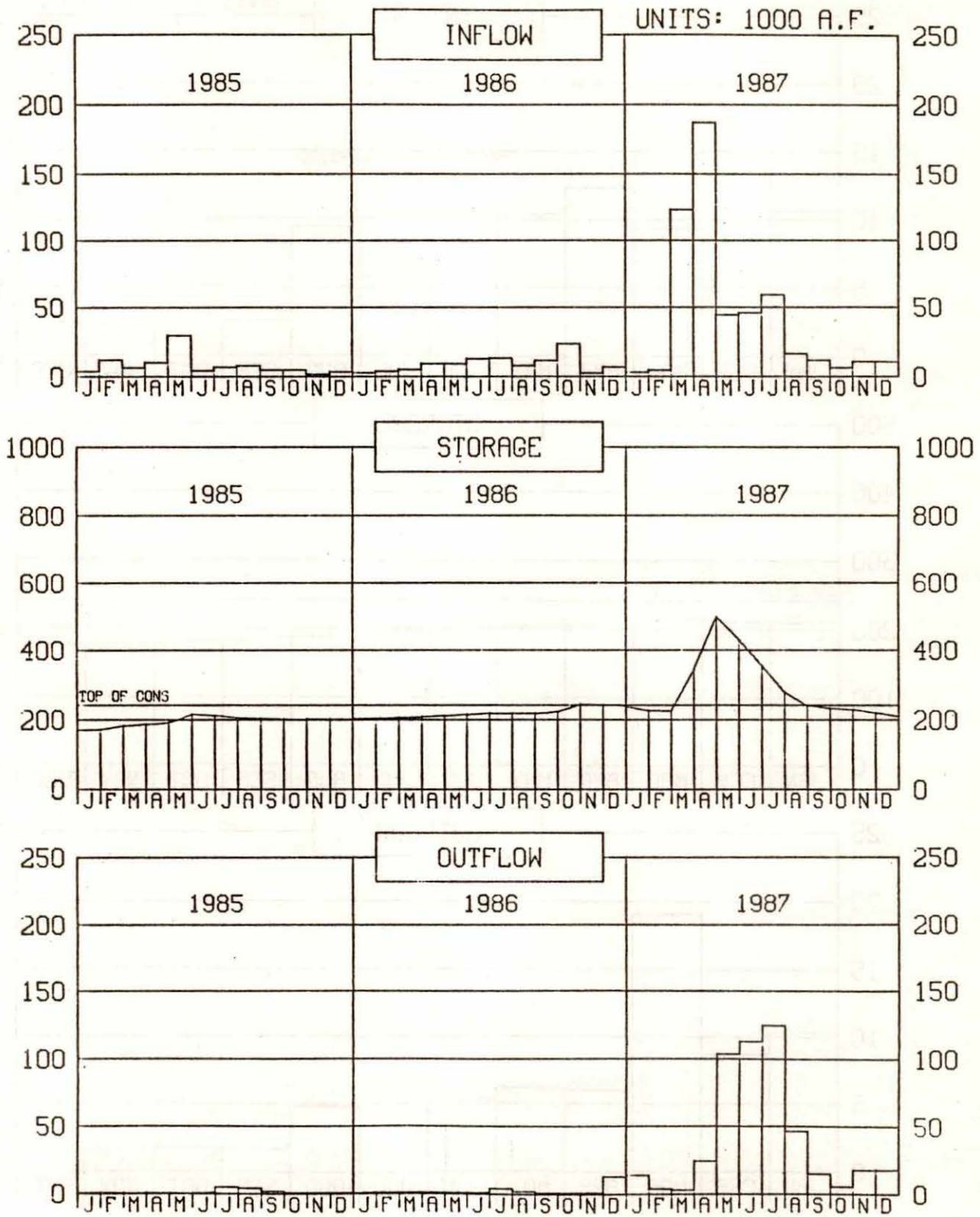


EXHIBIT 15B

WACONDA LAKE 1988 OPERATION

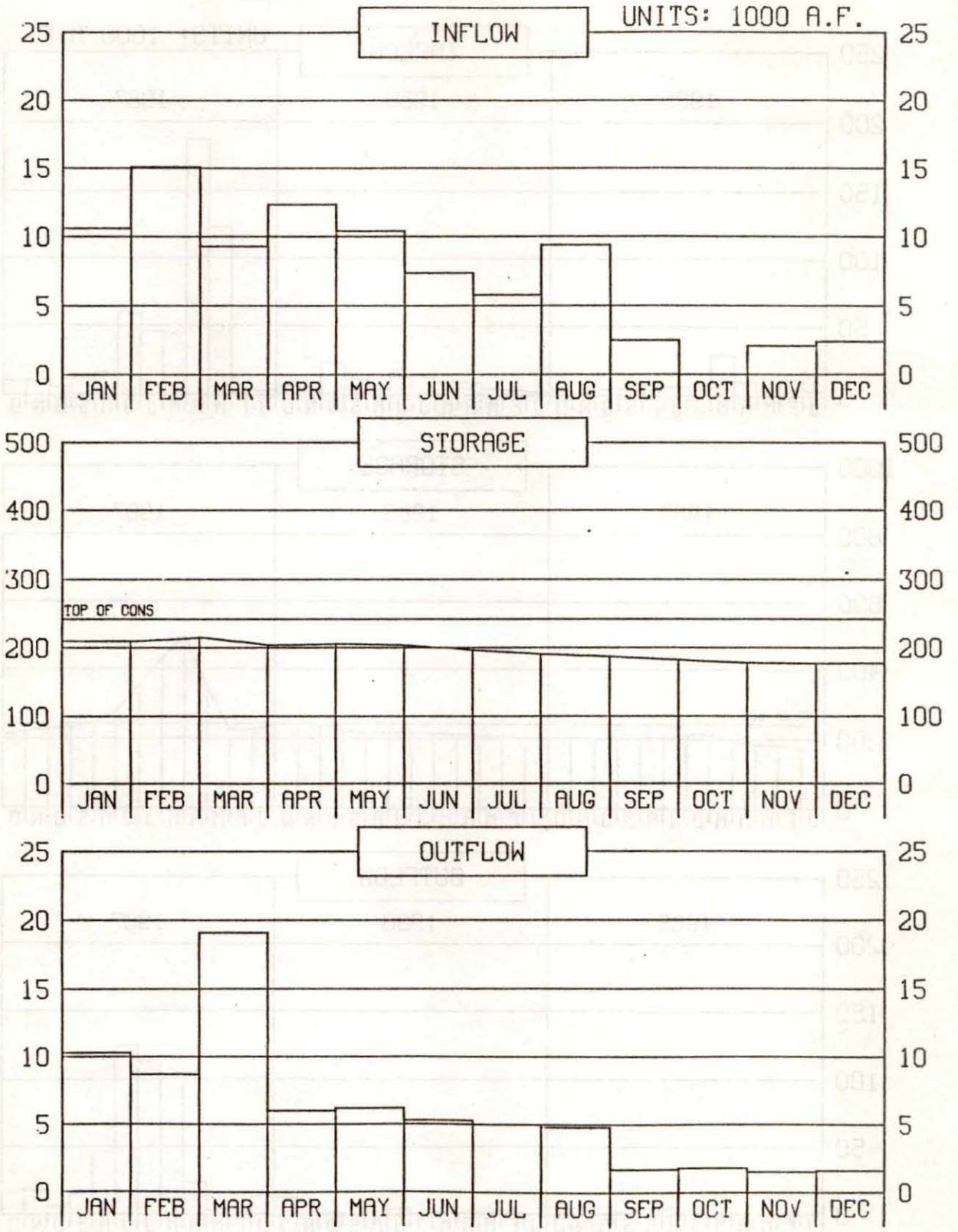


EXHIBIT 15C

WACONDA LAKE

CAL YEAR 1989 OPERATION PLAN

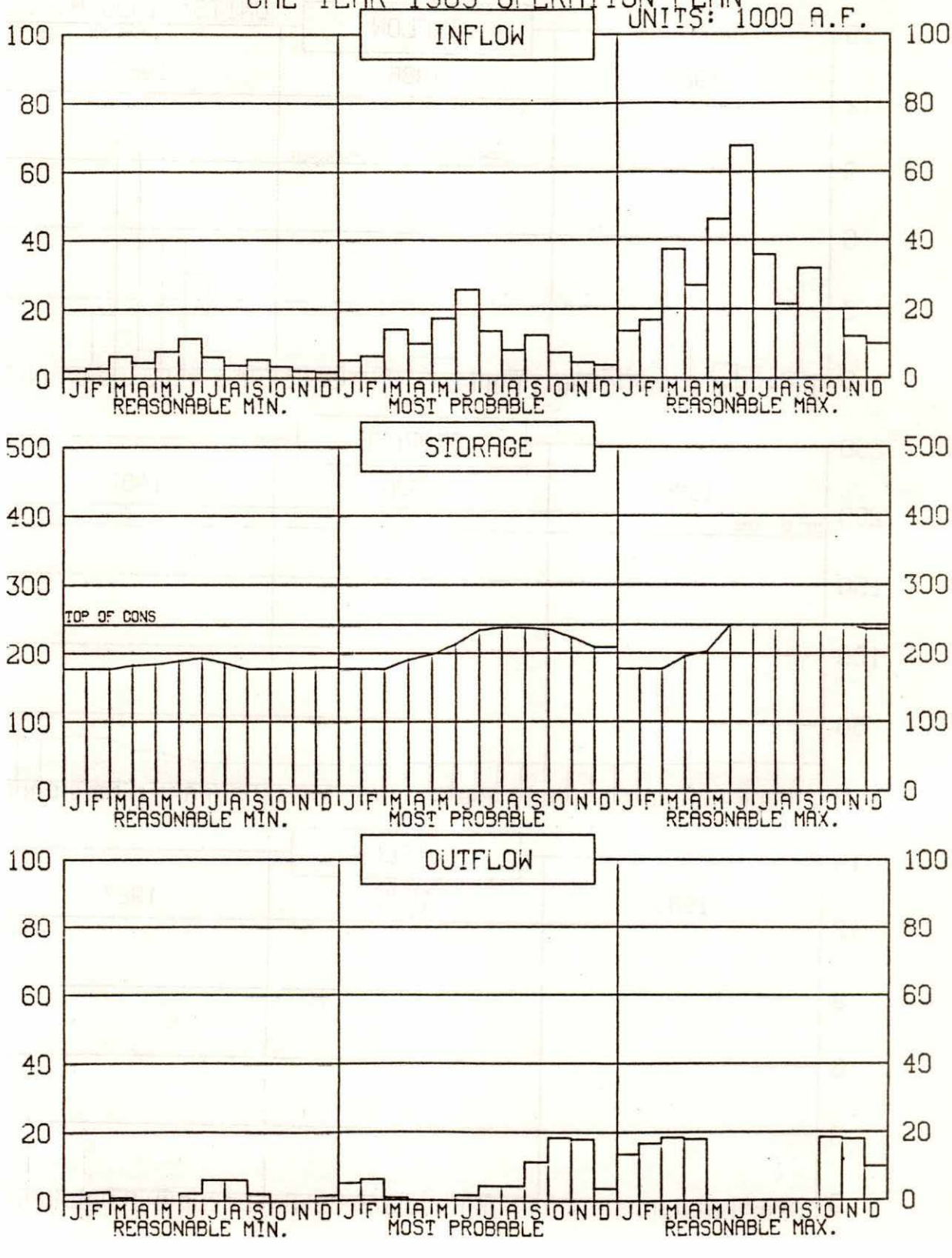


EXHIBIT 16A

CEDAR BLUFF RESERVOIR OPERATION

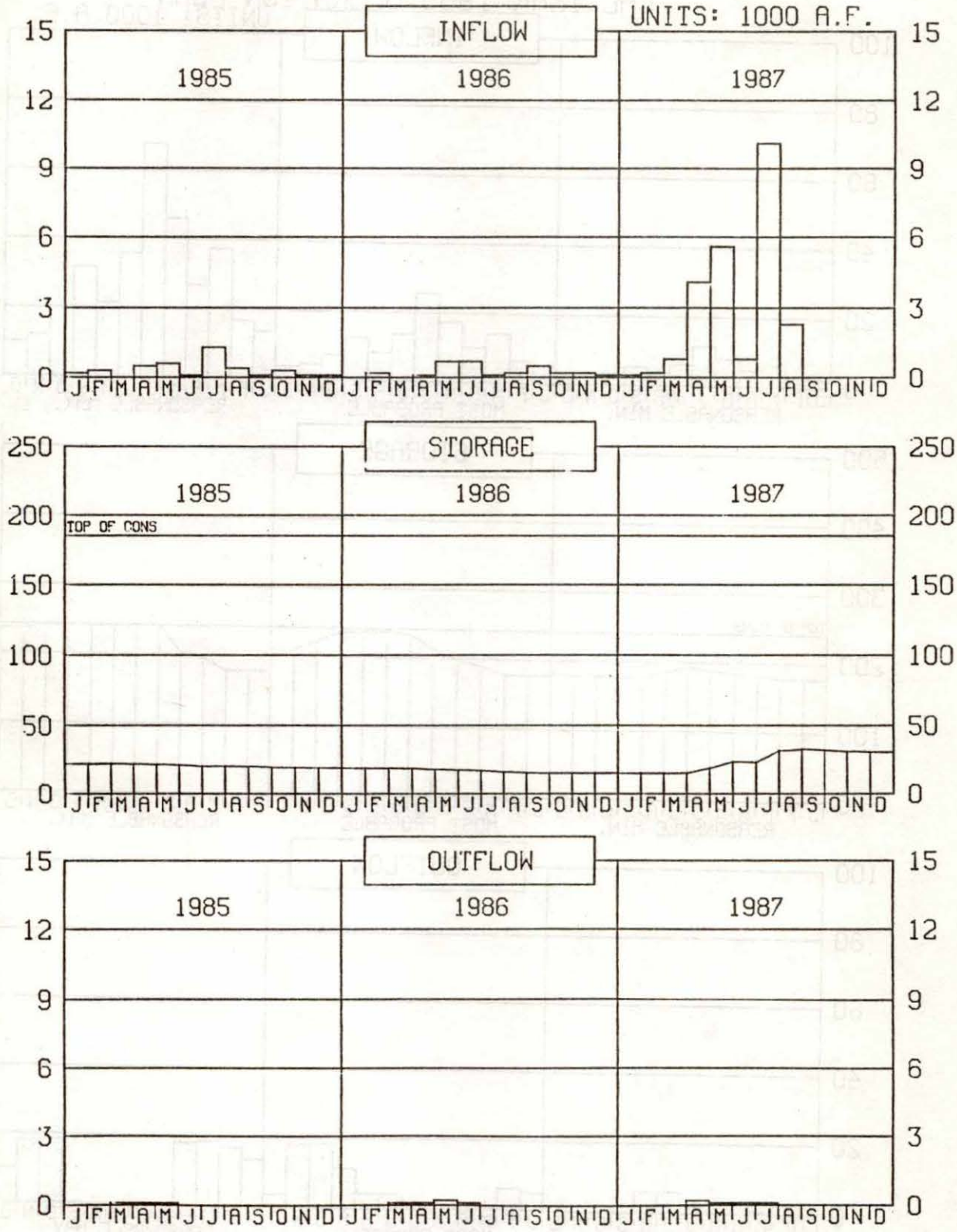


EXHIBIT 16B

CEDAR BLUFF RESERVOIR 1988 OPERATION

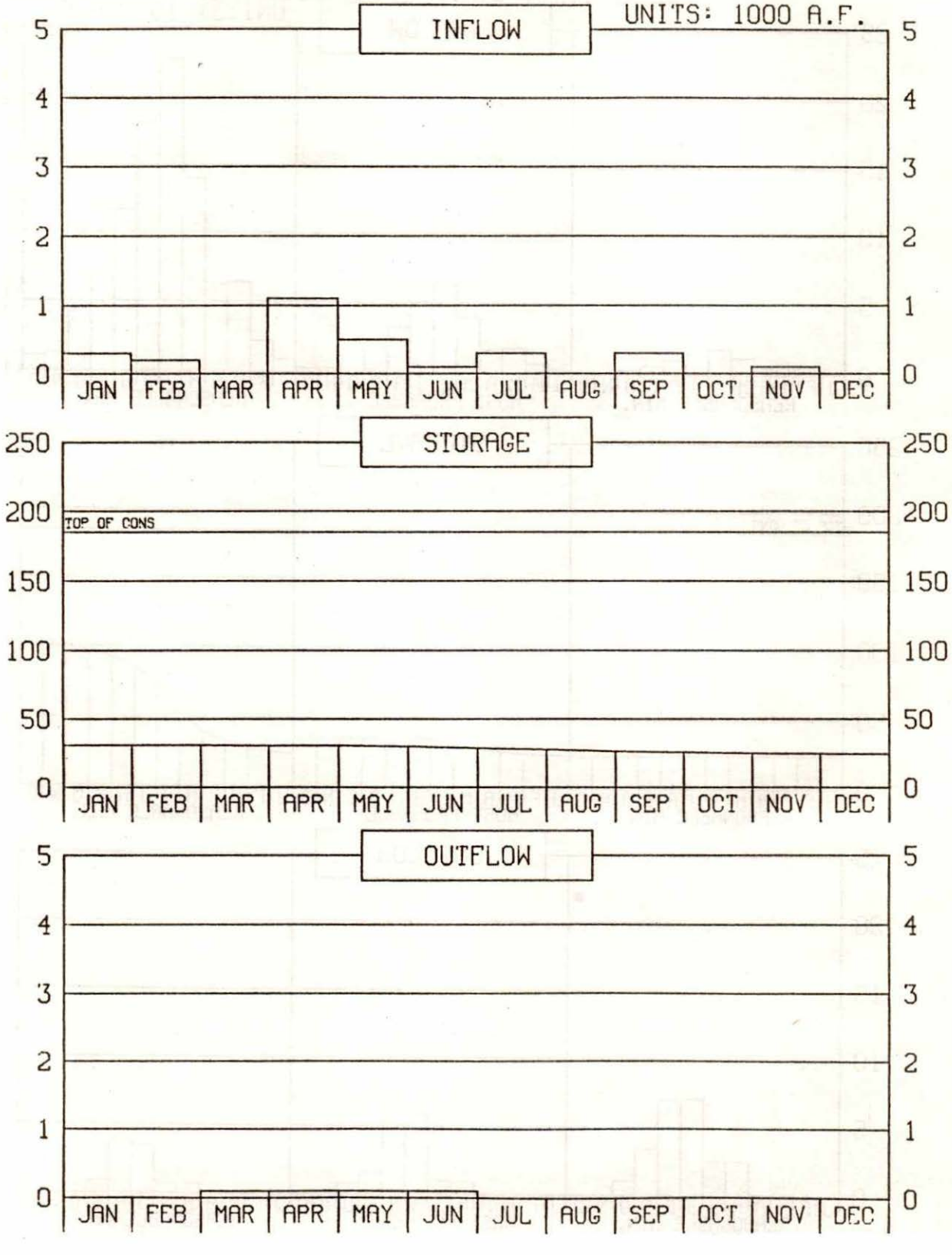


EXHIBIT 16C

CEDAR BLUFF RESERVOIR

CAL YEAR 1989 OPERATION PLAN

UNITS: 1000 A.F.

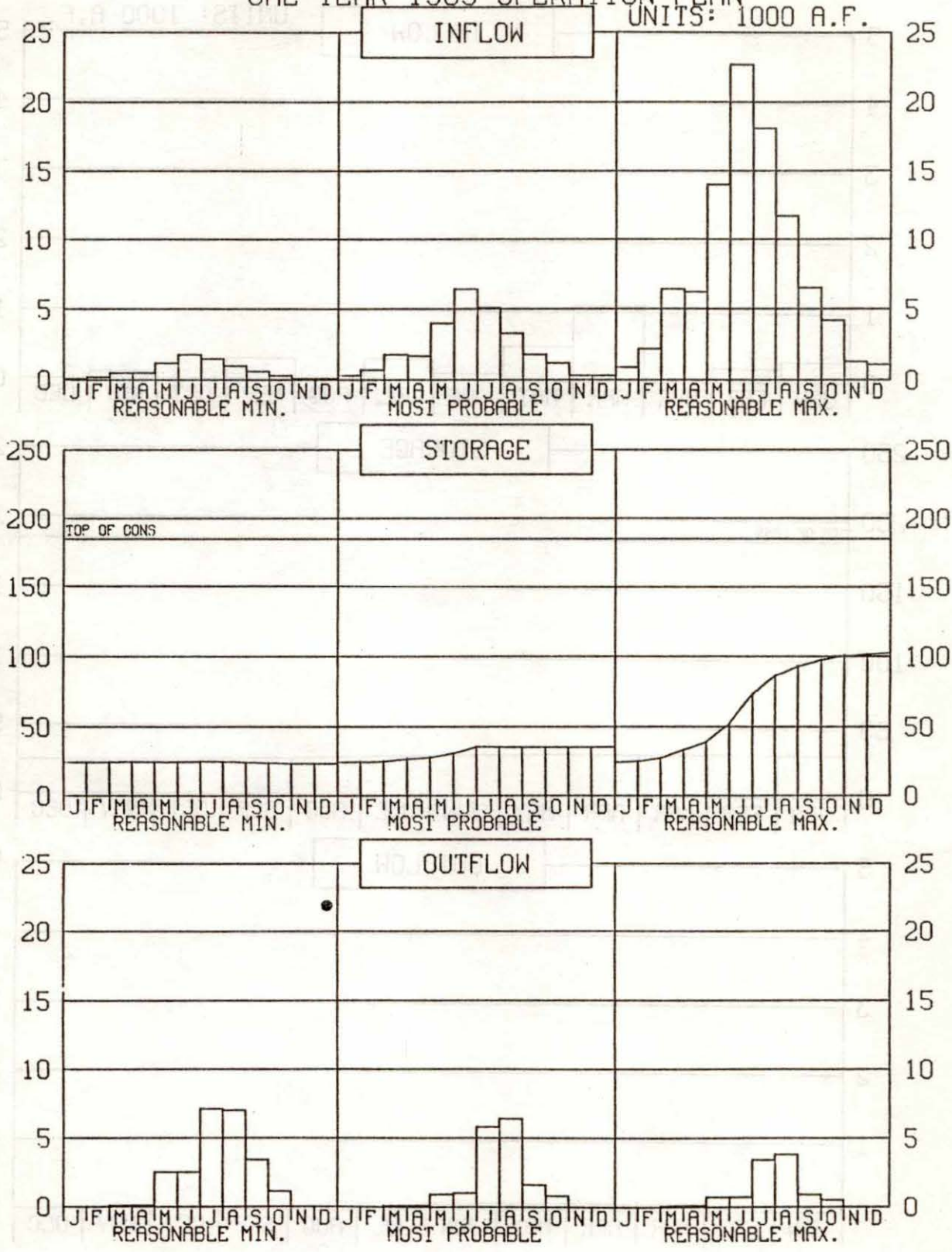
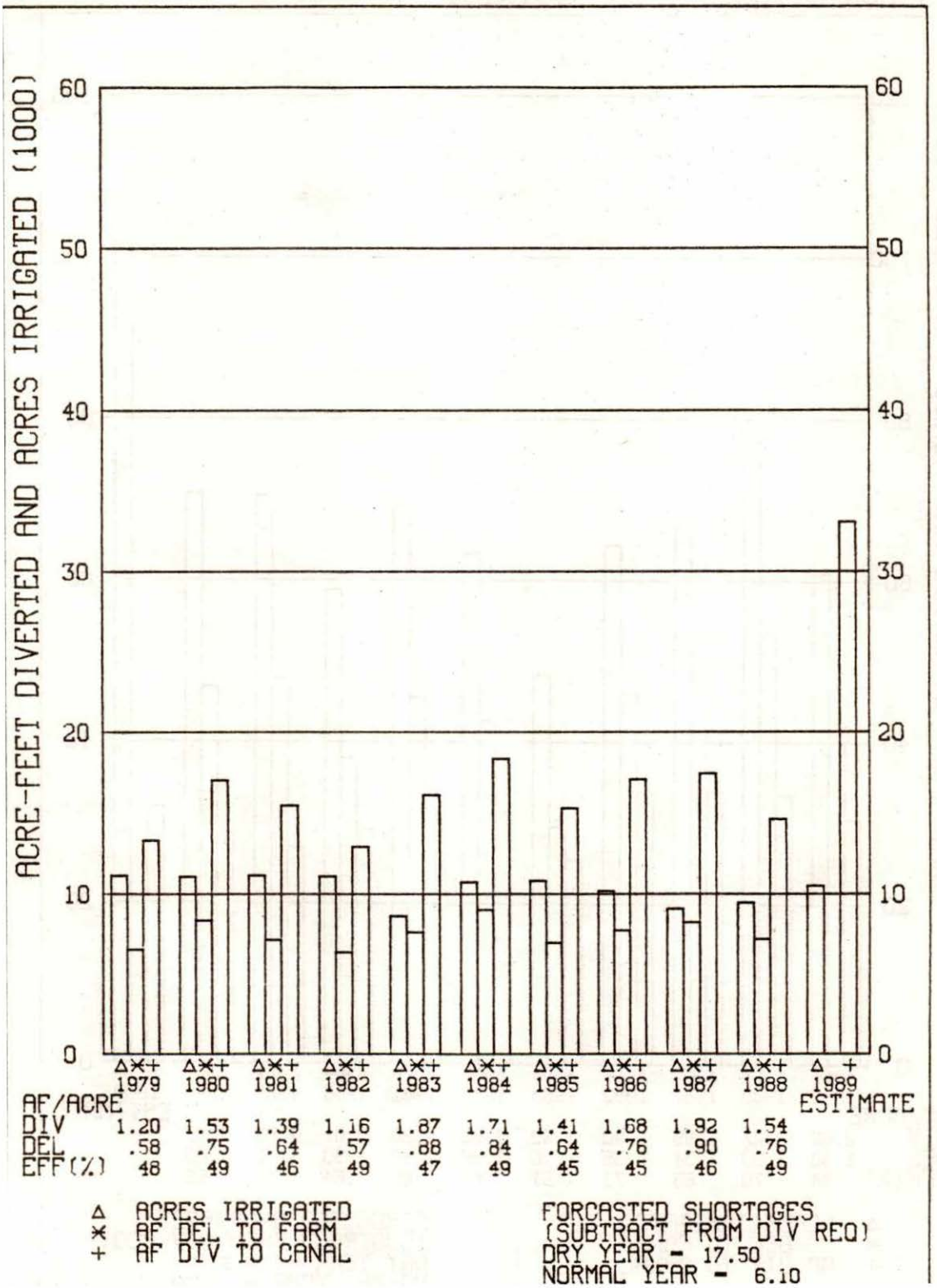


EXHIBIT 17

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
MIRAGE FLATS IRRIGATION DISTRICT



AF/ACRE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
DIV	1.20	1.53	1.39	1.16	1.87	1.71	1.41	1.68	1.92	1.54
DEL	.58	.75	.64	.57	.88	.84	.64	.76	.90	.76
EFF(%)	48	49	46	49	47	49	45	45	46	49

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 17.50
NORMAL YEAR - 6.10

EXHIBIT 18

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
AINSWORTH IRRIGATION DISTRICT

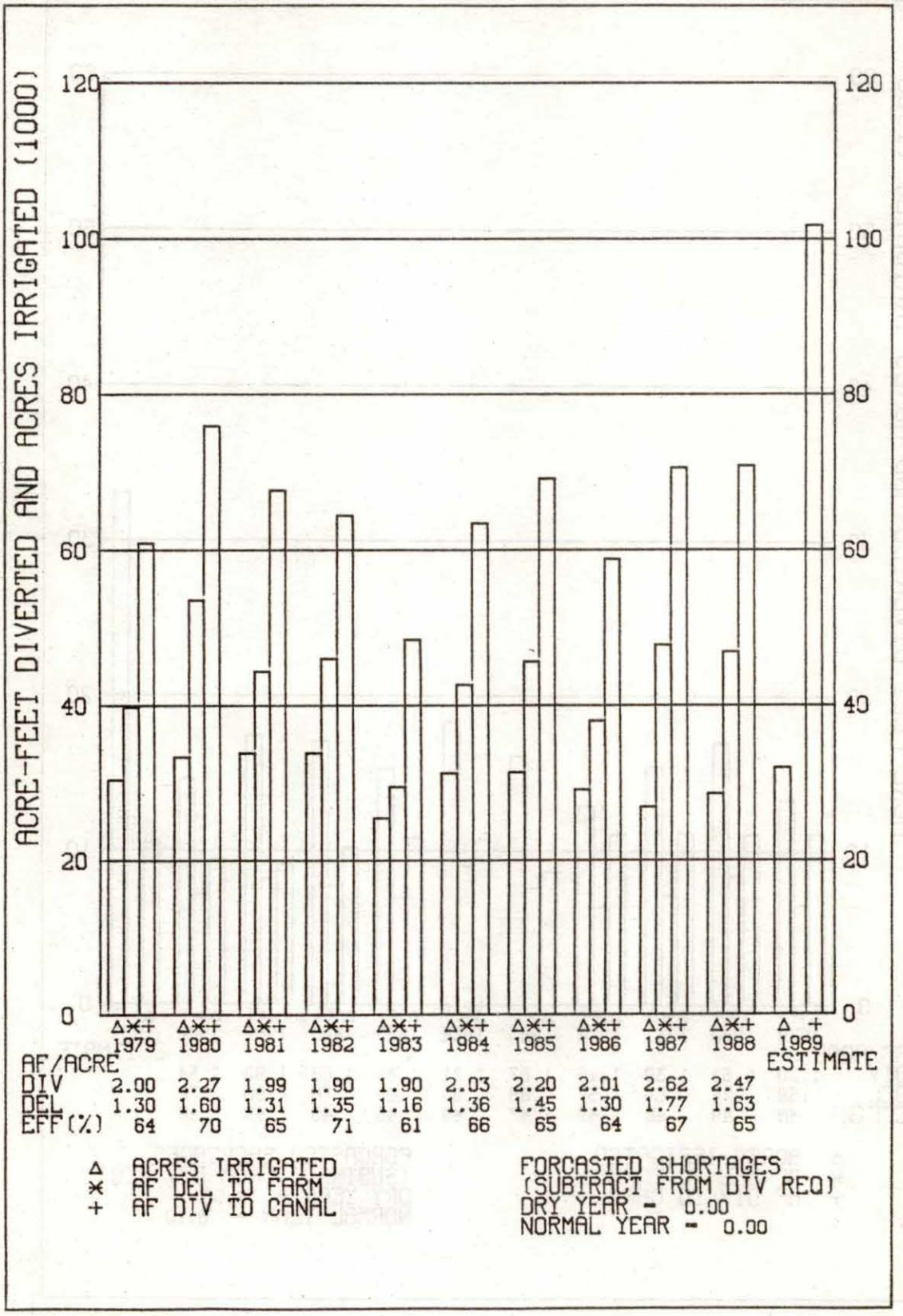


EXHIBIT 19

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
SARGENT IRRIGATION DISTRICT

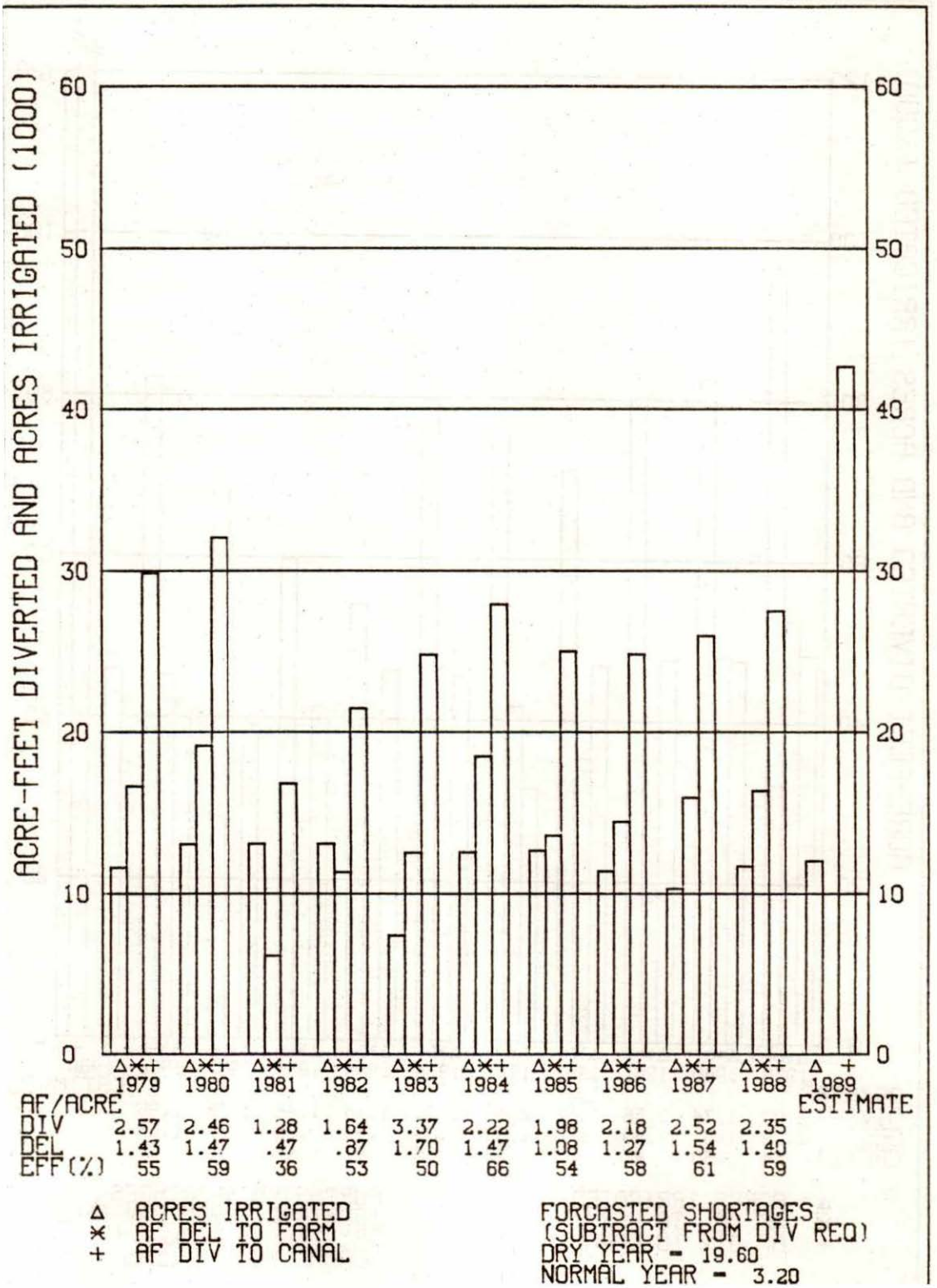
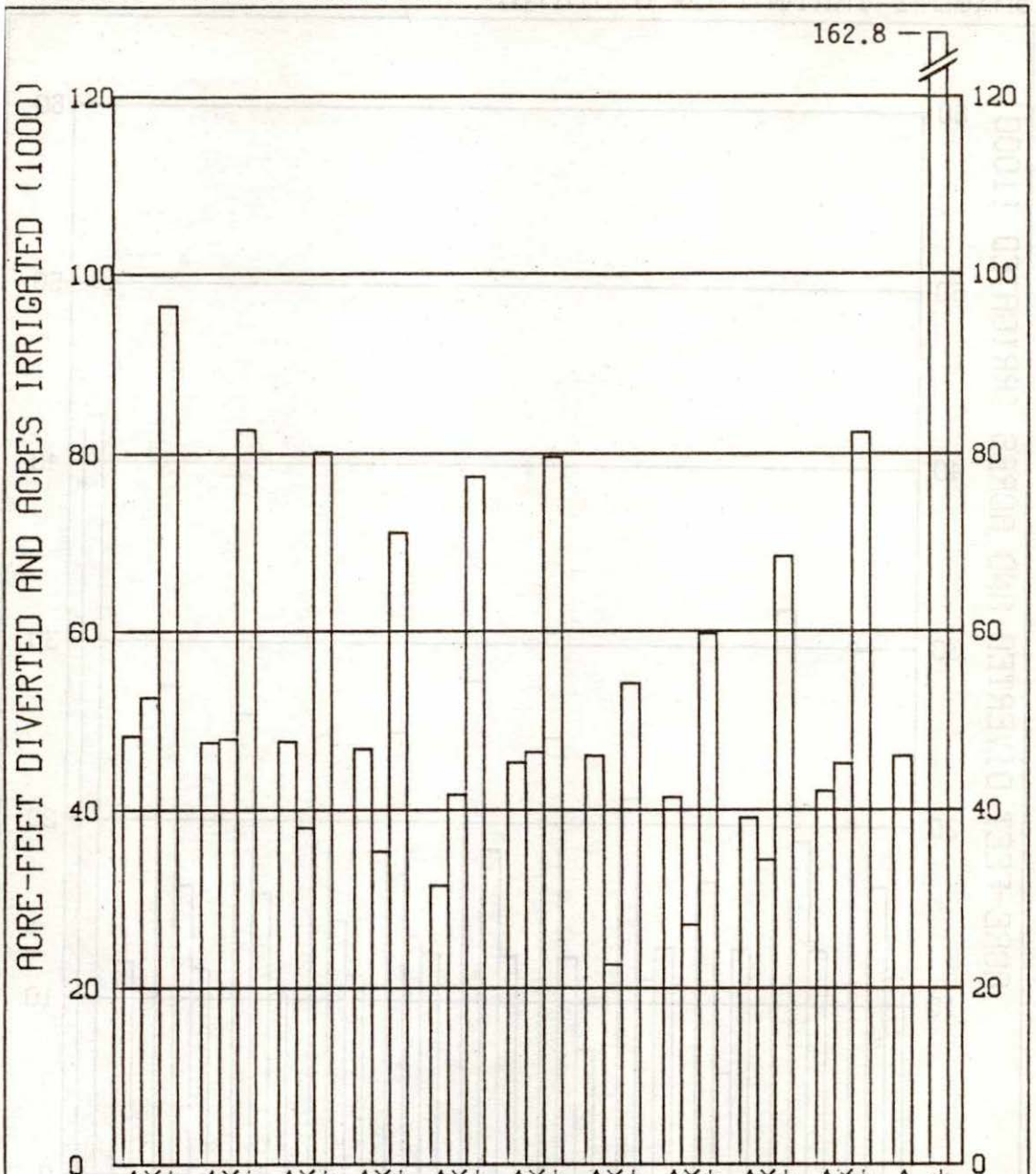


EXHIBIT 20

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
FARWELL IRRIGATION DISTRICT



AF/ACRE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
DIV	2.00	1.74	1.68	1.52	2.45	1.76	1.18	1.44	1.75	1.96
DEL	1.09	1.01	.80	.76	1.32	1.03	.49	.65	.88	1.07
EFF(%)	54	58	47	50	53	58	41	45	50	54

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 74.90
NORMAL YEAR - 12.40

EXHIBIT 21

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
TWIN LOUPS IRRIGATION DISTRICT

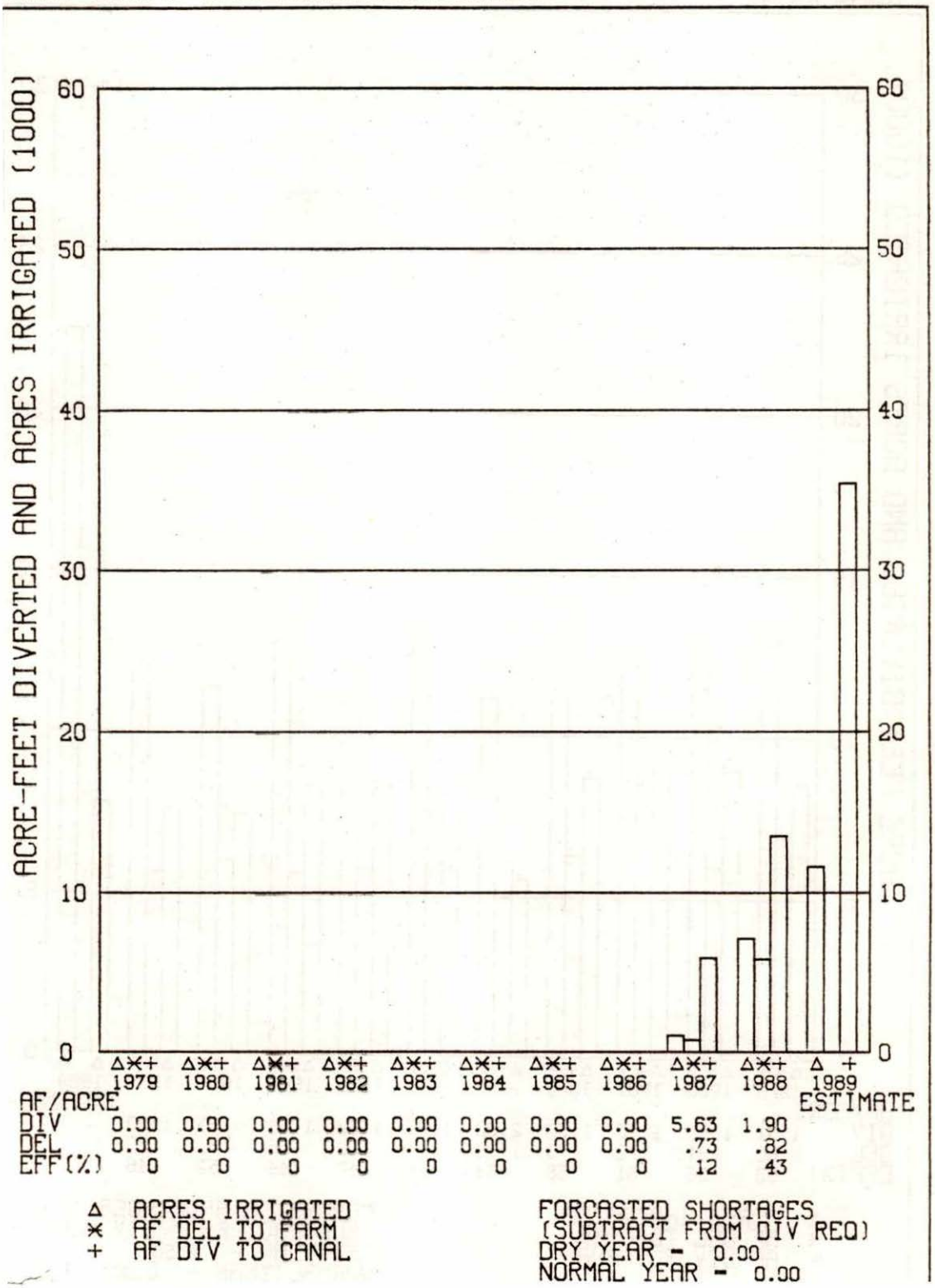


EXHIBIT 22

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
FRENCHMAN VALLEY IRRIGATION DISTRICT

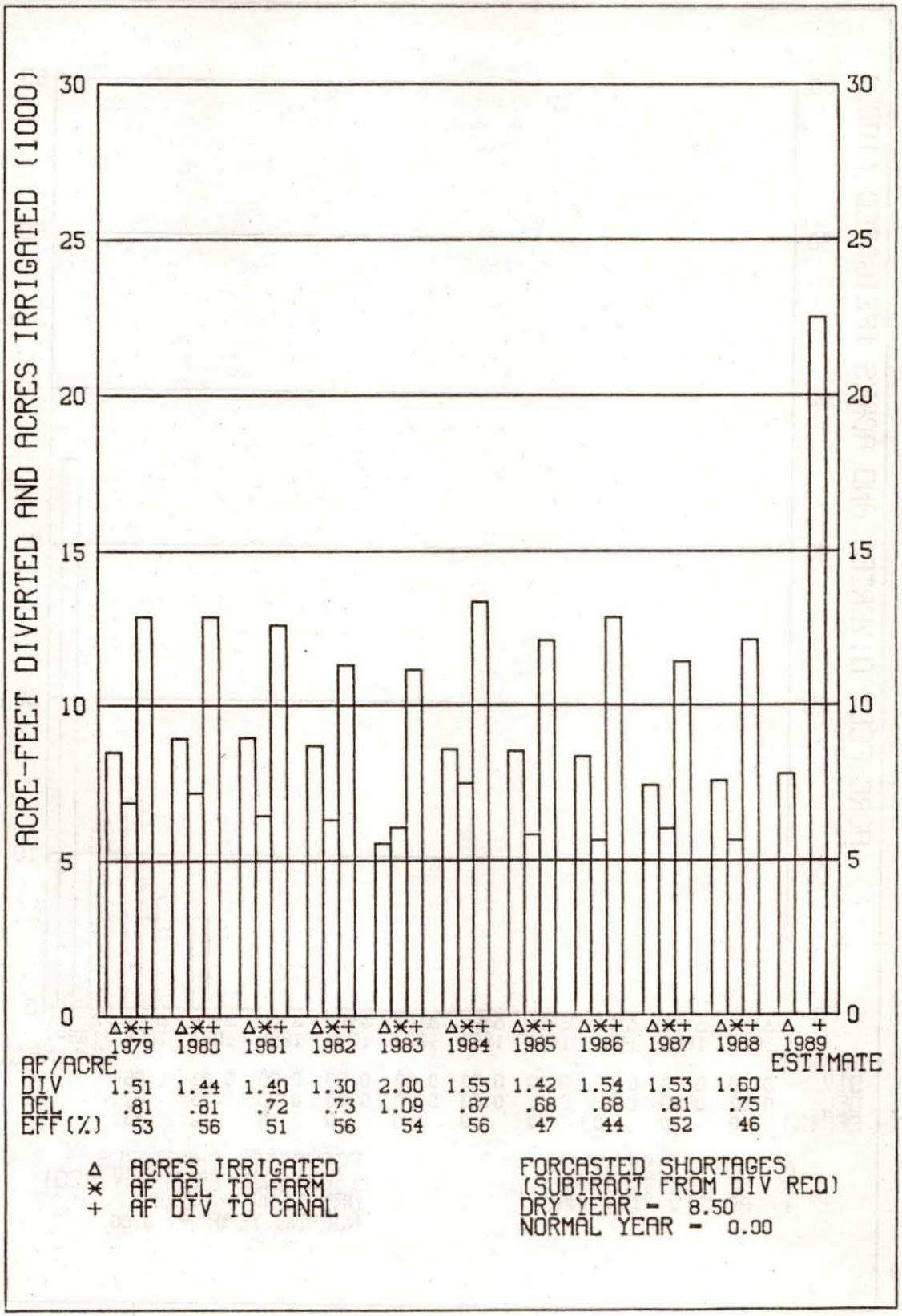


EXHIBIT 23

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED H AND RW IRRIGATION DISTRICT

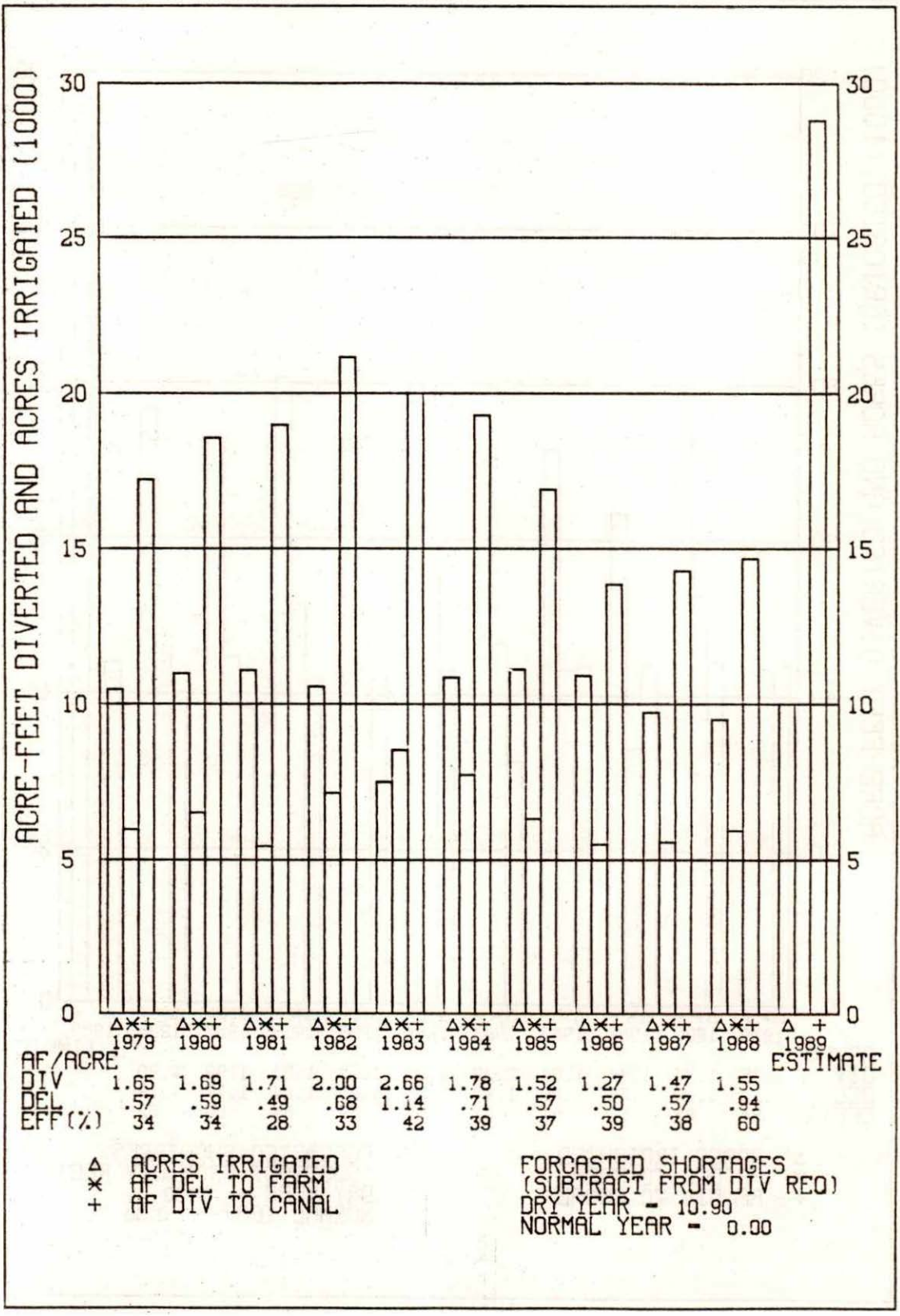
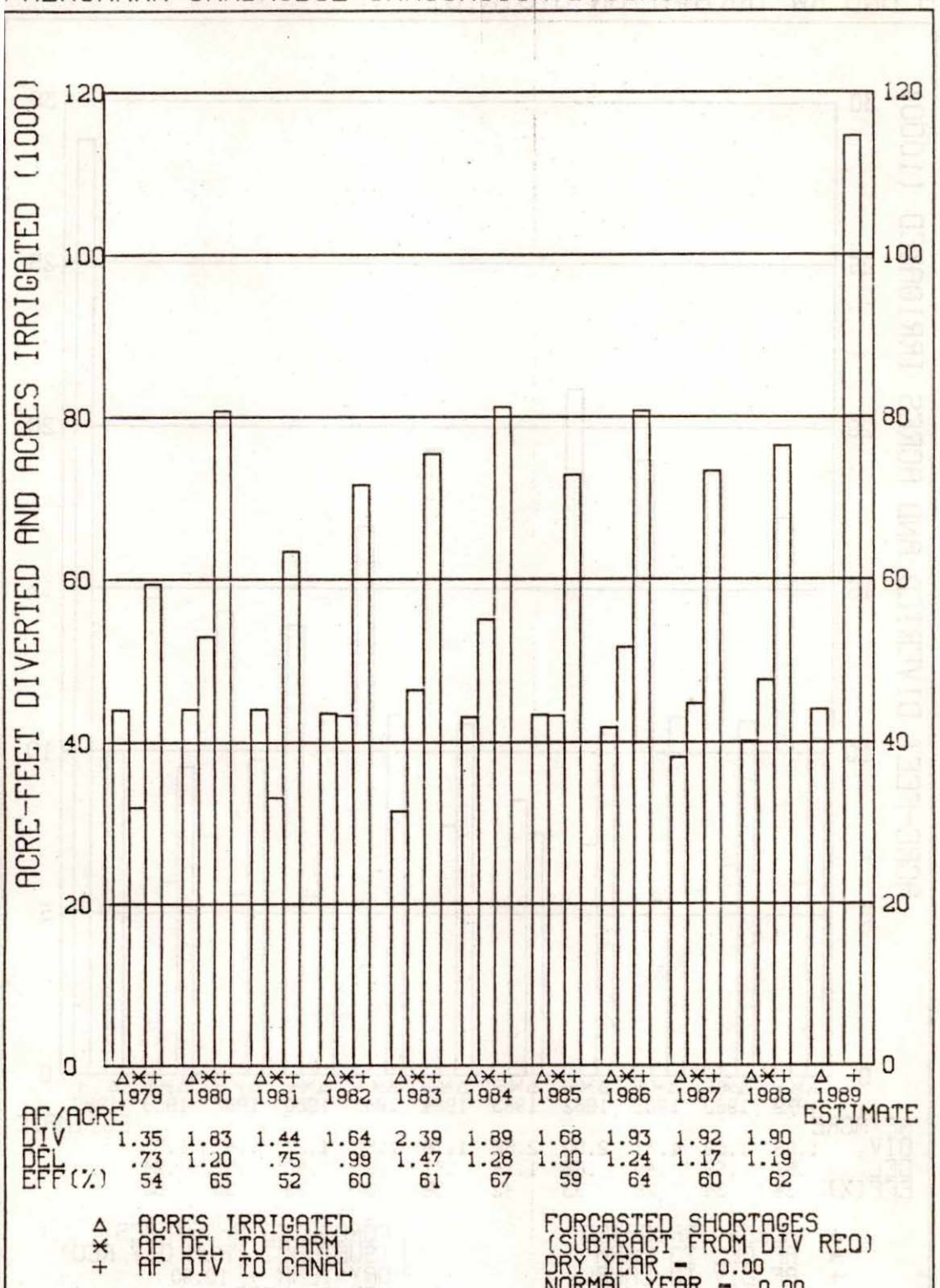


EXHIBIT 24

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
FRENCHMAN CAMBRIDGE IRRIGATION DISTRICT



AF/ACRE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 ESTIMATE
DIV	1.35	1.83	1.44	1.64	2.39	1.89	1.68	1.93	1.92	1.90	
DEL	.73	1.20	.75	.99	1.47	1.28	1.00	1.24	1.17	1.19	
EFF(%)	54	65	52	60	61	67	59	64	60	62	

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 0.00
NORMAL YEAR - 0.00

EXHIBIT 25

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
ALMENA IRRIGATION DISTRICT

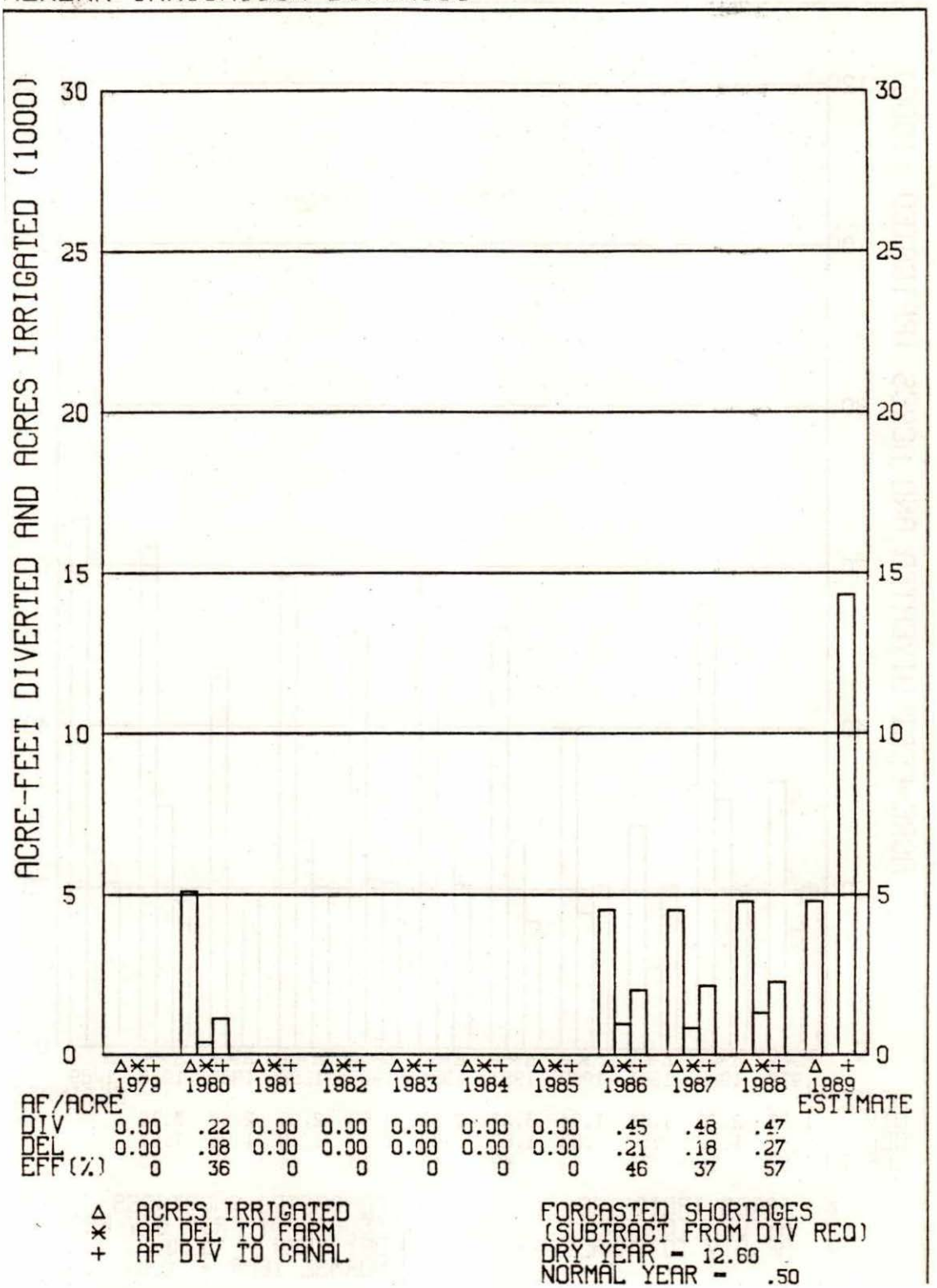


EXHIBIT 26

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
BOSTWICK IRRIGATION DISTRICT IN NEBRASKA

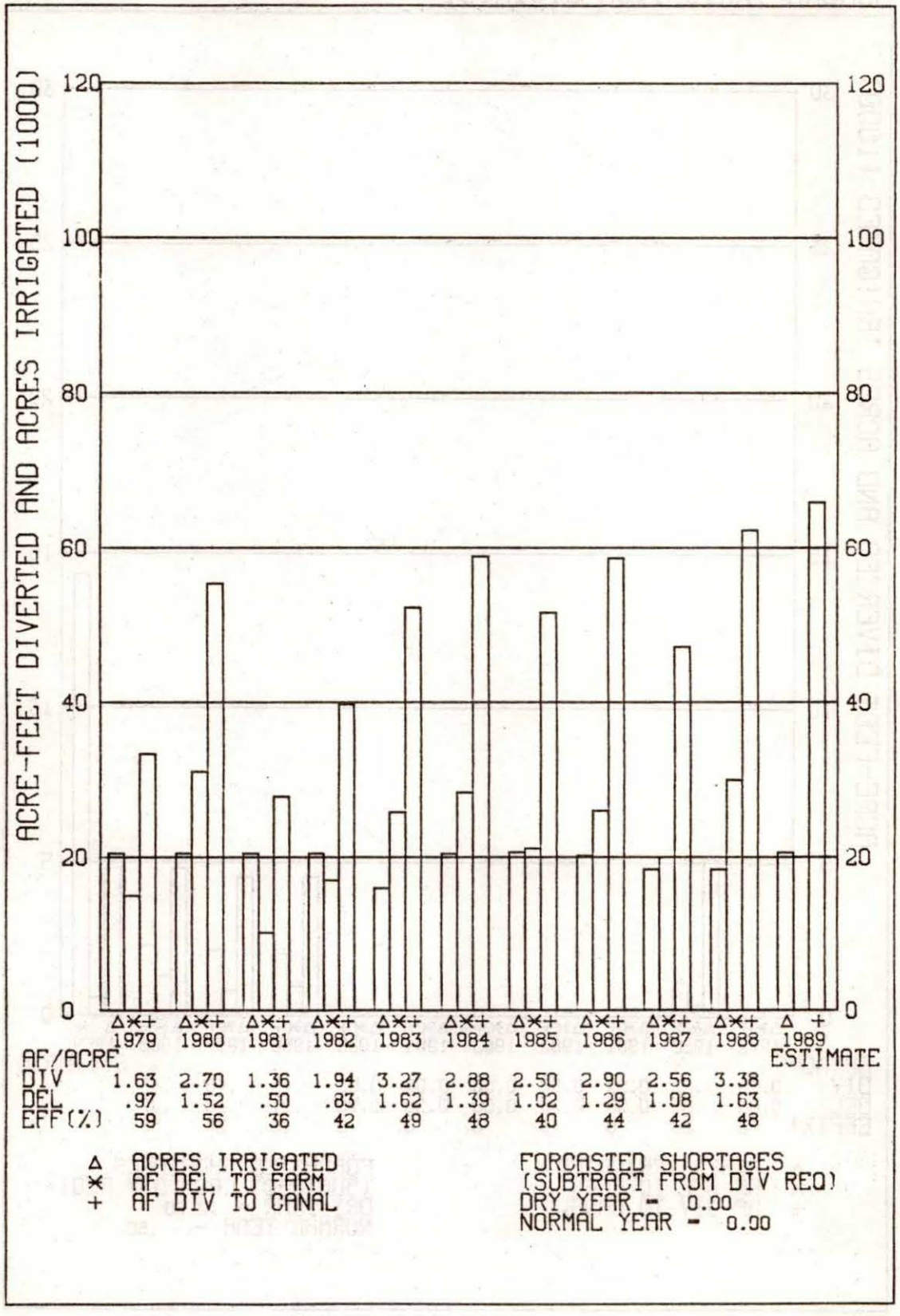
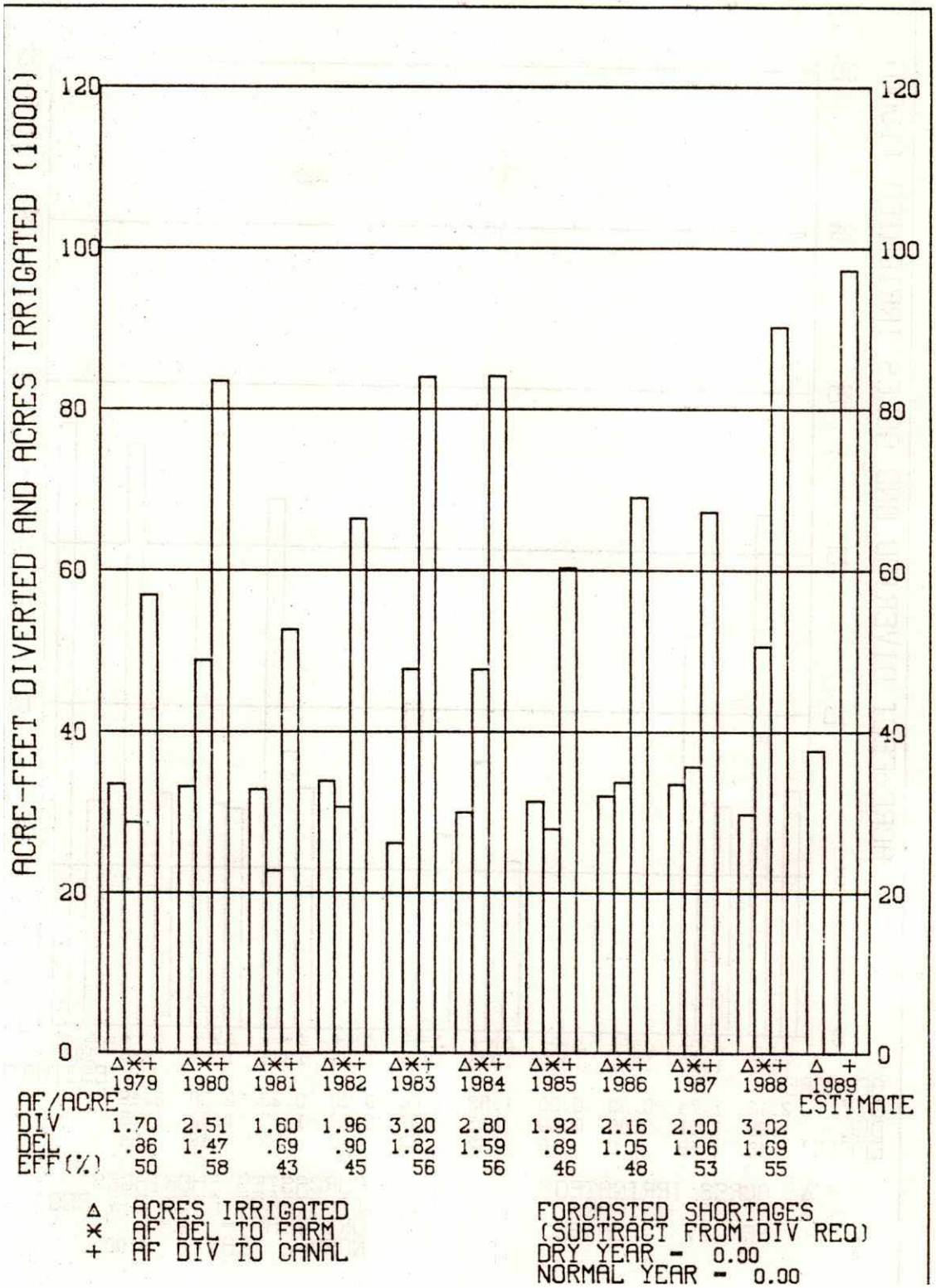


EXHIBIT 27

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
KANSAS-BOSTWICK IRRIGATION DISTRICT



AF/ACRE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 ESTIMATE
DIV	1.70	2.51	1.60	1.96	3.20	2.80	1.92	2.16	2.00	3.02	
DEL	.86	1.47	.69	.90	1.82	1.59	.89	1.05	1.06	1.69	
EFF(%)	50	58	43	45	56	56	46	48	53	55	

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 0.00
NORMAL YEAR - 0.00

EXHIBIT 28

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
KIRWIN IRRIGATION DISTRICT

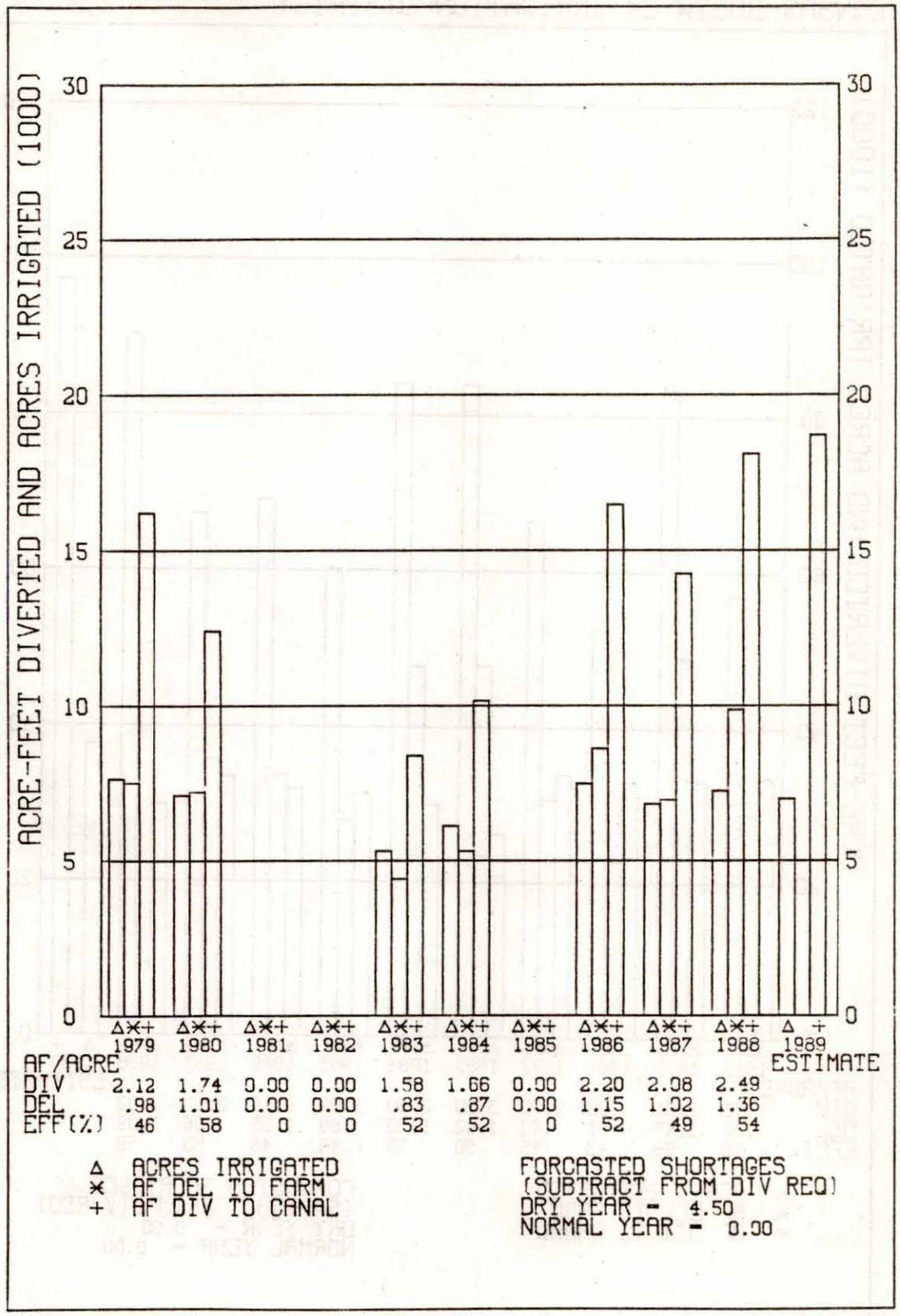
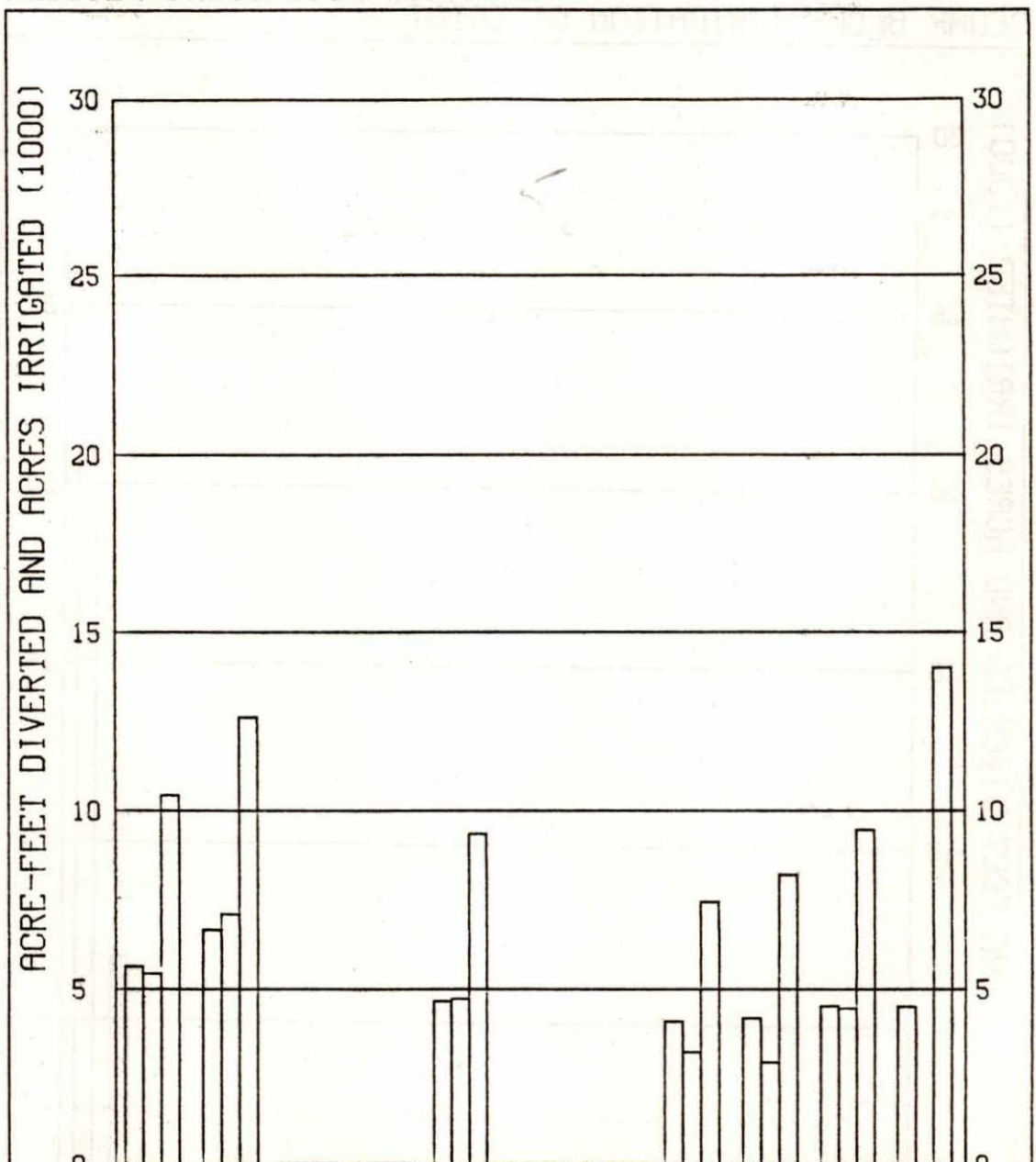


EXHIBIT 29

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
WEBSTER IRRIGATION DISTRICT



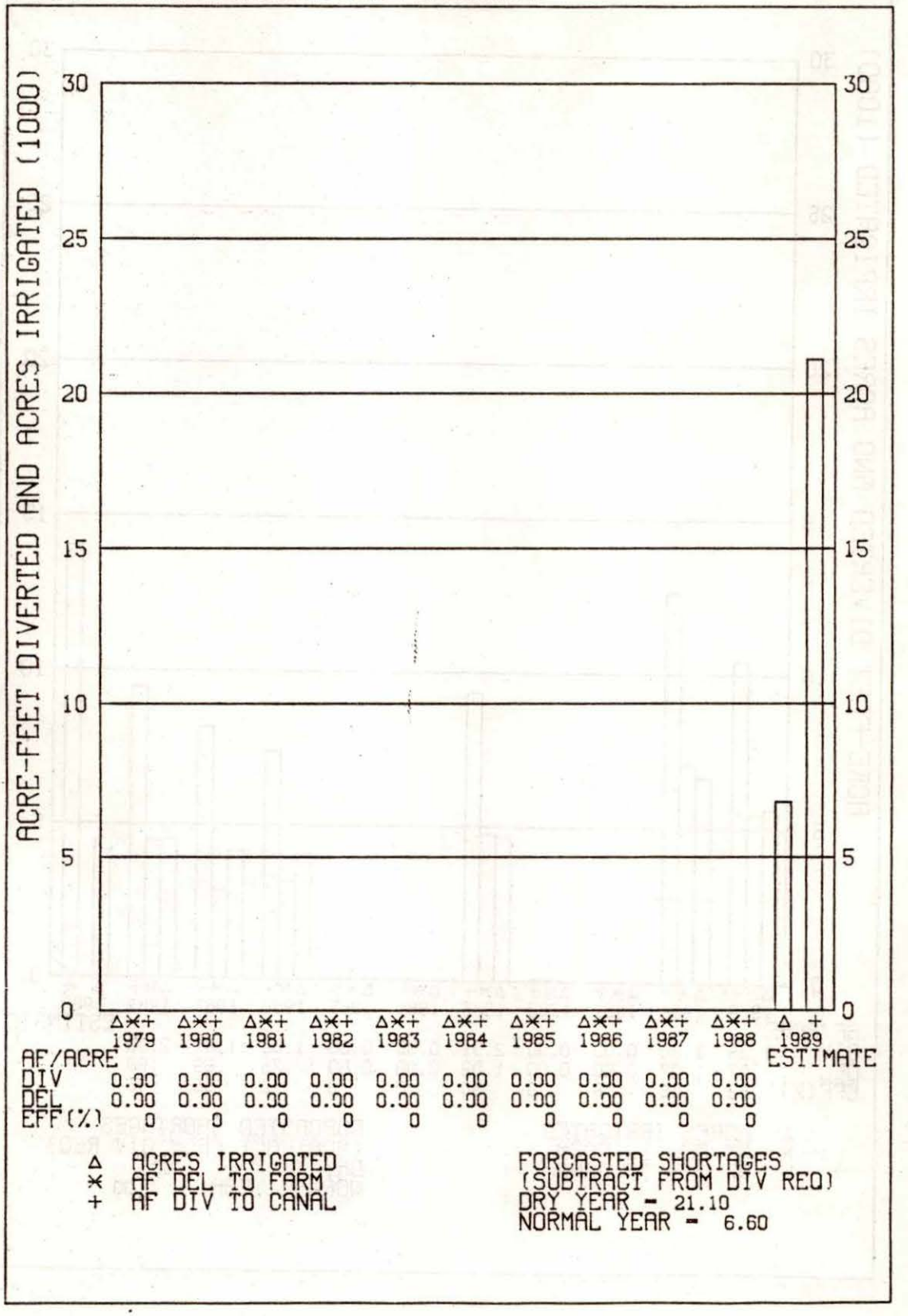
AF/ACRE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 ESTIMATE
DIV	1.85	1.90	0.00	0.00	2.01	0.00	0.00	1.83	1.97	2.09	
DEL	.97	1.07	0.00	0.00	1.02	0.00	0.00	.78	.69	.98	
EFF(%)	52	56	0	0	50	0	0	42	35	46	

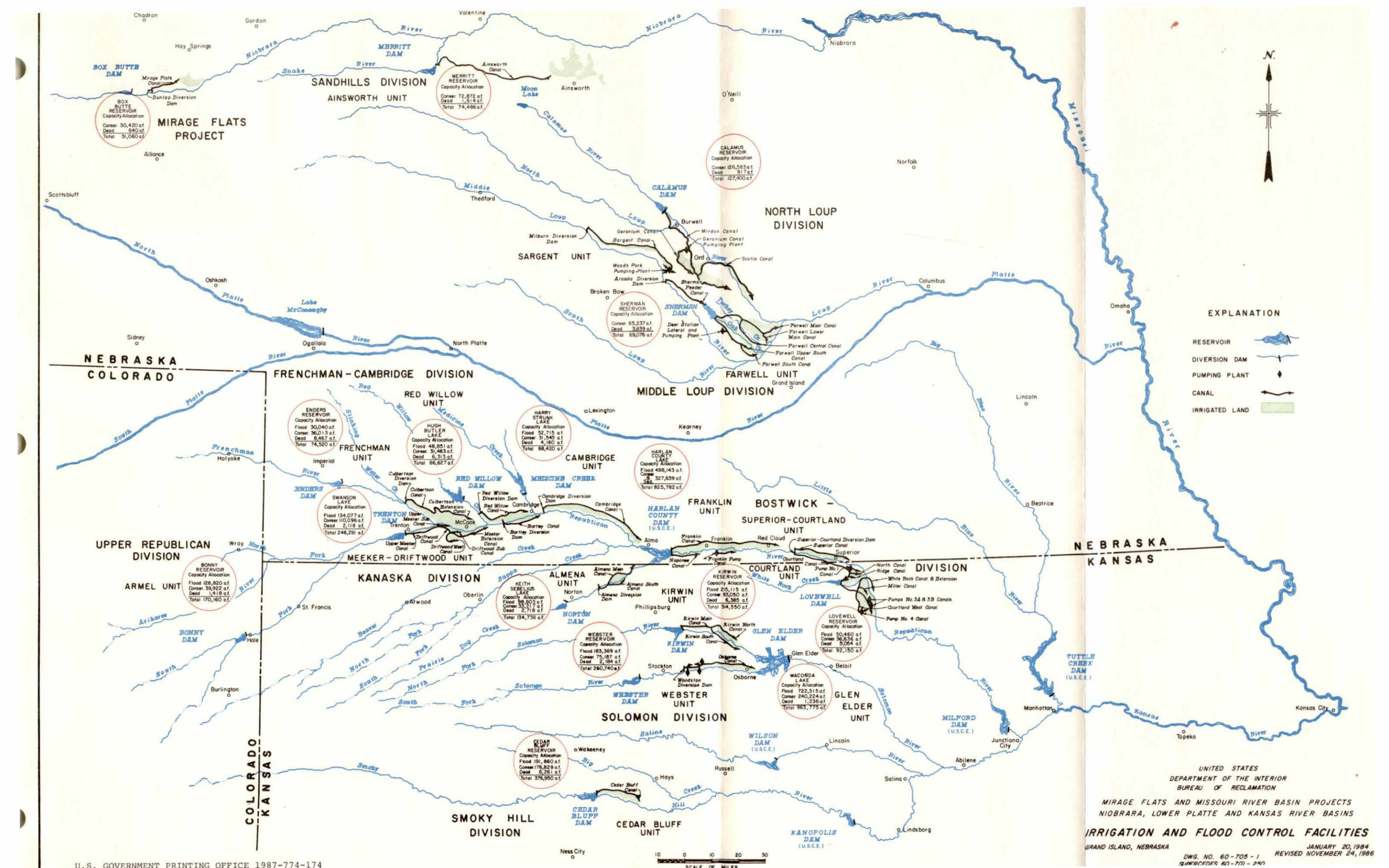
Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 1.30
NORMAL YEAR - 0.00

EXHIBIT 30

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
CEDAR BLUFF IRRIGATION DISTRICT





UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

MIRAGE FLATS AND MISSOURI RIVER BASIN PROJECTS
NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

IRRIGATION AND FLOOD CONTROL FACILITIES

GRAND ISLAND, NEBRASKA

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