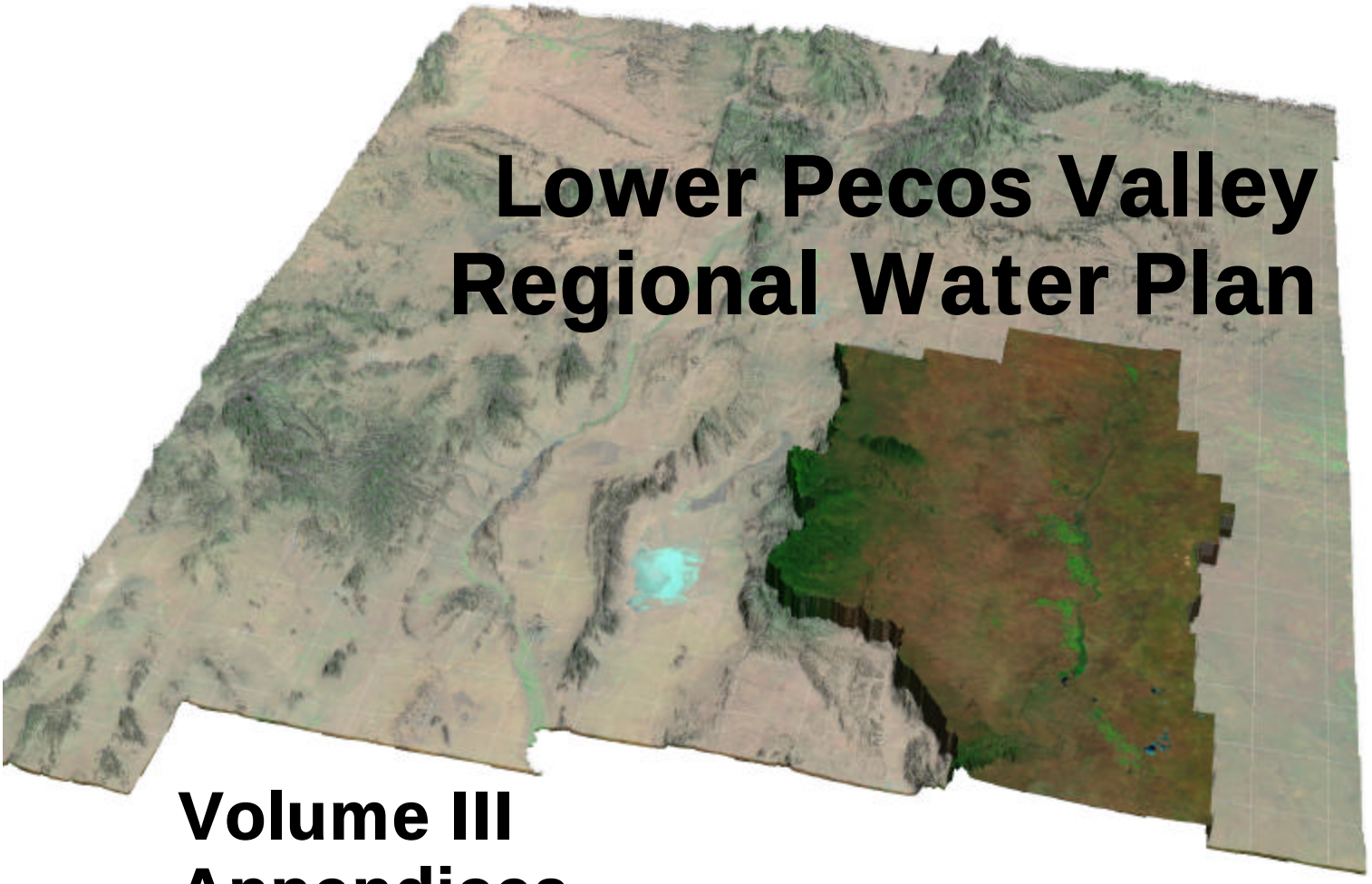
Prepared for:
New Mexico Interstate Stream Commission
Regional Water Planning Program



Lower Pecos Valley Regional Water Plan

Volume III Appendices

JULY 2001

Prepared by:
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P.O. Box 1361
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VOLUME III: APPENDICES

LIST OF APPENDICES

Pecos Valley Water Users Organization and Regional Water Planning for the Lower Pecos Basin

In 1987 the New Mexico Legislature declared that "the future water needs of New Mexico can best be met by allowing each region in the state to plan for its water future" (New Mexico Law 1987, Chapter 182, p. 1038). To support this regional planning effort, the Legislature authorized the ISC to make grants or loans for the purpose of developing regional water planning that will cover a 40-year period.

The Legislature was responding to the growing demand for New Mexico's water by other states. El Paso's threat in the early 1980's, to appropriate New Mexico groundwater to satisfy its growing needs, gave New Mexico an urgent reason to look carefully at its own water needs and how it could keep New Mexico water in New Mexico. Since the courts have determined that water is an item of commerce, a plan showing New Mexico's future need for the water can keep other states from appropriating it.

Since 1987, the New Mexico Legislature has appropriated $1,850,000 for regional water planning. The ISC has funded 22 regional water plans covering most of the state. The ISC envisions a process whereby these plans will be the foundation for a statewide plan.

While the appropriation of New Mexico's water by other states is still a concern, the regional planning effort is also a way to help solve its in-state water problems. PVWUO hopes that the planning process will provide alternatives to litigation or regulatory deadlock by balancing the many claims to water within the planning region.

Public participation is required by the ISC in developing the plan. Public education, understanding and local vision promise to provide the necessary political support to tackle hard questions in determining future water use.

The PVWUO was formed under a joint powers agreement to develop a Regional Water Plan for the Lower Pecos Basin utilizing existing and available information, along with public input and support.

The PVWUO represents water consumers located in the Lower Pecos Drainage Basin. Geographically, the planning region includes all or parts of De Baca, Chaves, Eddy, Lincoln and Otero counties. This is the second largest planning area in the state. Members of the PVWUO consist of primary water consumers, such as local government entities, irrigation districts and development districts, which have a special economic interest in the region's planning and use of water resources. The PVWUO serves as the primary representative body of water interests in the basin and as the regional contact for the ISC and the OSE. The PVWUO, through the regional water planning process, will assist the ISC and other agencies in compilation of water supply and use data and other related data as well as water-related studies. These planning efforts will be conducted in a manner consistent with the Handbook and the guidelines provided by the ISC.

The Lower Pecos Basin's water problems are more complex today than ever before because of additional players, such as endangered species, with their own demands on managing the water resources. Also, an additional impact resulted from the U.S. Supreme Court ruling in Texas v. New Mexico. The U.S. Supreme Court amended the 1947 Compact placing more stringent requirements on the State of New Mexico to deliver water to Texas.

The PVWUO has been awarded a grant to begin the formulation of a Regional Water Plan for the Lower Pecos Basin. This grant will be used to organize and collect data, to recommend action to balance water demands and supply and to conduct public meetings to involve the public in this process. The PVWUO plans a series of public meetings throughout the Lower Pecos River Basin. The first set of meetings are to inform the public of what is required by the PVWUO to qualify for the grant. The grant agreement requires that the PVWUO utilize public input to accomplish portions of the Regional Water Plan as follows:

1. Compile a summary of all existing water supply use data, taking into consideration the quantity and quality of surface and groundwater resources within the basin. This will result in a comprehensive water use inventory for the basin.

2. Utilizing the information from item 1 above and future population projections, we must estimate the future water needs for the next 40 years.

3. By September 30 1996, we must submit to the ISC the above information in a draft report in the statewide format the ISC has established.

The scheduled first round of public meetings will be held at the following locations:

Fort Sumner	7:00 p.m. Tuesday	September 19, 1995	Fort Sumner Community Center
Artesia	1:30 p.m. Wednesday	September 27, 1995	Artesia Central Valley Electric Community Room
Carlsbad	1:30 p.m. Wednesday	October 4, 1995	Eddy County Commission Meeting Room
Roswell	1:30 p.m. Friday	October 6, 1995	Roswell Inn
Hope/Mayhill	7:00 p.m. Tuesday	October 10, 1995	Hope Fire Station
Dexter/Hagerman	7:00 p.m. Tuesday	October 17, 1995	Hagerman High School Auditorium
Lincoln County	10:00 p.m. Thursday	October 24, 1995	Ruidoso Downs Village Hall

The second round of public meetings will be held in about three months to get input on the above items.

After the draft report is completed, a third round of meetings will be held by September 1996 to give the public a chance to comment on the report before it goes to the ISC.

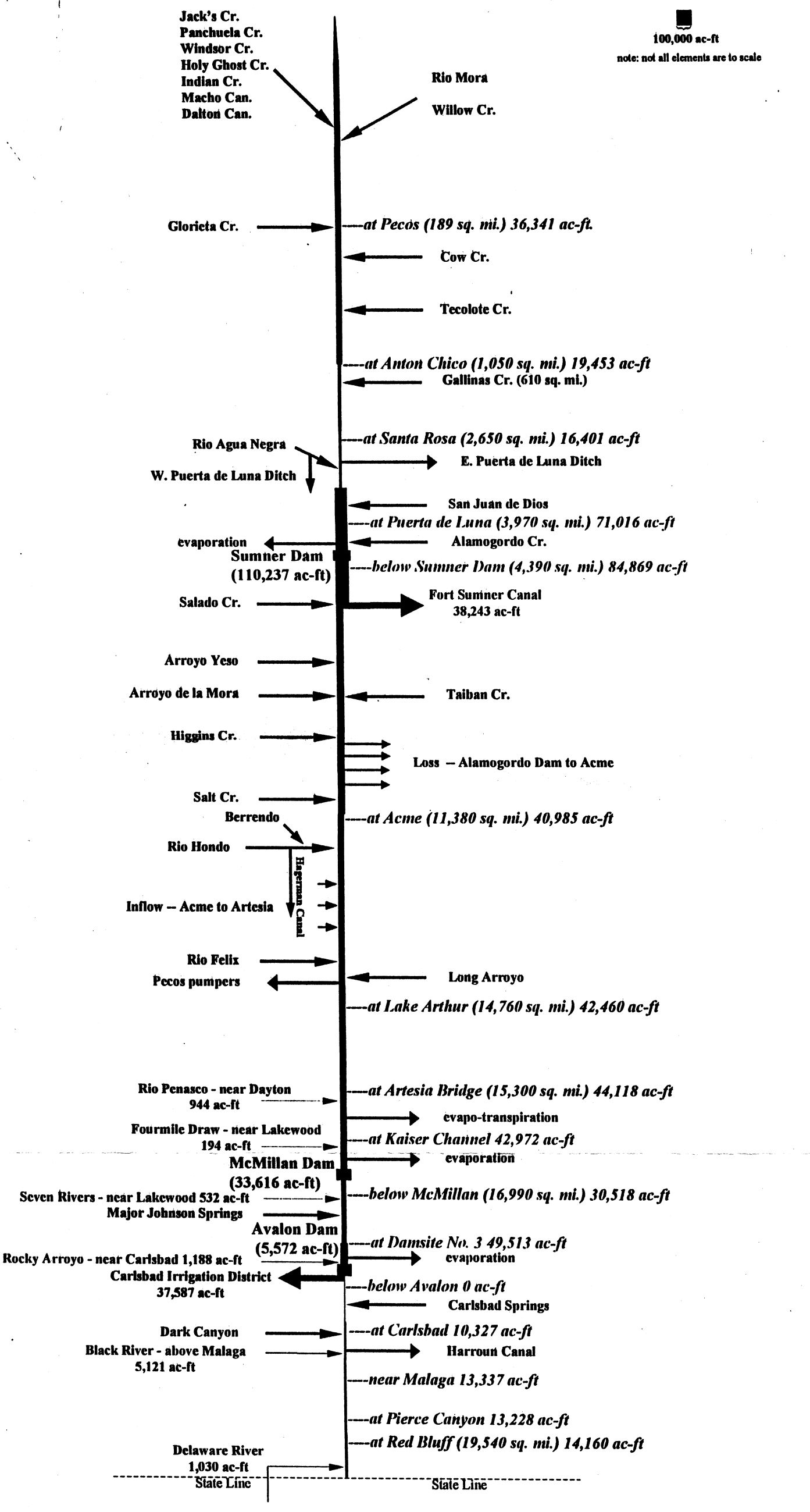
DRIEST YEAR - 1964

(based on flow at the Acme Gage)

Pecos River
Inflows & Outflows
1964

100,000 ac-ft

note: not all elements are to scale

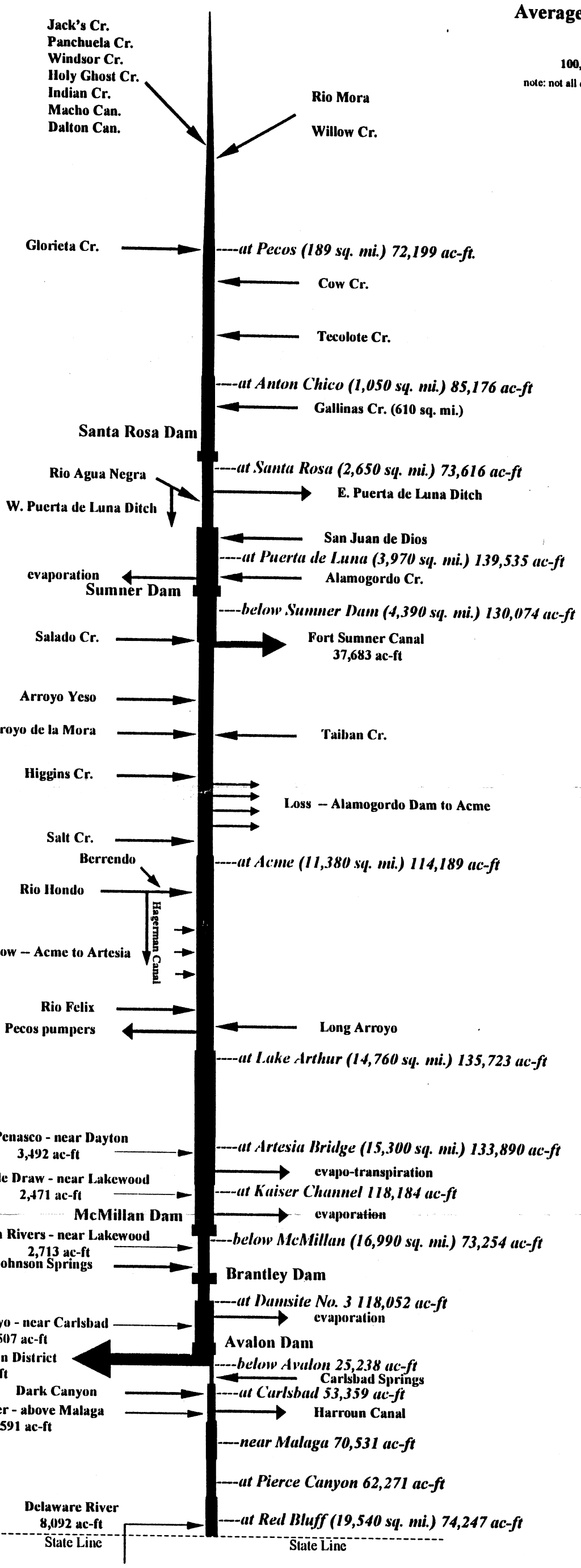


AVERAGE 1[illegible]9-1997

Pecos River
Inflows & Outflows
Average 1949-1997

100,000 ac-ft

note: not all elements are to scale



WETTEST YEA.. - 1941

Pecos River
Inflows & Outflows
1941

100,000 ac-ft

note: not all elements are to scale

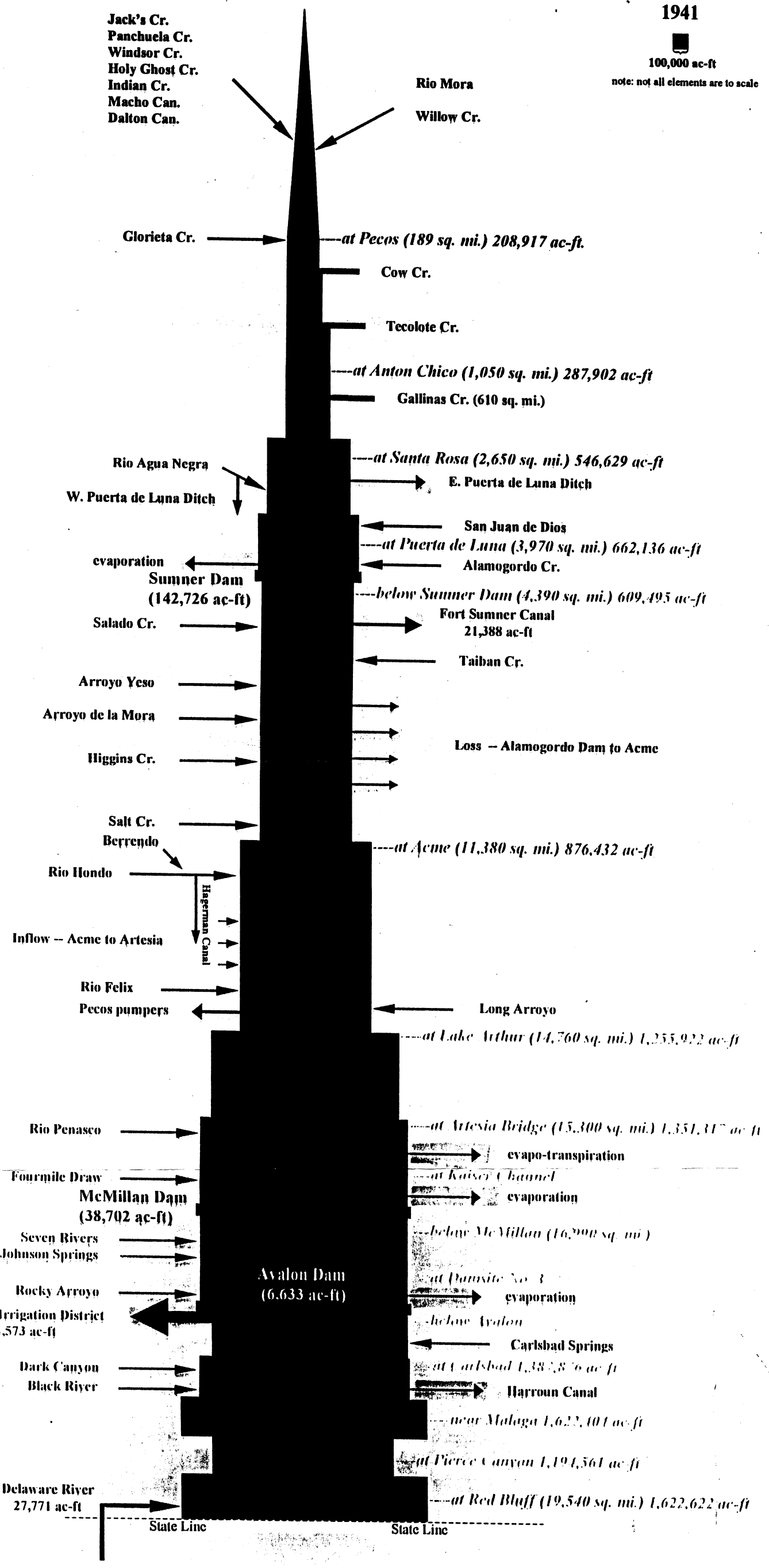
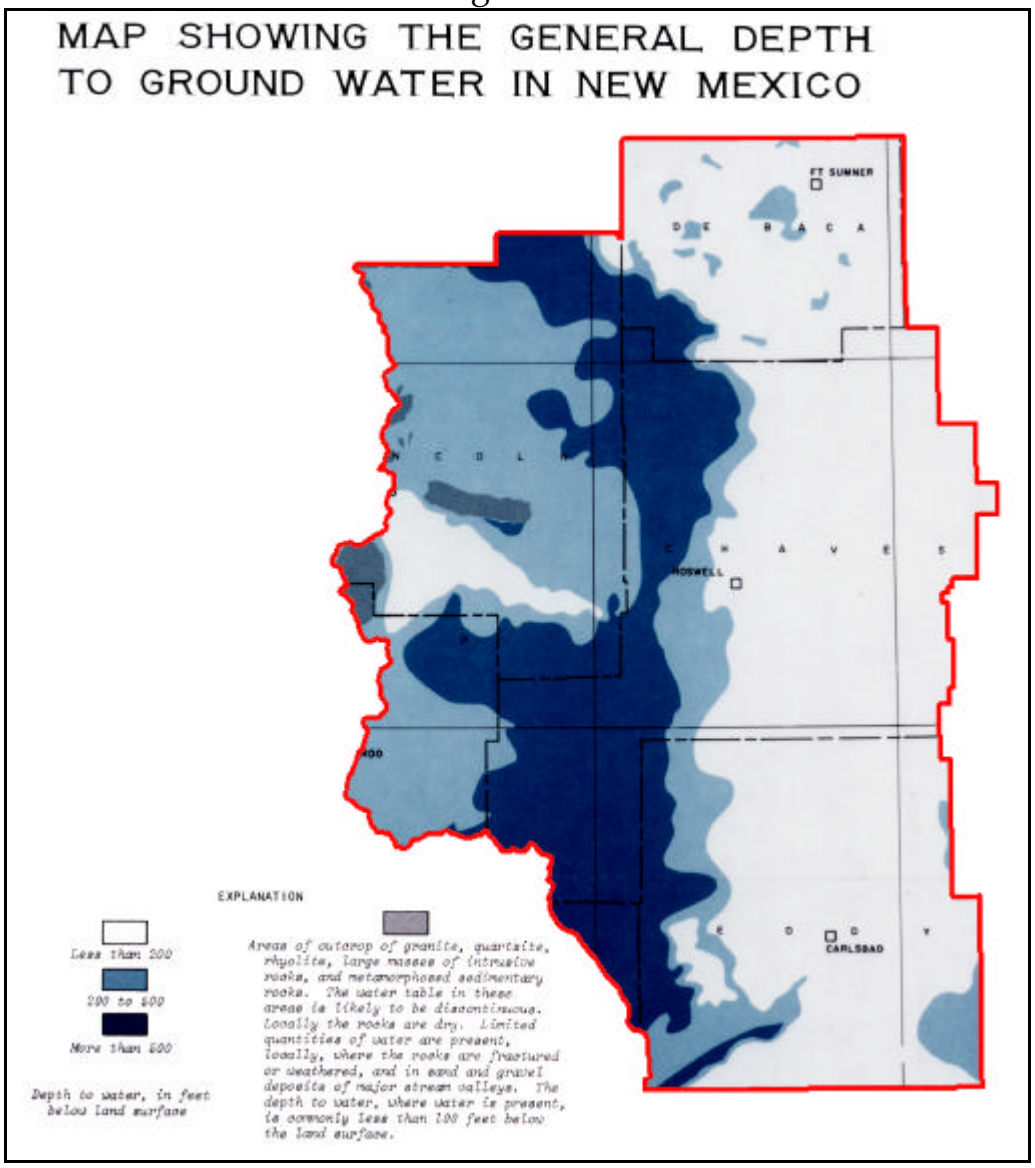
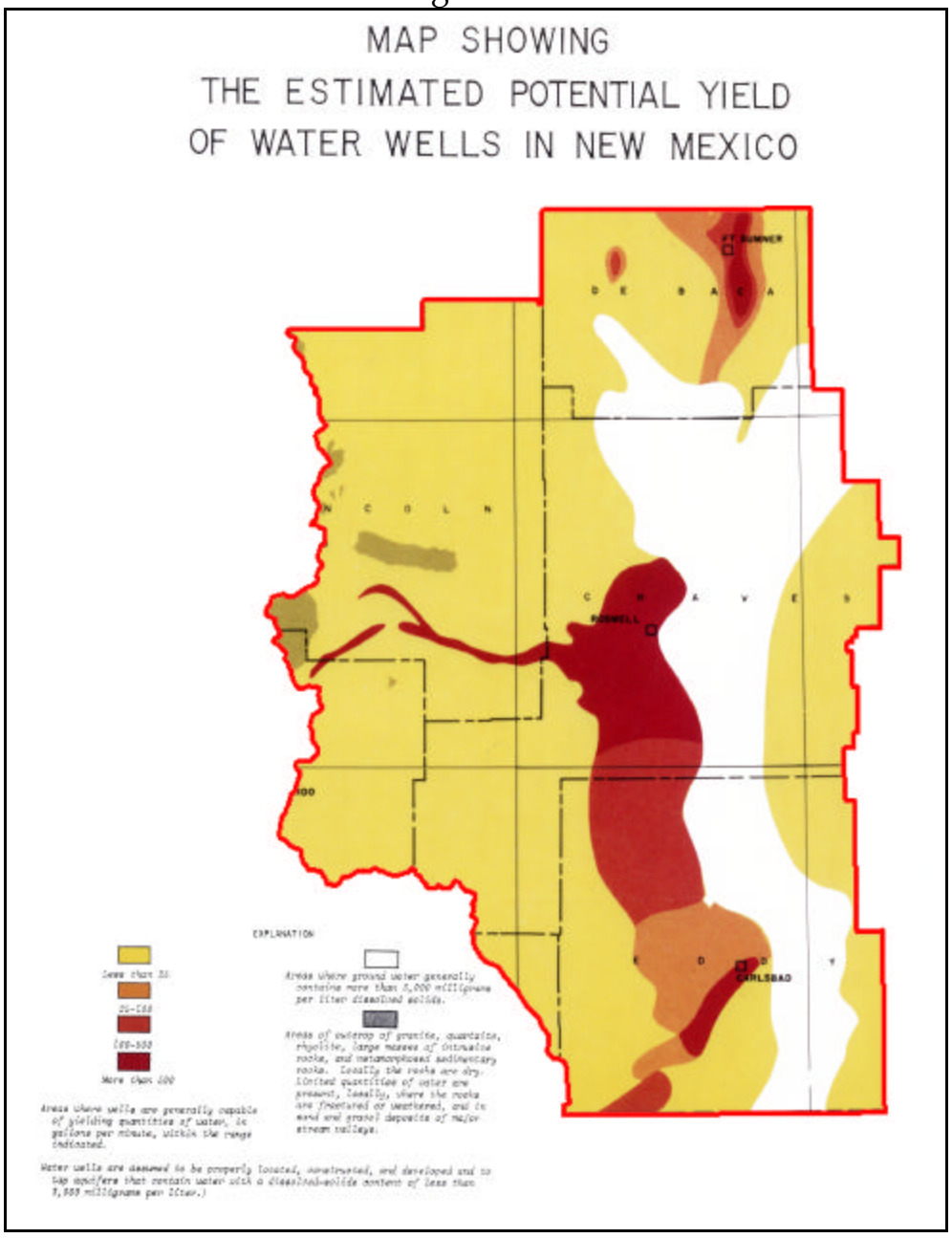


Figure O1



Source: U.S. Geological Survey, 1972, New Mexico Water Resources – Assessment for Planning Purposes.

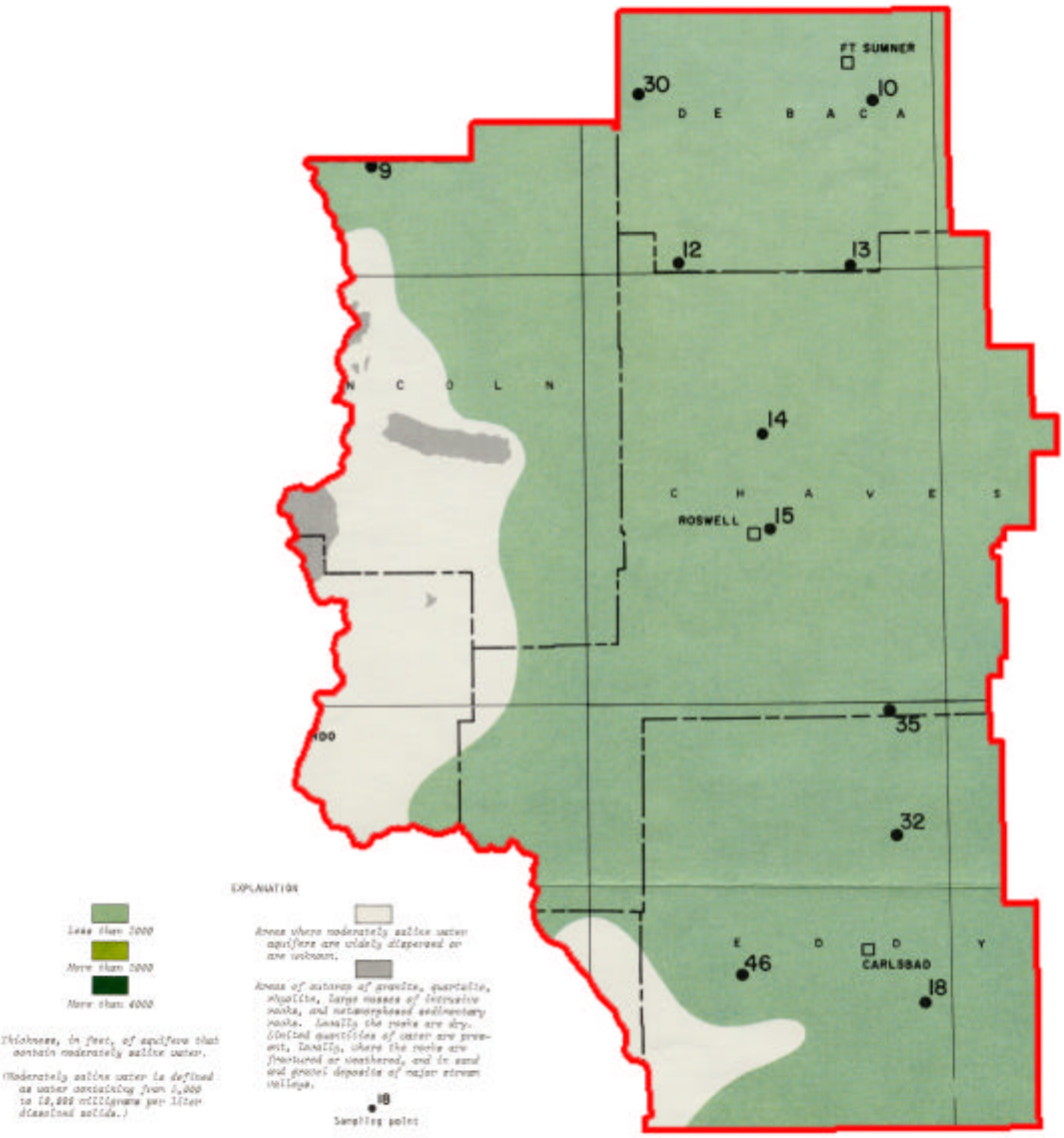
Figure O2



Source: U.S. Geological Survey, 1972, New Mexico Water Resources – Assessment for Planning Purposes.

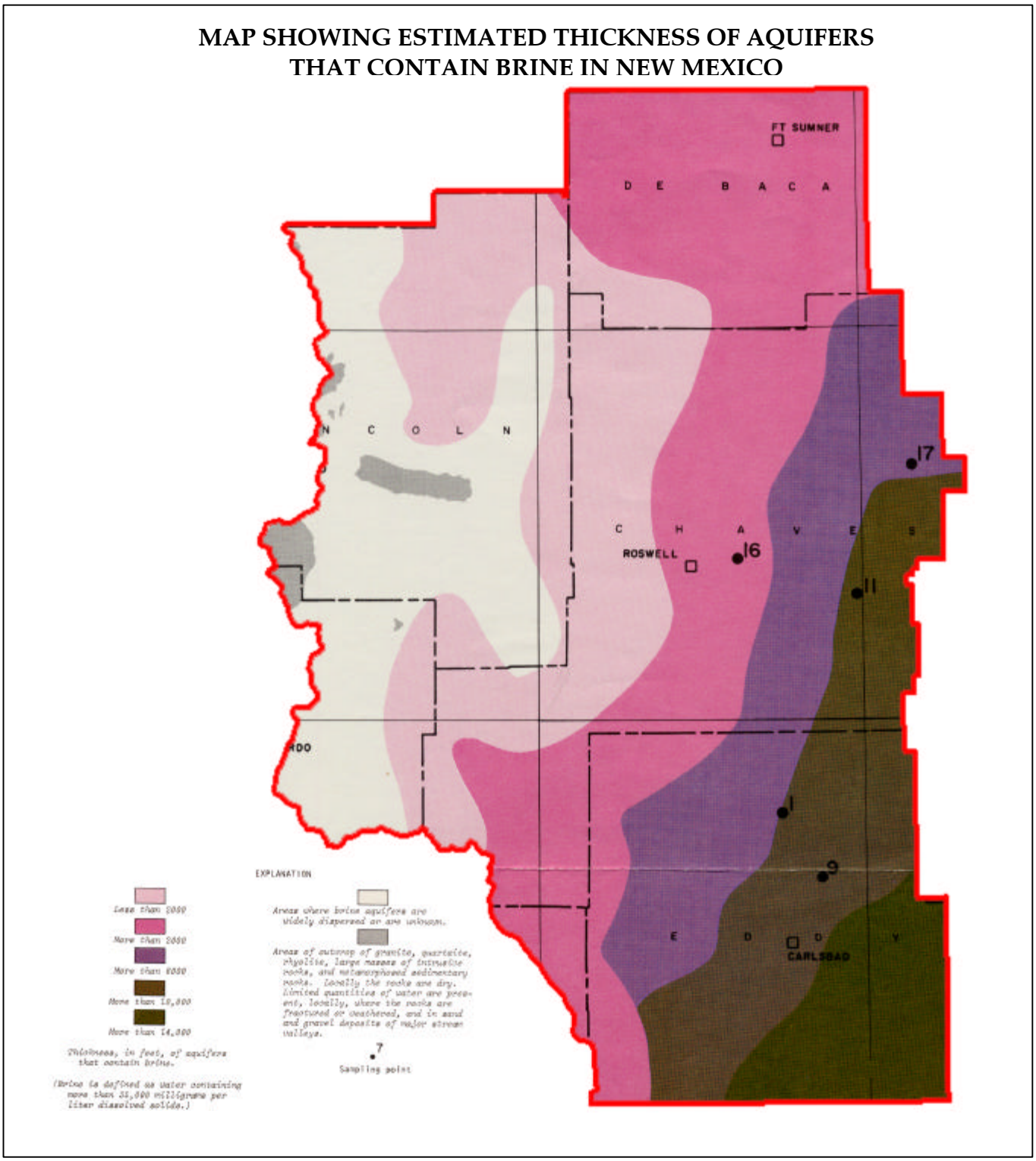
Figure O3

MAP SHOWING ESTIMATED THICKNESS OF AQUIFERS THAT CONTAIN MODERATELY SALINE GROUNDWATER IN NEW MEXICO



Source: U.S. Geological Survey, 1972, New Mexico Water Resources – Assessment for Planning Purposes.

Figure O4



Source: U.S. Geological Survey, 1972, New Mexico Water Resources – Assessment for Planning Purposes.

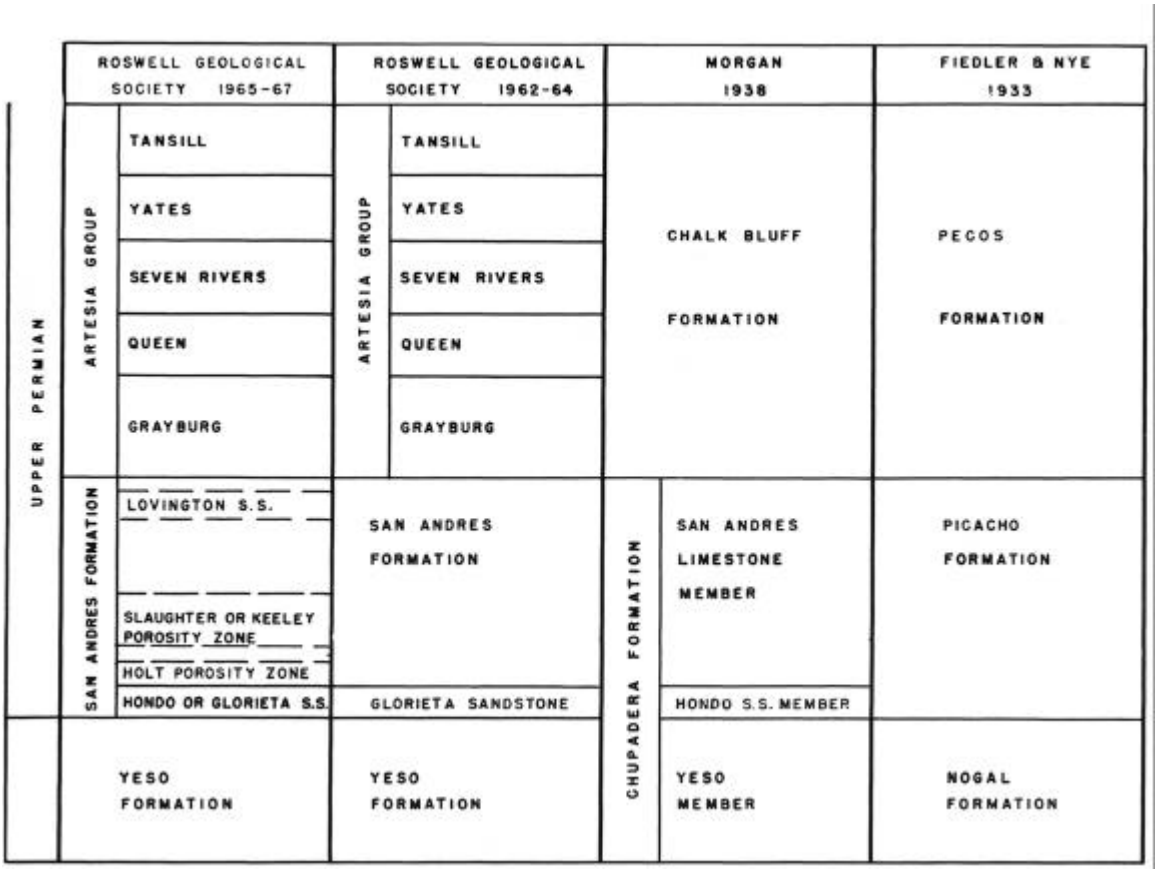
Table N1. Stratigraphy of Rocks in the Planning Area

		Formations & Members			Thick	Description
Holocene and Pleistocene		Assorted surficial deposits			0-300	Valley alluvium, terrace and pediment gravel, caliche soils, aeolian sand, travertine
Pleistocene-Pliocene		Gatuna Formation			0-200	Sandstone, sand gravel, siltstone, limestone, red, brown, tan, gray, yellowish
Oligocene		Sierra Blanca Volcanics			700-4,000	Andesite breccia and tuff; some flows
Paleocene		Cub Mountain Formation			500-2,000	Sandstone, mudstone, conglomerate, arkose; white, buff, lavender, purple, maroon
Cretaceous		Mesaverde Formation			500-1,500	Sandstone, shale, coal, conglomerate; buff, gray, black
		Mancos Shale			400-700	Shale, siltstone, with local thin sandstone and limestone; black, grayish-black
		Dakota Sandstone			100-150	Sandstone, conglomerate, black shale; gray to tan
Upper Triassic		Chinle Shale			0-300	Mudstone with some claystone and thin sandstone; reddish brown
		Santa Rosa Sandstone			0-300	Sandstone, conglomerate, mudstone; brown, buff, lavender
PERMIAN	Ochoan Series	Dewey Lake Formation			200-250	Sandstone, siltstone; orange-brown; commonly laminated
		Rustler Formation: Upper Member			150-200	Dolomite, gypsum, mudstone, white, red-brown, green, gray, deep orange; Magenta dolomite at base
		Lower Member			100-250	Dolomite, gypsum, mudstone, sandstone; white, red-brown, gray, green; salt in subsurface; Culebra dolomite at base.
		Salado Formation			0-2,500	Gypsum, mudstone, thin local dolomite; white, red, brown, green, deep orange; breccia residue at surface, thick salt, potash in subsurface
		Castile Formation Upper Member* (surface)			1,000±	Gypsum (anhydrite), salt; white, gray
		Lower Member (surface)			1,000±	Laminated gypsum (anhydrite) and limestone, laminated limestone, laminated gypsum; gray, black, white
	Guadalupian Series	Tansill Formation	Capitan Lst.†	Bell Canyon Fm.*	200-300	Dolomite and siltstone (south); dolomite, gypsum, and anhydrite (north); Ocotillo siltstone tongue near exposed top
		Yates Formation			250-350	Siltstone, sandstone, dolomite, limestone and gypsum (south); gypsum, siltstone and thin dolomite (north)
		Seven Rivers Formation			450-600	Dolomite, siltstone (south); gypsum and siltstone (north)
		Queen Formation	Goat Seed Dol.†	Cherry Canyon Fm.*	200-400	Dolomite and sandstone (south); gypsum, red mudstone, dolomite (north); Shattuck member near top
		Grayburg Formation			250-450	Dolomite and sandstone (south); gypsum, mudstone, dolomite (north)
	Leonardian Series	San Andres Formation: Fourmile Draw Member			0-700	Dolomite, gypsum, reddish mudstone; sandstone locally at top; thin-bedded
		Bonney Canyon Member			0-300	Dolomite, local limestone; gray, light-gray, local black; thin-bedded
		Rio Bonito Member			250-350	Dolomite, limestone, sandstone (Glorieta); gray, brownish gray; thick-bedded
		Yeso Formation			0-1,400	Sandstone, siltstone, dolomite, gypsum; tan, red-yellow, gray, white
Precambrian		Syenite, gneiss, and diabase				

* Delware basin facies only
† Reef facies only

Source: Kelley, V.C., 1971, Geology of the Pecos Country, Southeastern New Mexico: New Mexico Bureau of Mines and Mineral Resources, Memoir 24.

Figure N1. Stratigraphic Terminology of Upper Permian Rocks in the Planning Area



Source: Kinney, E.E., Nations, J.D., Oliver, B.J., Wagner, P.G., Siwula, T.A. and Renner, R.E., 1968, A Study of the Roswell Artesian Basin: Roswell Geological Society.

Figure N2. Hydrostratigraphy in the Roswell Basin

Era	System	Series	Stratigraphic unit	Unit thickness (feet)	Physical characteristics	Hydrogeologic unit		Saturated thickness (feet)	Hydrologic characteristics
Cenozoic	Quaternary	Holocene / Pleistocene	Alluvium	0 – 300	Unconsolidated gravel, sand, silt, and clay	Roswell Basin aquifer system	Alluvial aquifer	0 – 300	Water-table aquifer. Very permeable. Wells may yield more than 2,000 gallons per minute
Paleozoic	Permian	Upper	Tansil, Yates, and Seven Rivers Formations, undivided	900 – 1,200	Dolomite, limestone, and gypsum interbedded with sandstone and siltstone		none	—	Generally does not yield water to wells. Where permeable, may yield saline water
			Queen and Grayburg Formations, undivided	400 – 800	Dolomite and sandstone interbedded with siltstone and gypsum		Upper confining unit	0 – 800	Generally low permeability except where fractured or where dissolution of gypsum has created solution openings
			San Andres Limestone and Glorieta Sandstone, undivided	700 – 1,500	Limestone, dolomite, sandstone and gypsum		Carbonate aquifer	0 – 500	Very permeable aquifer present in solution openings of middle to upper part of San Andres Limestone and lower part of Grayburg Formation. Wells may yield more than 3,000 gallons per minute
		Lower	Yeso Formation	1,200 – 2,400	Sandstone, siltstone, dolomite, and gypsum		Lower confining unit	0 – 2,400	Lower, unaltered part, of San Andres Limestone, Glorieta Sandstone and Yeso Formation are much less permeable than the carbonate aquifer and form lower confining layer of the aquifer

Modified from Welder, 1983

Figure 93. *The Roswell Basin aquifer system contains two aquifers. An alluvial aquifer that consists of Quaternary sediments overlies a more extensive carbonate-rock aquifer that primarily consists of the San Andres Limestone.*

Source: Robson, S.G. and Banta, E.R., 1995, Ground Water Atlas of the United States Arizona, Colorado, New Mexico, Utah. Hydrologic Atlas 730-C (http://capp.water.usgs.gov/gwa/ch_c/).

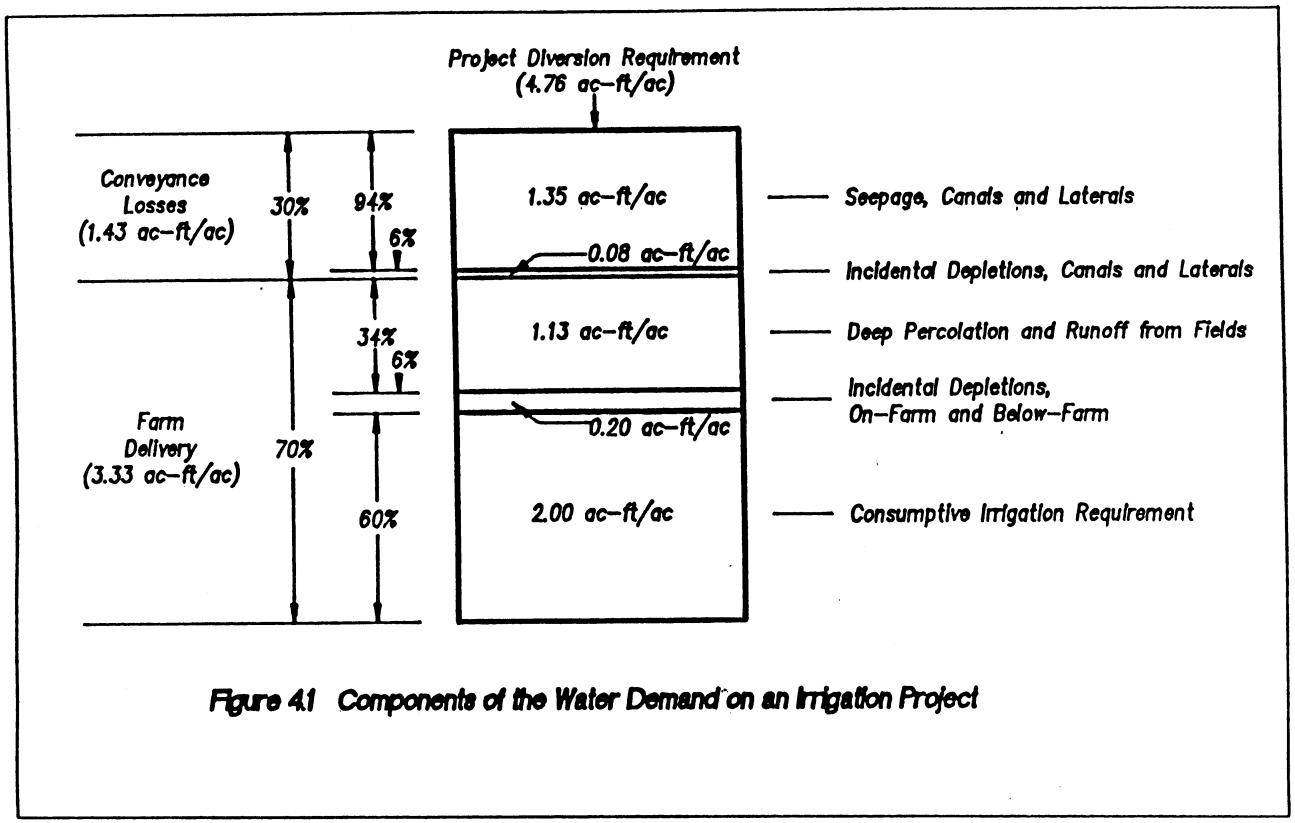
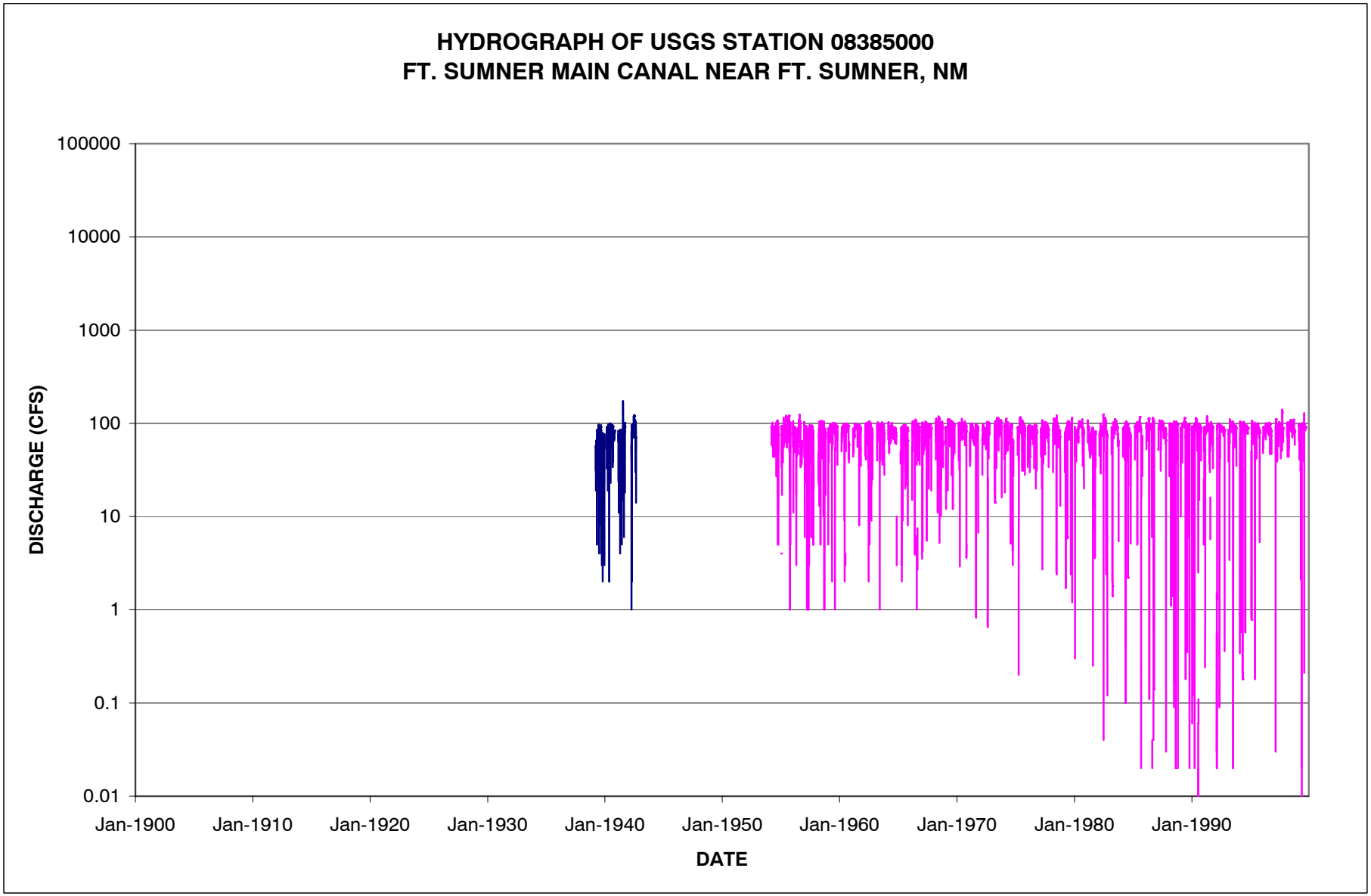


Figure 4.1 Components of the Water Demand on an Irrigation Project

Source: Wilson, B.C. and Lucero, A.A., 1997 Water Use by Categories in New Mexico Counties and River Basins, and Irrigated Acreage in 1995: New Mexico Office of the State Engineer Technical Report 49.

FIGURE L1a


HYDROGRAPH OF USGS STATION 08385000
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DISCHARGE (CFS)
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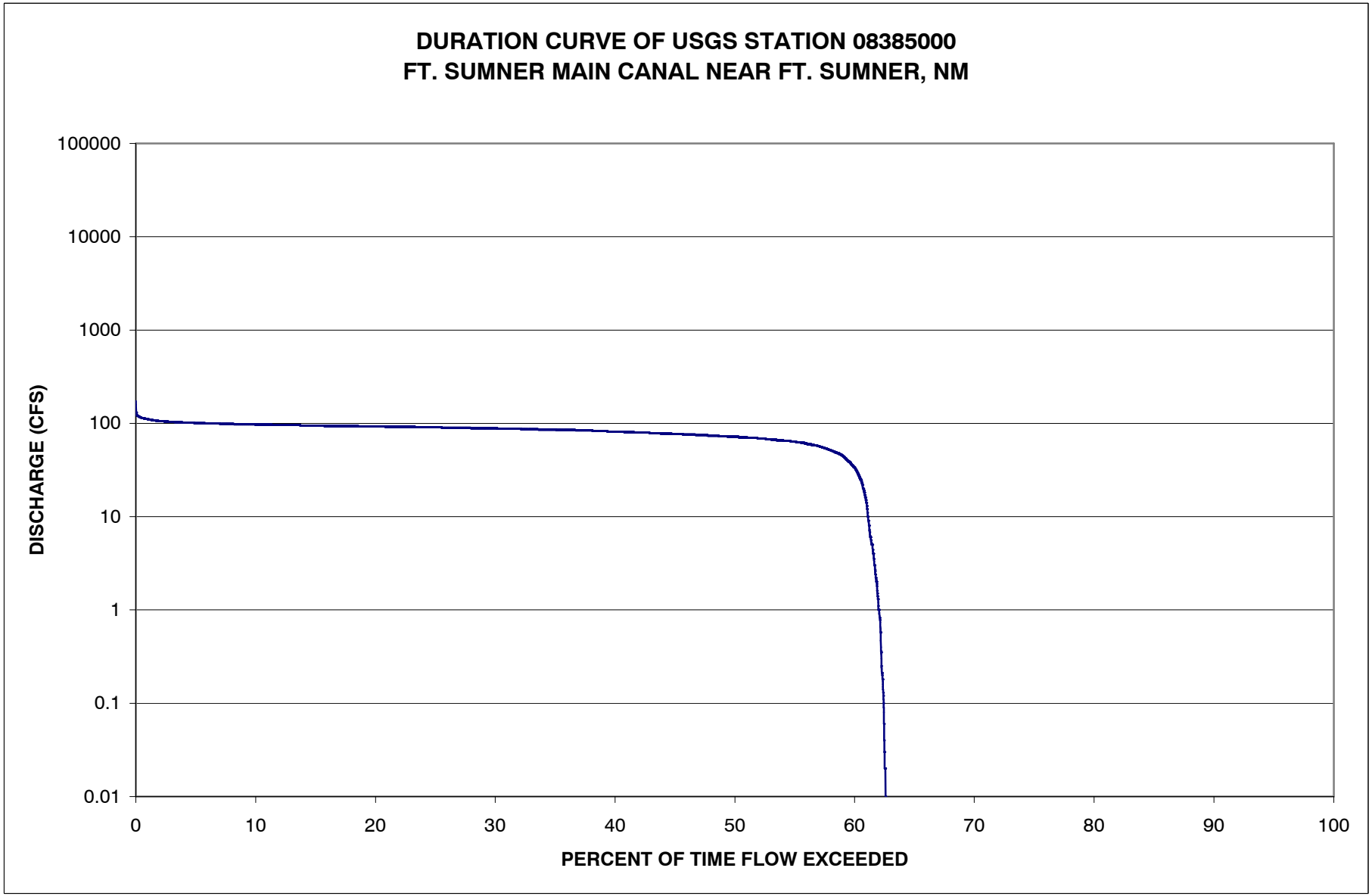
Jan-1980
Jan-1990
DATE

FIGURE L1b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PERCENT OF TIME FLOW EXCEEDED

FIGURE L2a

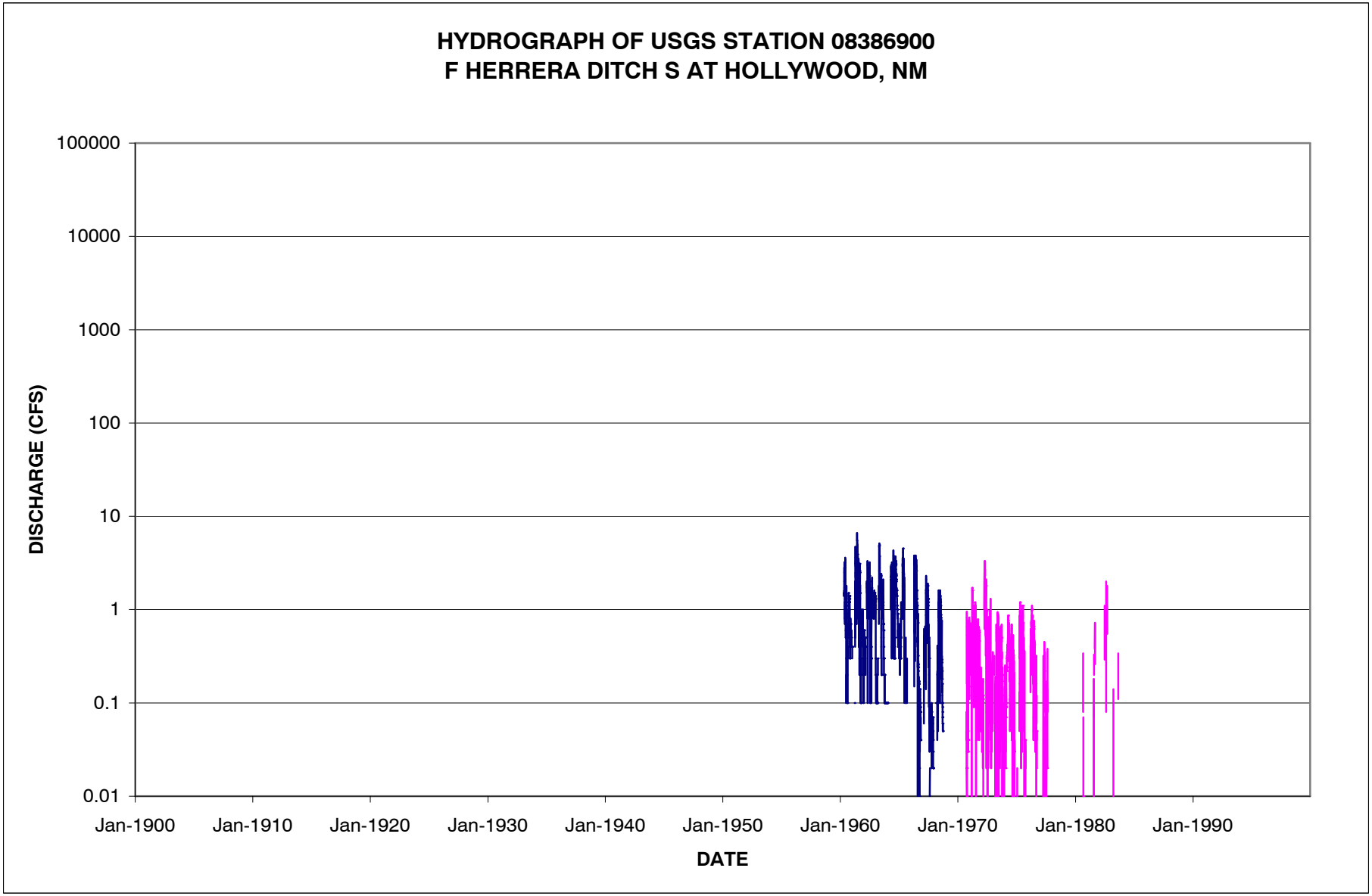
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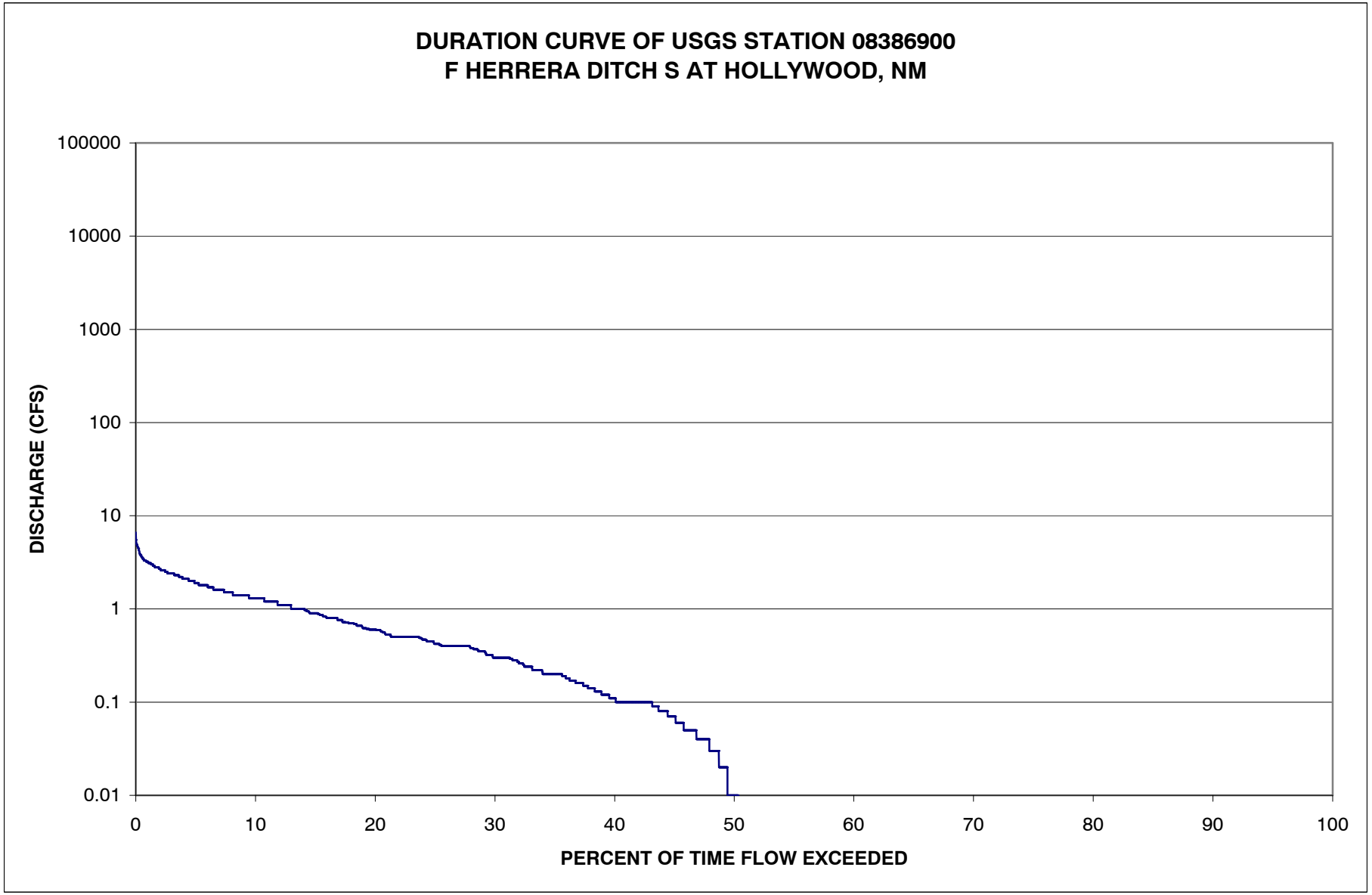
FIGURE L2b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DISCHARGE (CFS)
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PERCENT OF TIME FLOW EXCEEDED

FIGURE L3a

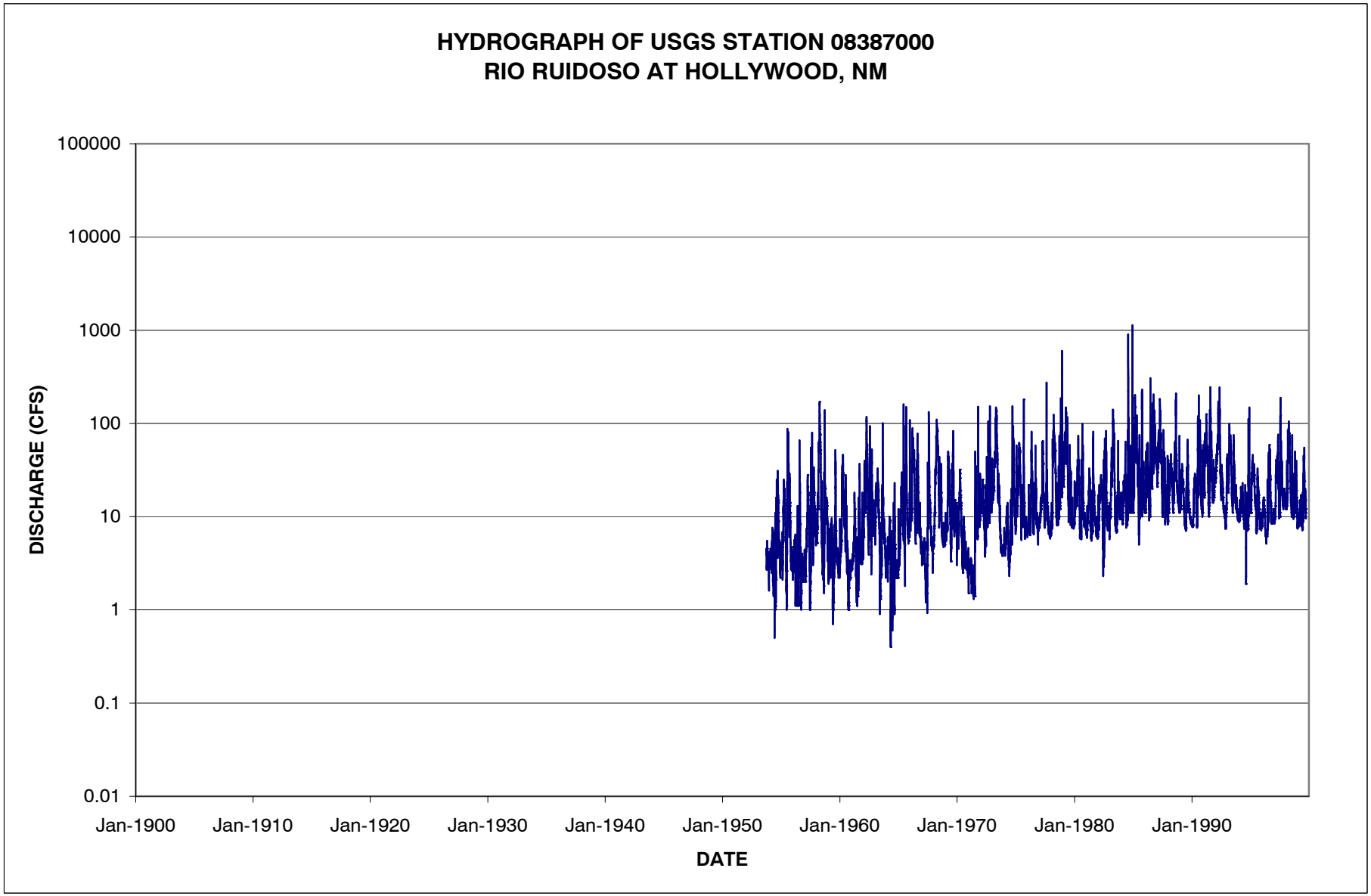
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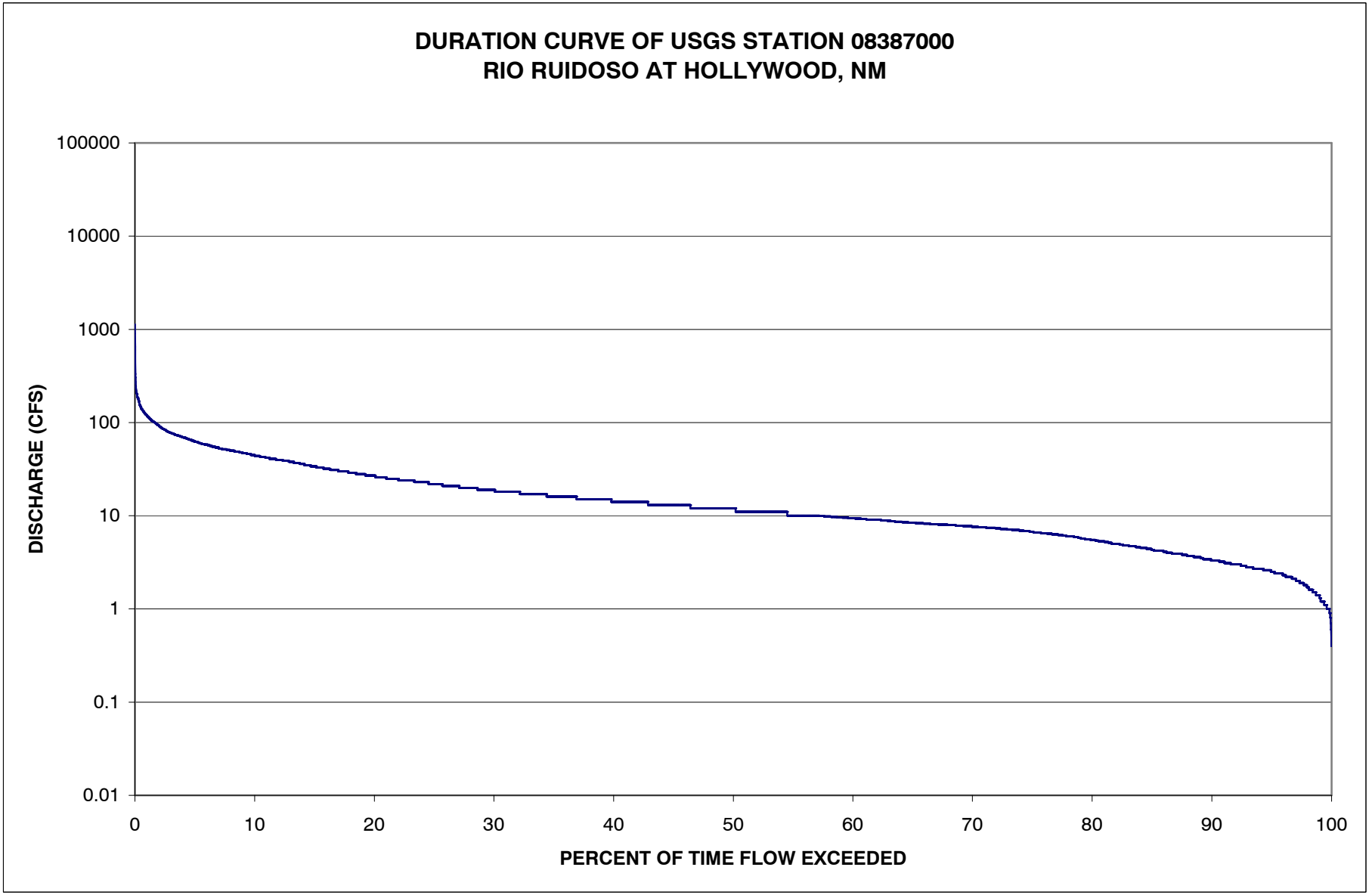
FIGURE L3b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PERCENT OF TIME FLOW EXCEEDED

FIGURE L4a

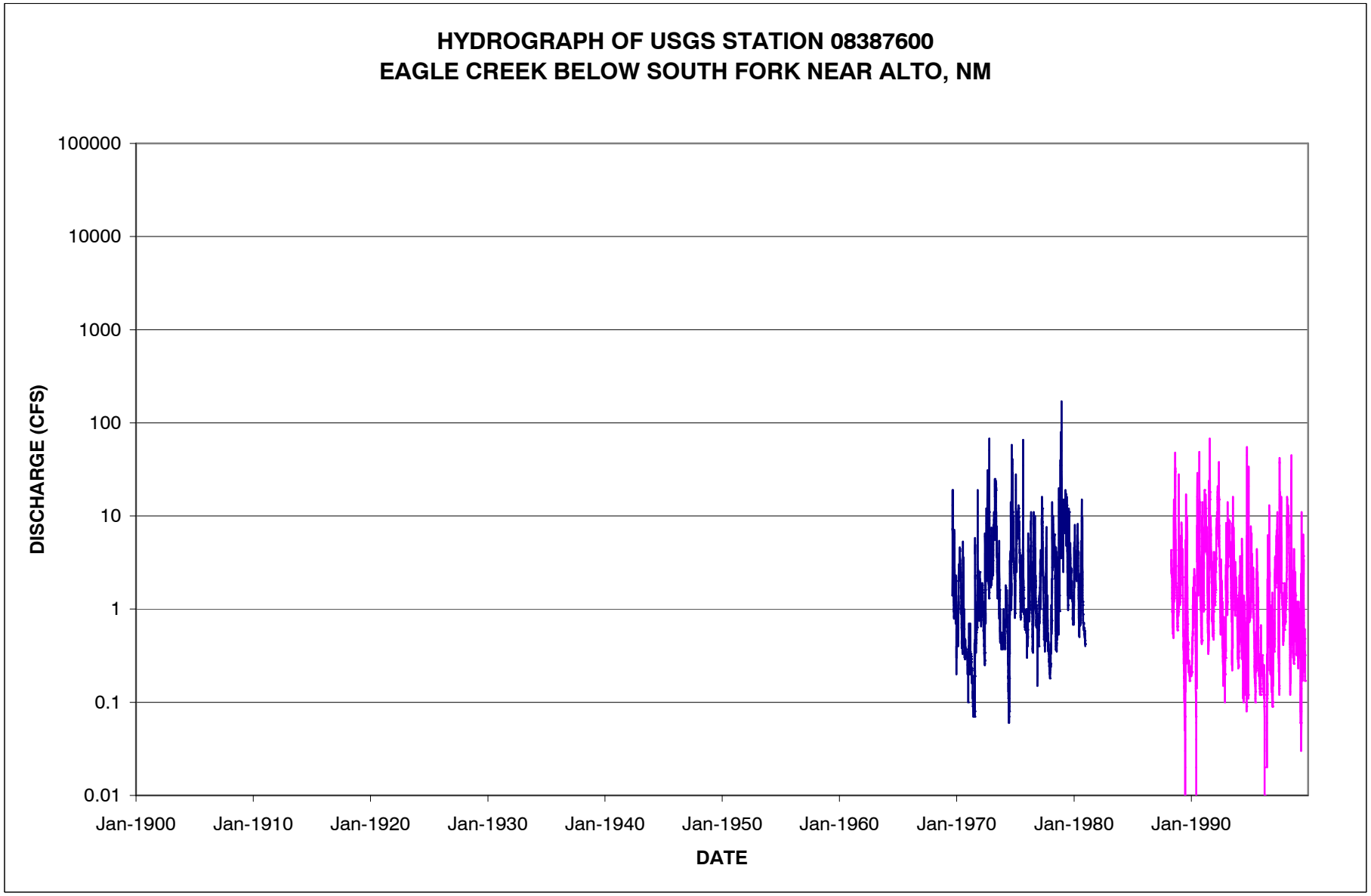
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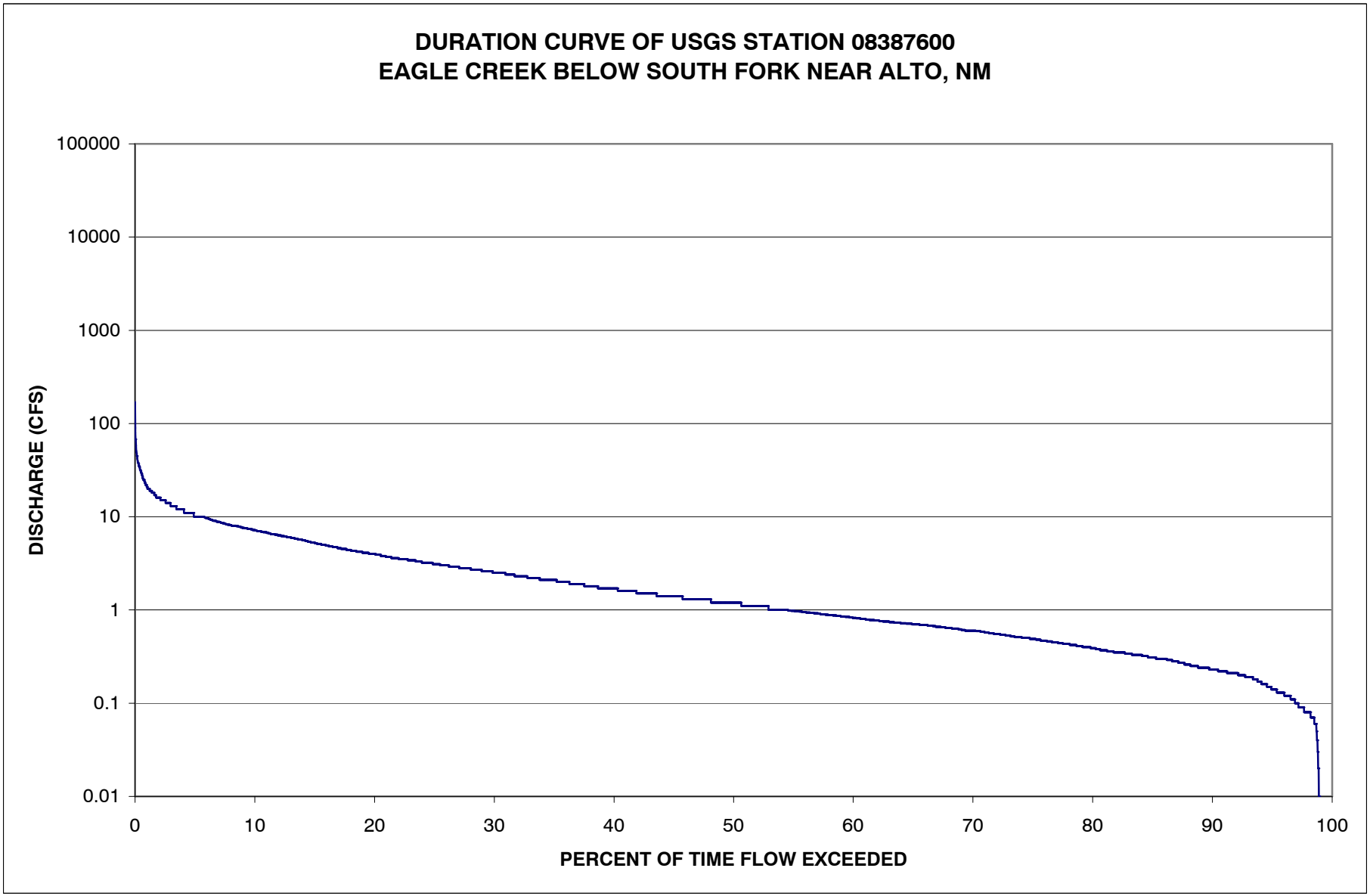
FIGURE L4b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PERCENT OF TIME FLOW EXCEEDED

FIGURE L5a

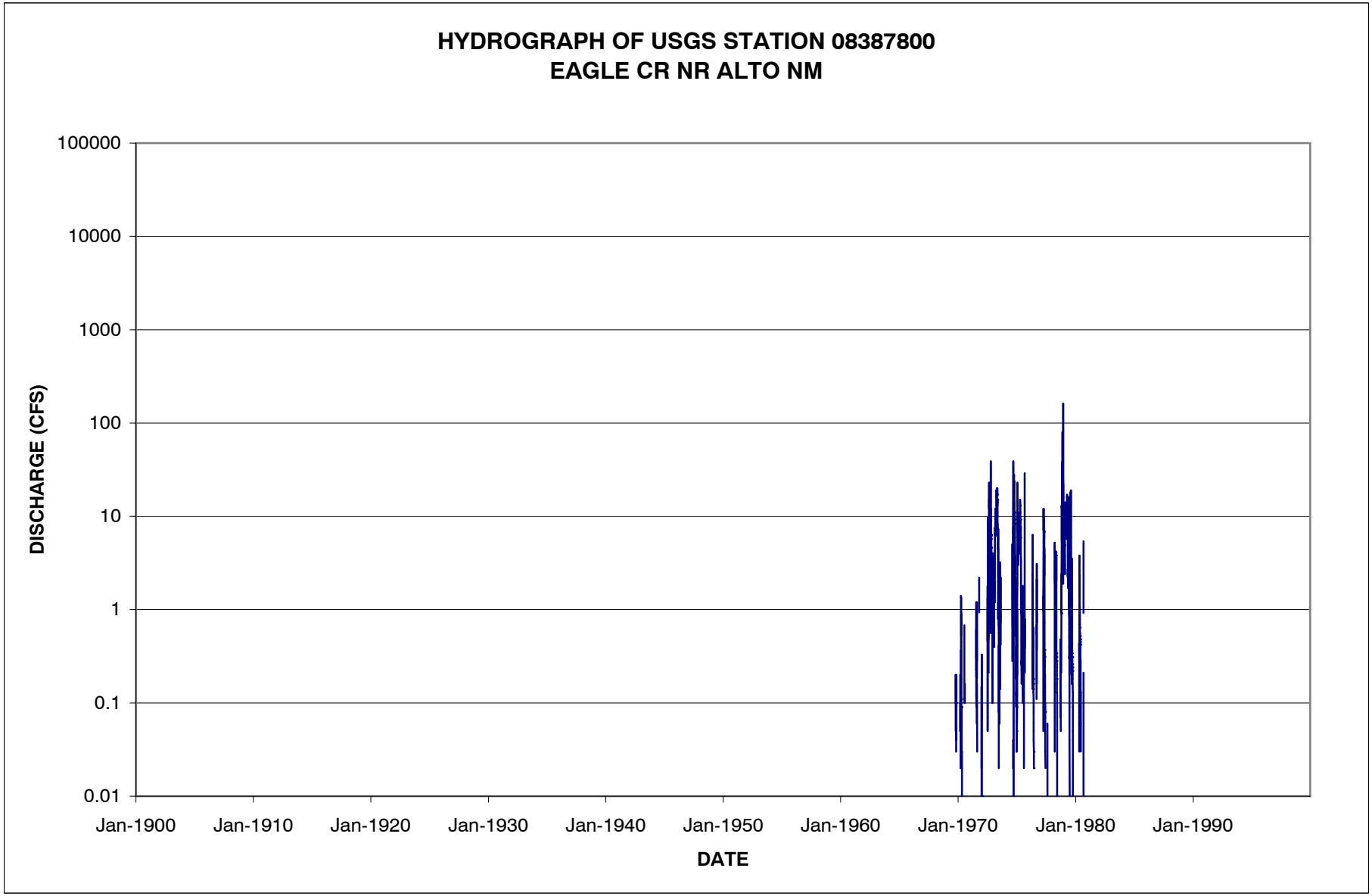
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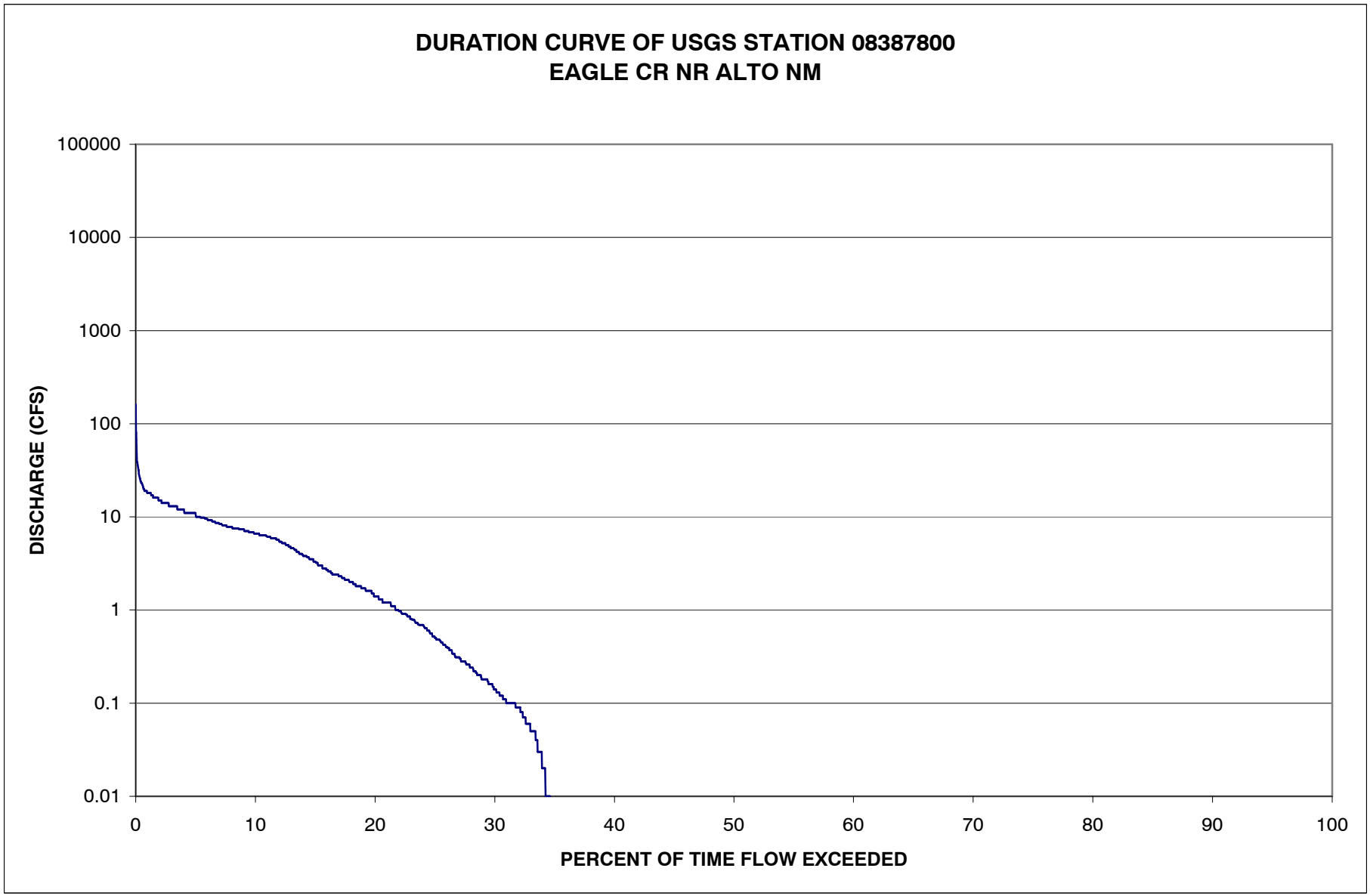
FIGURE L5b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PERCENT OF TIME FLOW EXCEEDED

FIGURE L6a

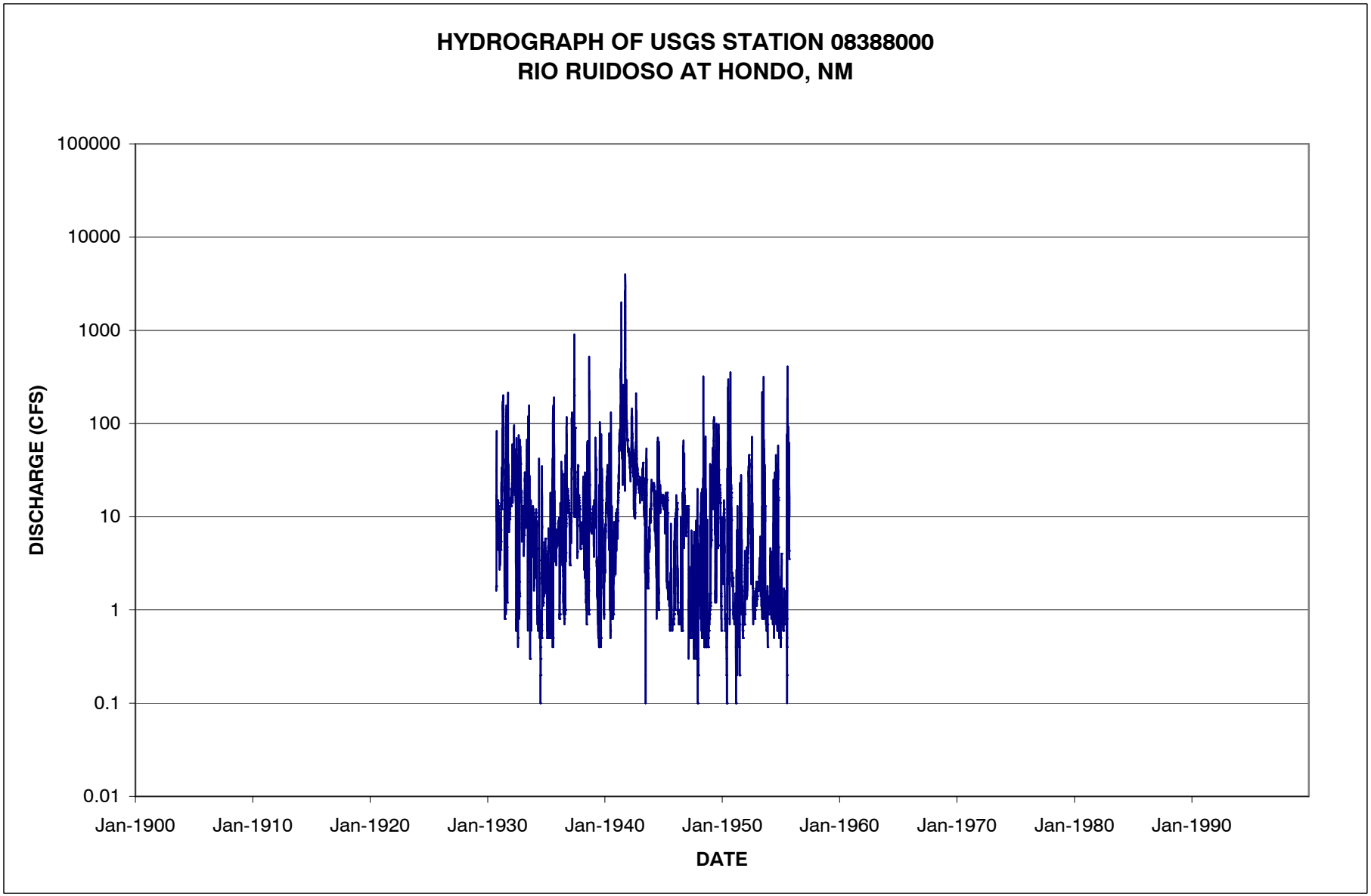
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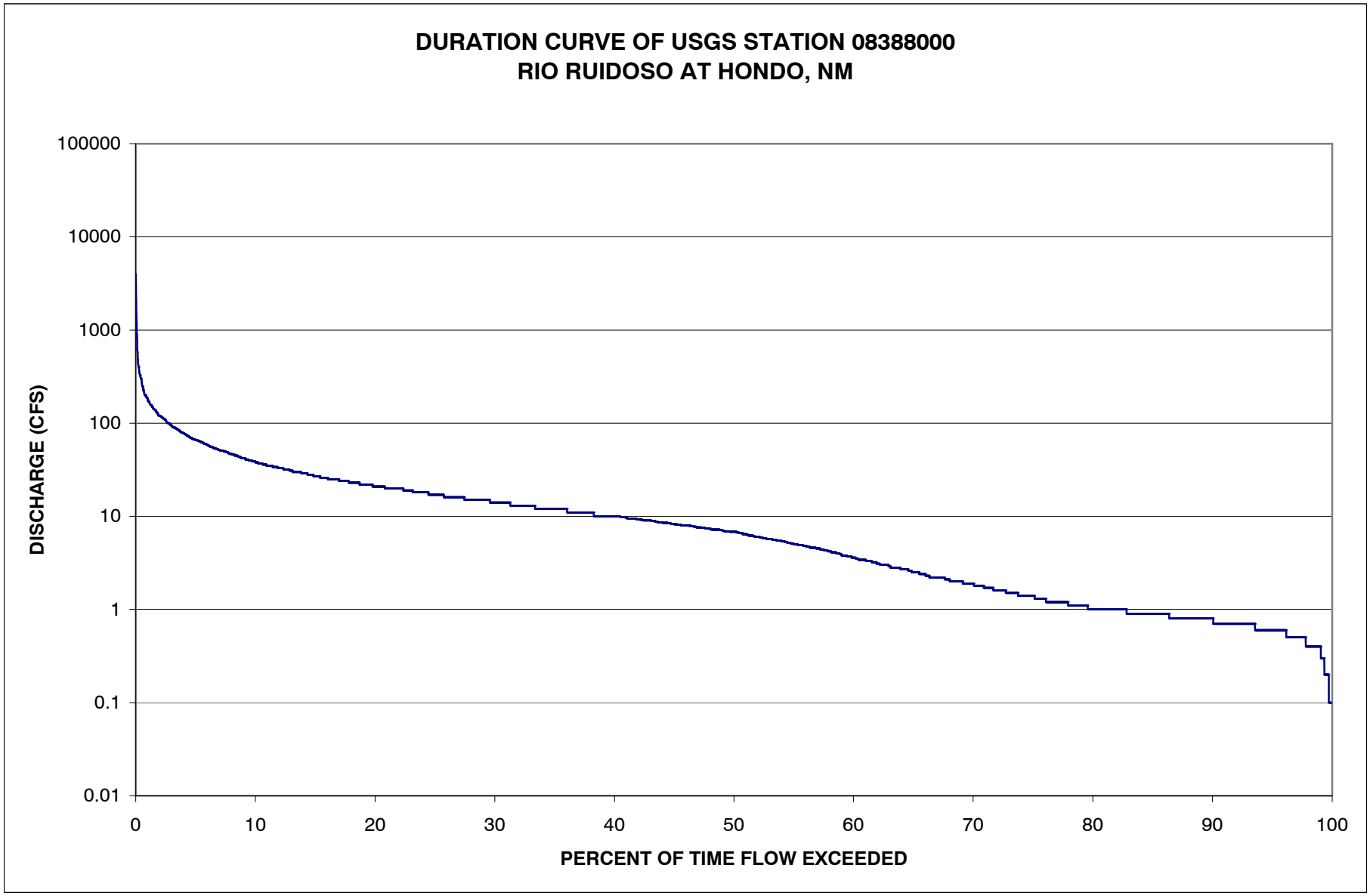
FIGURE L6b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PERCENT OF TIME FLOW EXCEEDED

FIGURE L7a

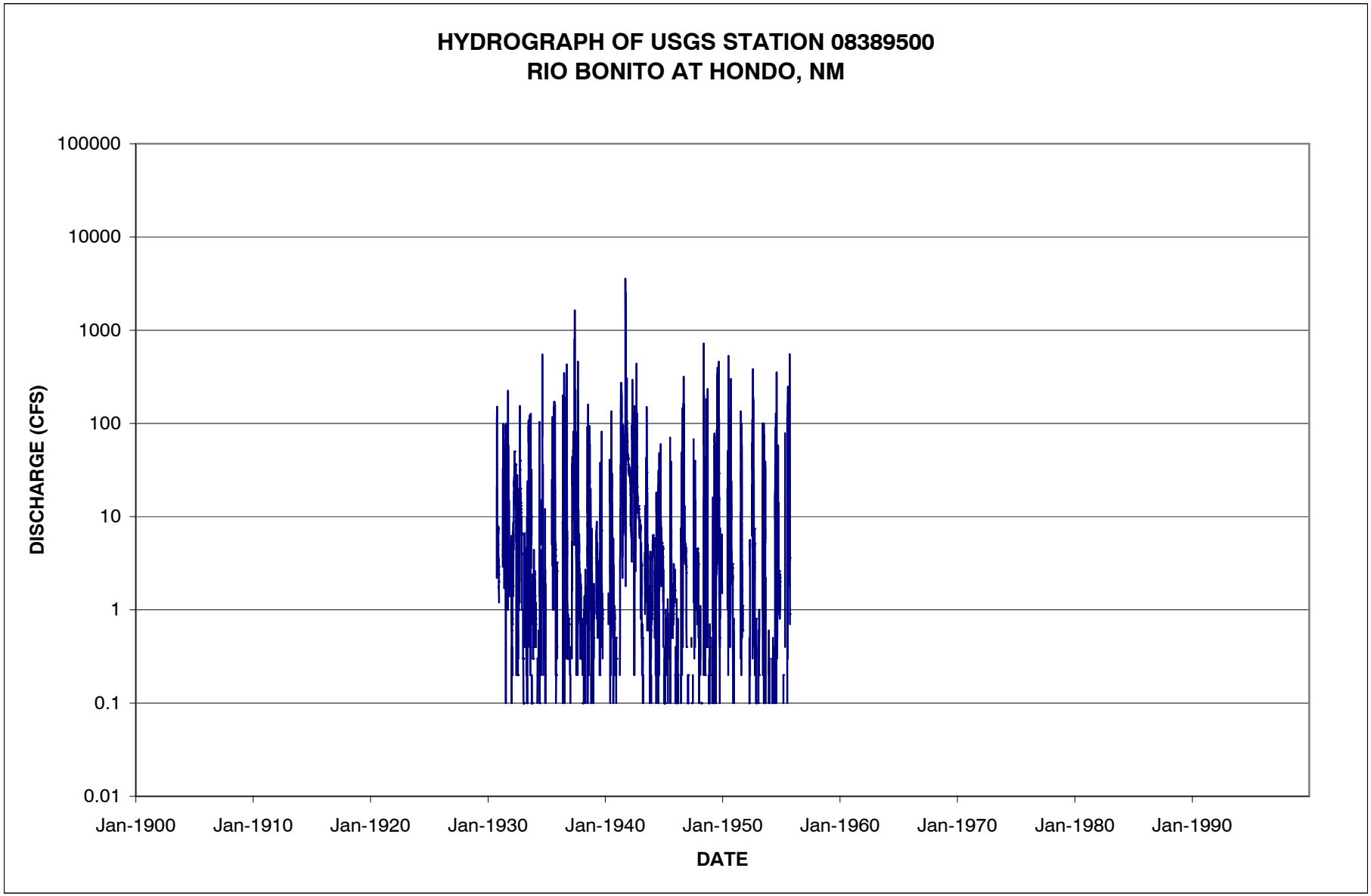
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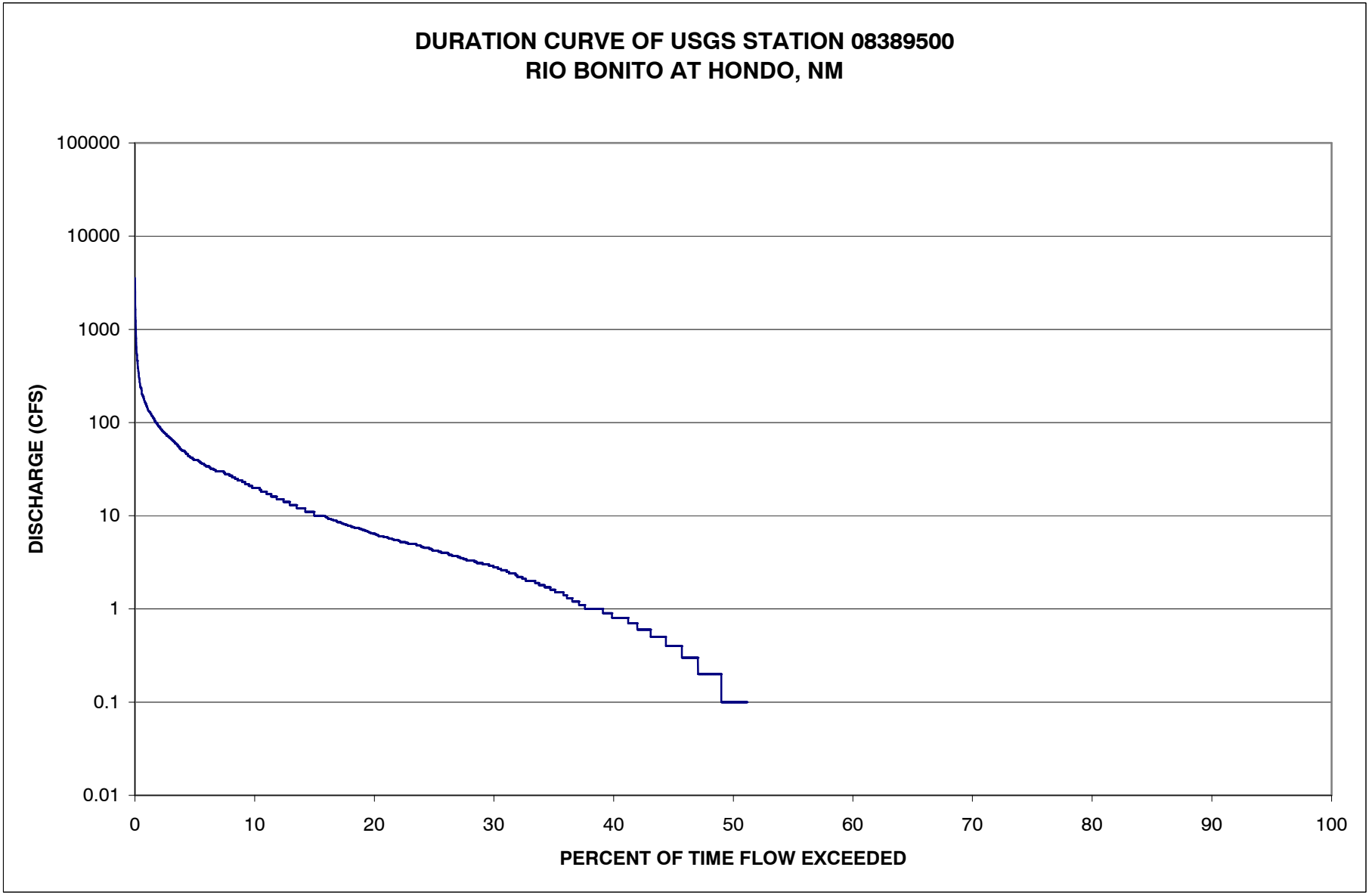
FIGURE L7b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60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L8a

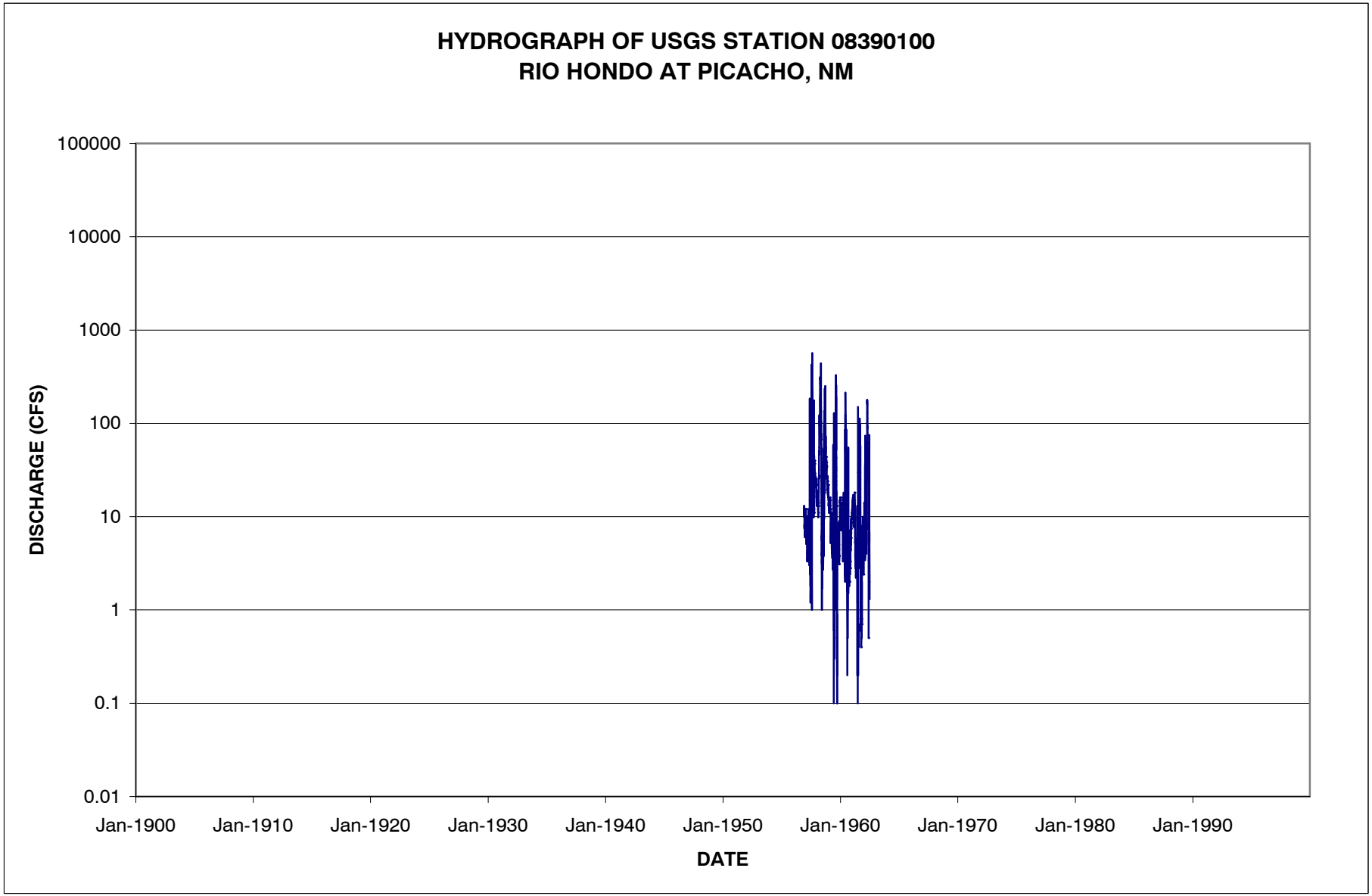
HYDROGRAPH OF USGS STATION 08390100
RIO HONDO AT PICACHO, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L8b

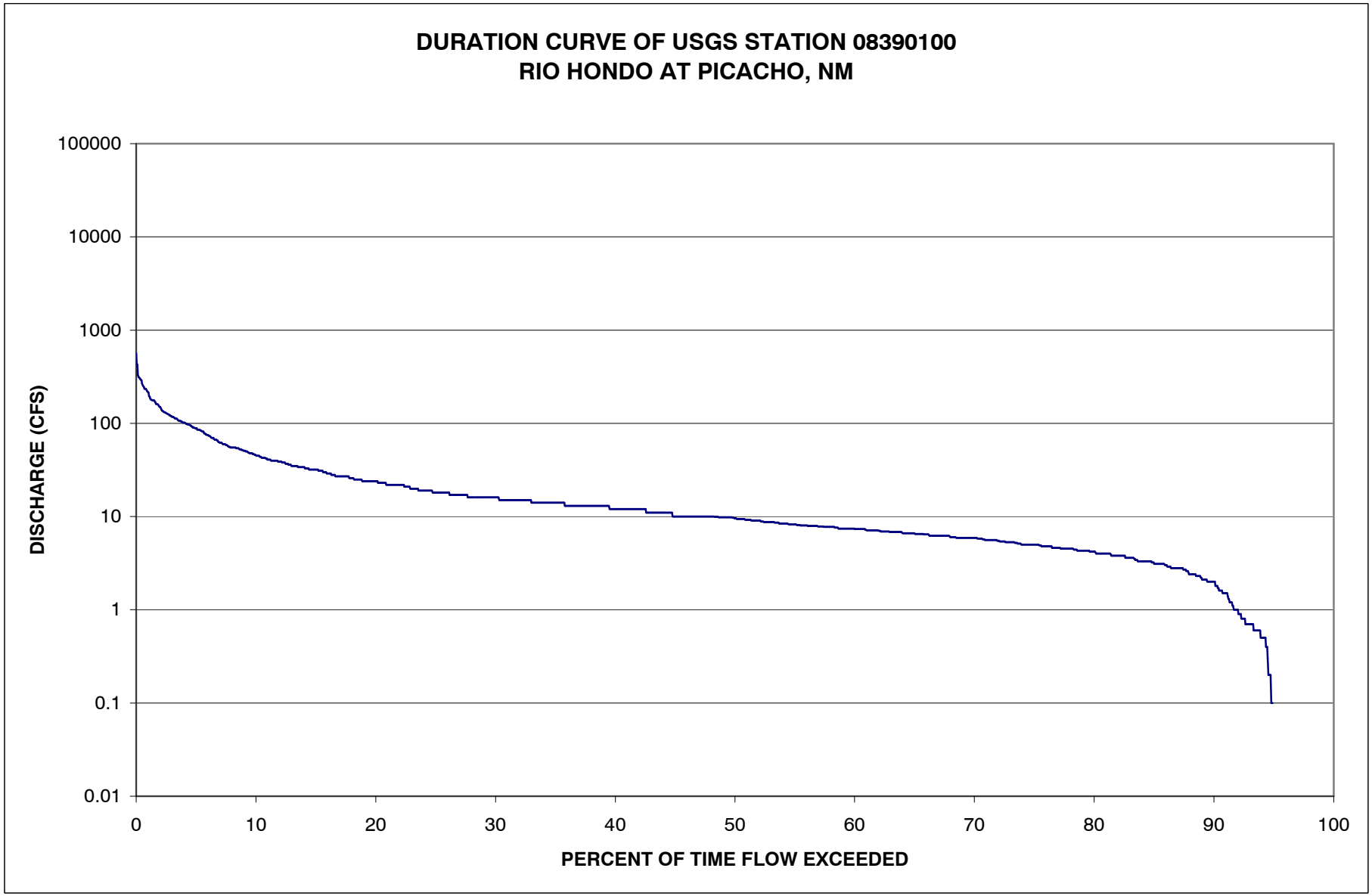
DURATION CURVE OF USGS STATION 08390100
RIO HONDO AT PICACHO, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L9a

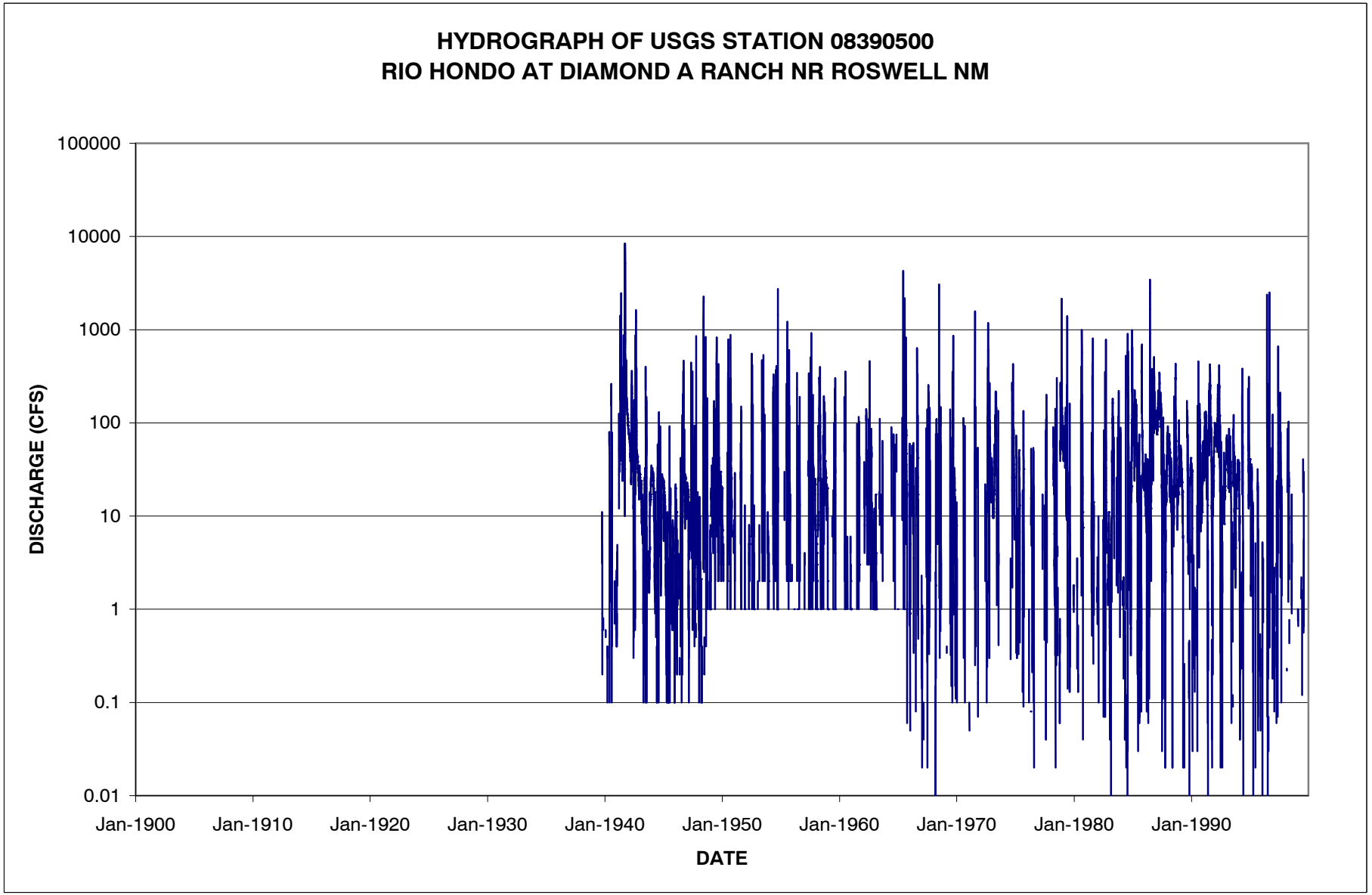
HYDROGRAPH OF USGS STATION 08390500
RIO HONDO AT DIAMOND A RANCH NR ROSWELL NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L9b

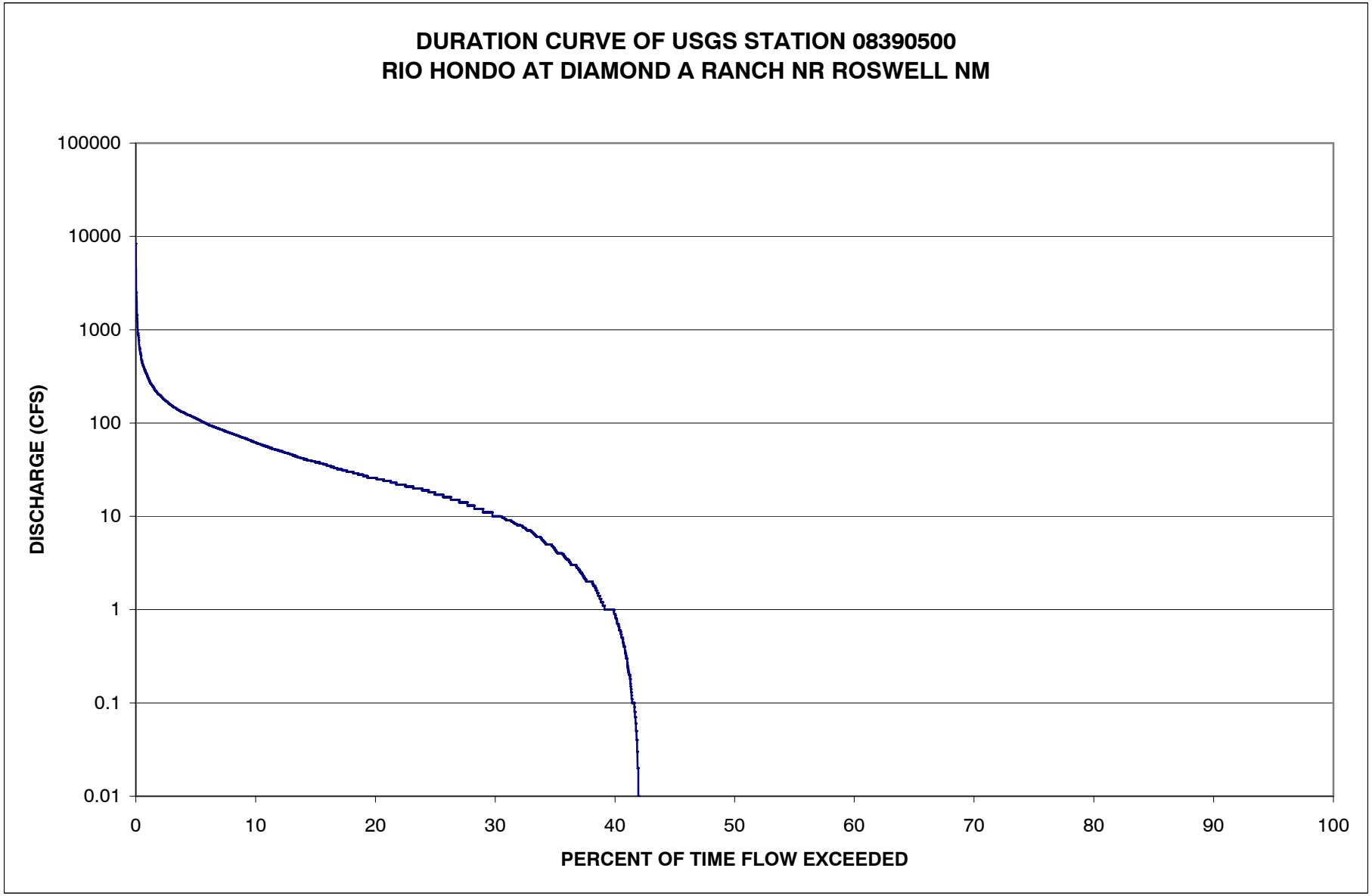
DURATION CURVE OF USGS STATION 08390500
RIO HONDO AT DIAMOND A RANCH NR ROSWELL NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L10a

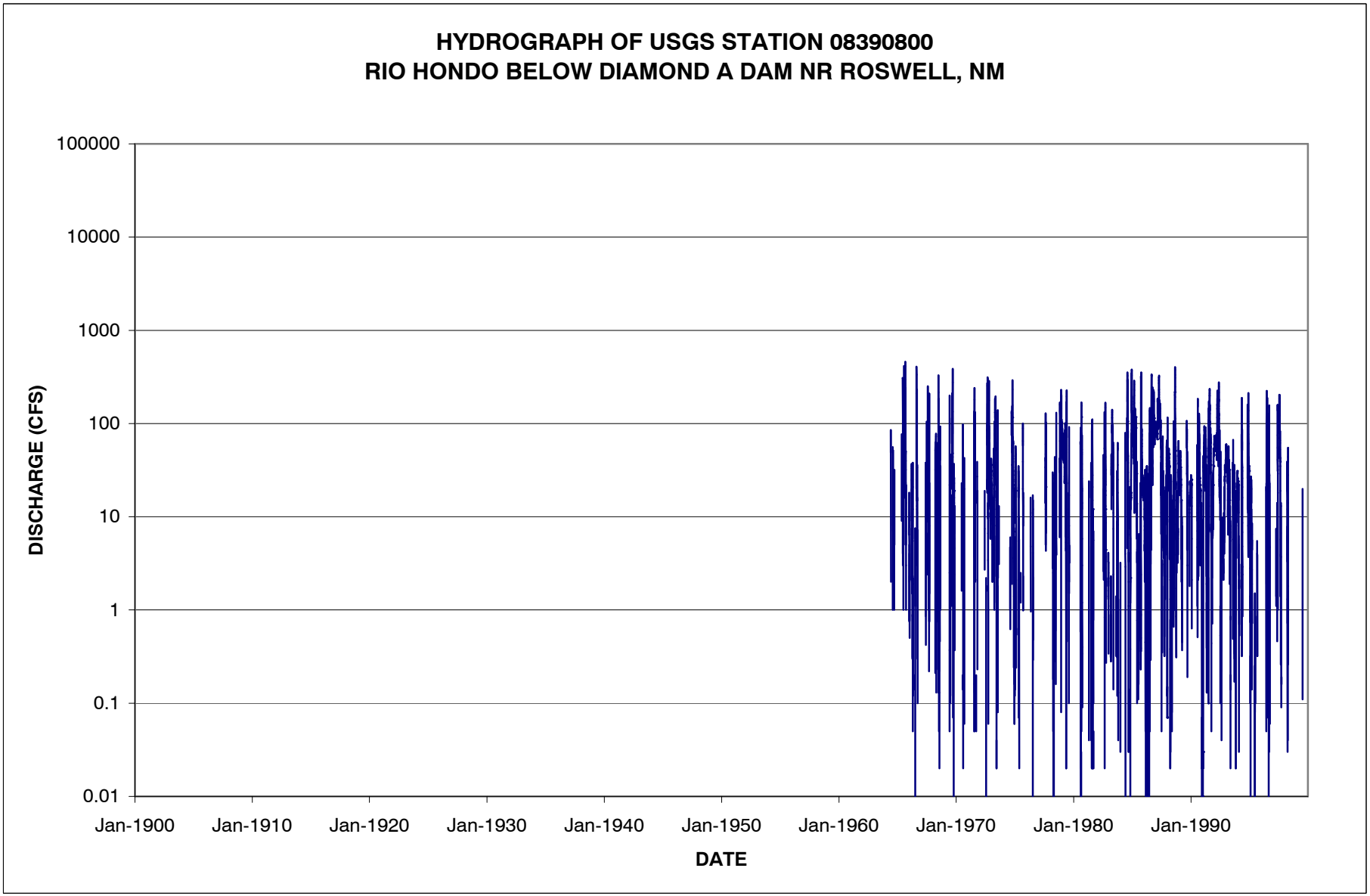
HYDROGRAPH OF USGS STATION 08390800
RIO HONDO BELOW DIAMOND A DAM NR ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L10b

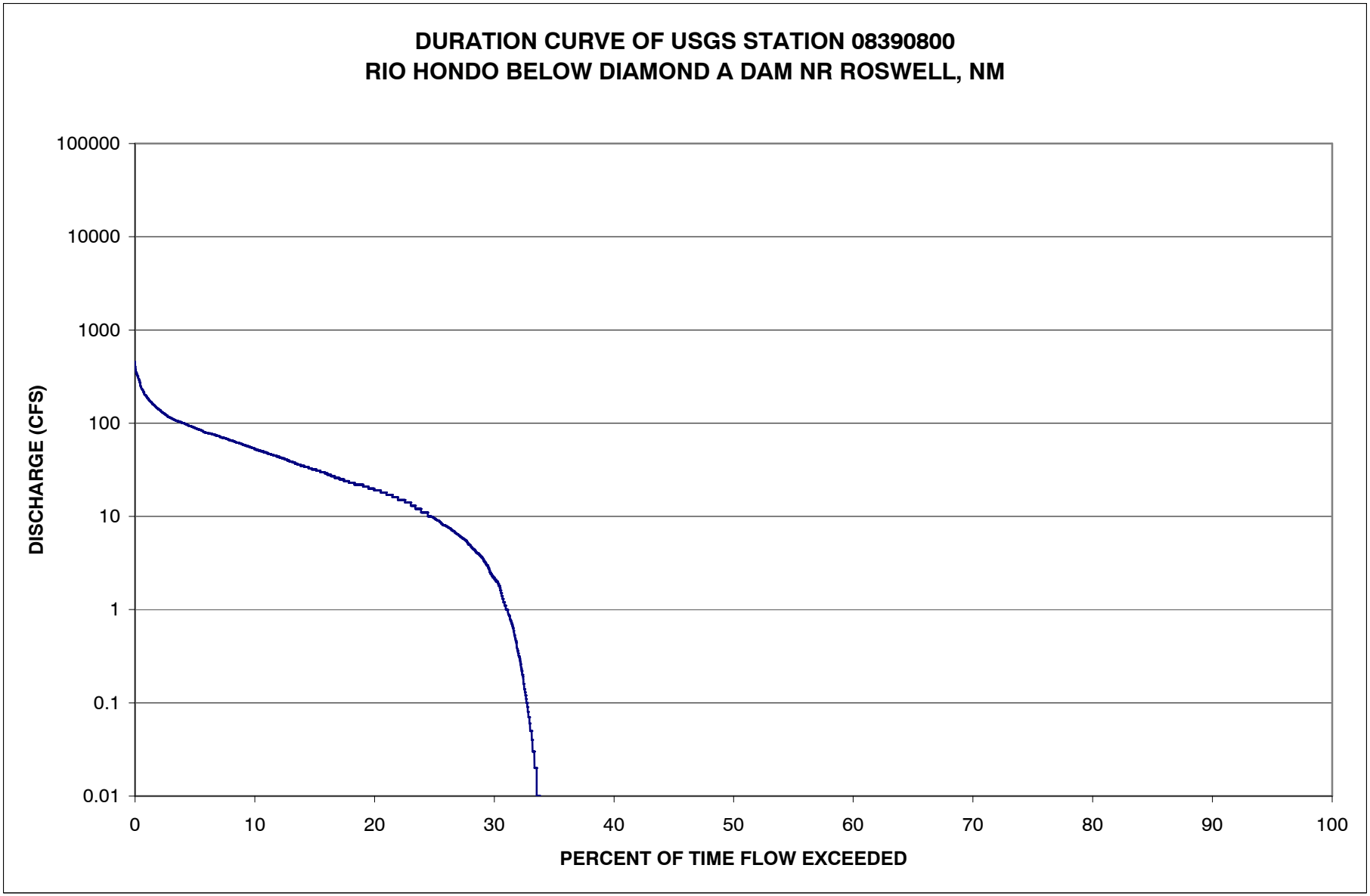
DURATION CURVE OF USGS STATION 08390800
RIO HONDO BELOW DIAMOND A DAM NR ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L11a

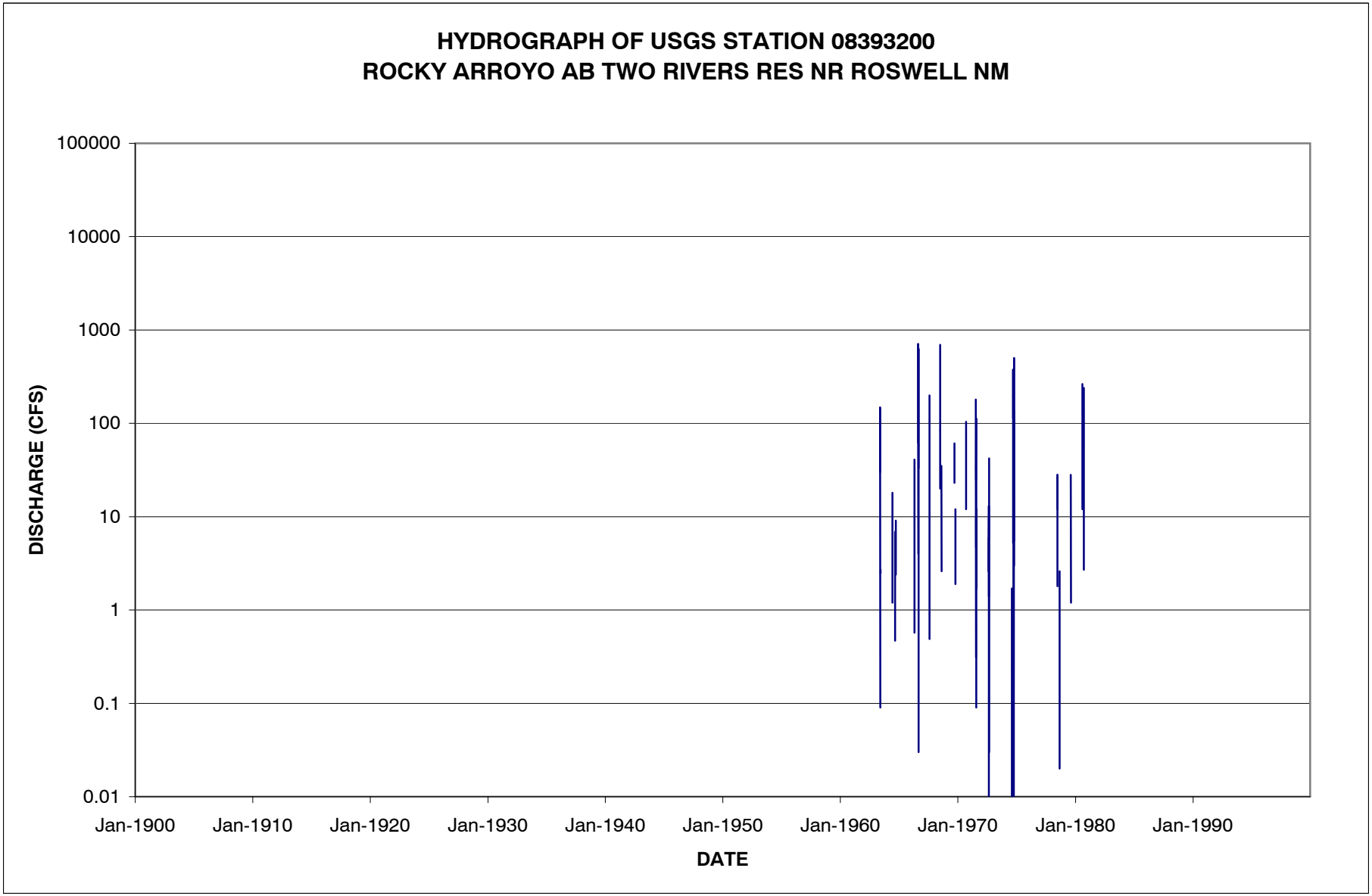
HYDROGRAPH OF USGS STATION 08393200
ROCKY ARROYO AB TWO RIVERS RES NR ROSWELL NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L11b

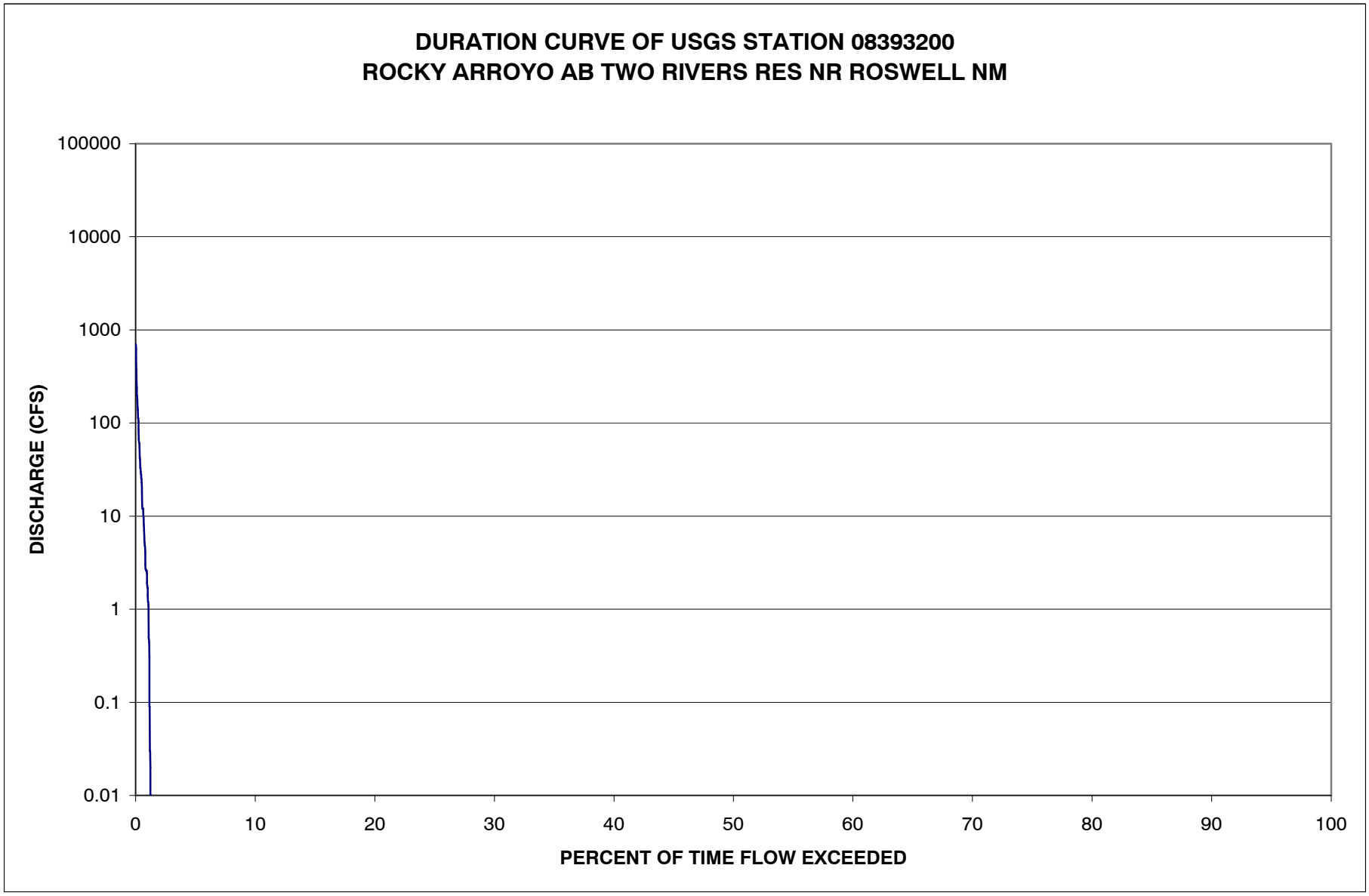
DURATION CURVE OF USGS STATION 08393200
ROCKY ARROYO AB TWO RIVERS RES NR ROSWELL NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L12a

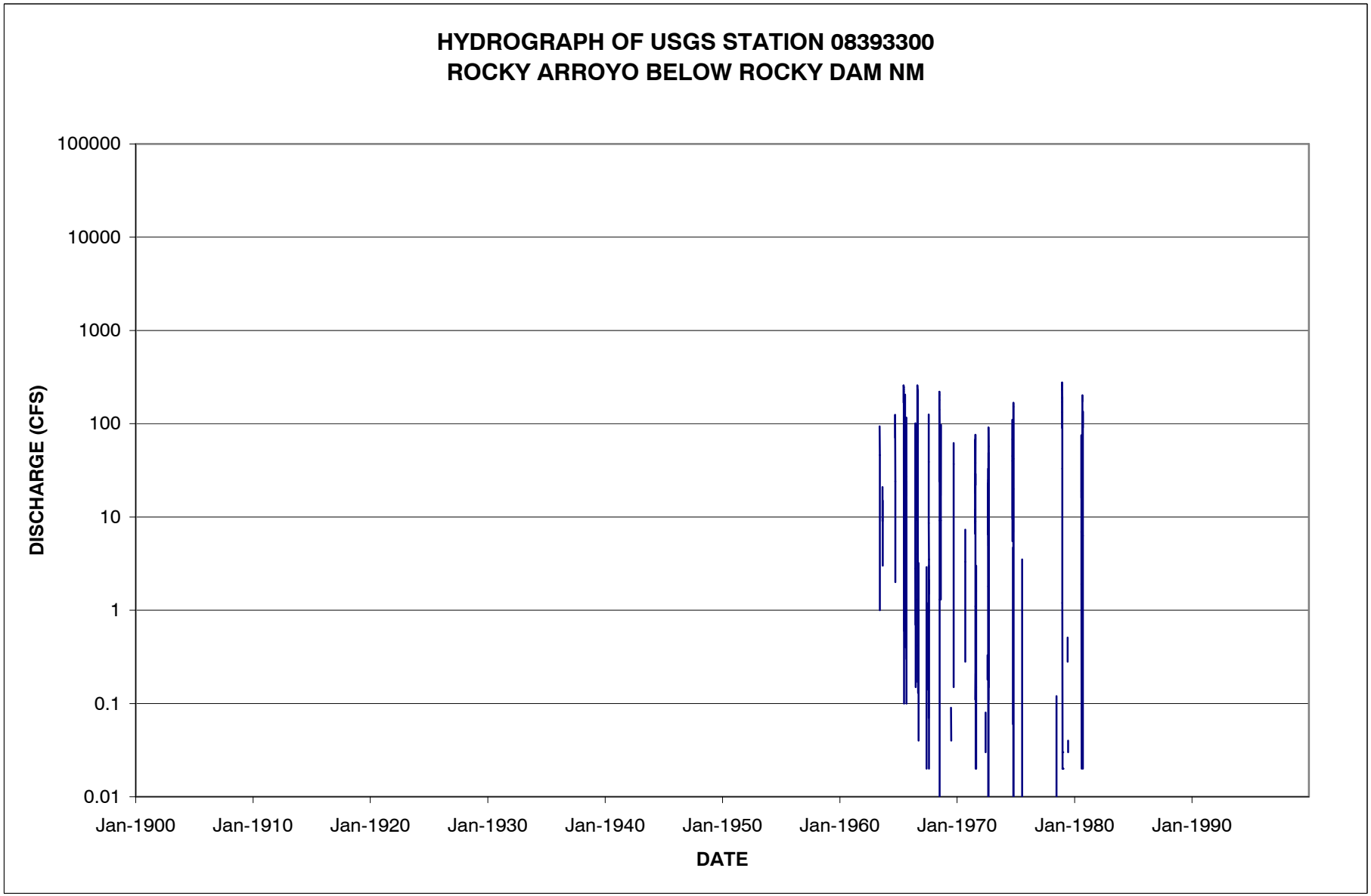
HYDROGRAPH OF USGS STATION 08393300
ROCKY ARROYO BELOW ROCKY DAM NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L12b

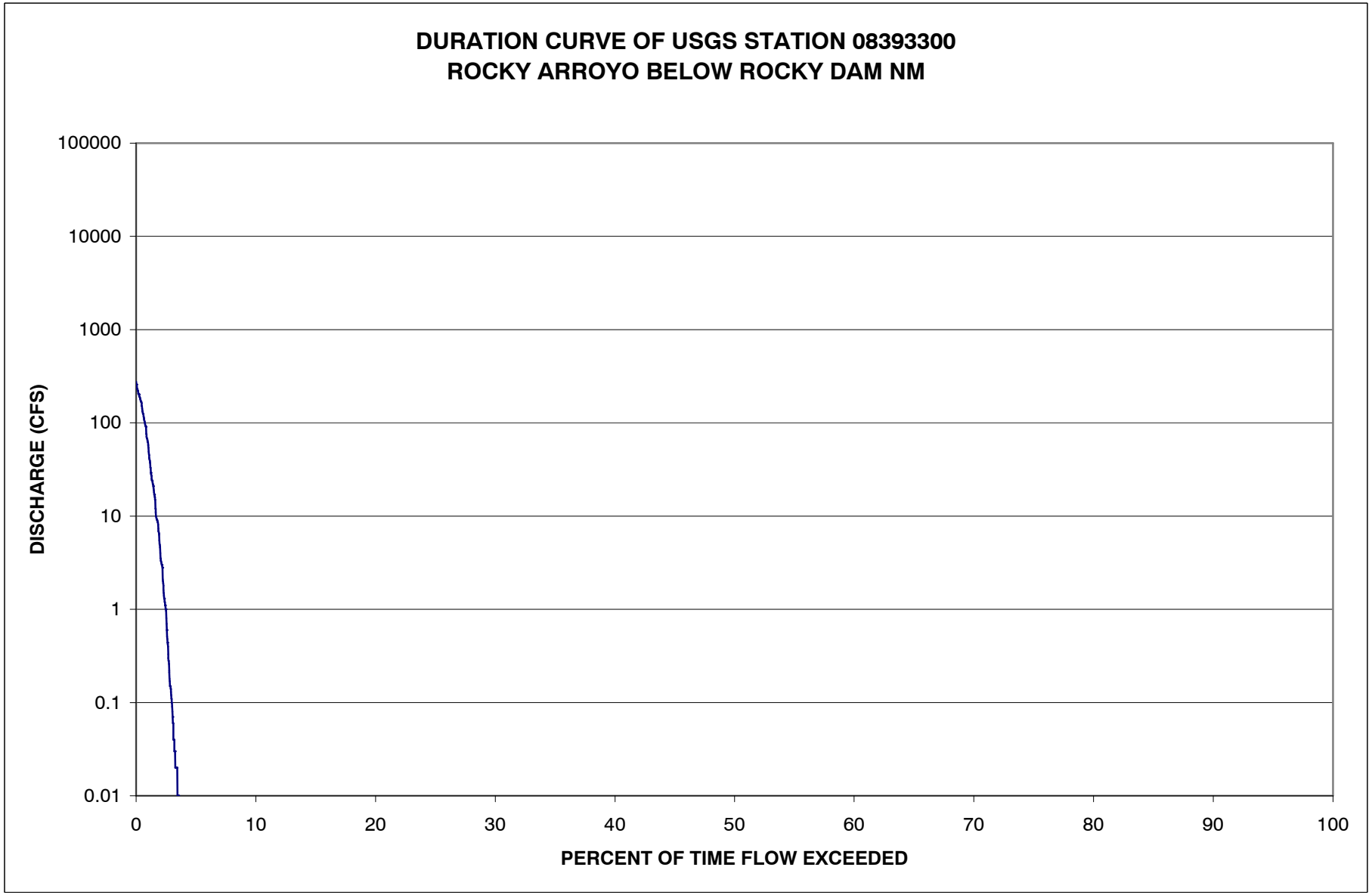
DURATION CURVE OF USGS STATION 08393300
ROCKY ARROYO BELOW ROCKY DAM NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L13a

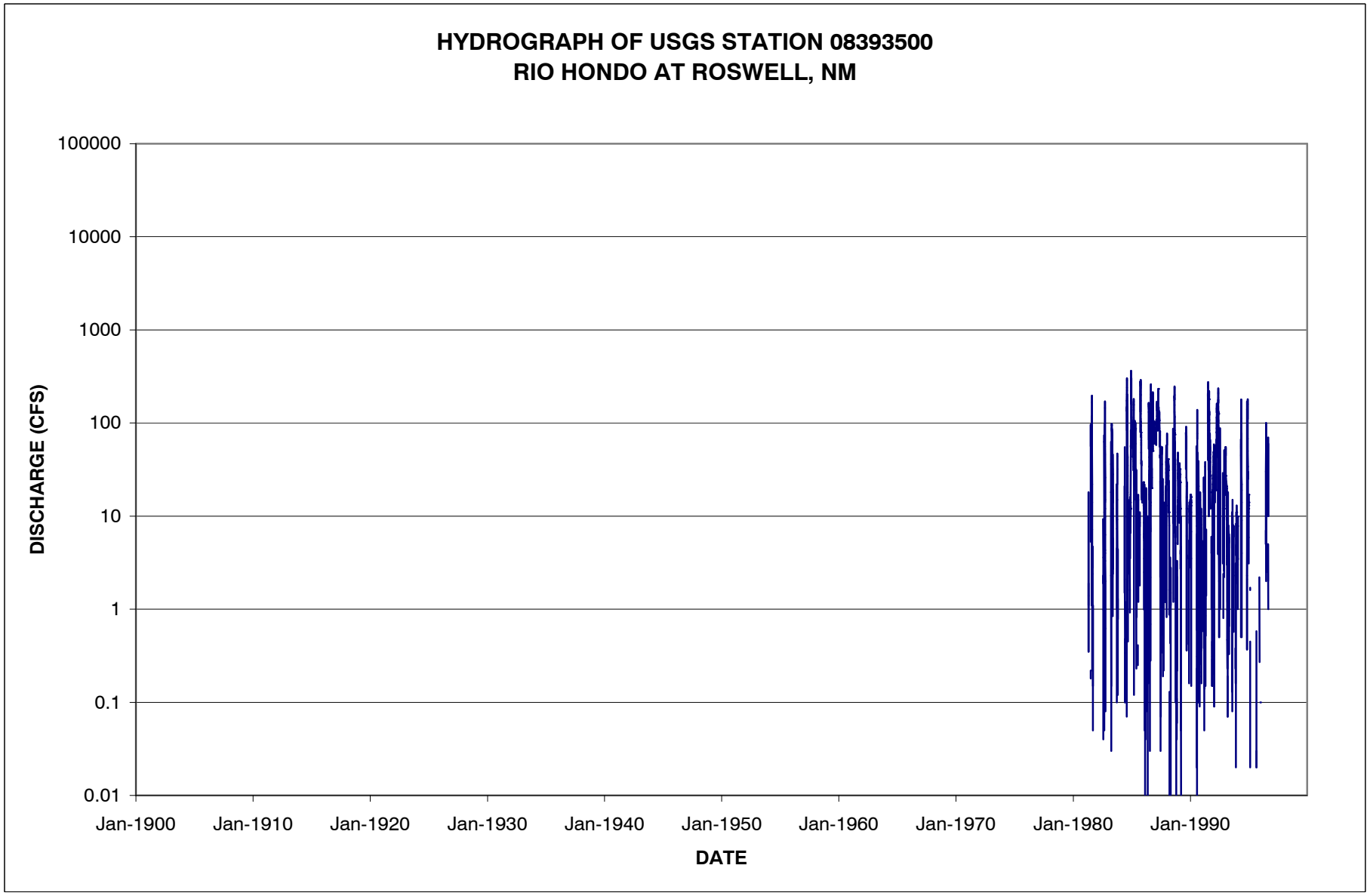
HYDROGRAPH OF USGS STATION 08393500
RIO HONDO AT ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L13b

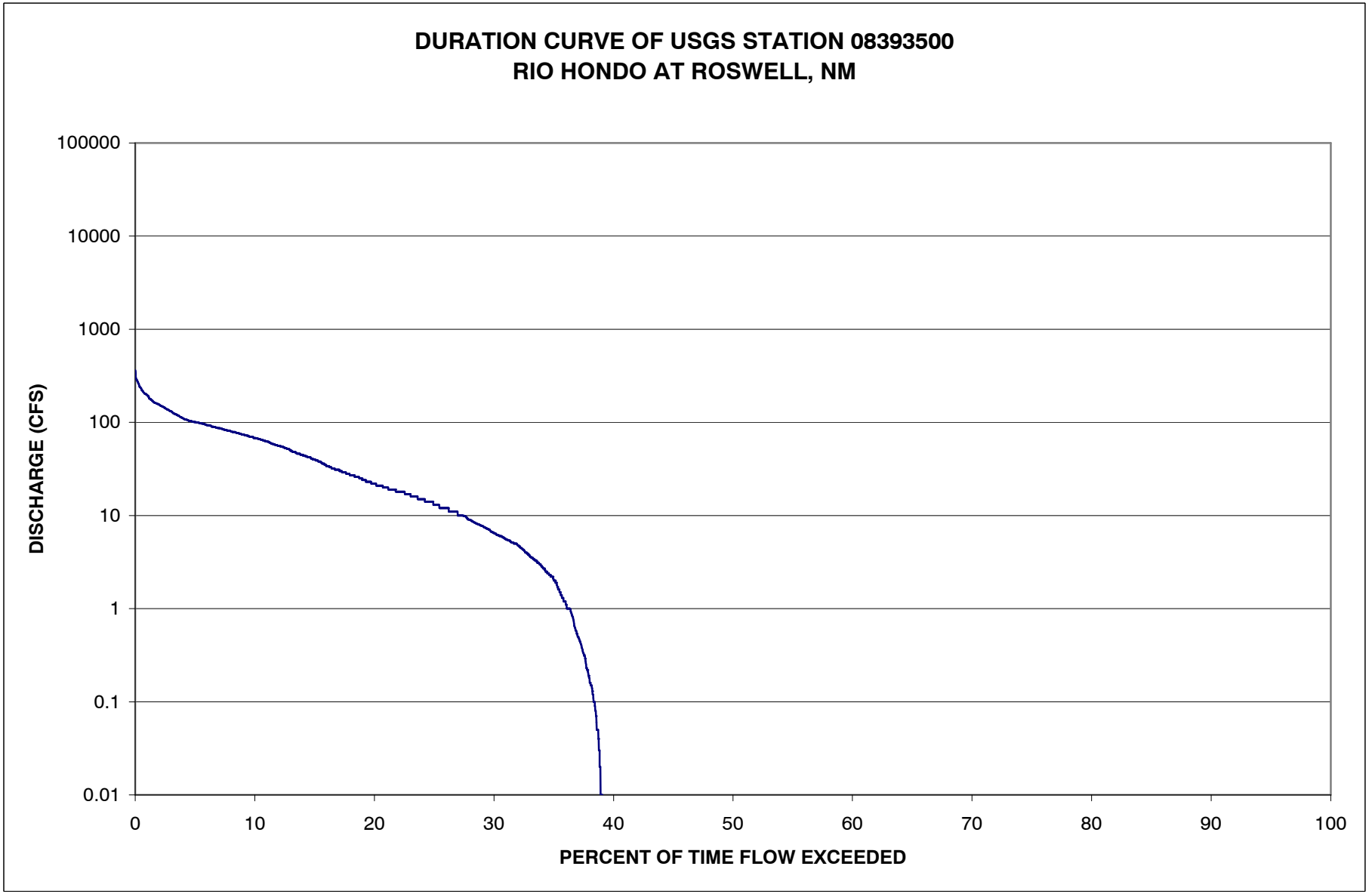
DURATION CURVE OF USGS STATION 08393500
RIO HONDO AT ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L14a

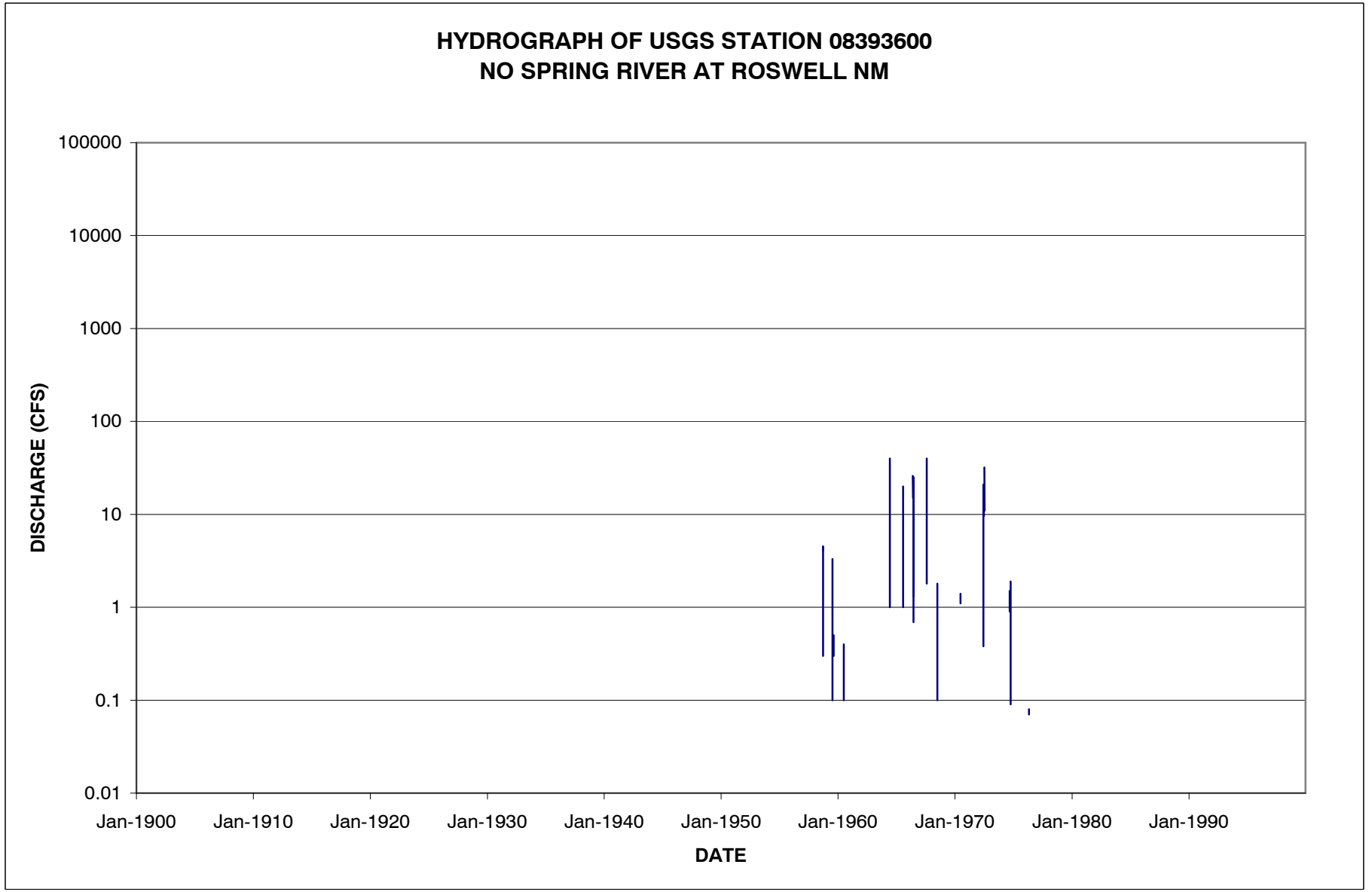
HYDROGRAPH OF USGS STATION 08393600
NO SPRING RIVER AT ROSWELL NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L14b

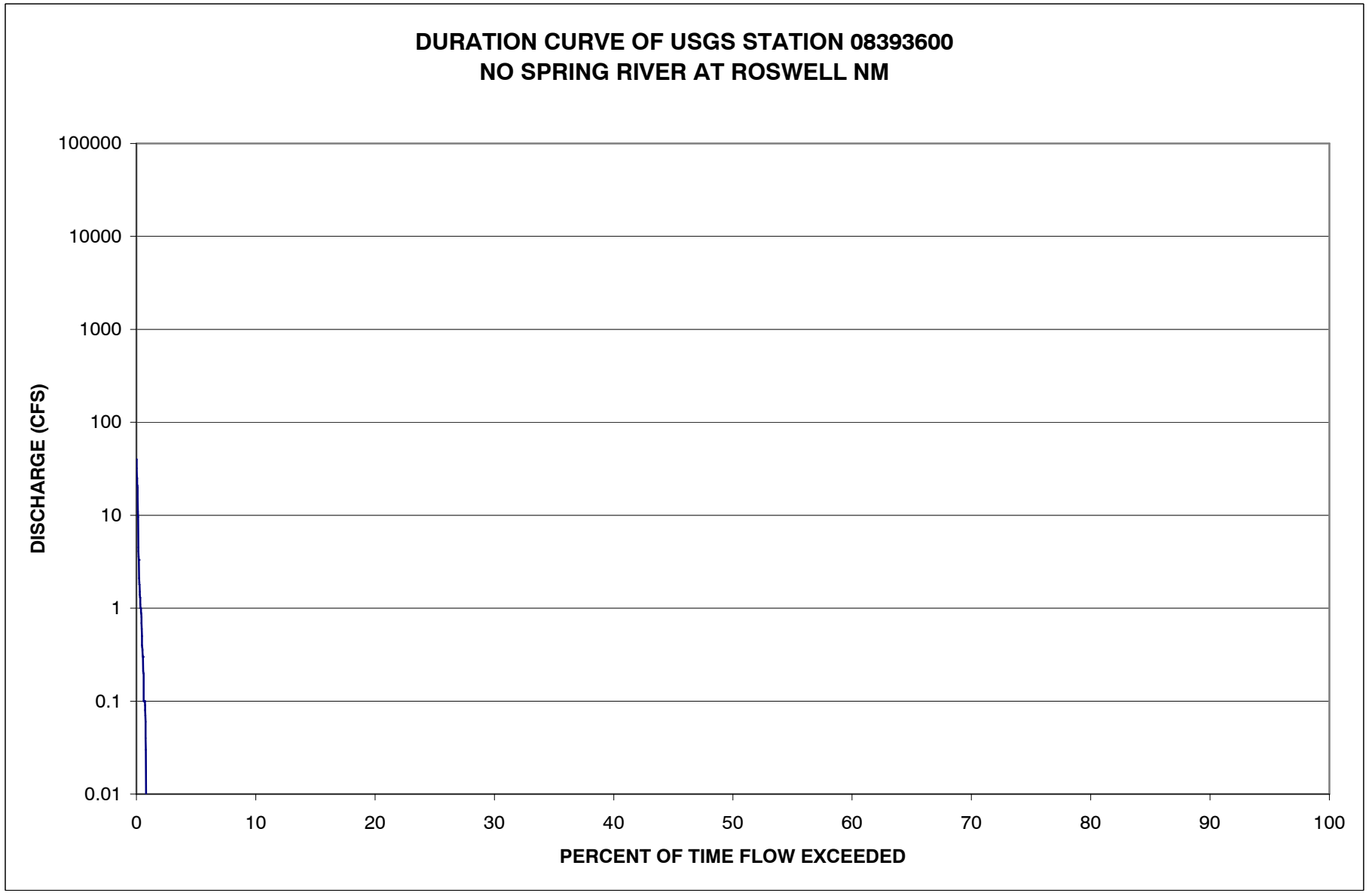
DURATION CURVE OF USGS STATION 08393600
NO SPRING RIVER AT ROSWELL NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L15a

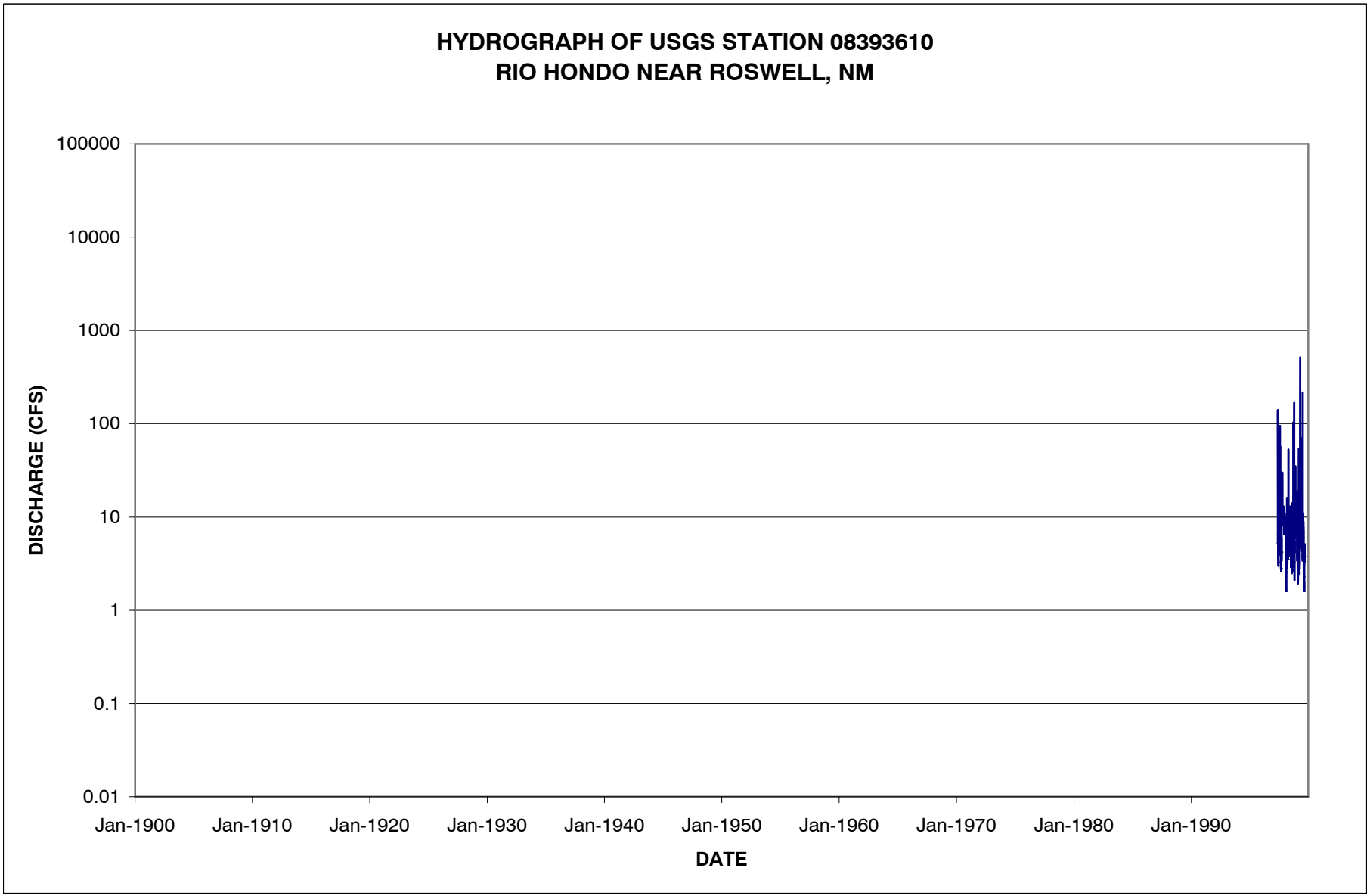
HYDROGRAPH OF USGS STATION 08393610
RIO HONDO NEAR ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L15b

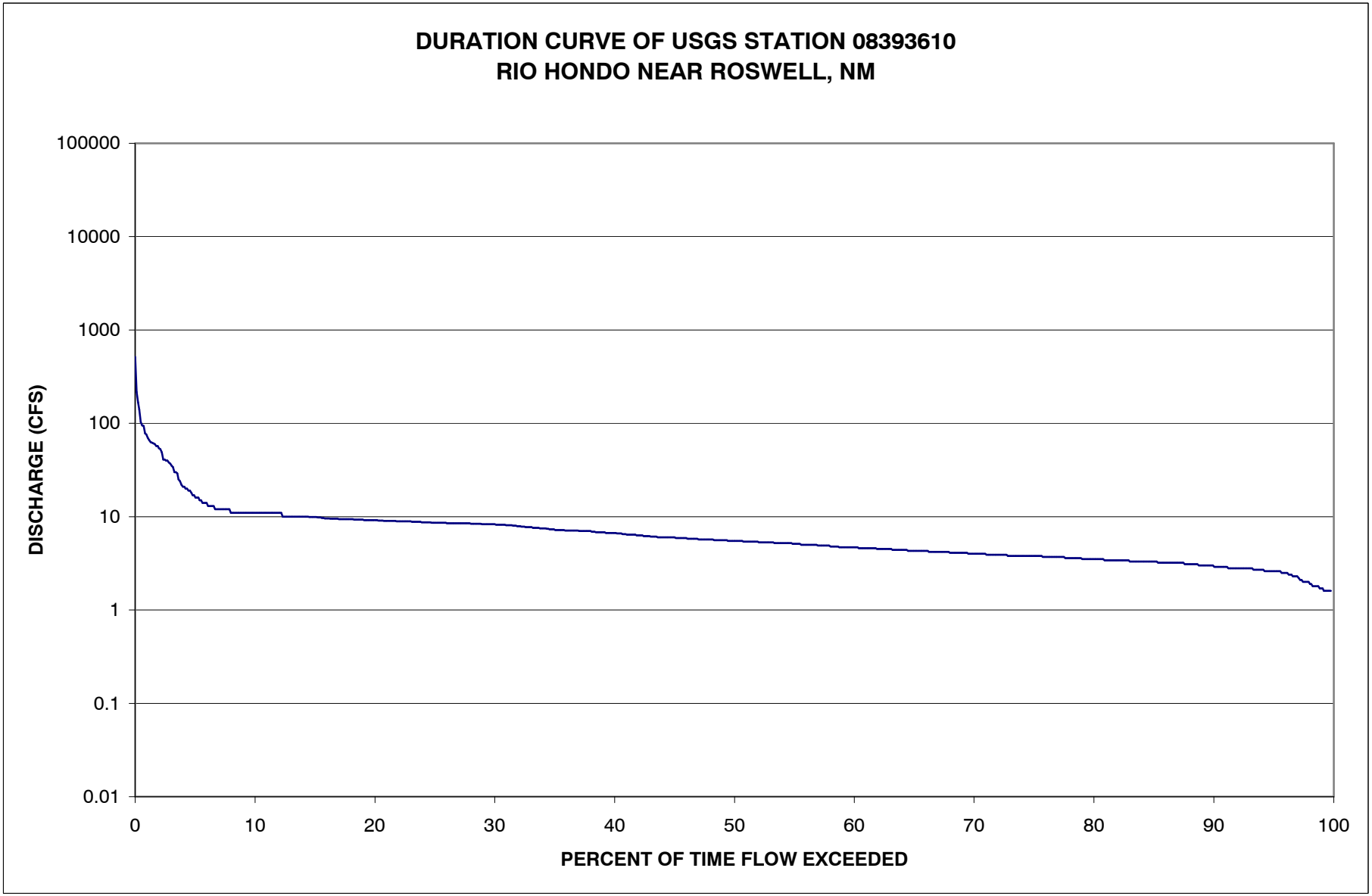
DURATION CURVE OF USGS STATION 08393610
RIO HONDO NEAR ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L16a

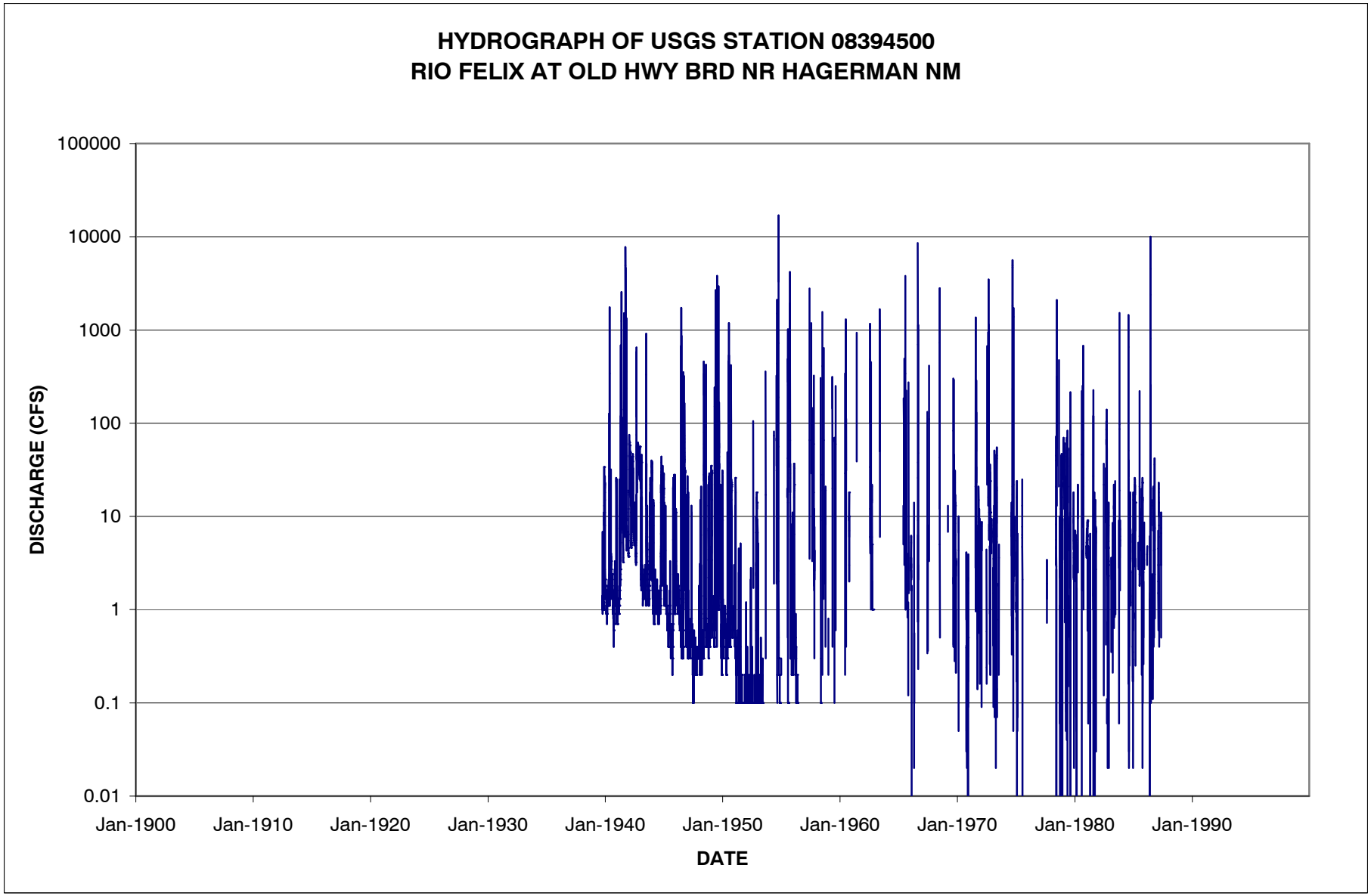
HYDROGRAPH OF USGS STATION 08394500
RIO FELIX AT OLD HWY BRD NR HAGERMAN NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L16b

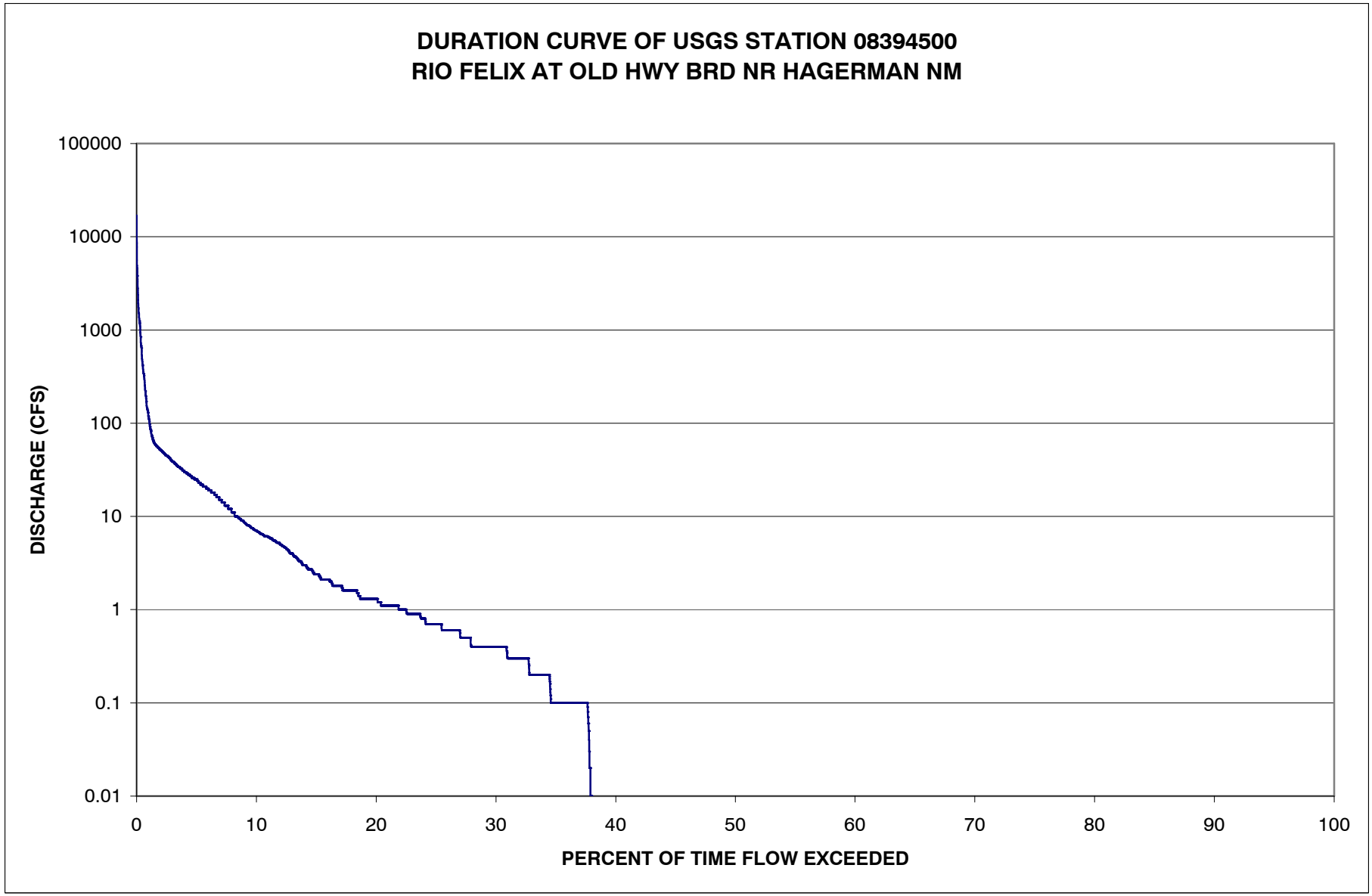
DURATION CURVE OF USGS STATION 08394500
RIO FELIX AT OLD HWY BRD NR HAGERMAN NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L17a

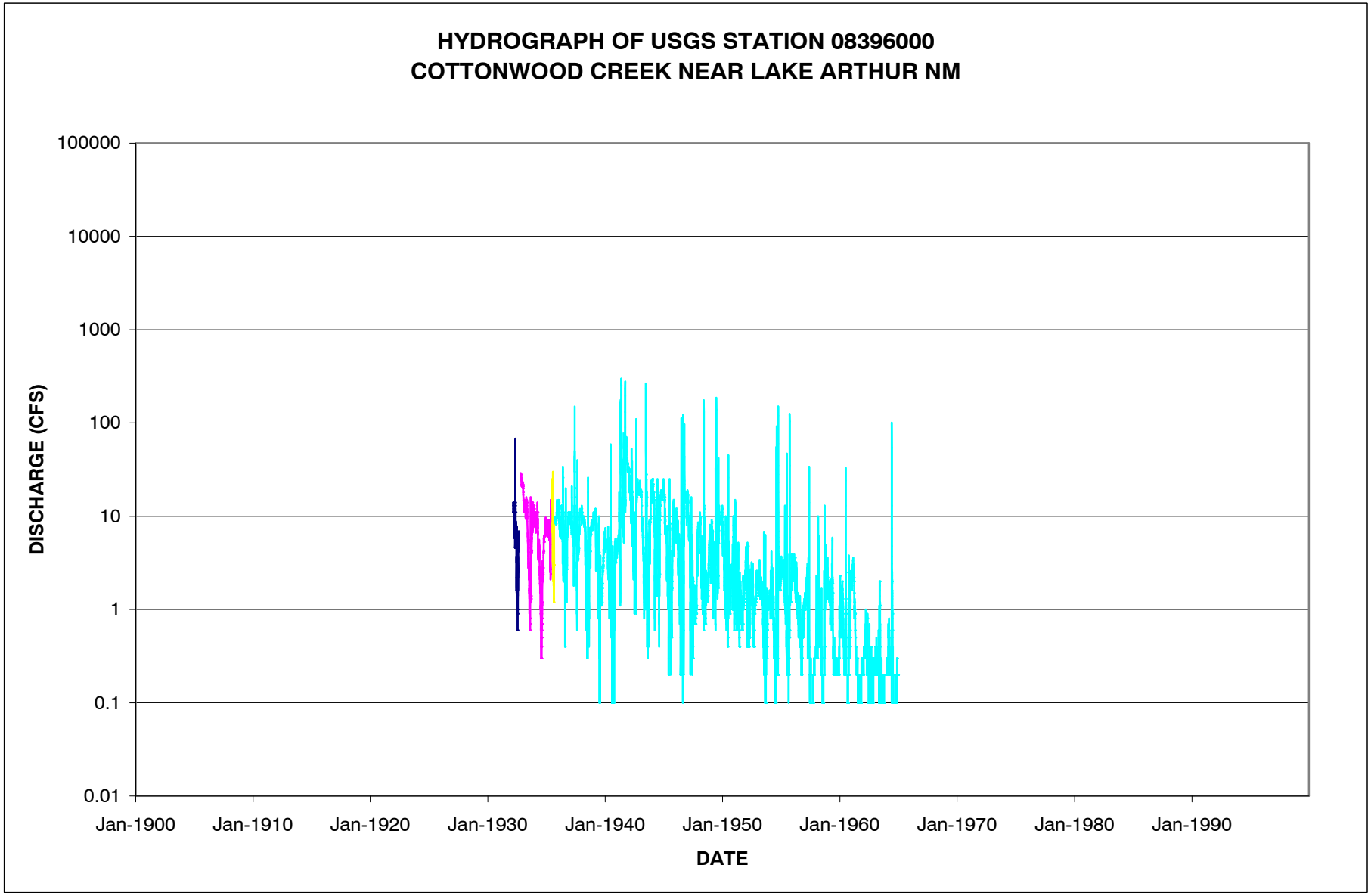
HYDROGRAPH OF USGS STATION 08396000
COTTONWOOD CREEK NEAR LAKE ARTHUR NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L17b

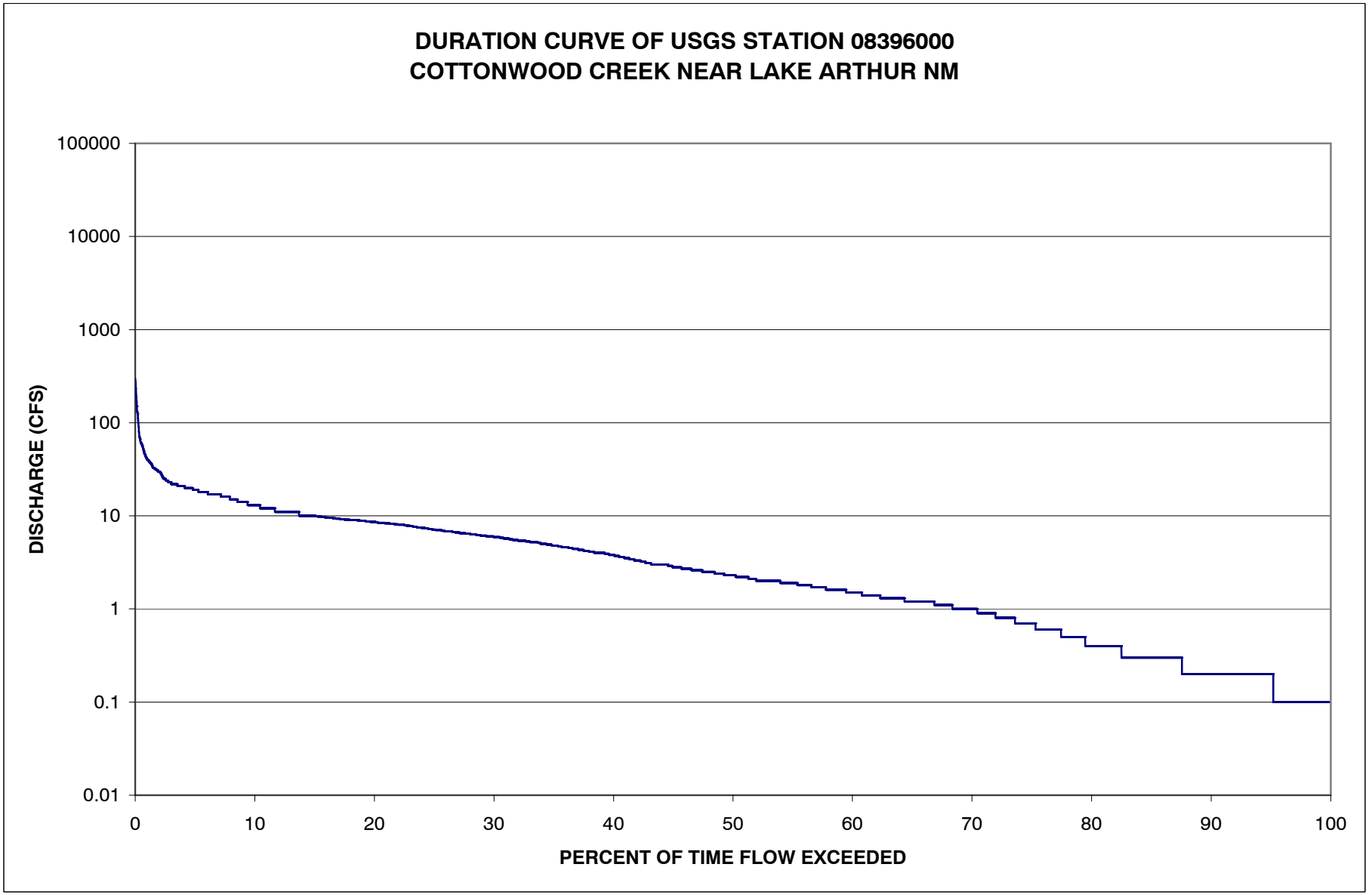
DURATION CURVE OF USGS STATION 08396000
COTTONWOOD CREEK NEAR LAKE ARTHUR NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L18a

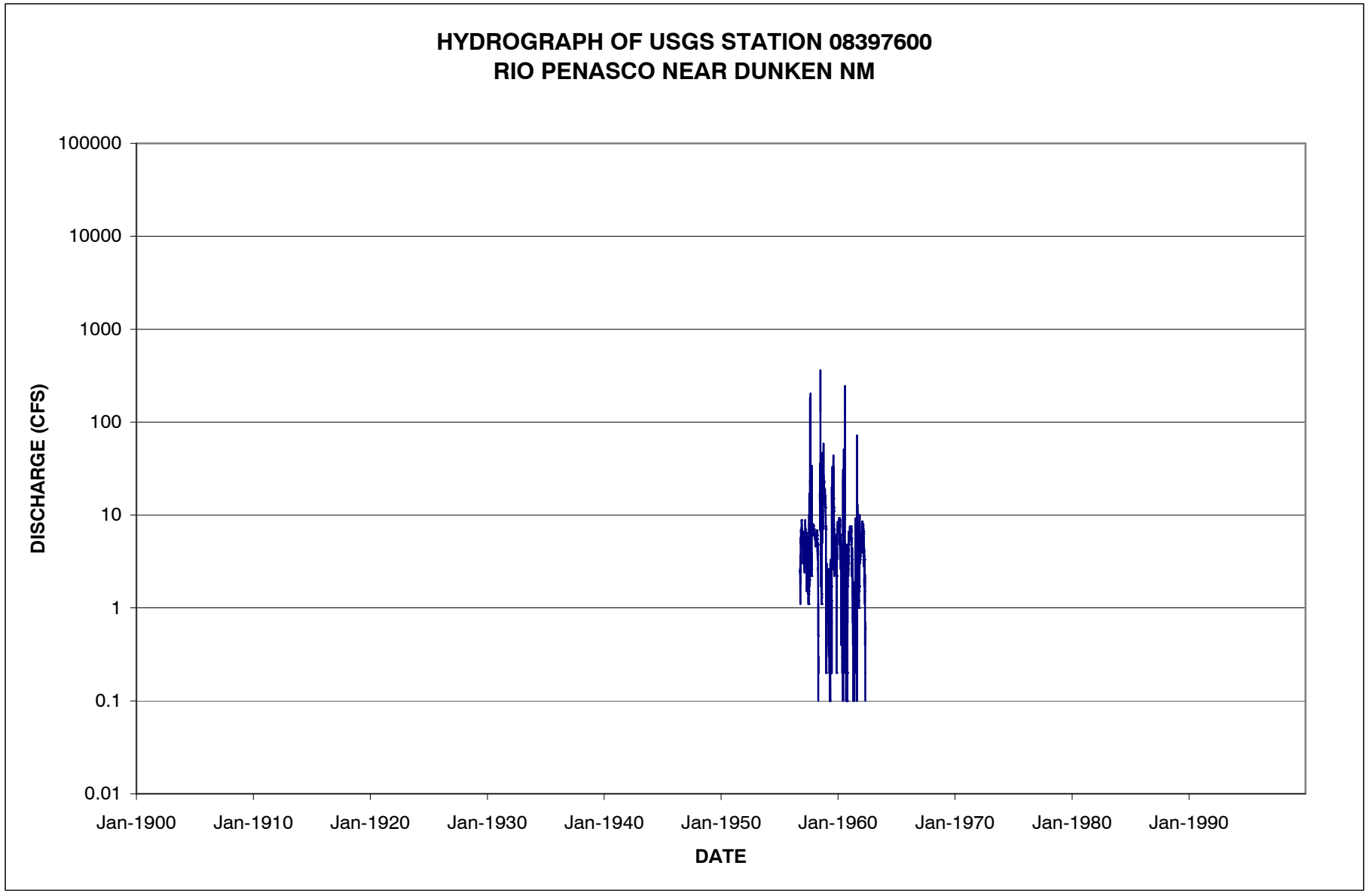
HYDROGRAPH OF USGS STATION 08397600
RIO PENASCO NEAR DUNKEN NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L18b

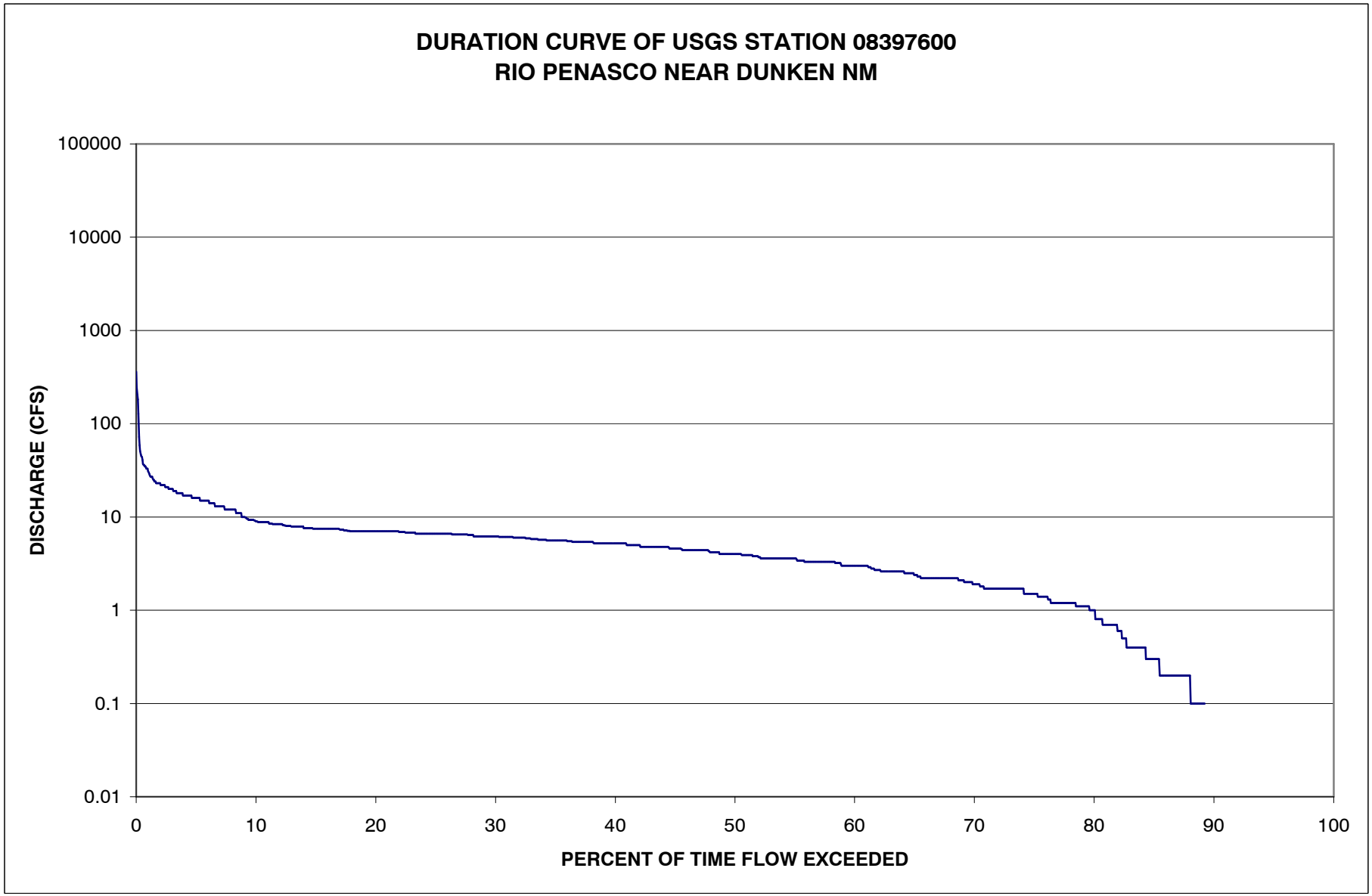
DURATION CURVE OF USGS STATION 08397600
RIO PENASCO NEAR DUNKEN NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L19a

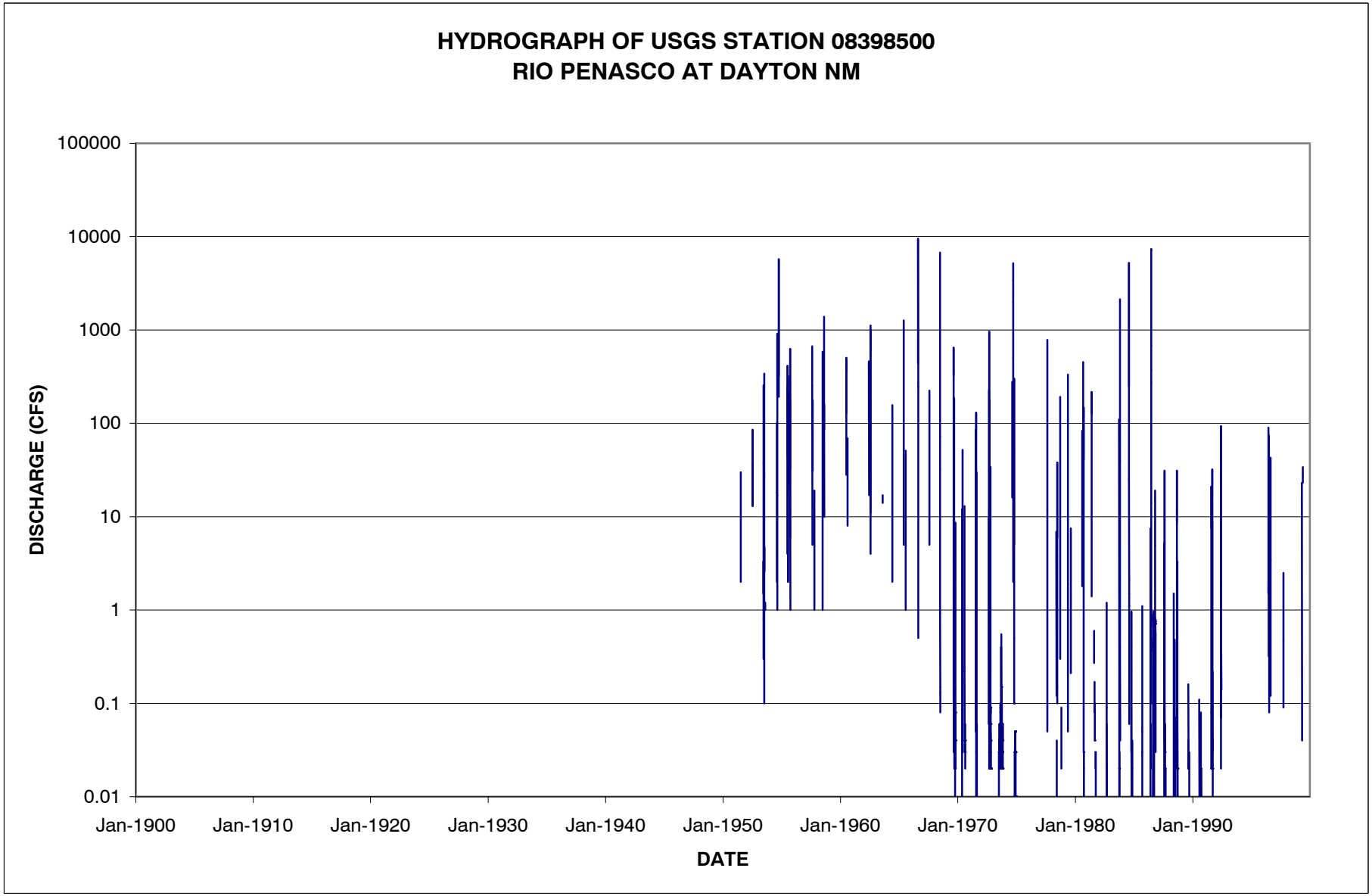
HYDROGRAPH OF USGS STATION 08398500
RIO PENASCO AT DAYTON NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L19b

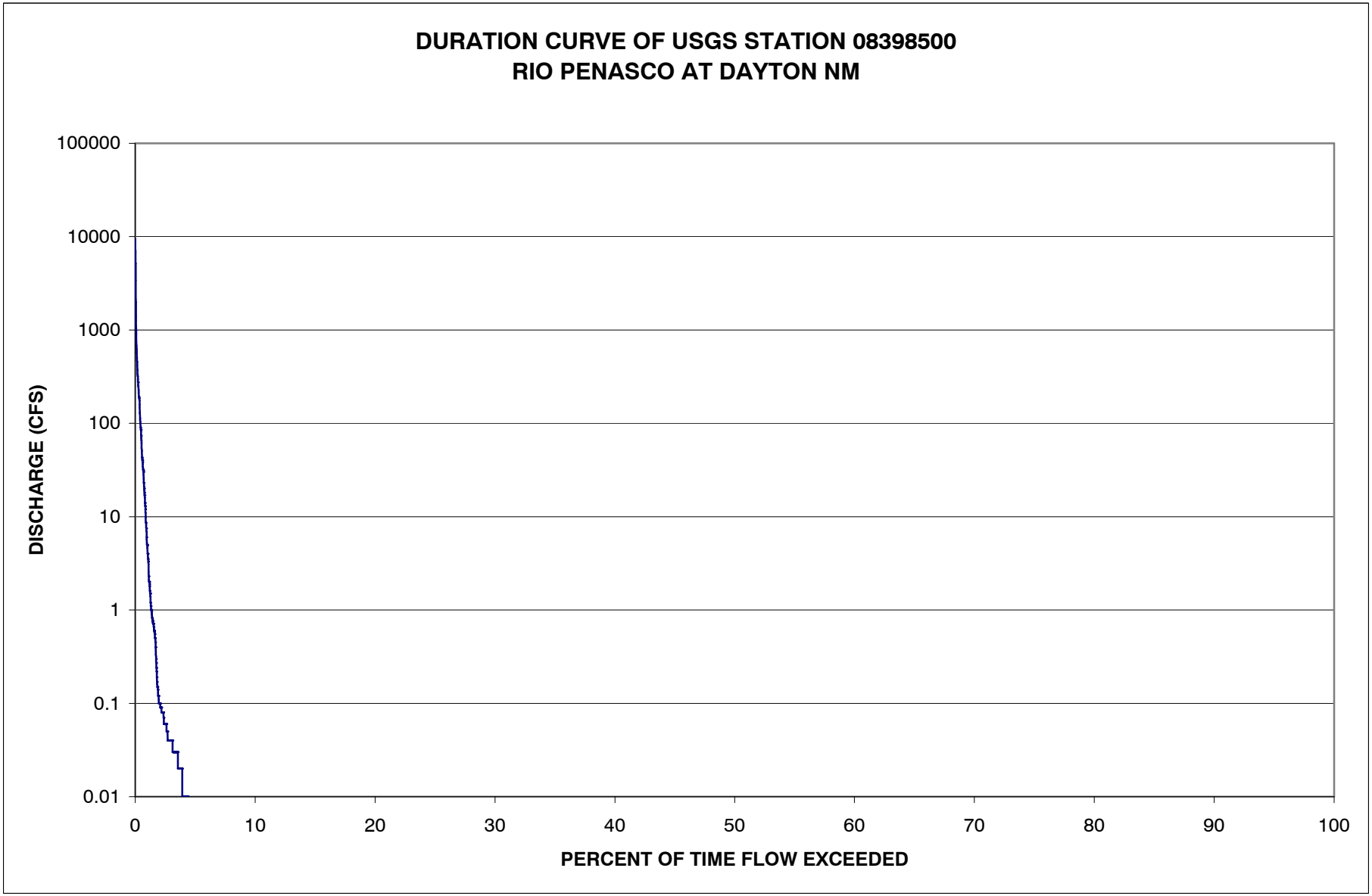
DURATION CURVE OF USGS STATION 08398500
RIO PENASCO AT DAYTON NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L20a

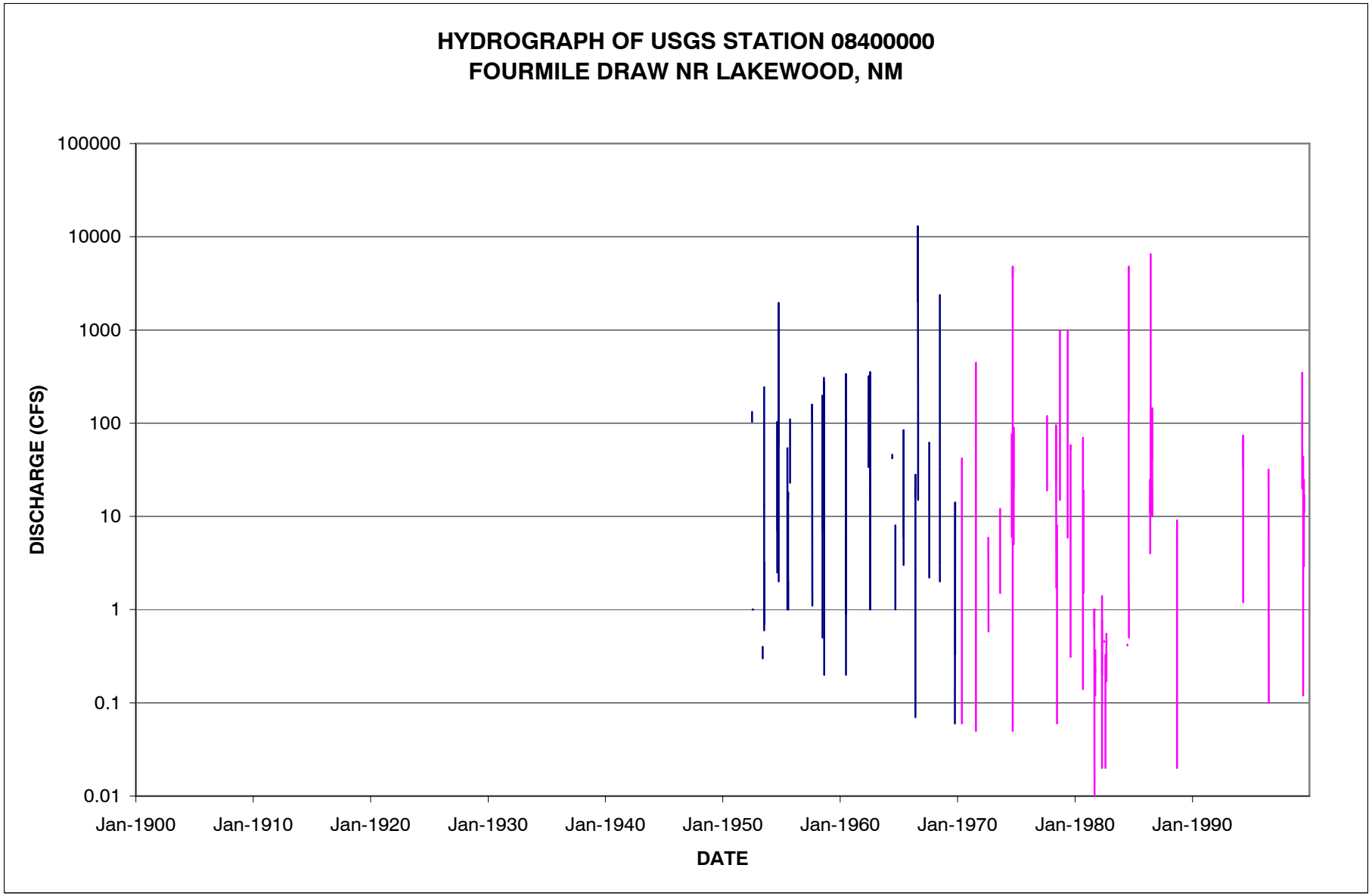
HYDROGRAPH OF USGS STATION 08400000
FOURMILE DRAW NR LAKEWOOD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L20b

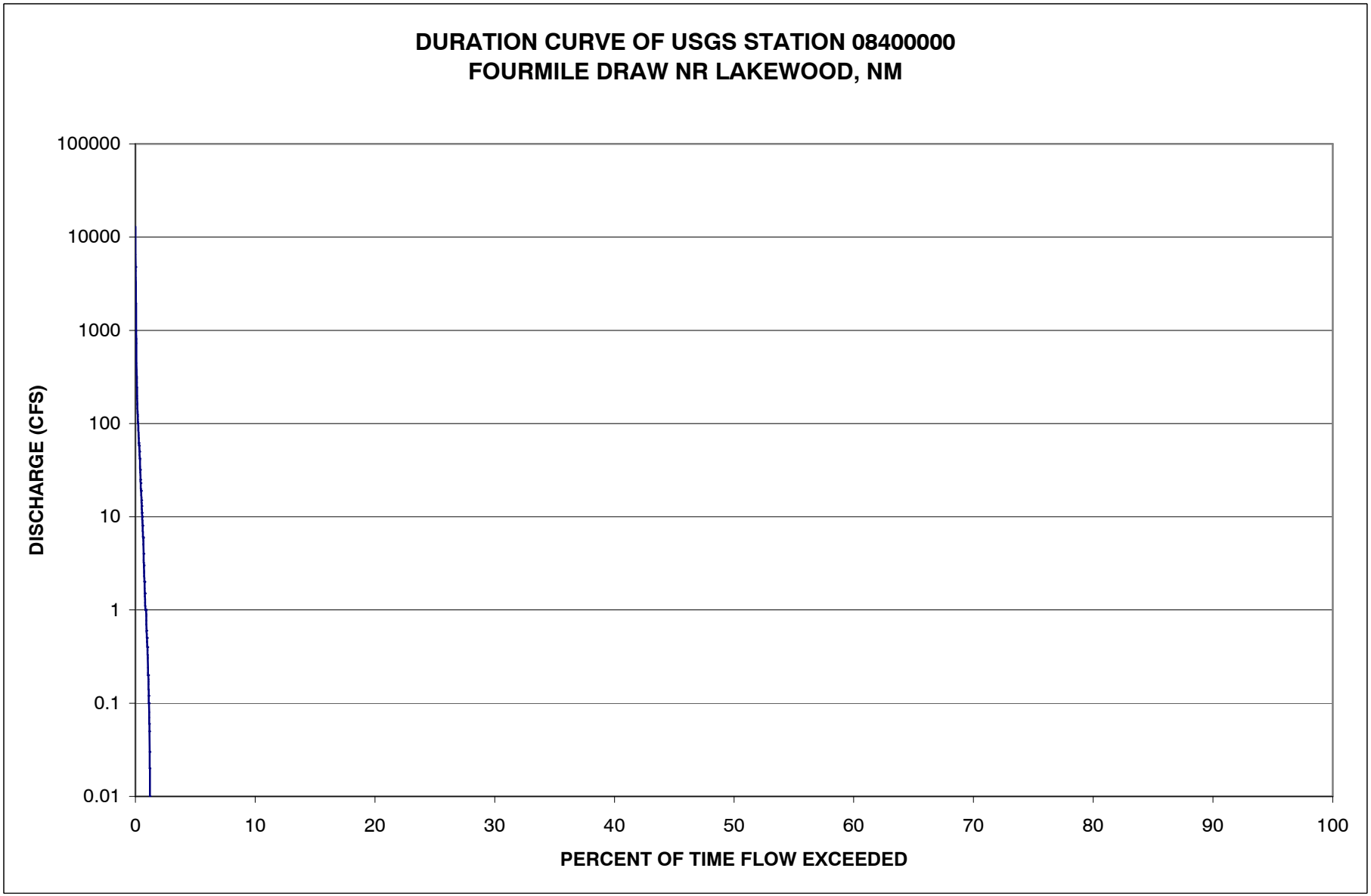
DURATION CURVE OF USGS STATION 08400000
FOURMILE DRAW NR LAKEWOOD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L21a

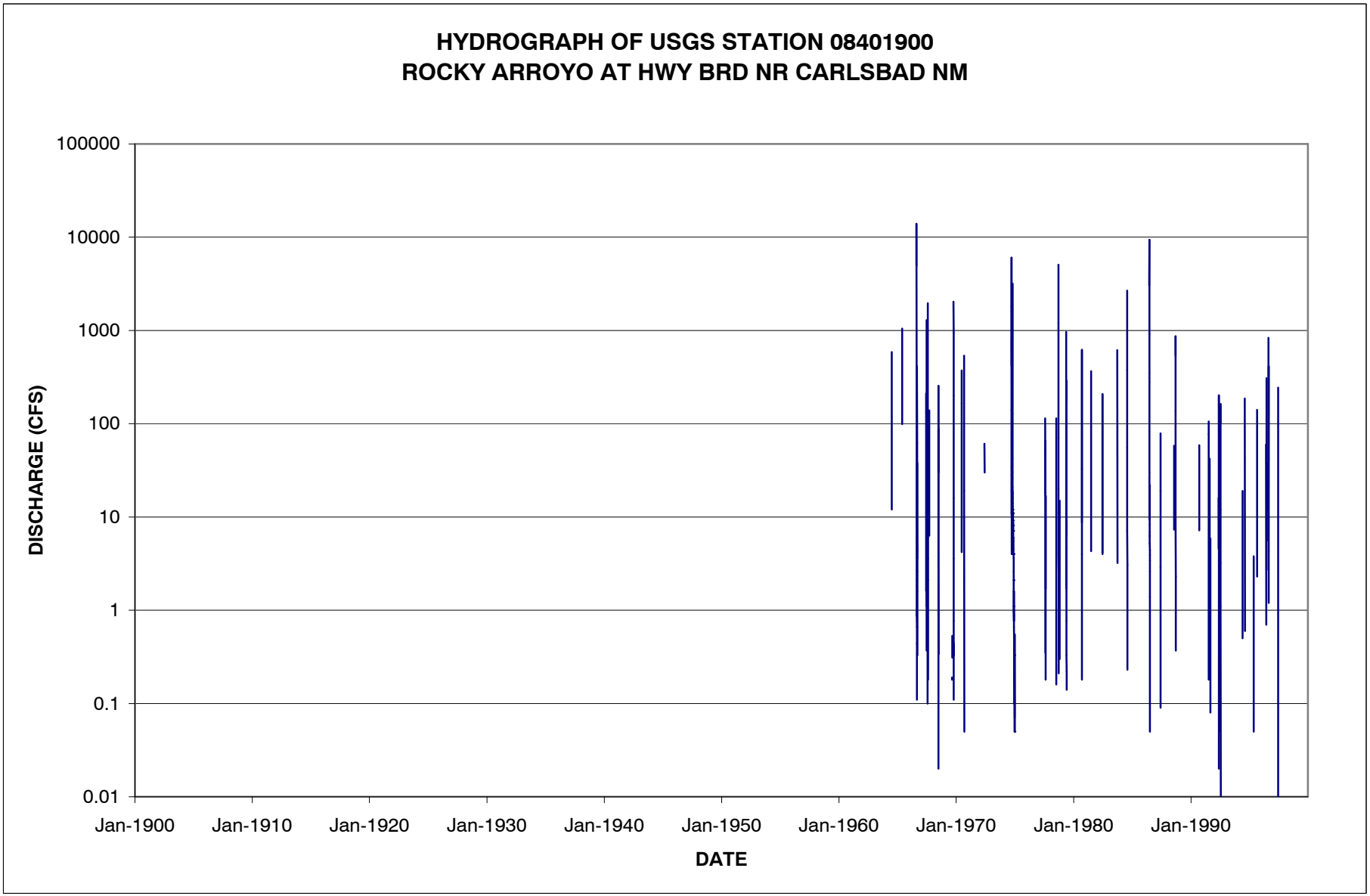
HYDROGRAPH OF USGS STATION 08401900
ROCKY ARROYO AT HWY BRD NR CARLSBAD NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L21b

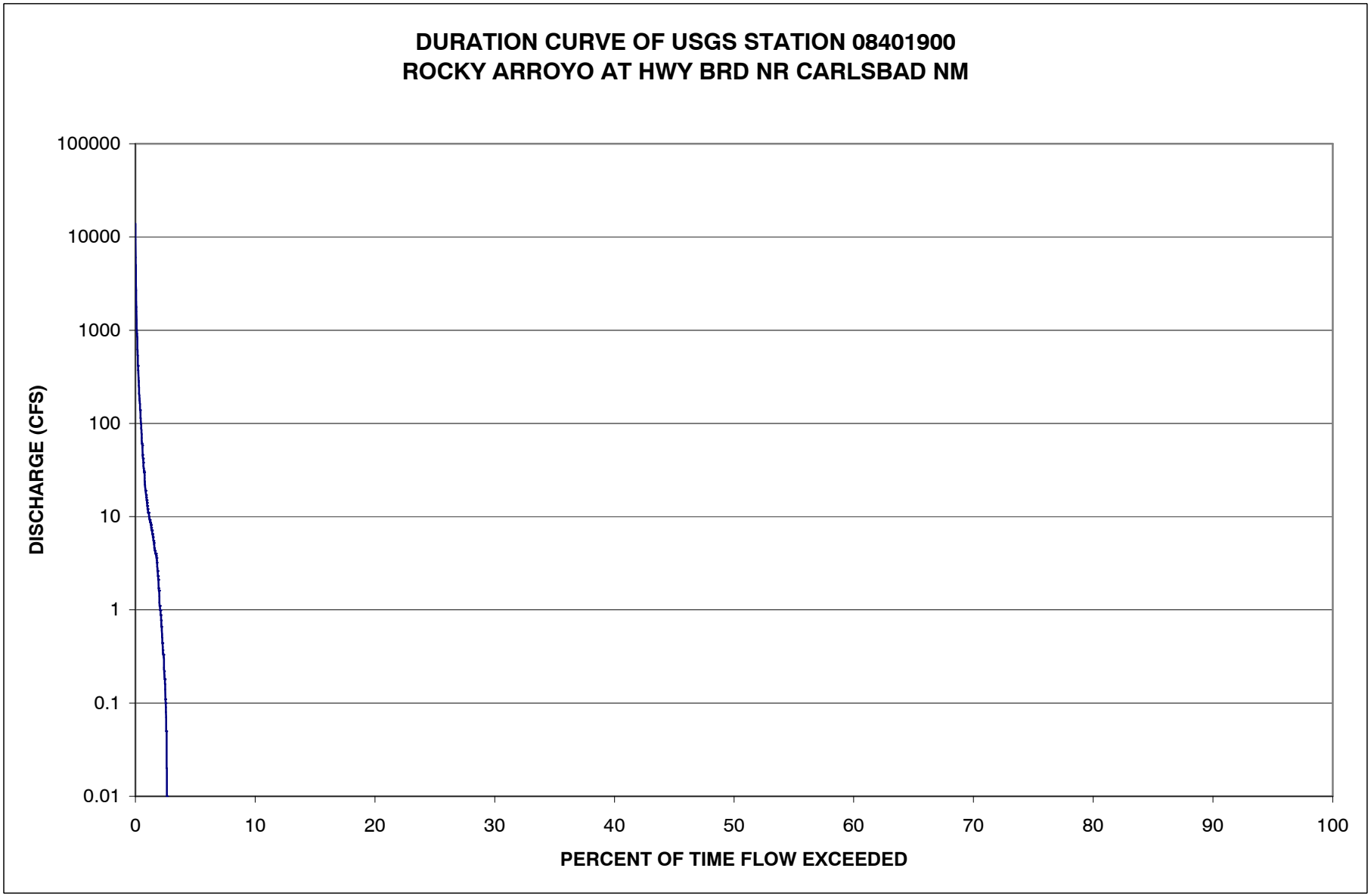
DURATION CURVE OF USGS STATION 08401900
ROCKY ARROYO AT HWY BRD NR CARLSBAD NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L22a

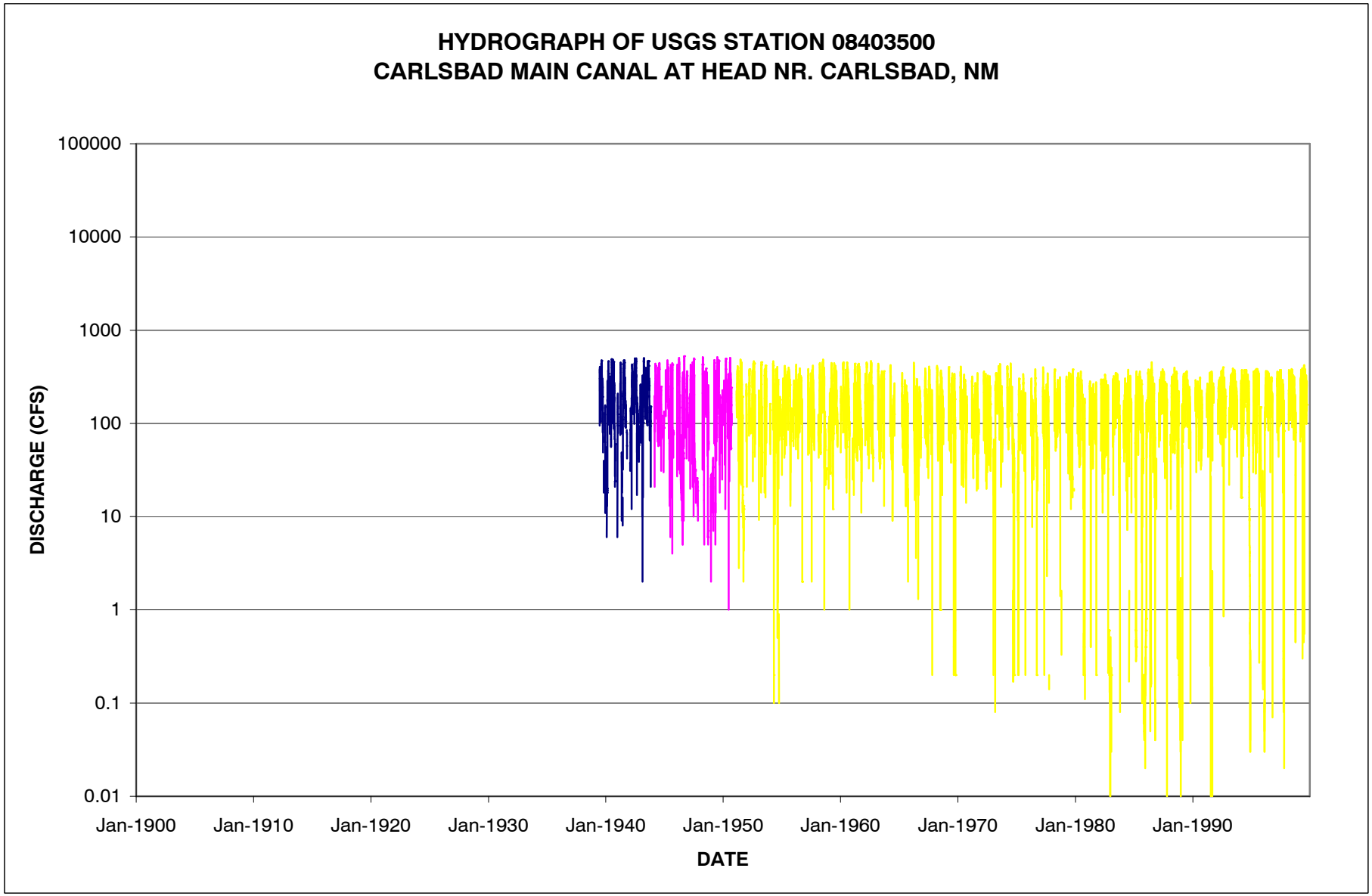
HYDROGRAPH OF USGS STATION 08403500
CARLSBAD MAIN CANAL AT HEAD NR. CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L22b

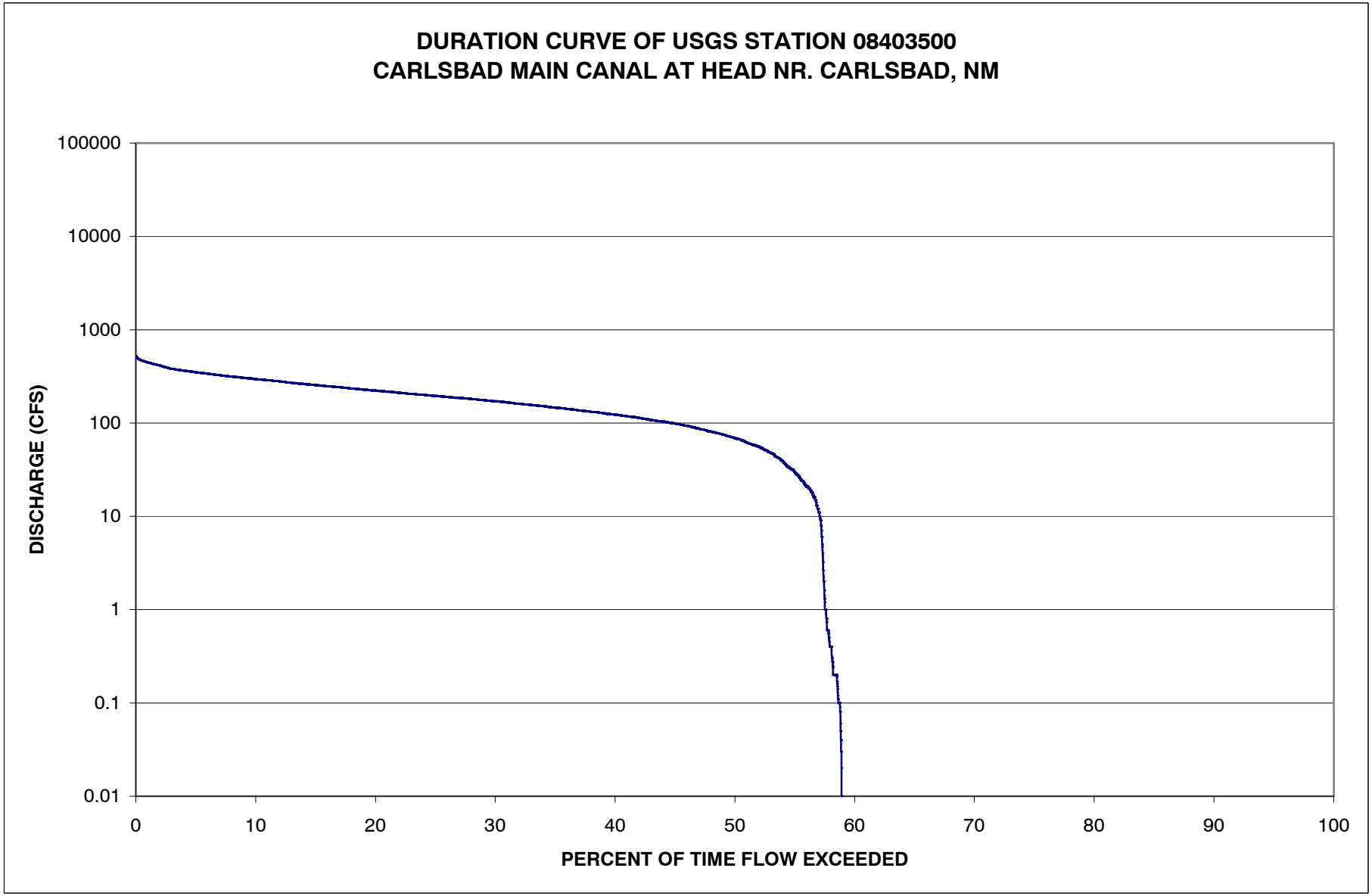
DURATION CURVE OF USGS STATION 08403500
CARLSBAD MAIN CANAL AT HEAD NR. CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L23a

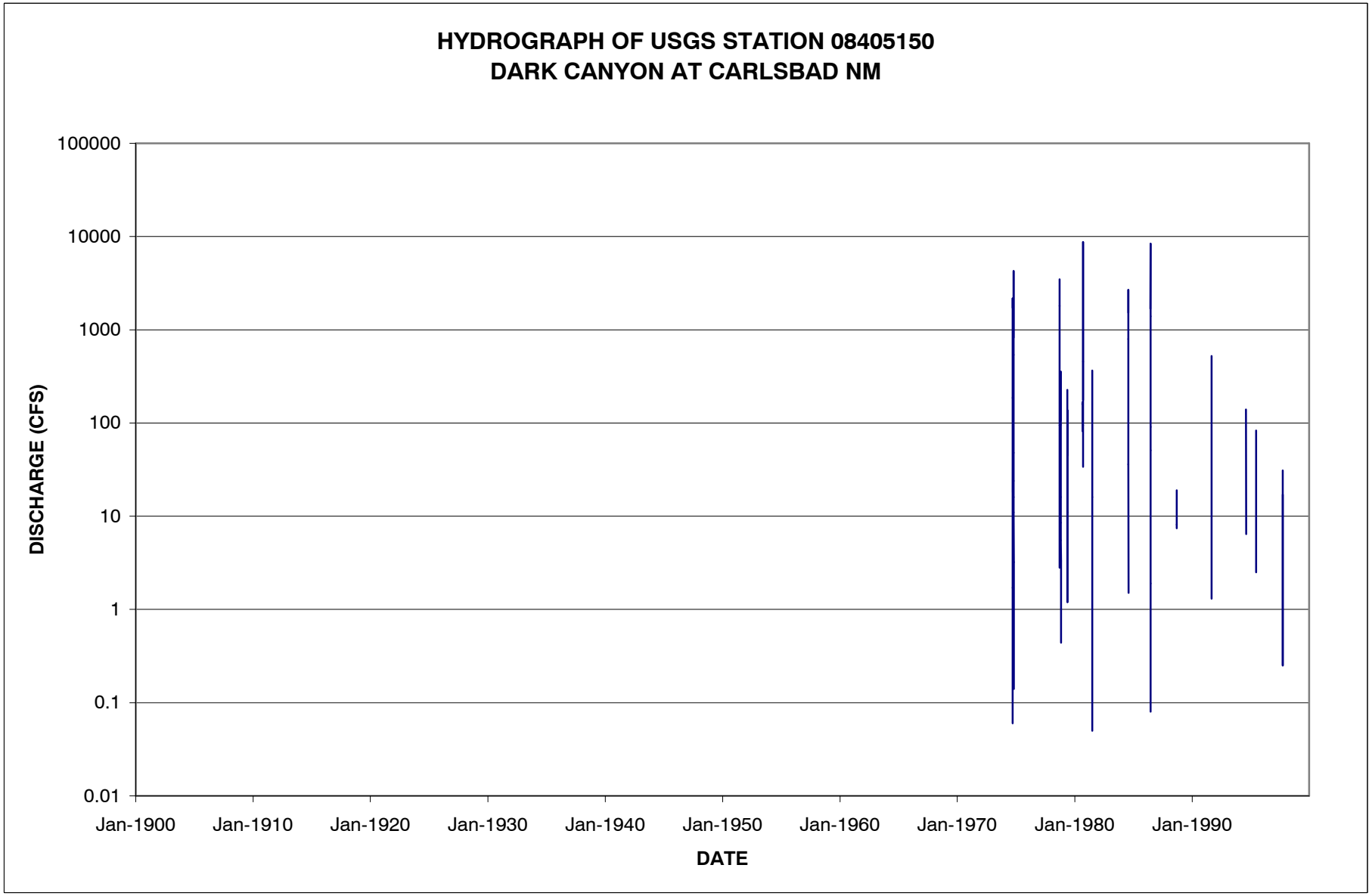
HYDROGRAPH OF USGS STATION 08405150
DARK CANYON AT CARLSBAD NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L23b

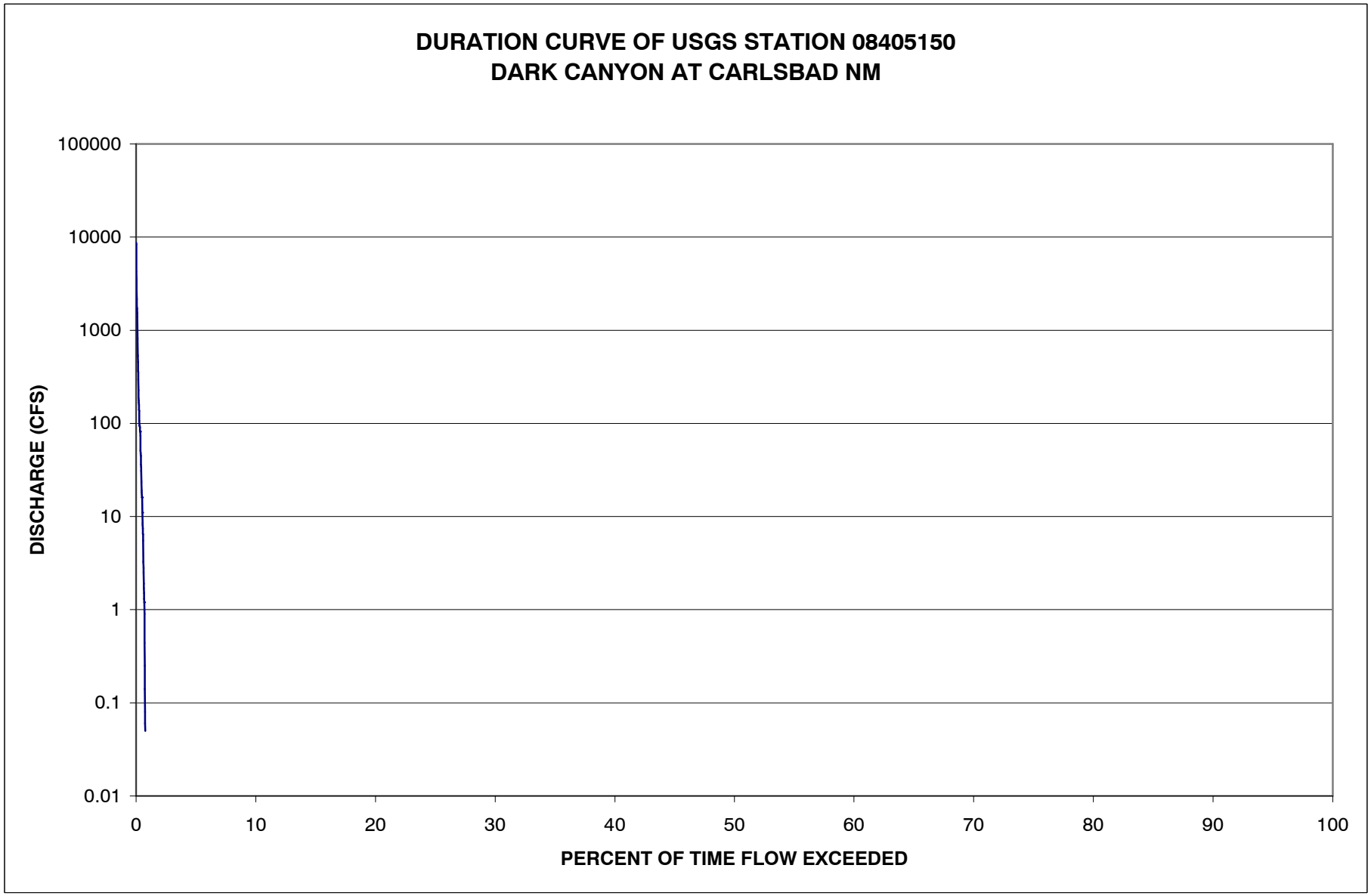
DURATION CURVE OF USGS STATION 08405150
DARK CANYON AT CARLSBAD NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE L24a

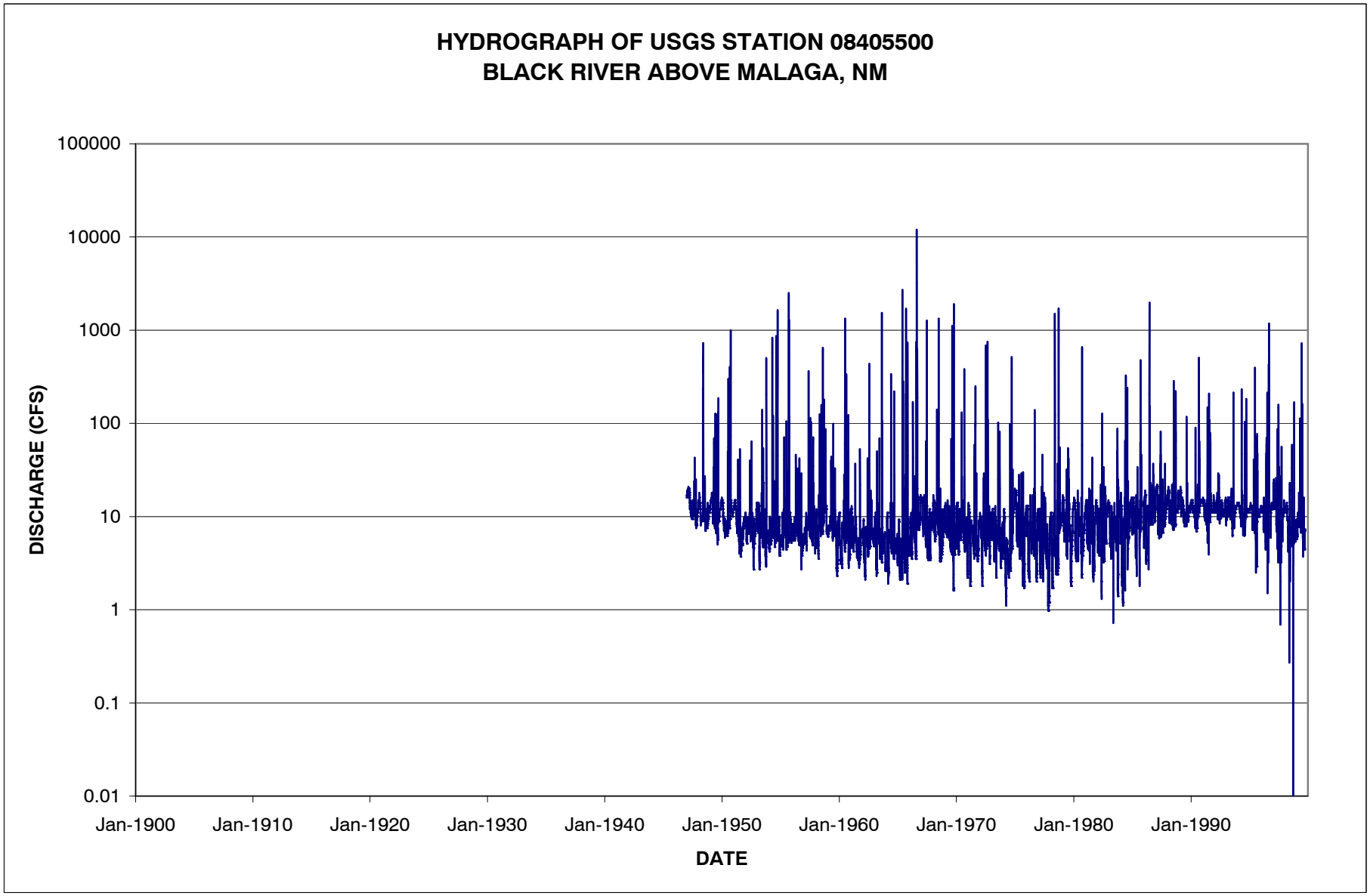
HYDROGRAPH OF USGS STATION 08405500
BLACK RIVER ABOVE MALAGA, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE L24b

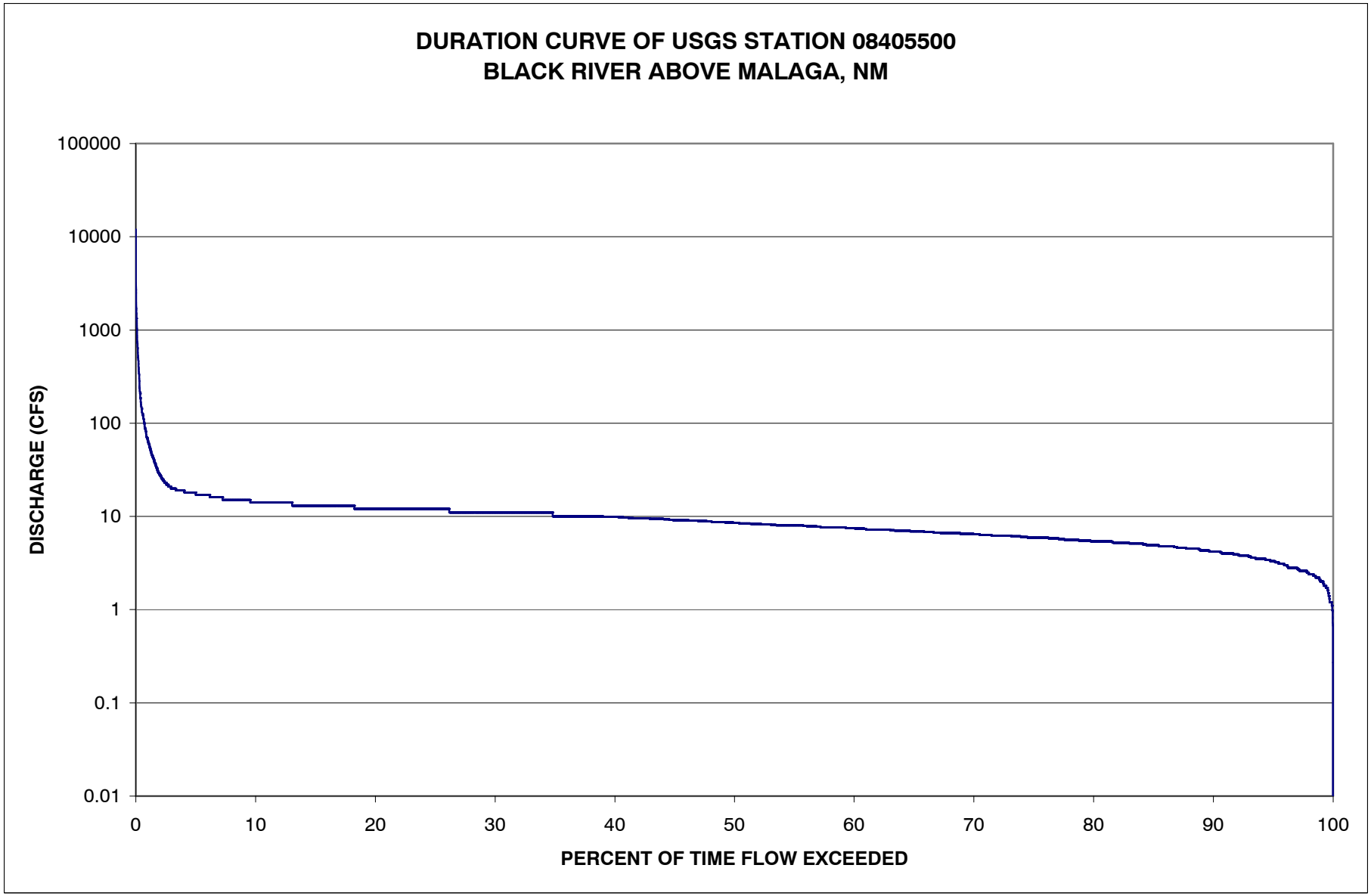
DURATION CURVE OF USGS STATION 08405500
BLACK RIVER ABOVE MALAGA, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K1a

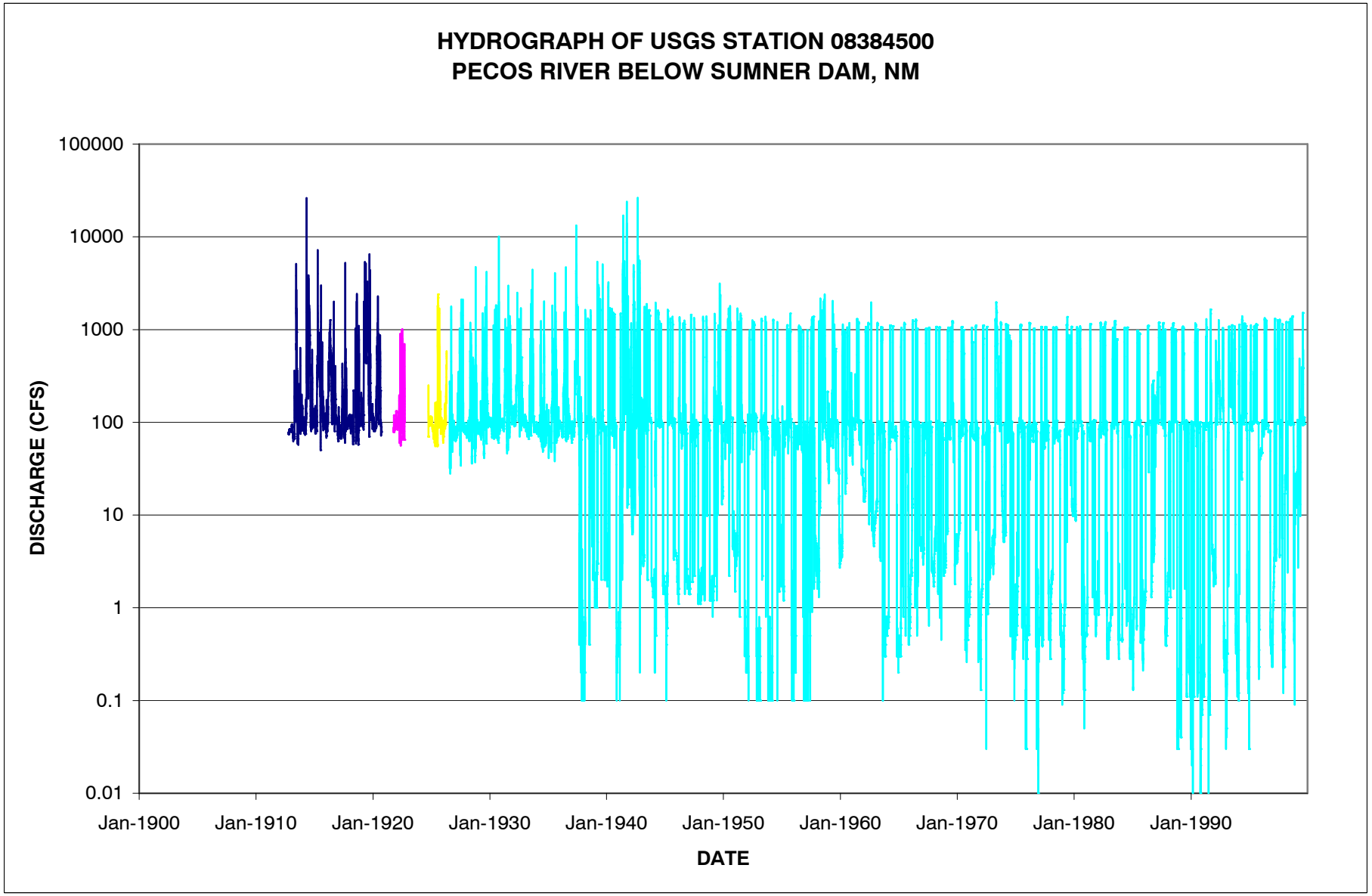
HYDROGRAPH OF USGS STATION 08384500
PECOS RIVER BELOW SUMNER DAM, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K1b

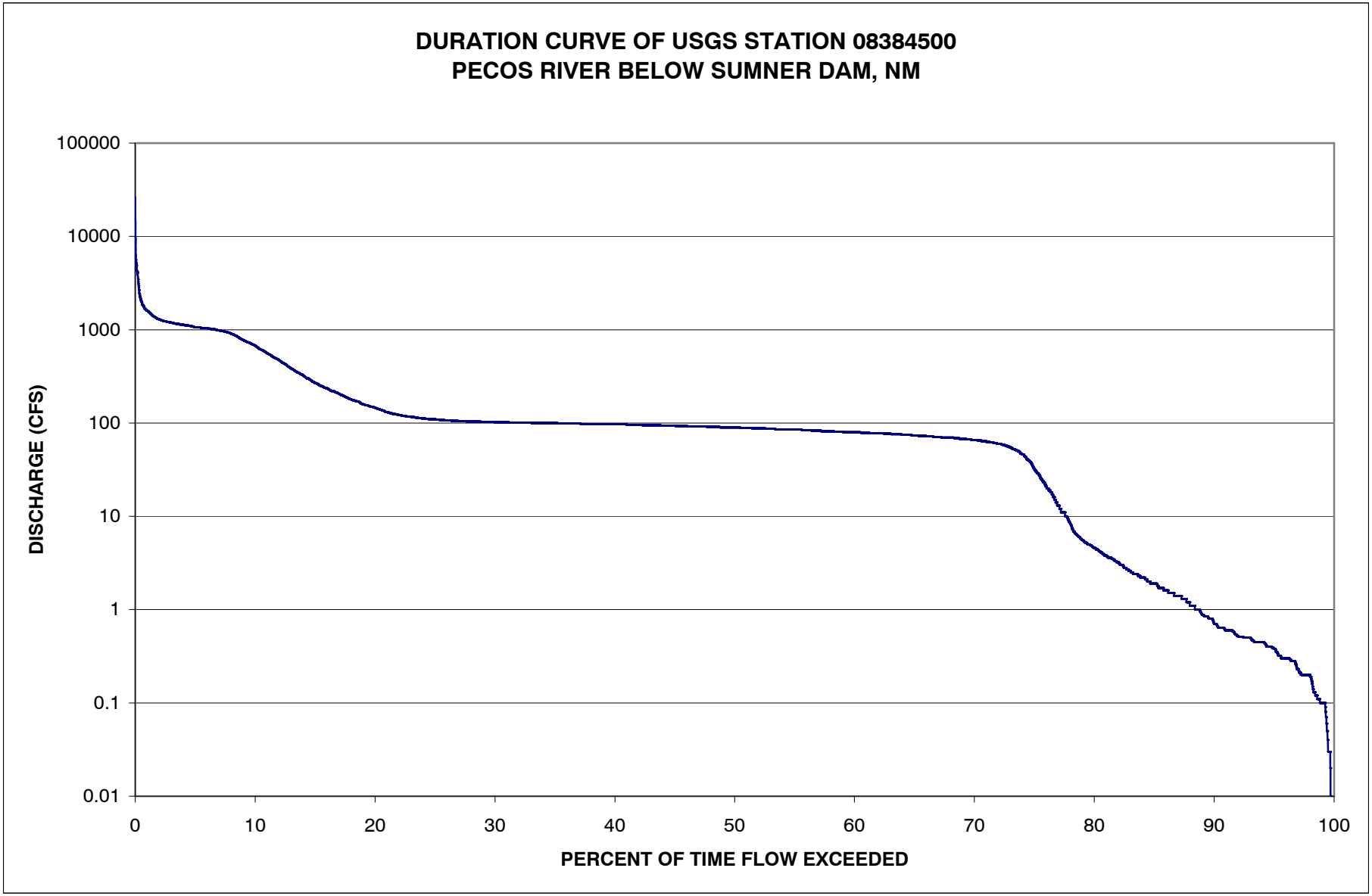
DURATION CURVE OF USGS STATION 08384500
PECOS RIVER BELOW SUMNER DAM, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K2a

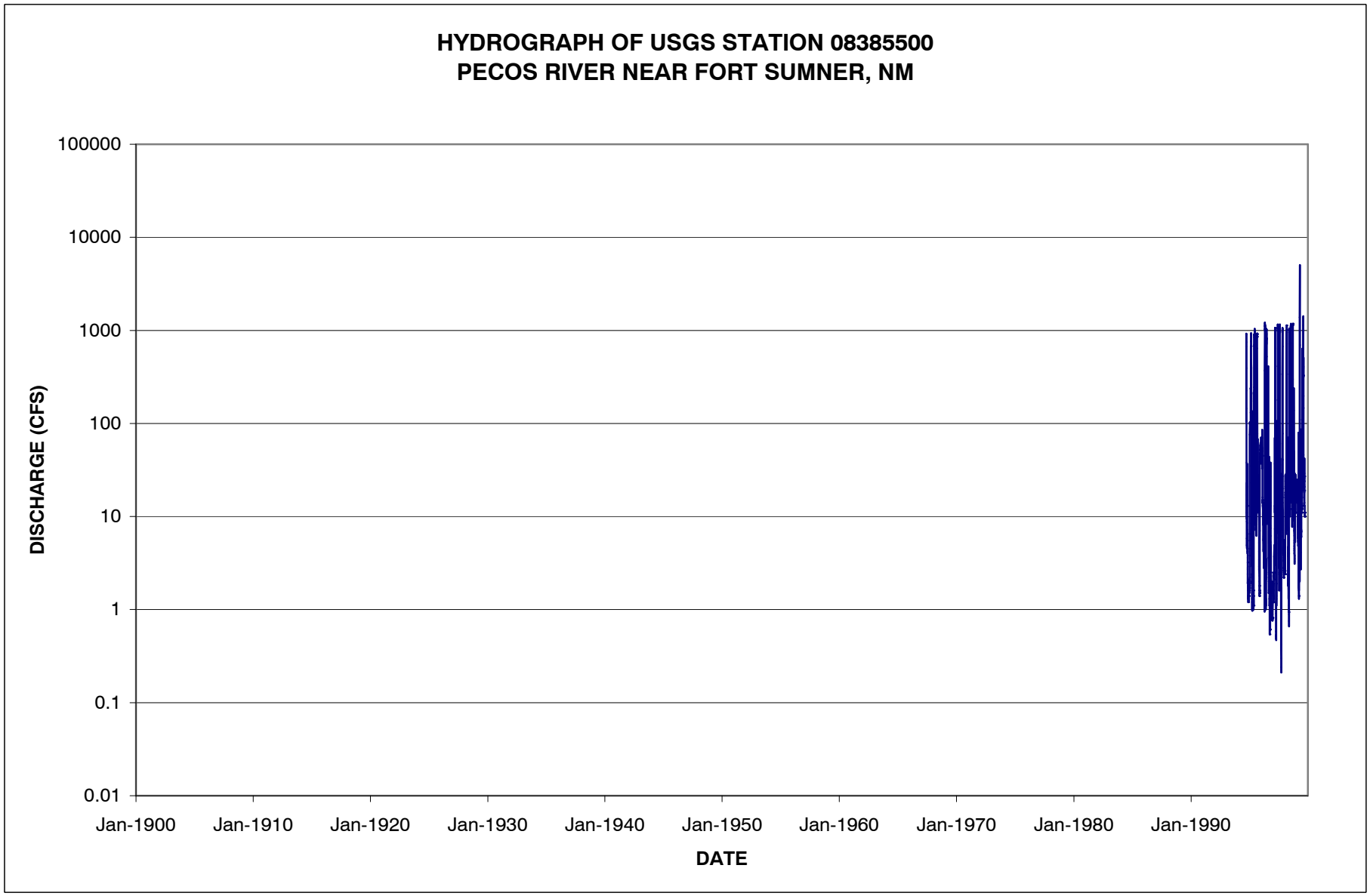
HYDROGRAPH OF USGS STATION 08385500
PECOS RIVER NEAR FORT SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K2b

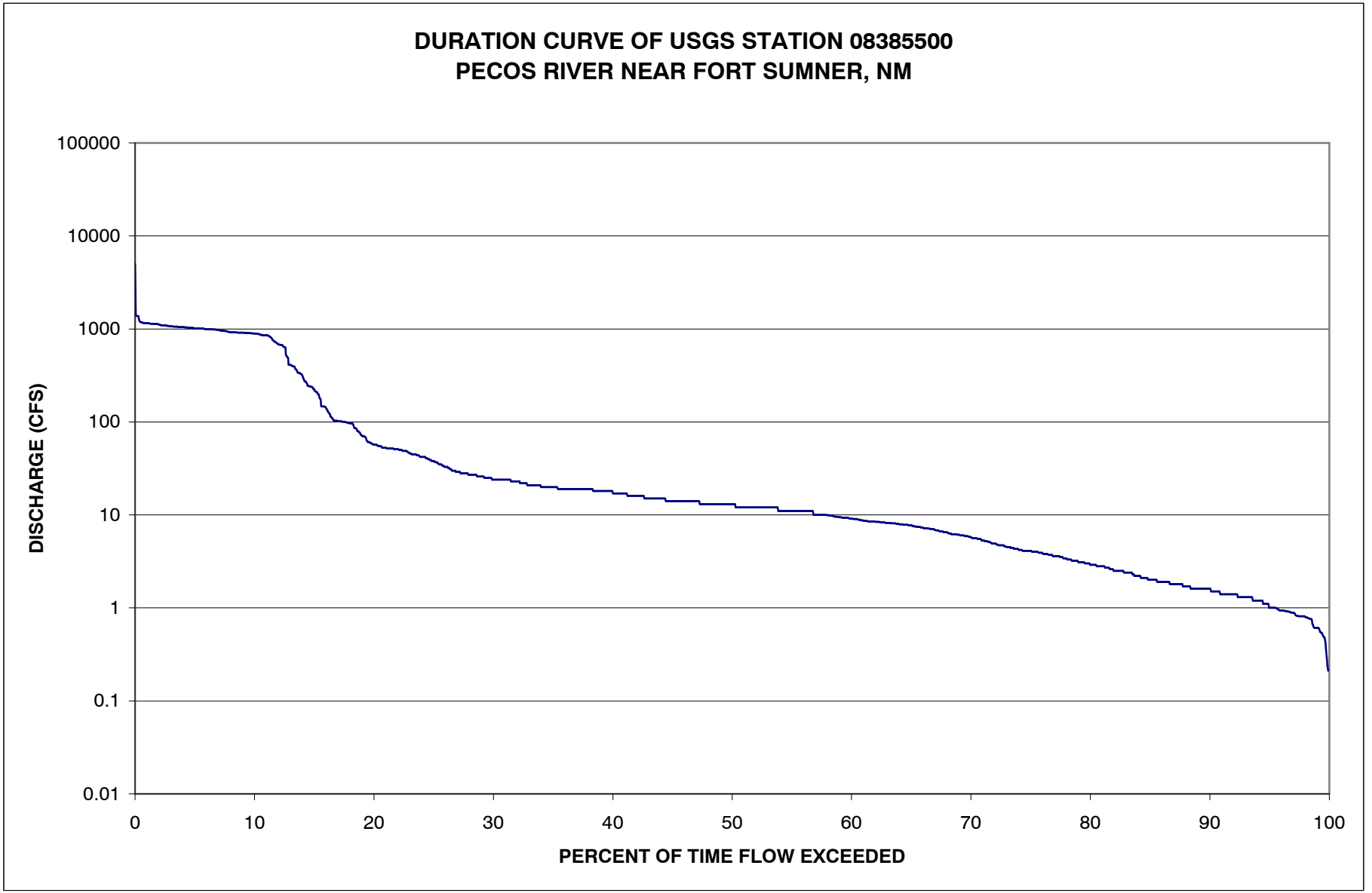
DURATION CURVE OF USGS STATION 08385500
PECOS RIVER NEAR FORT SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K3a

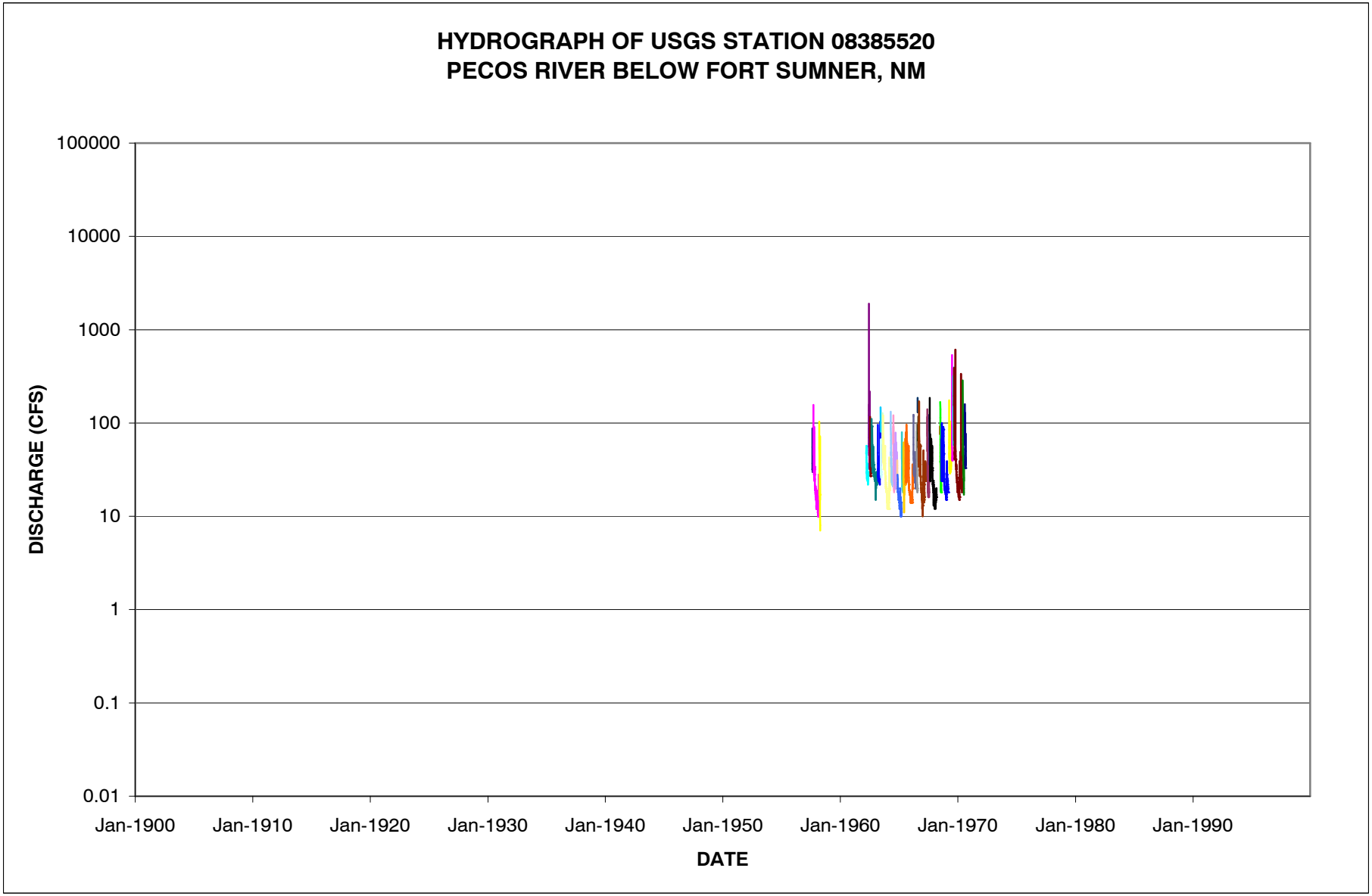
HYDROGRAPH OF USGS STATION 08385520
PECOS RIVER BELOW FORT SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K3b

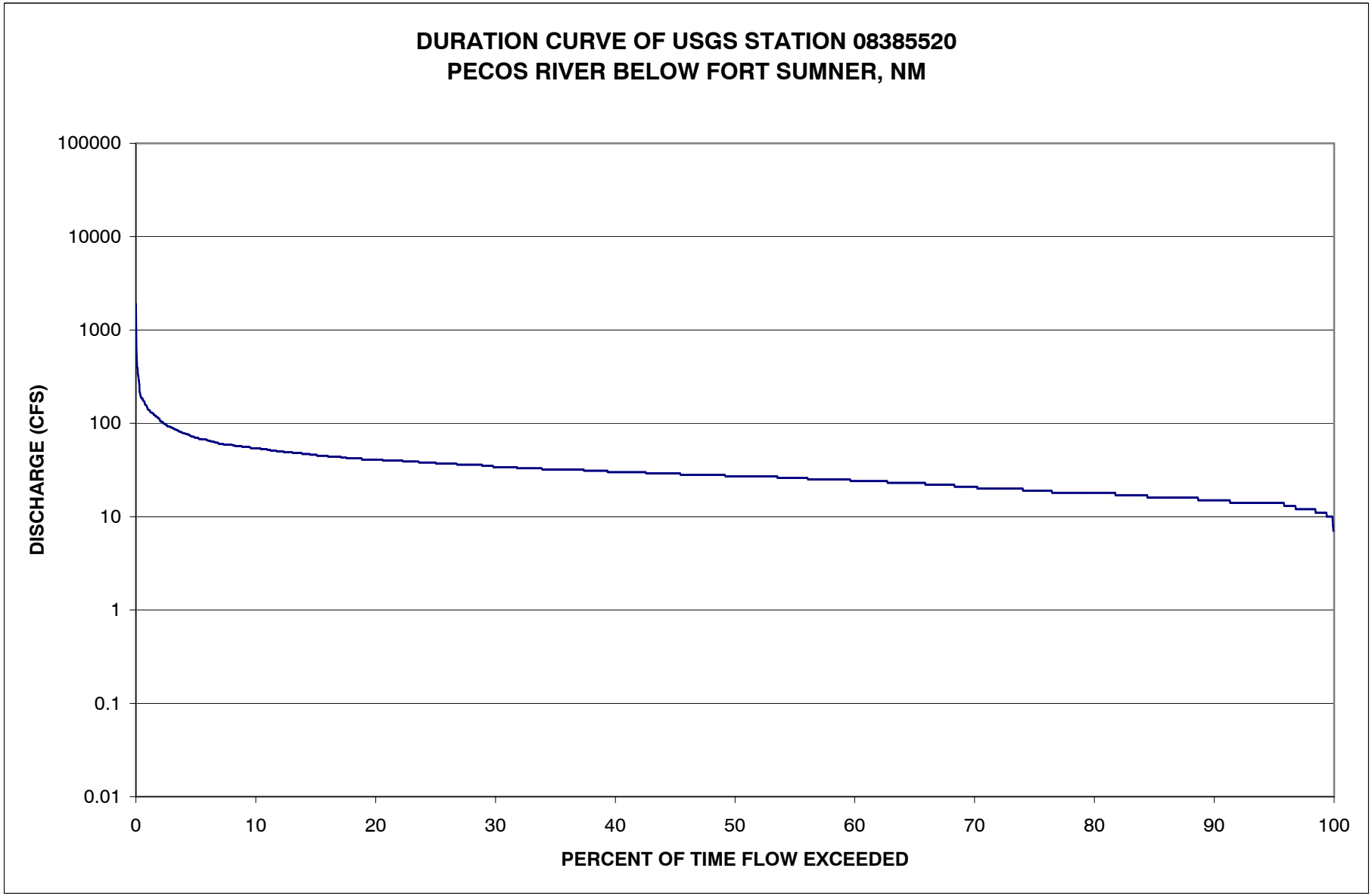
DURATION CURVE OF USGS STATION 08385520
PECOS RIVER BELOW FORT SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K4a

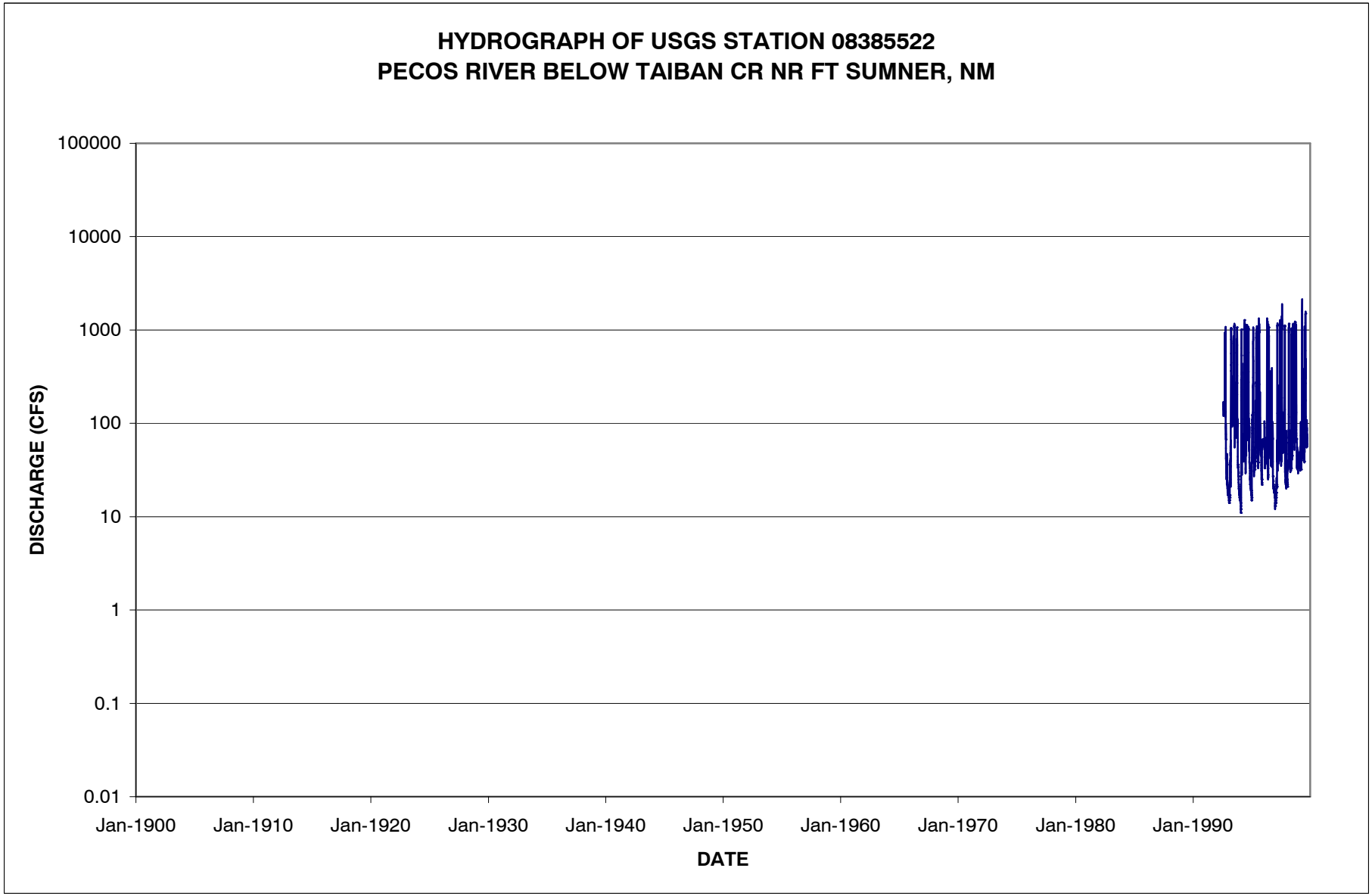
HYDROGRAPH OF USGS STATION 08385522
PECOS RIVER BELOW TAIBAN CR NR FT SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K4b

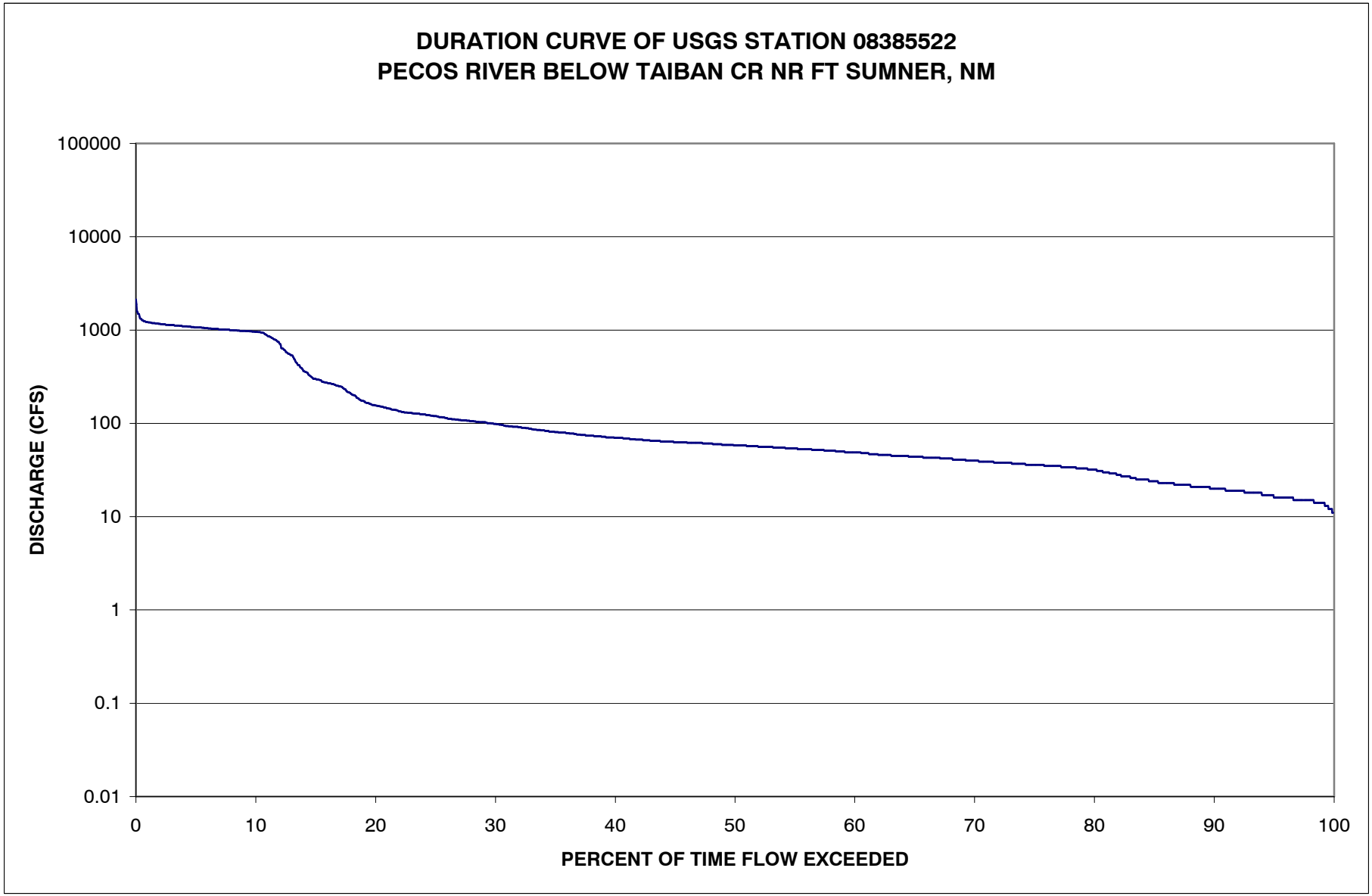
DURATION CURVE OF USGS STATION 08385522
PECOS RIVER BELOW TAIBAN CR NR FT SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K5a

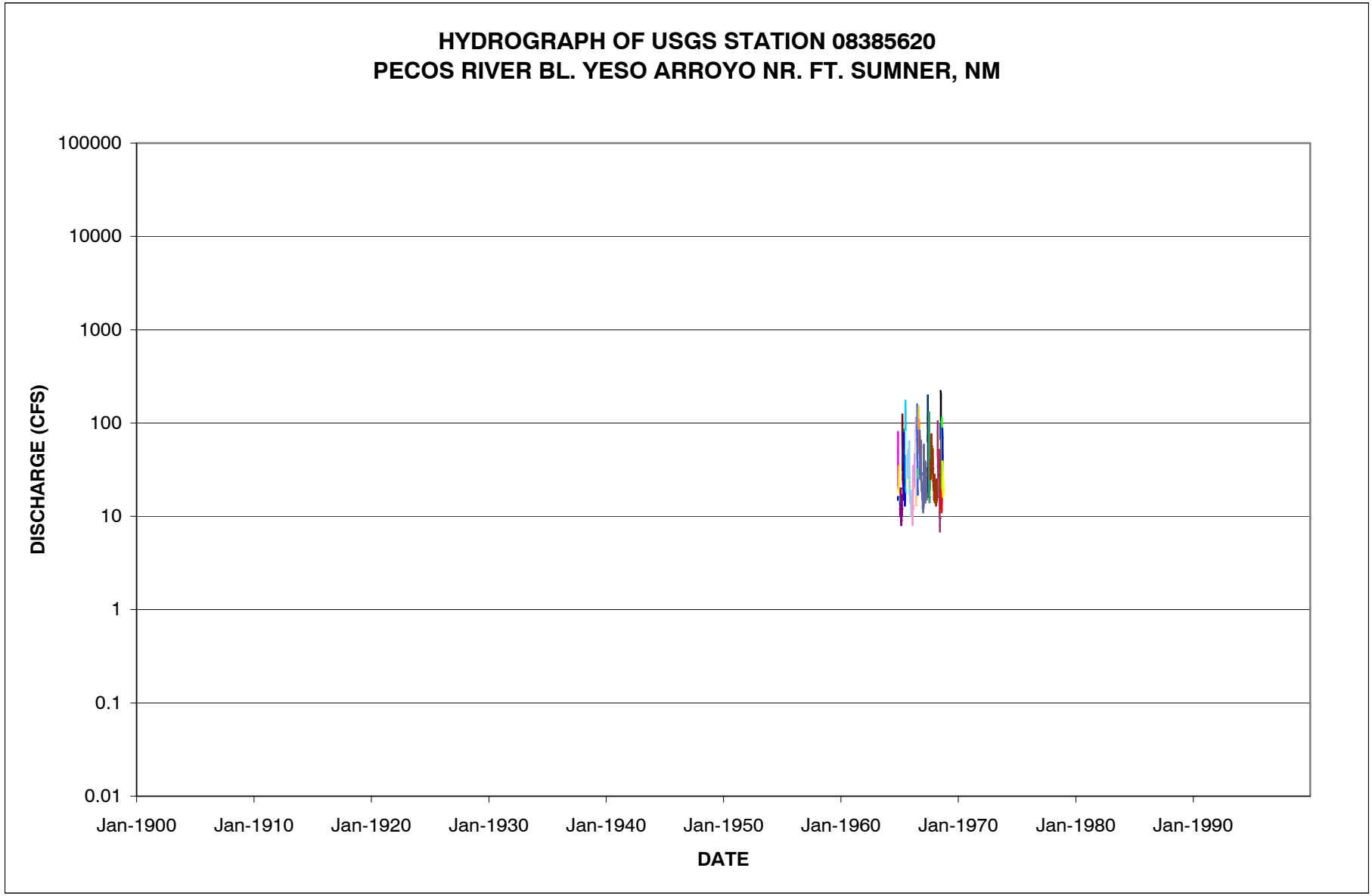
HYDROGRAPH OF USGS STATION 08385620
PECOS RIVER BL. YESO ARROYO NR. FT. SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K5b

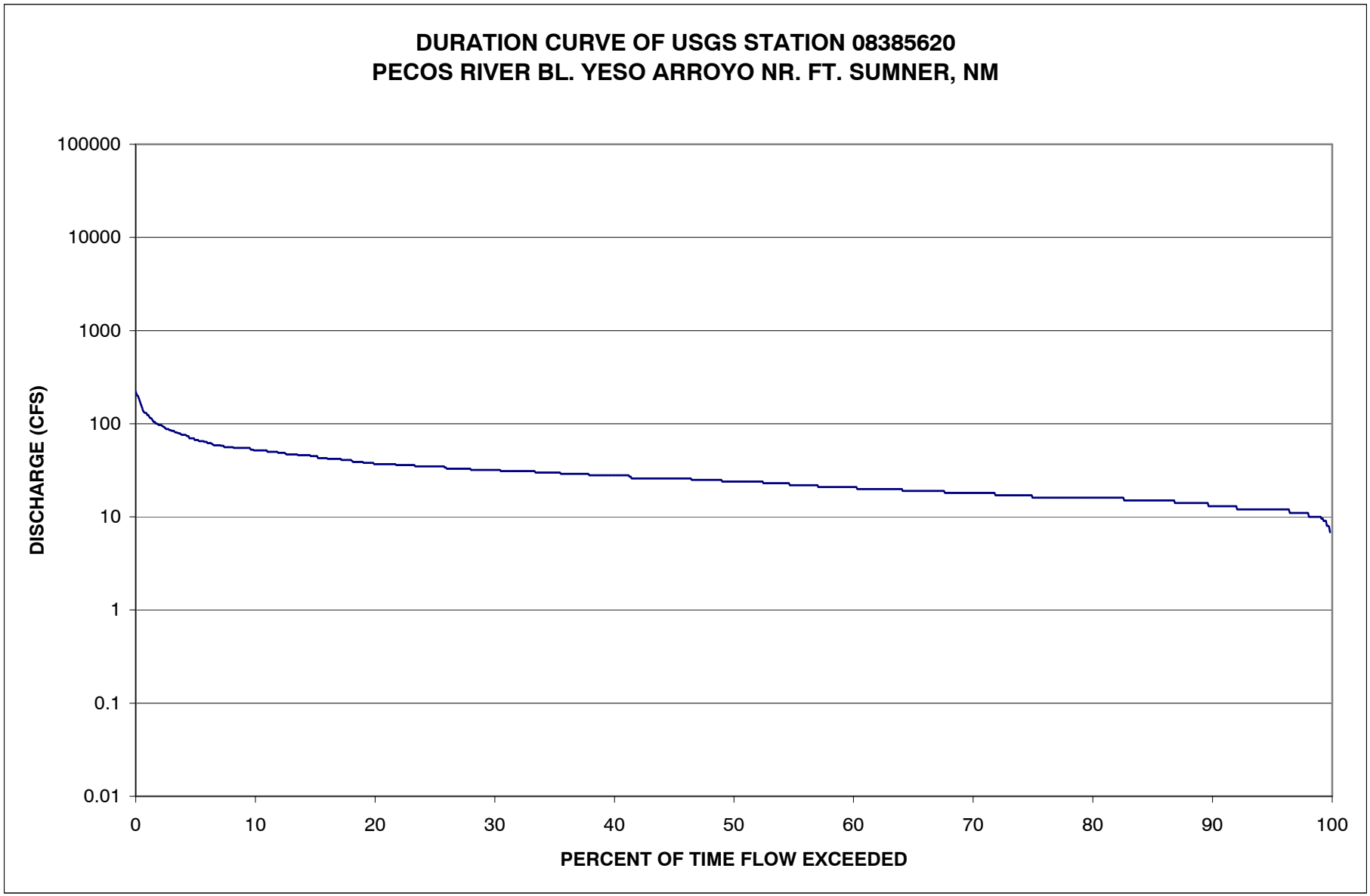
DURATION CURVE OF USGS STATION 08385620
PECOS RIVER BL. YESO ARROYO NR. FT. SUMNER, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K6a

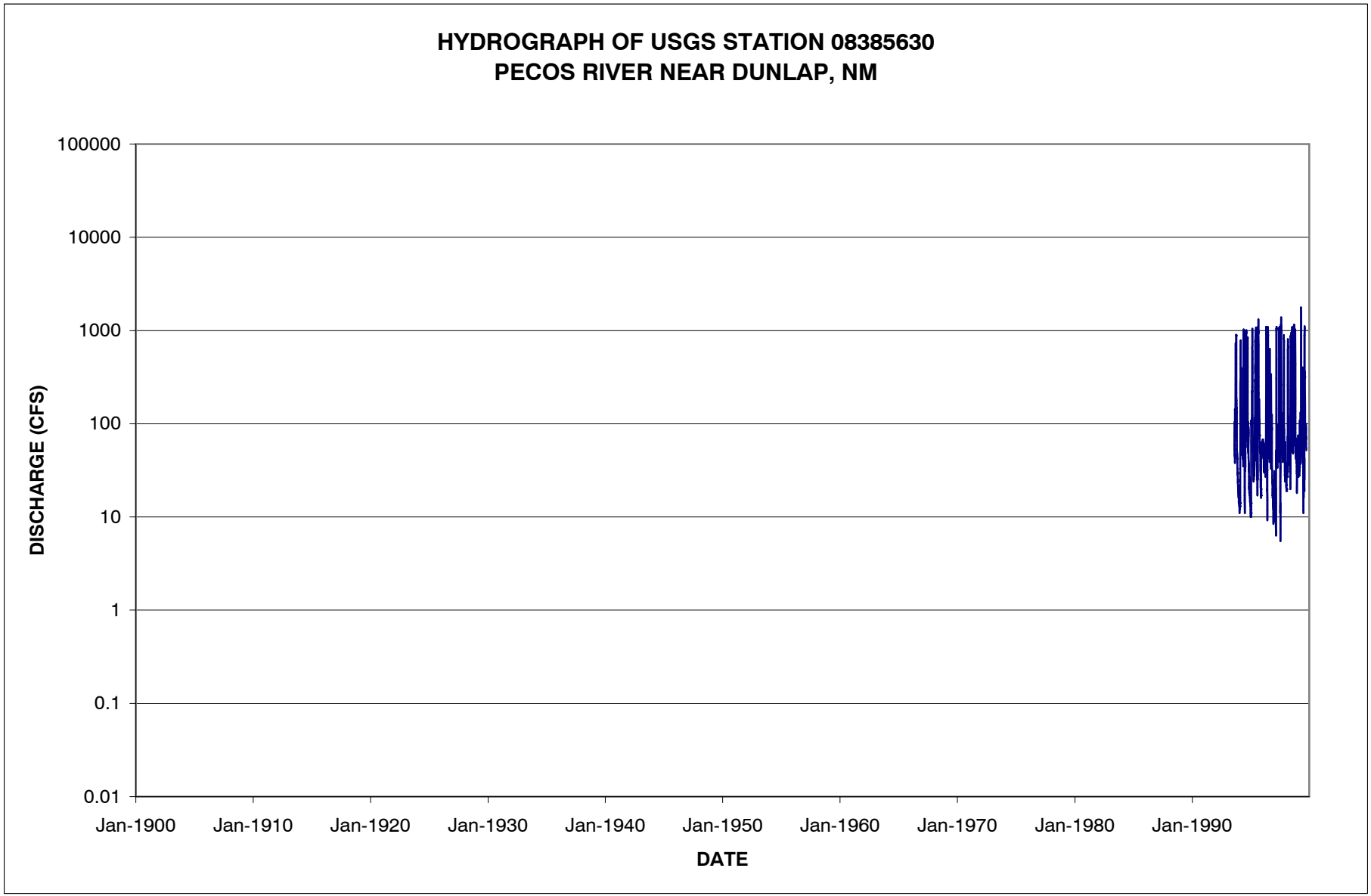
HYDROGRAPH OF USGS STATION 08385630
PECOS RIVER NEAR DUNLAP, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K6b

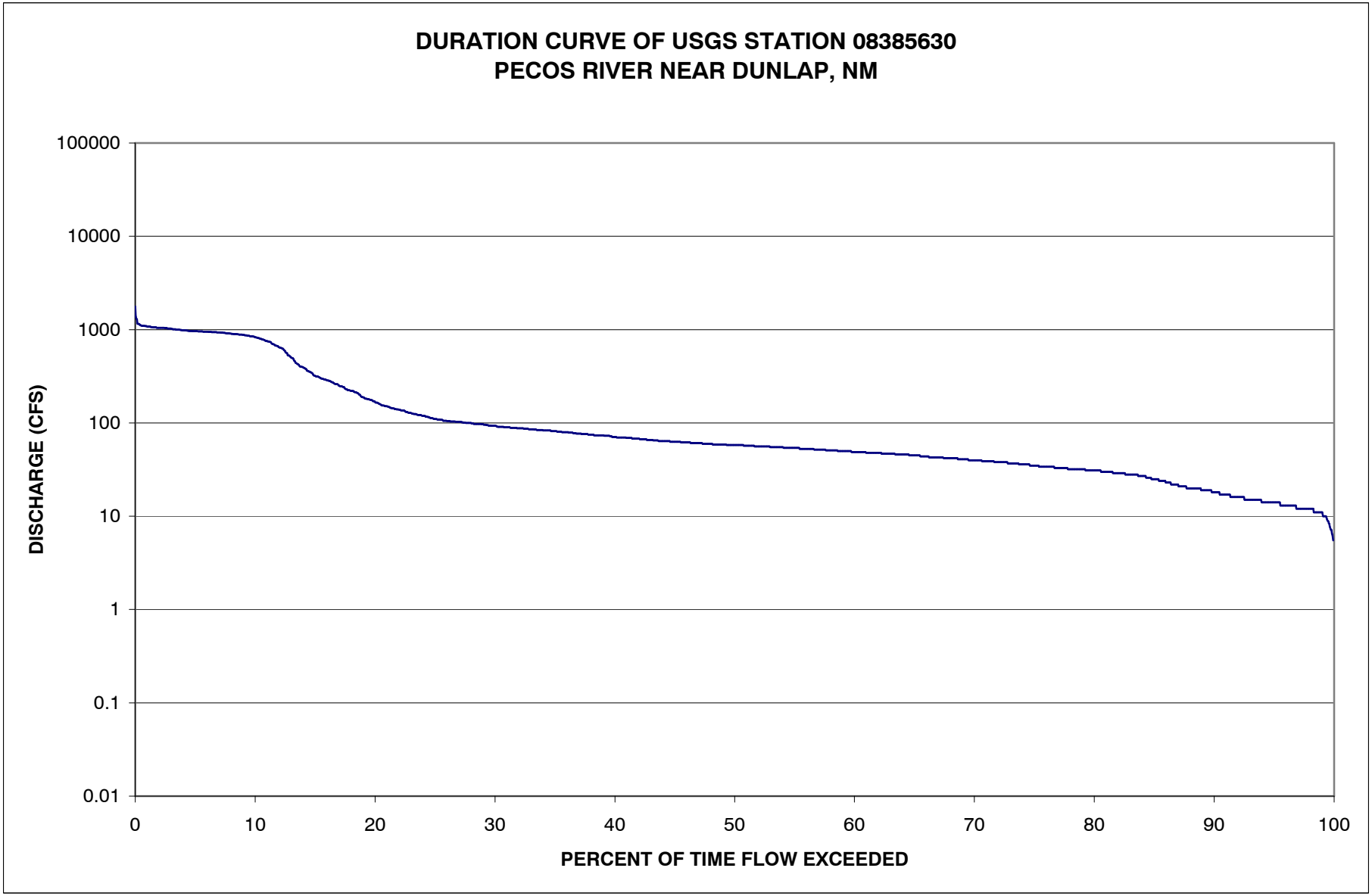
DURATION CURVE OF USGS STATION 08385630
PECOS RIVER NEAR DUNLAP, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K7a

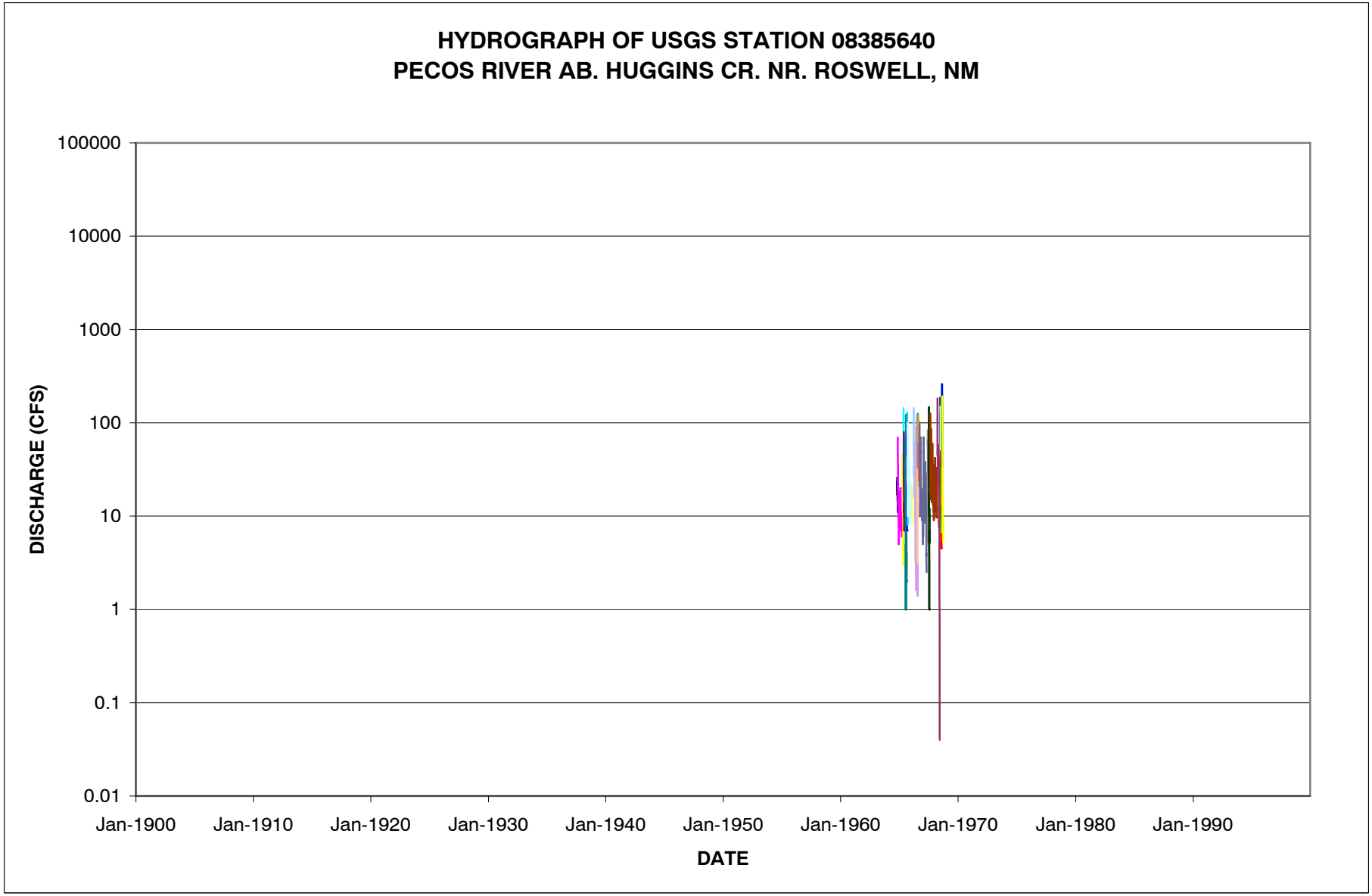
HYDROGRAPH OF USGS STATION 08385640
PECOS RIVER AB. HUGGINS CR. NR. ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K7b

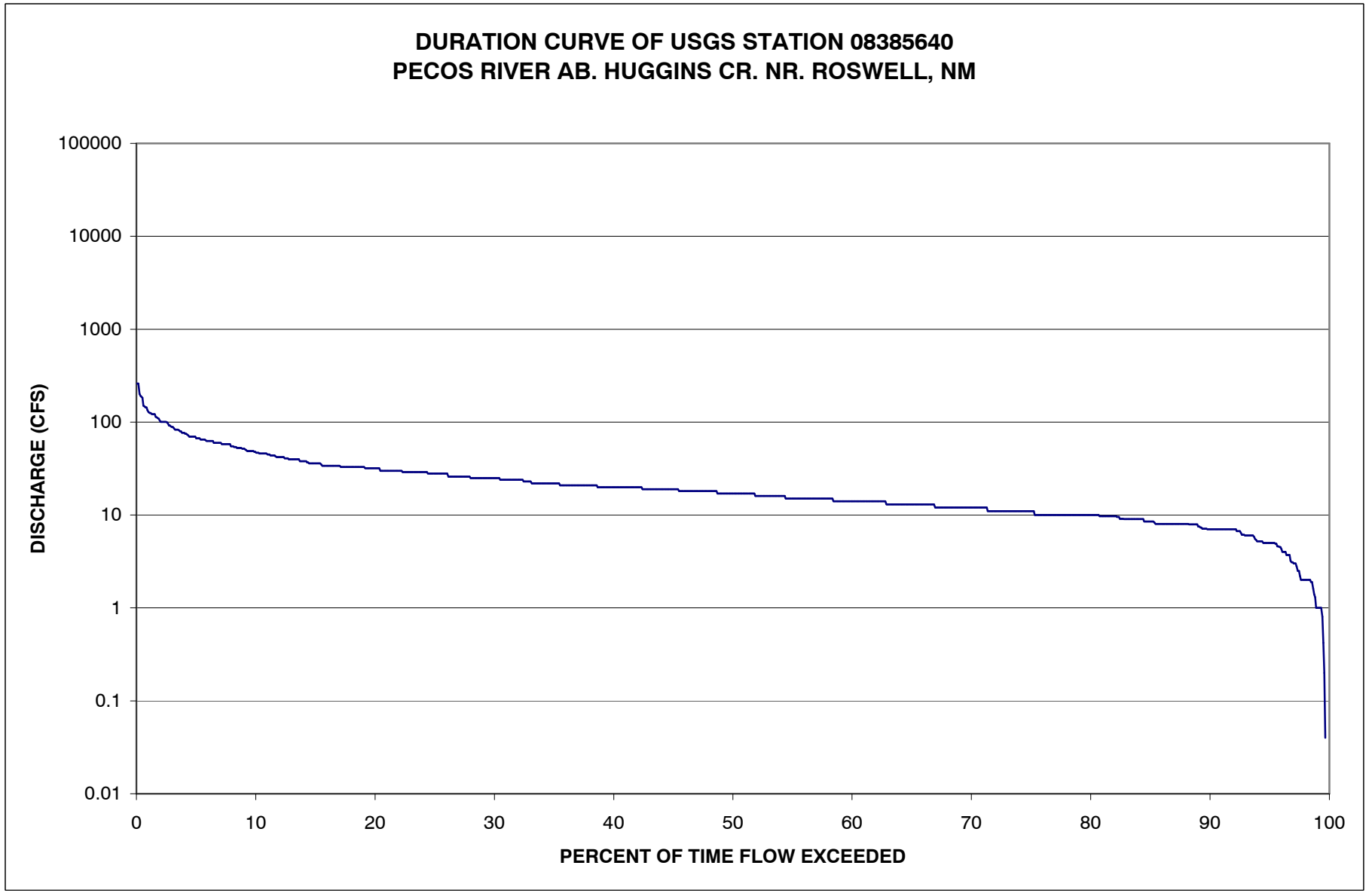
DURATION CURVE OF USGS STATION 08385640
PECOS RIVER AB. HUGGINS CR. NR. ROSWELL, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K8a

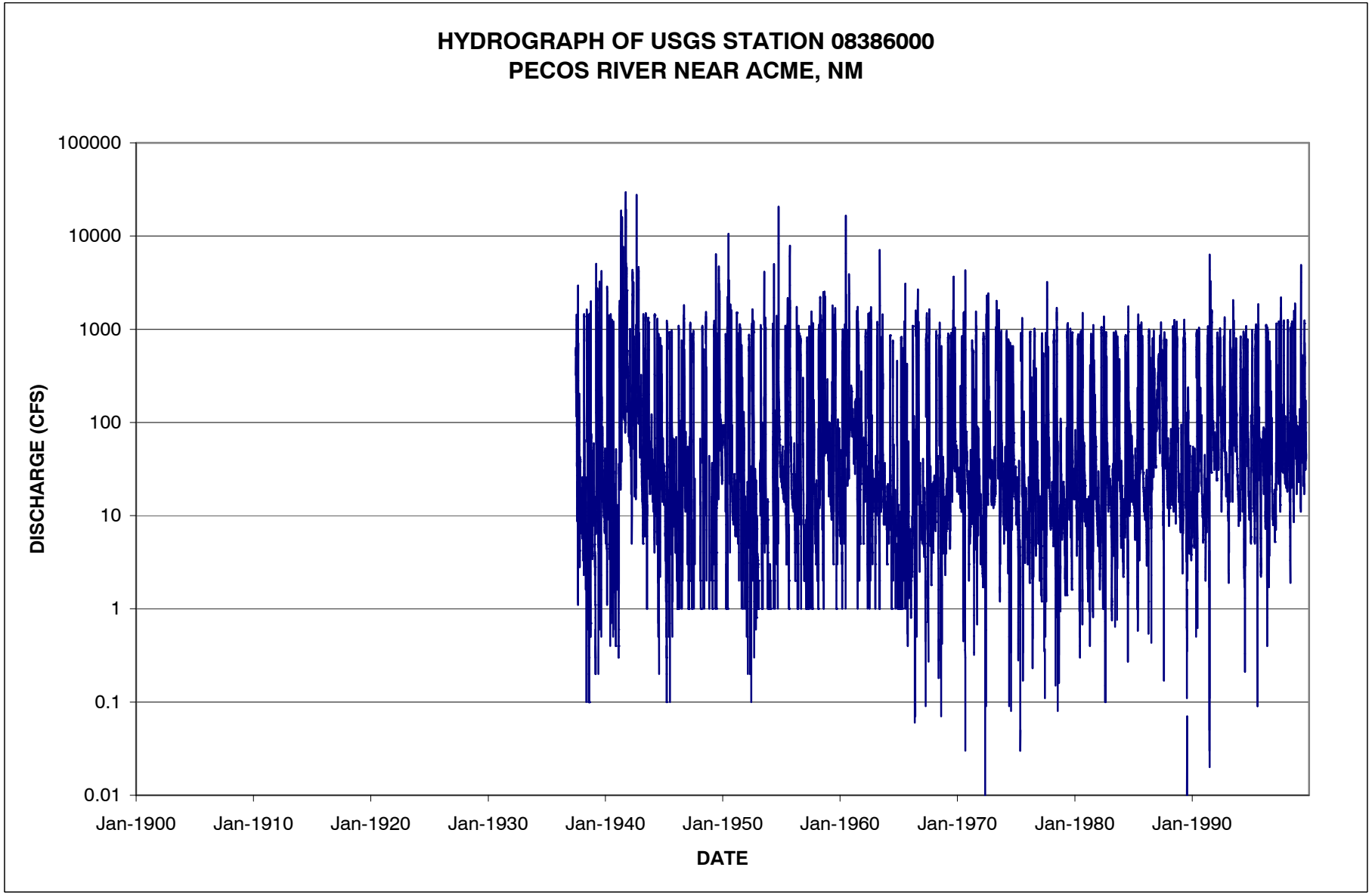
HYDROGRAPH OF USGS STATION 08386000
PECOS RIVER NEAR ACME, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K8b

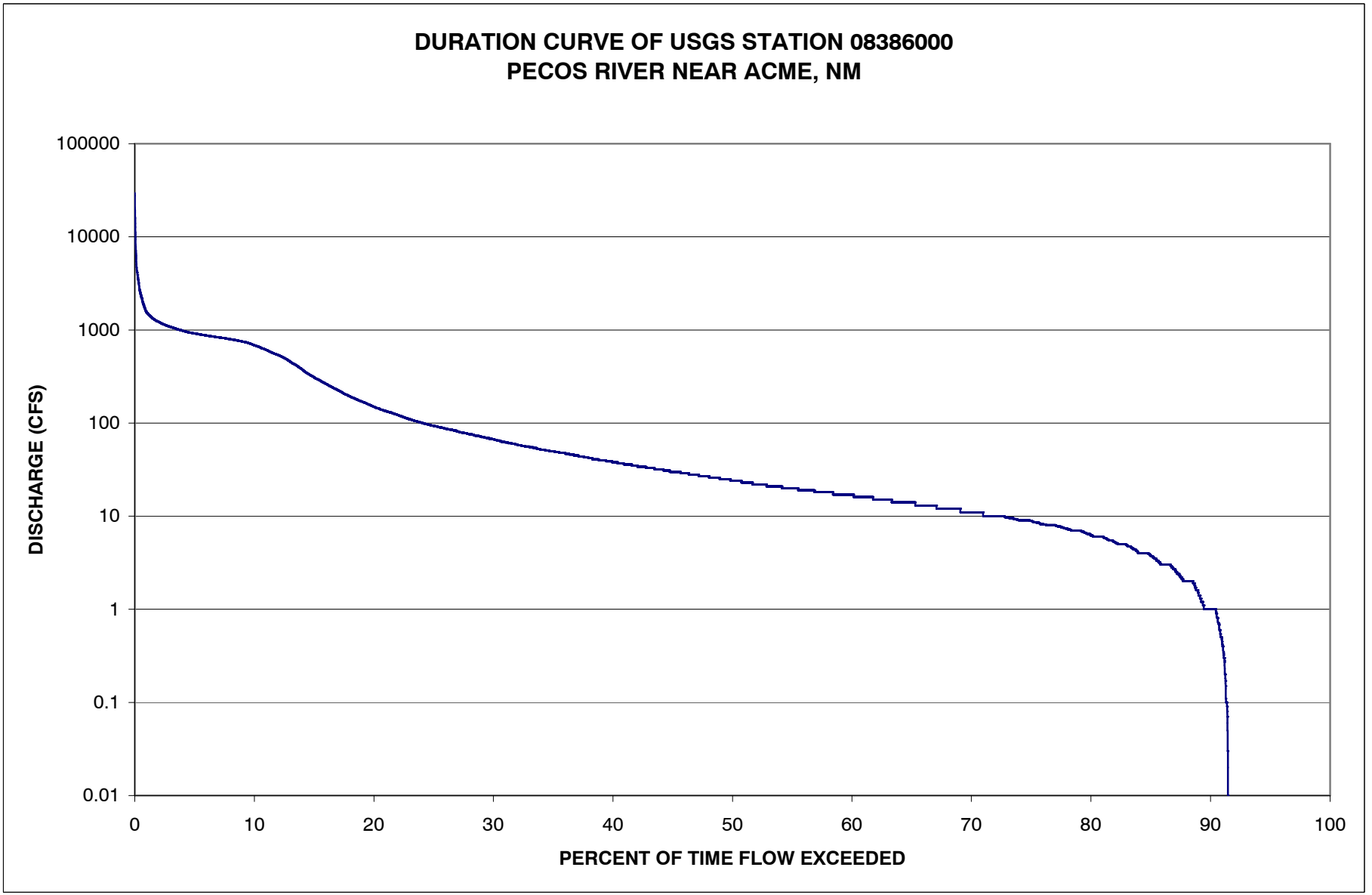
DURATION CURVE OF USGS STATION 08386000
PECOS RIVER NEAR ACME, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K9a

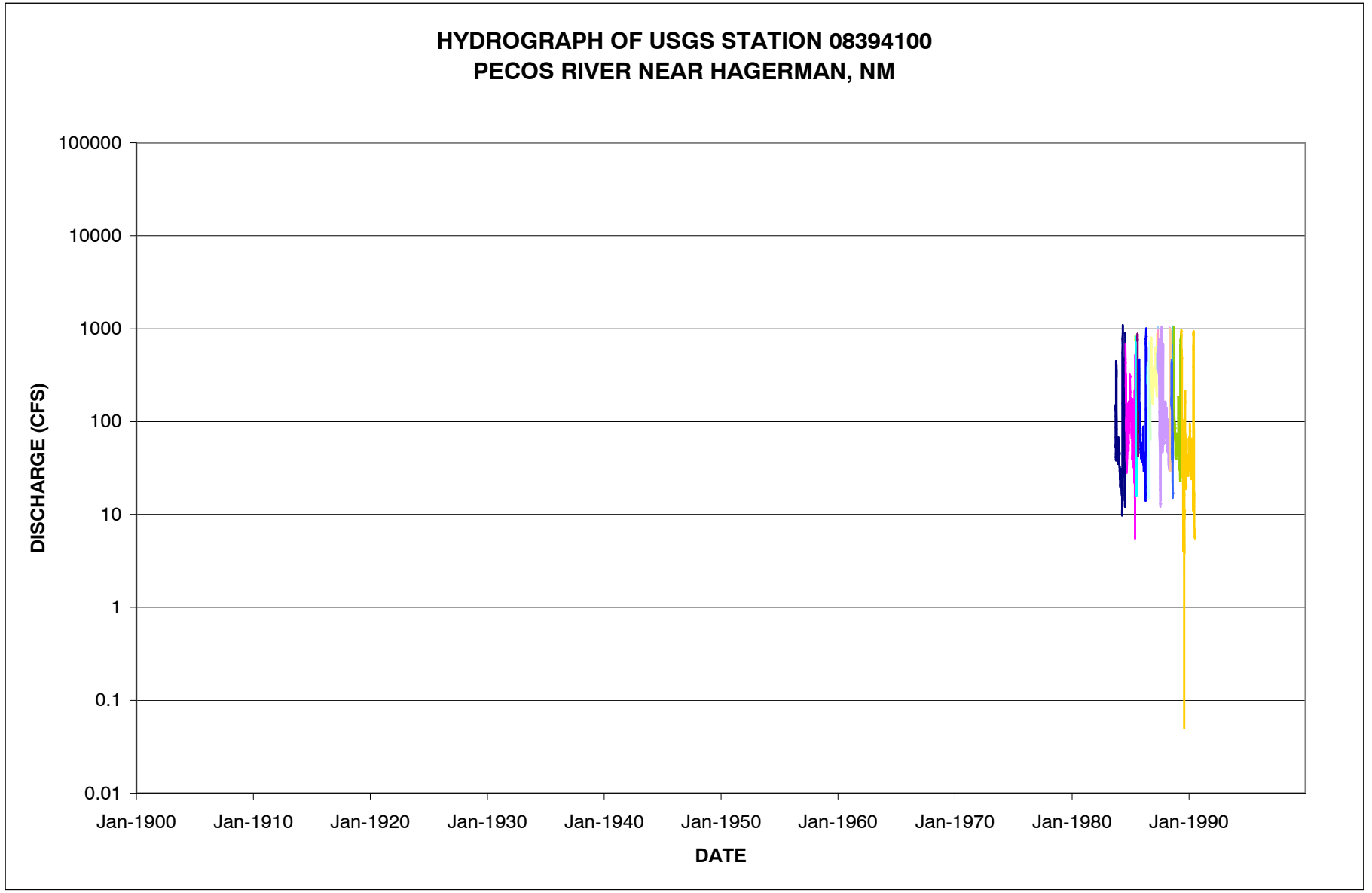
HYDROGRAPH OF USGS STATION 08394100
PECOS RIVER NEAR HAGERMAN, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K9b

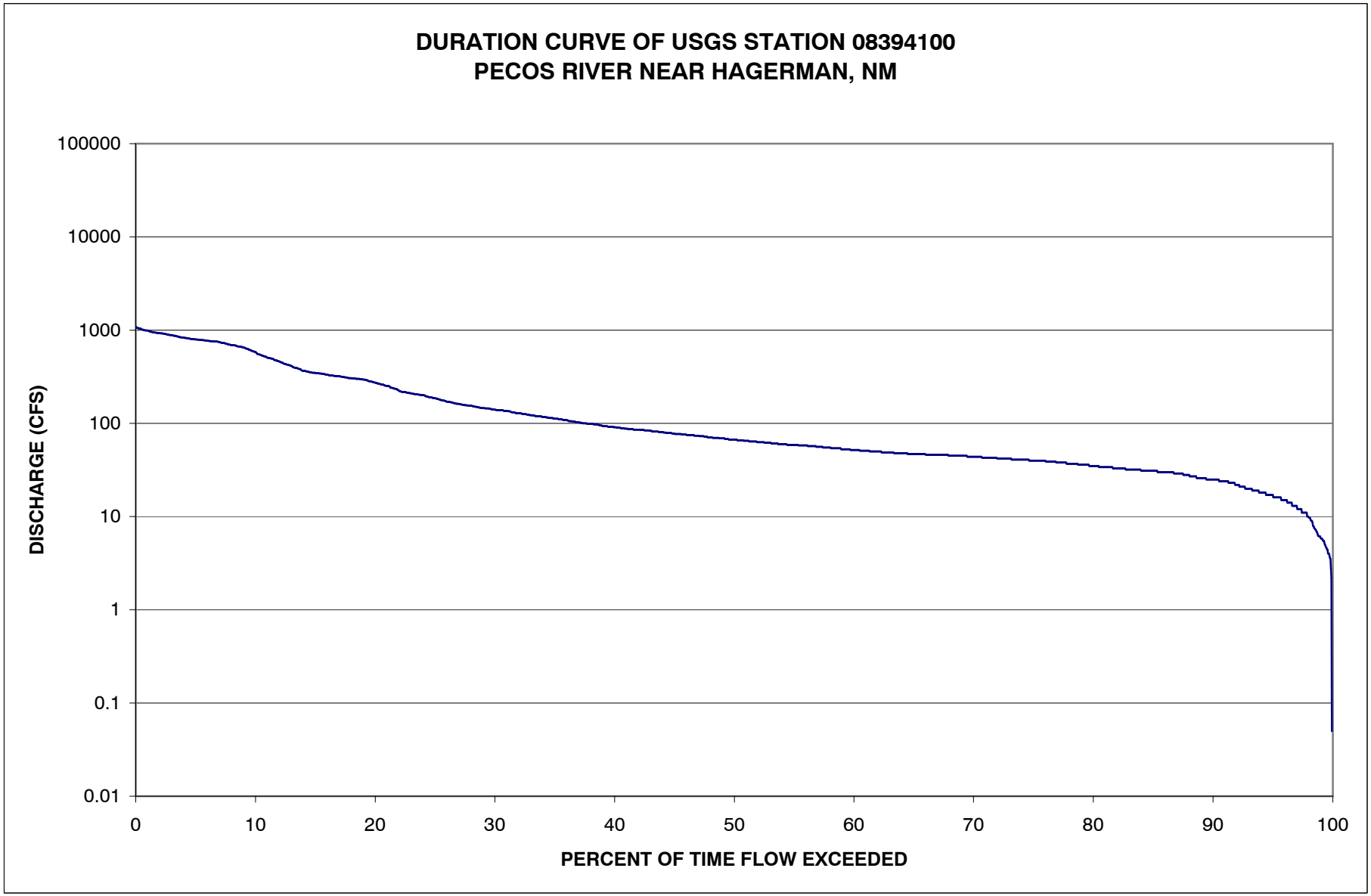
DURATION CURVE OF USGS STATION 08394100
PECOS RIVER NEAR HAGERMAN, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K10a

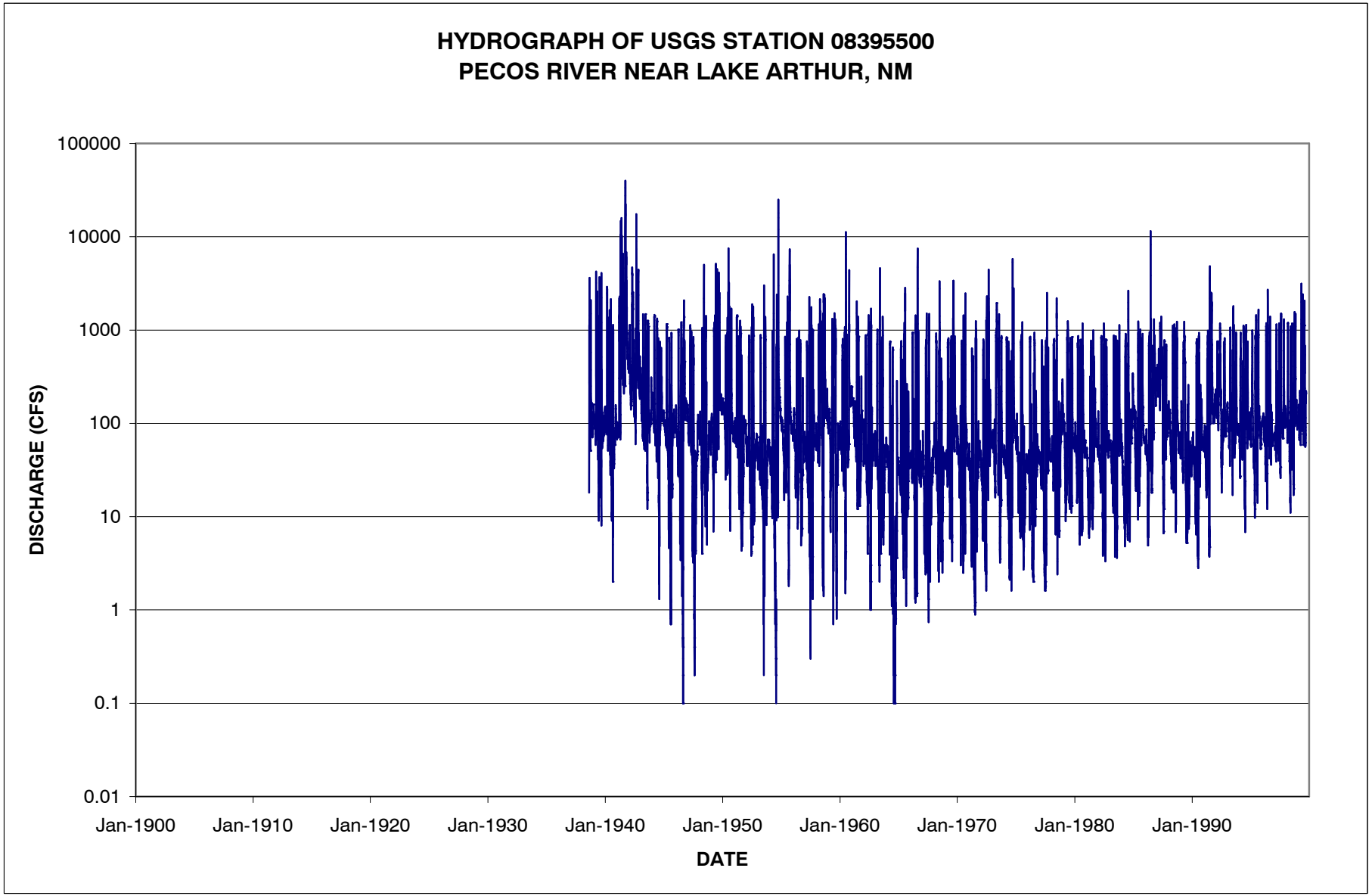
HYDROGRAPH OF USGS STATION 08395500
PECOS RIVER NEAR LAKE ARTHUR, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K10b

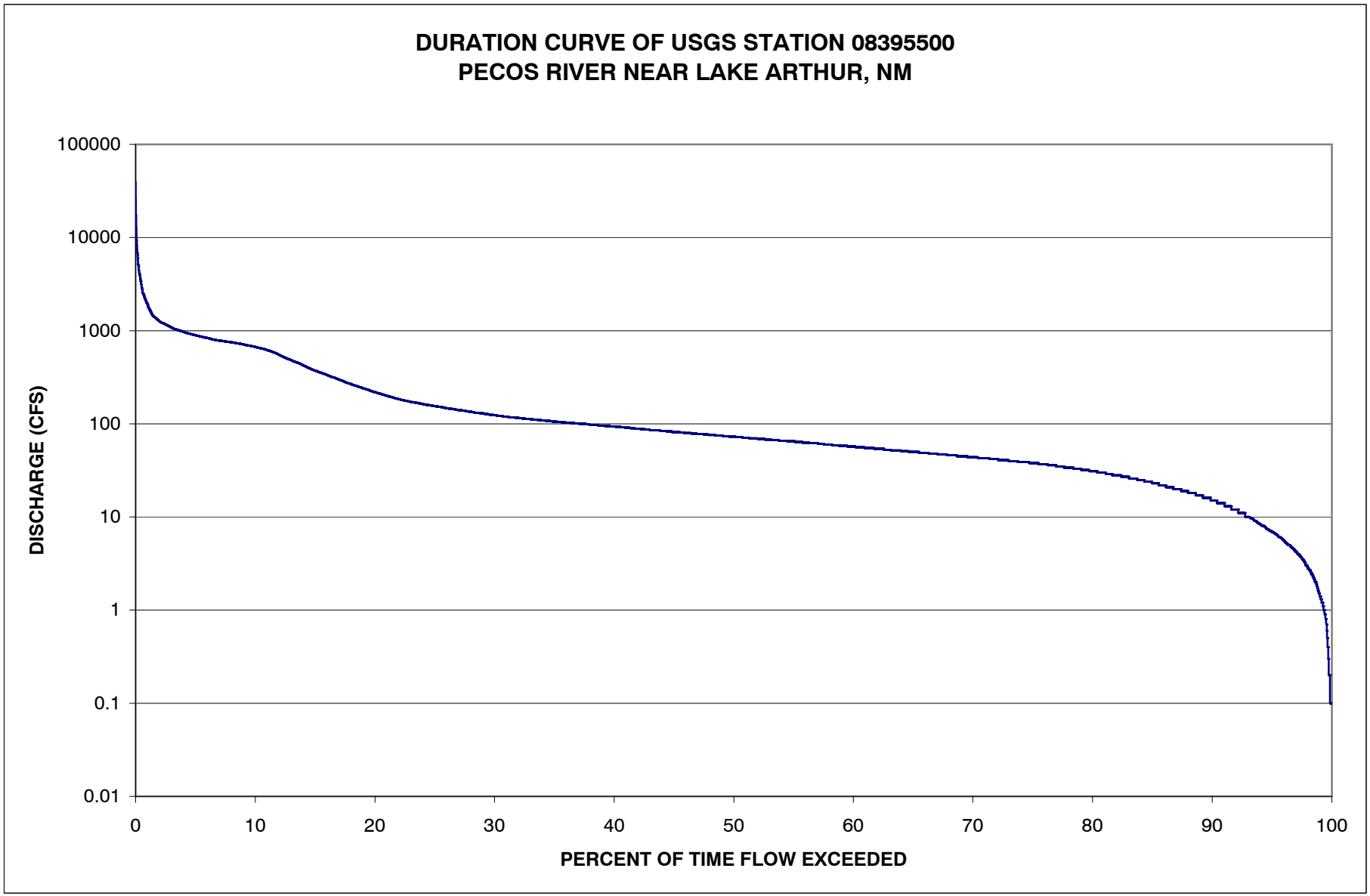
DURATION CURVE OF USGS STATION 08395500
PECOS RIVER NEAR LAKE ARTHUR, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K11a

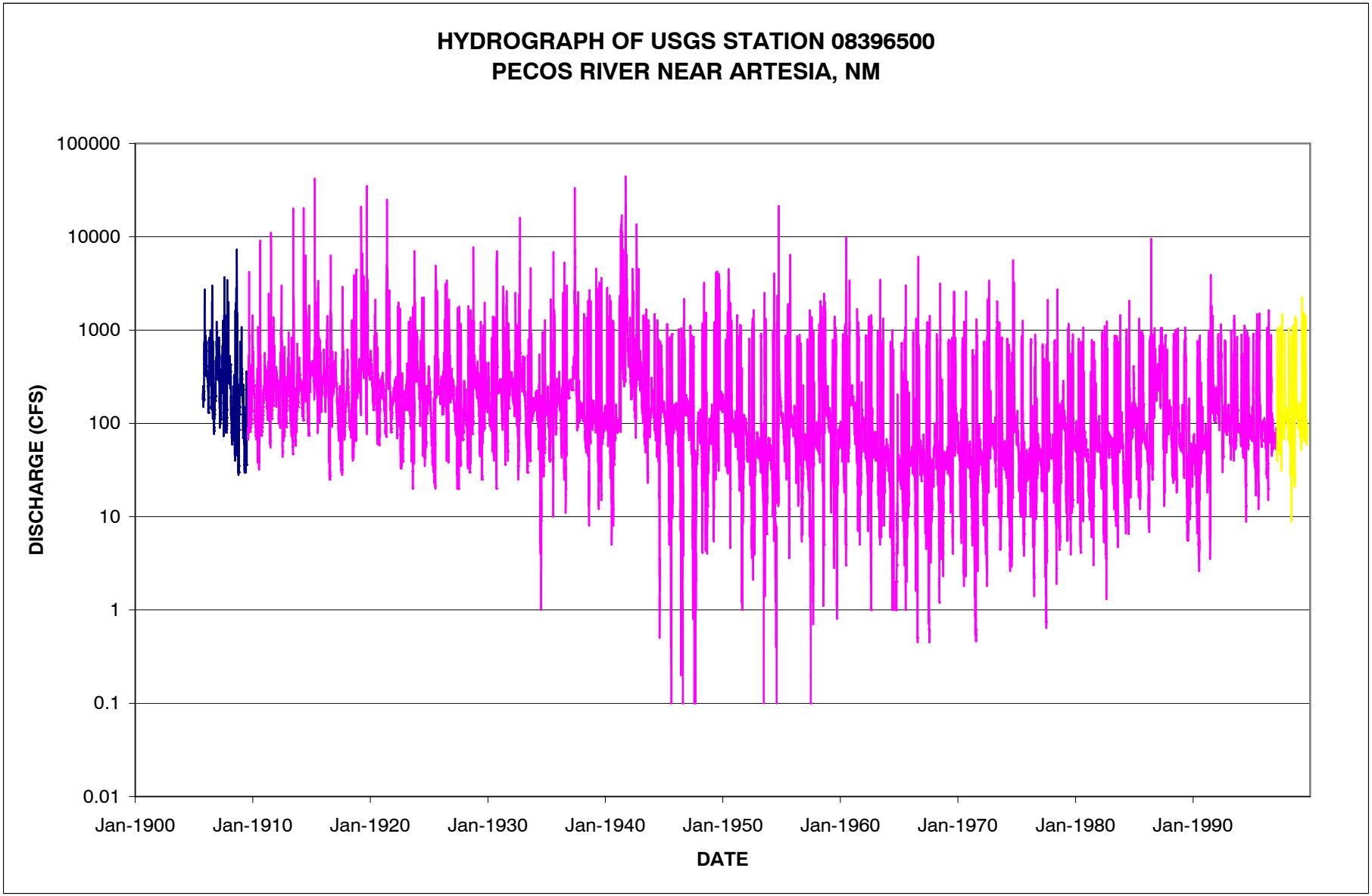
HYDROGRAPH OF USGS STATION 08396500
PECOS RIVER NEAR ARTESIA, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K11b

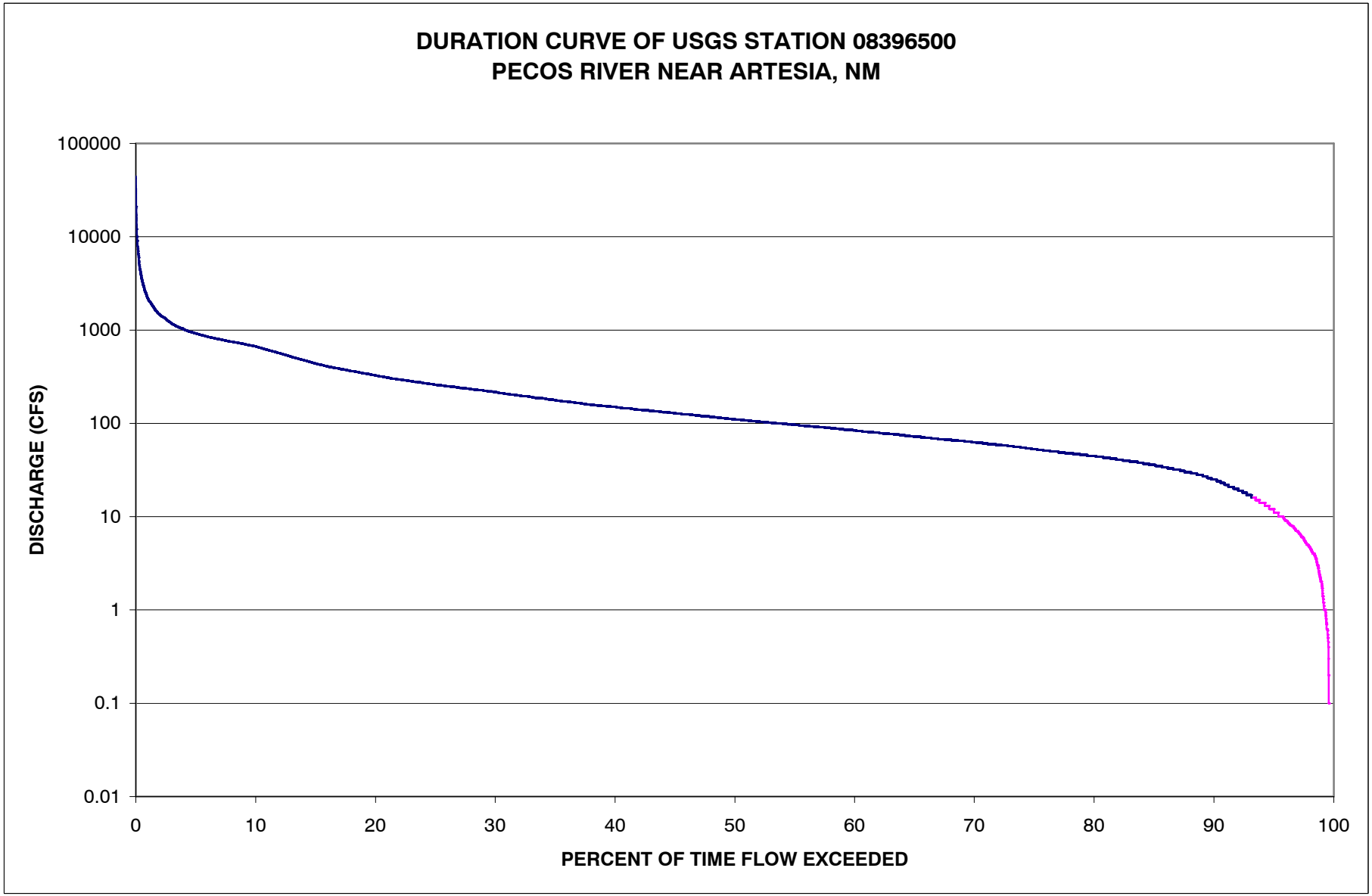
DURATION CURVE OF USGS STATION 08396500
PECOS RIVER NEAR ARTESIA, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K12a

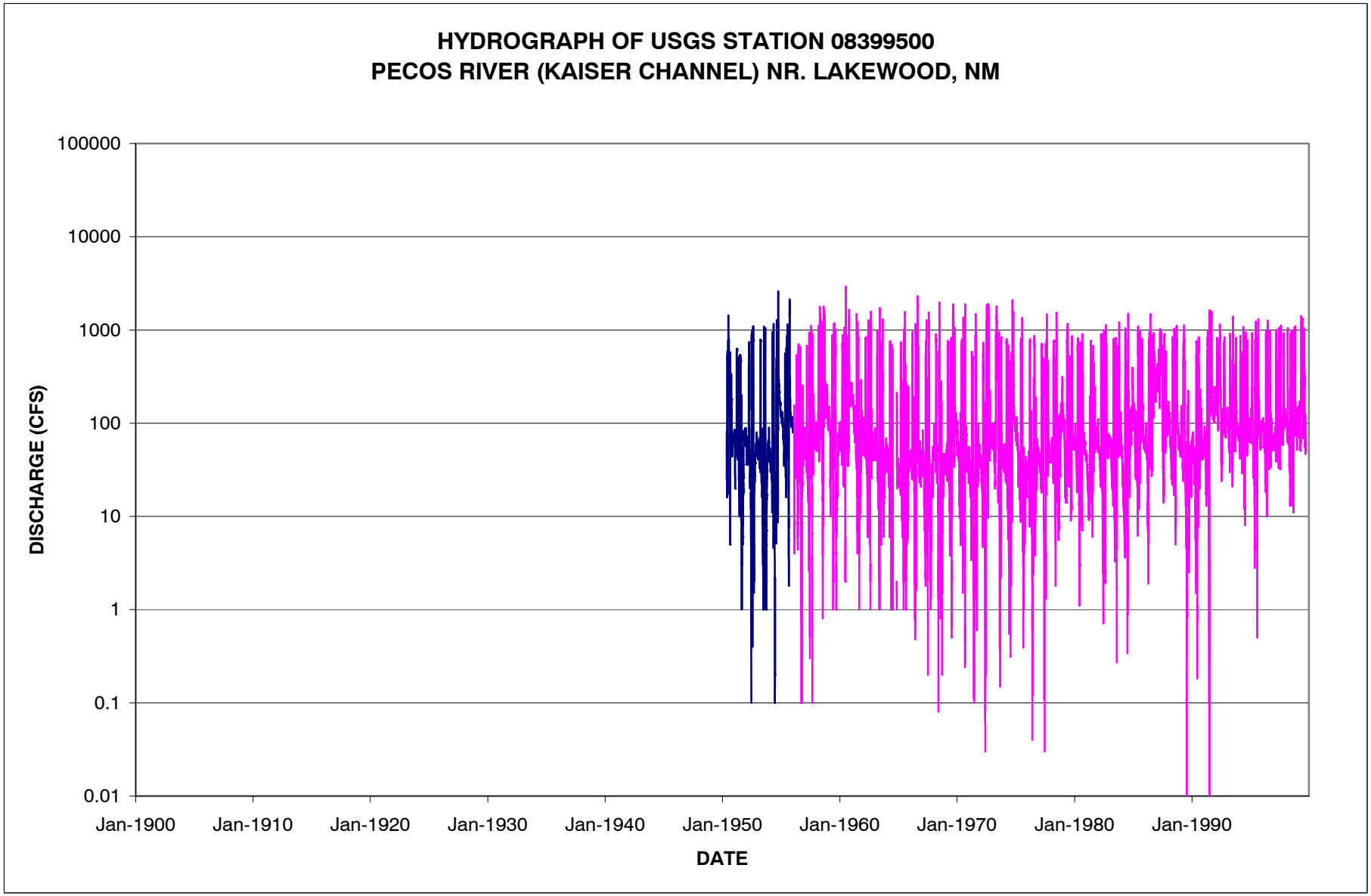
HYDROGRAPH OF USGS STATION 08399500
PECOS RIVER (KAISER CHANNEL) NR. LAKEWOOD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K12b

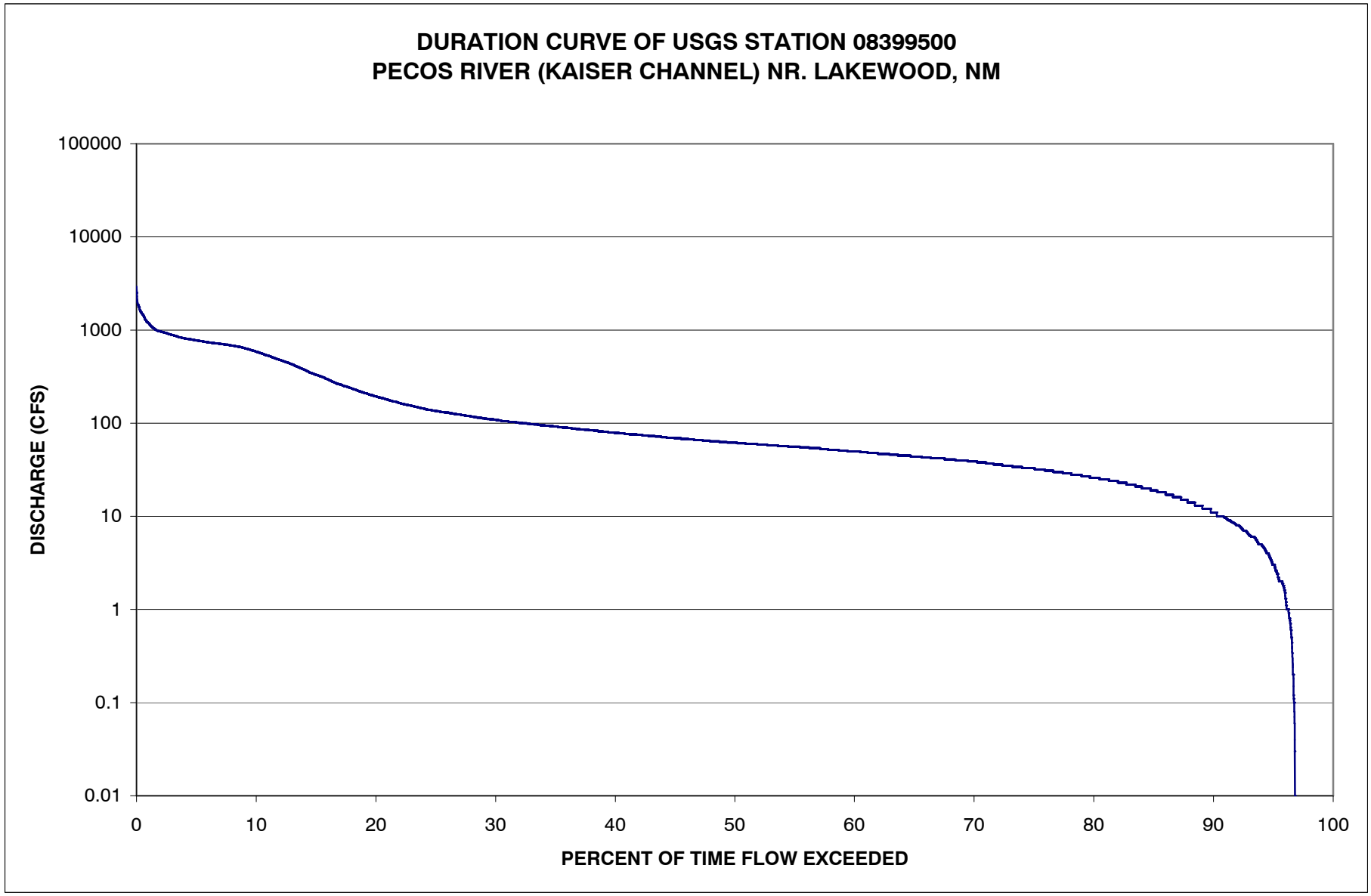
DURATION CURVE OF USGS STATION 08399500
PECOS RIVER (KAISER CHANNEL) NR. LAKEWOOD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K13a

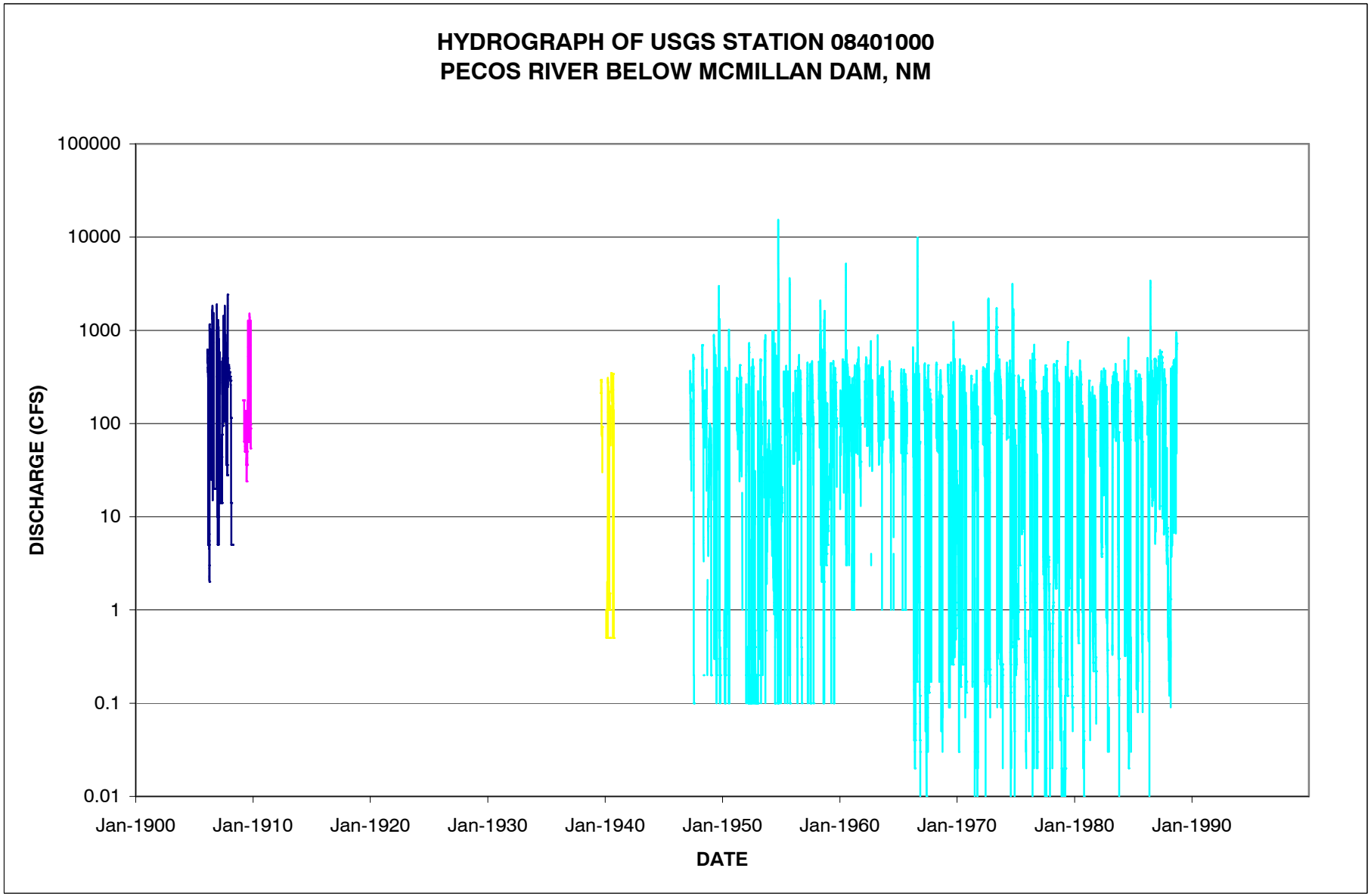
HYDROGRAPH OF USGS STATION 08401000
PECOS RIVER BELOW MCMILLAN DAM, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K13b

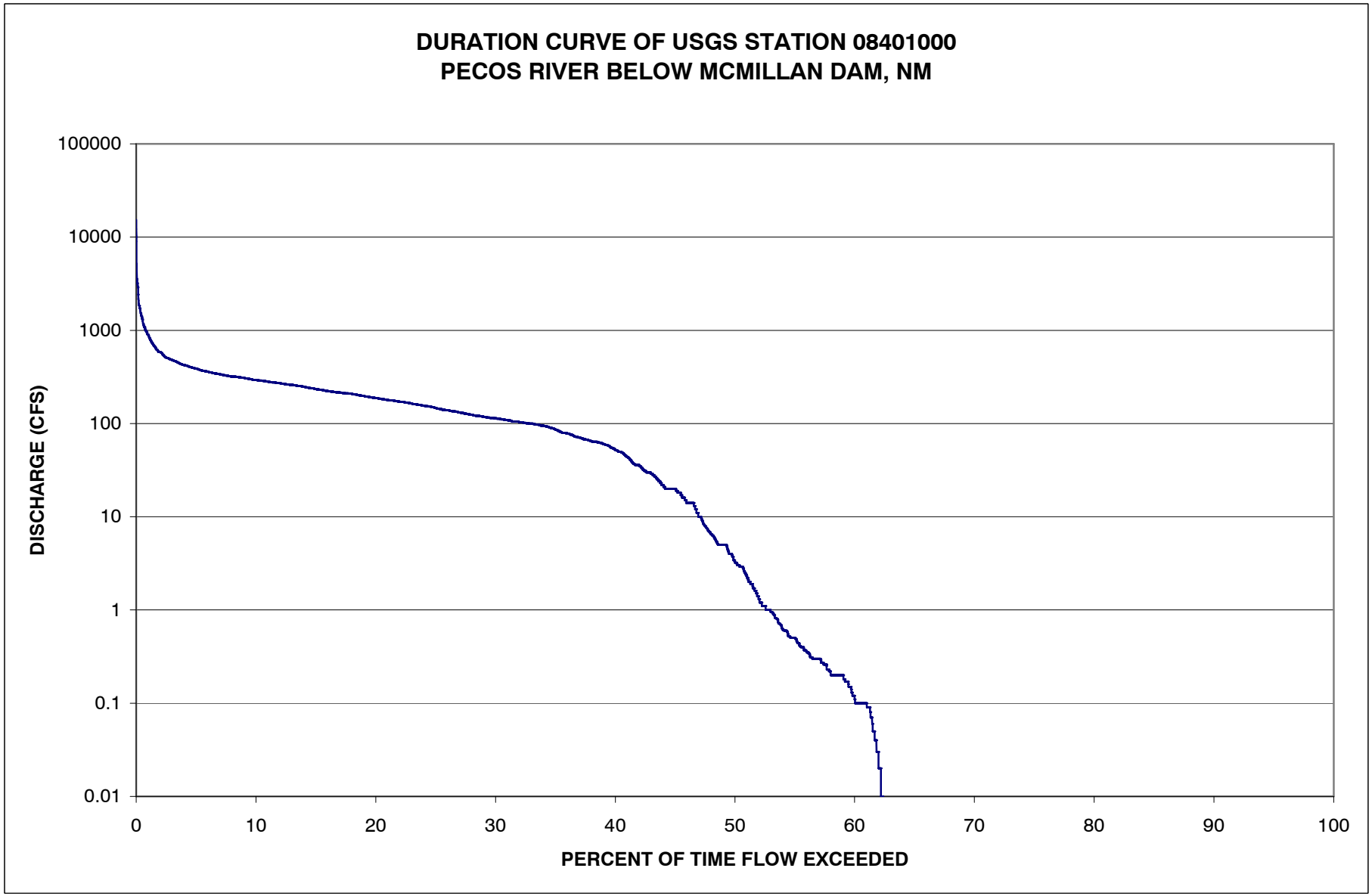
DURATION CURVE OF USGS STATION 08401000
PECOS RIVER BELOW MCMILLAN DAM, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K14a

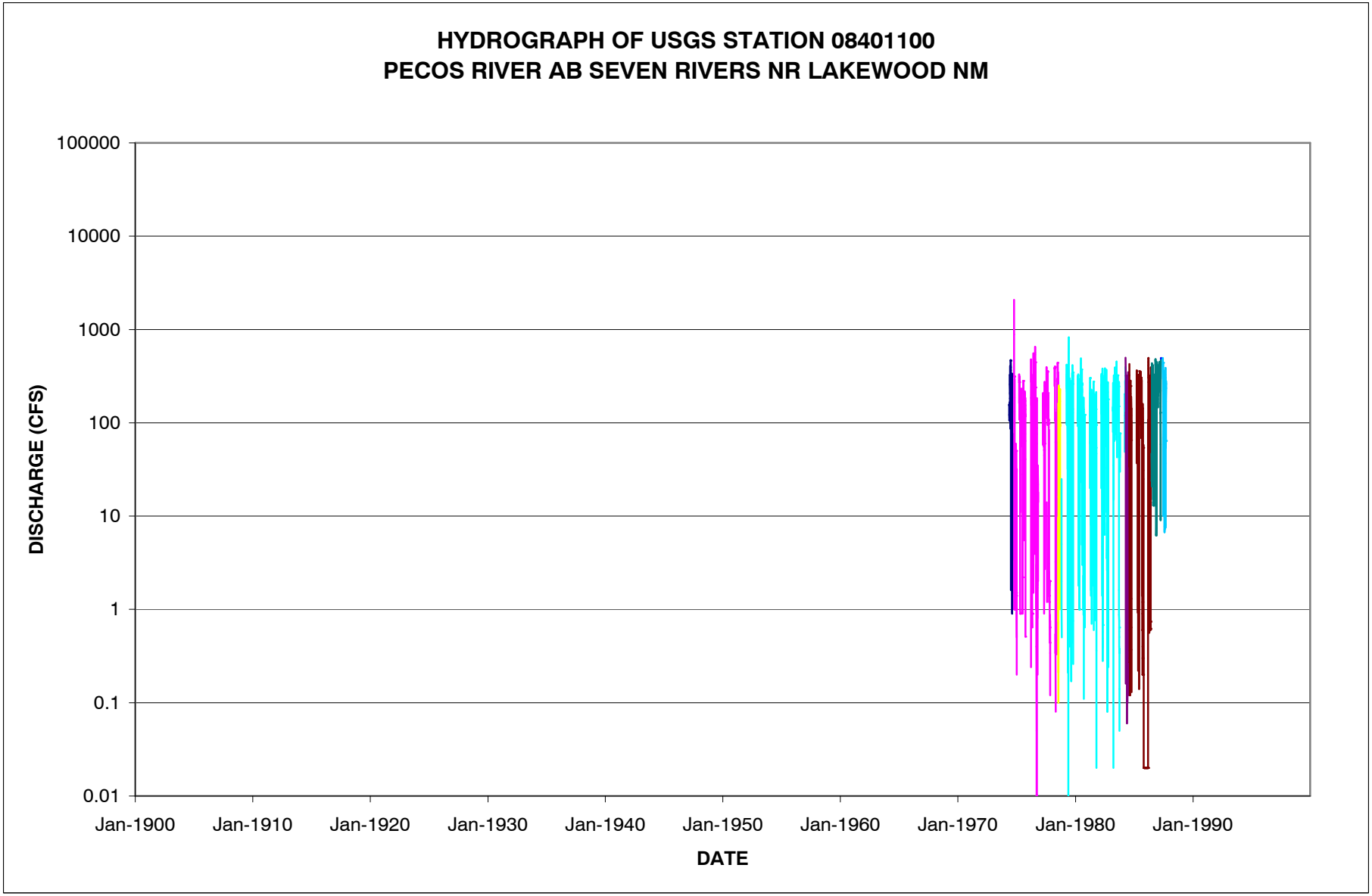
HYDROGRAPH OF USGS STATION 08401100
PECOS RIVER AB SEVEN RIVERS NR LAKEWOOD NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K14b

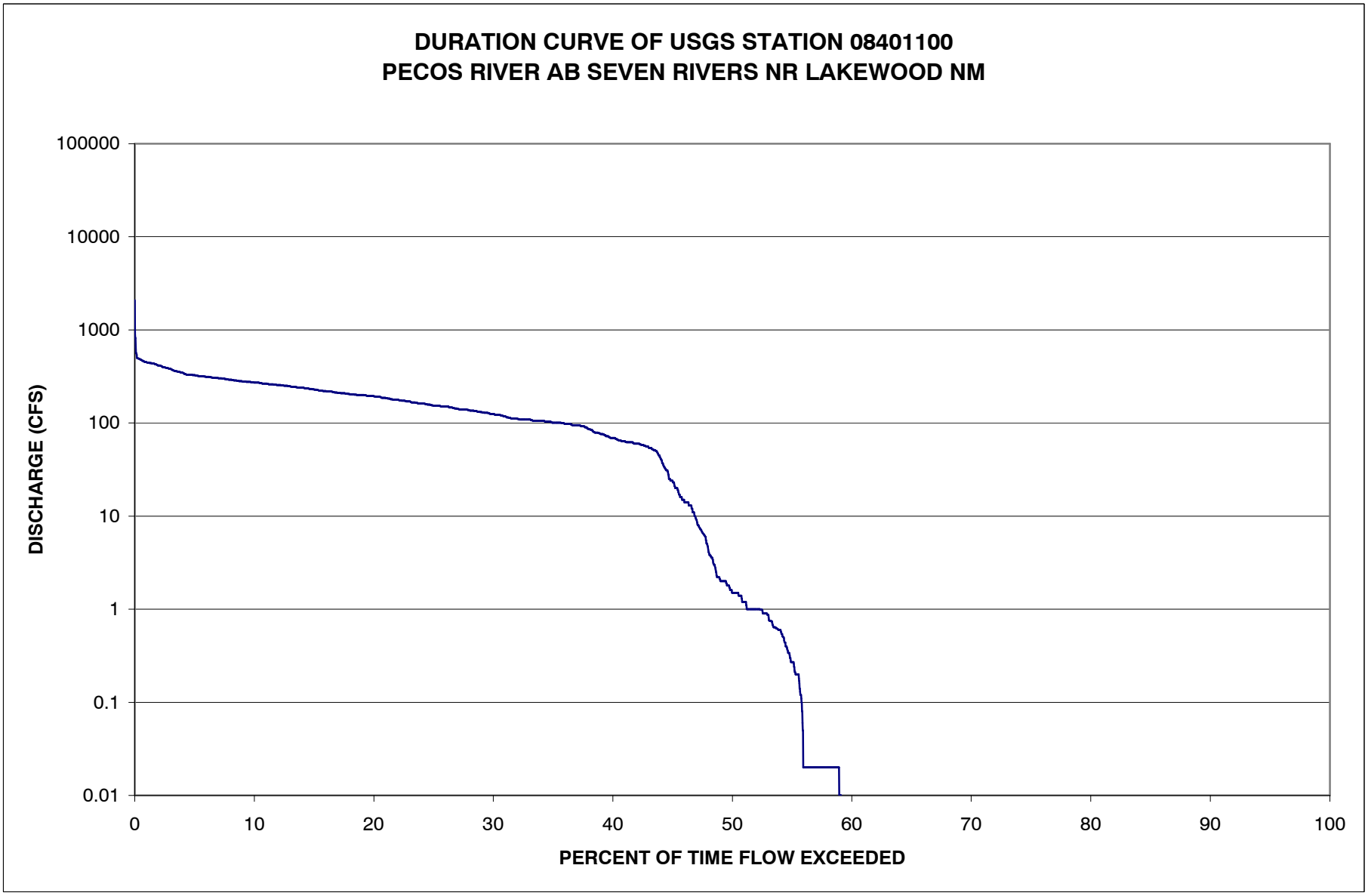
DURATION CURVE OF USGS STATION 08401100
PECOS RIVER AB SEVEN RIVERS NR LAKEWOOD NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K15a

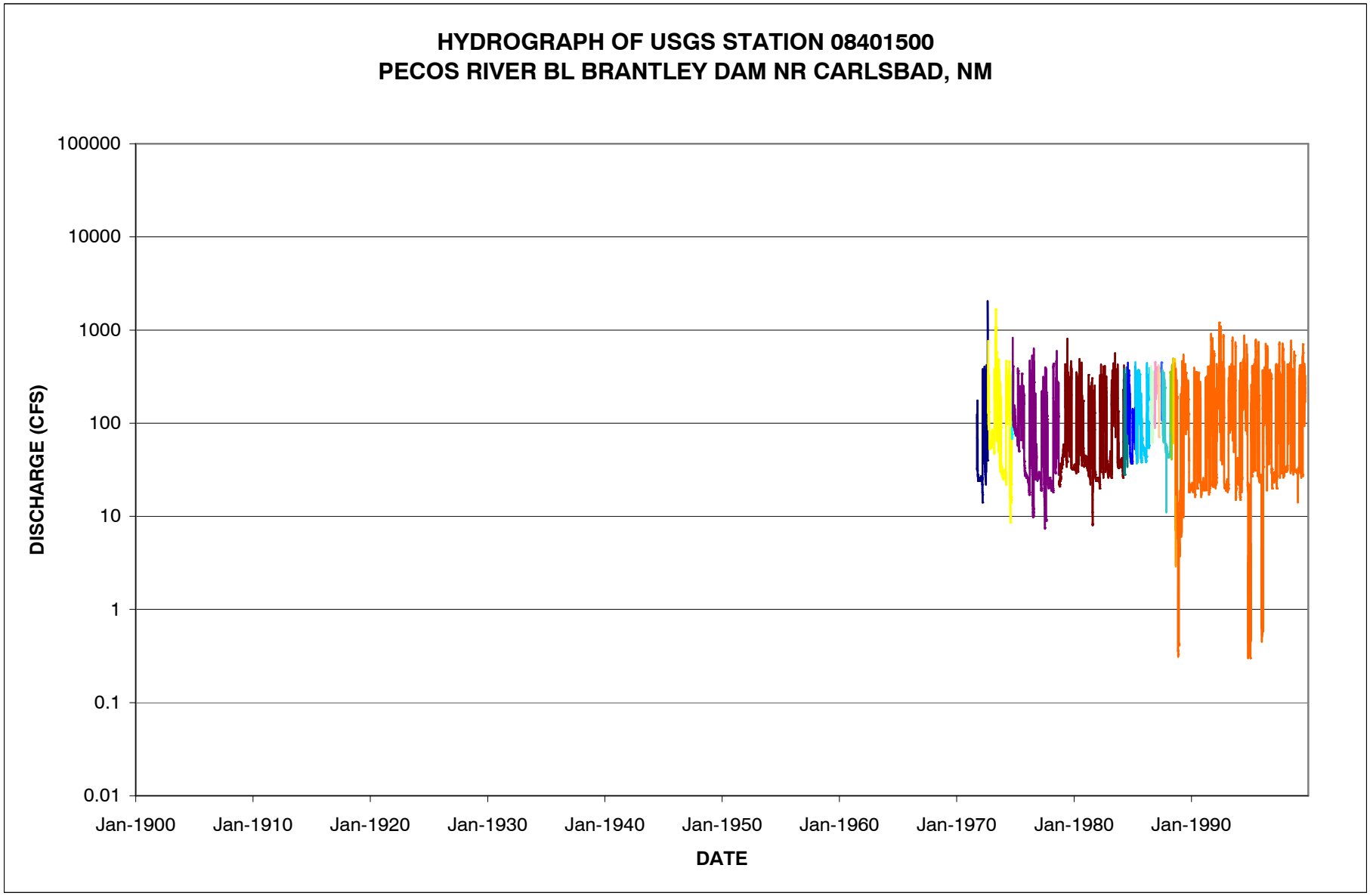
HYDROGRAPH OF USGS STATION 08401500
PECOS RIVER BL BRANTLEY DAM NR CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K15b

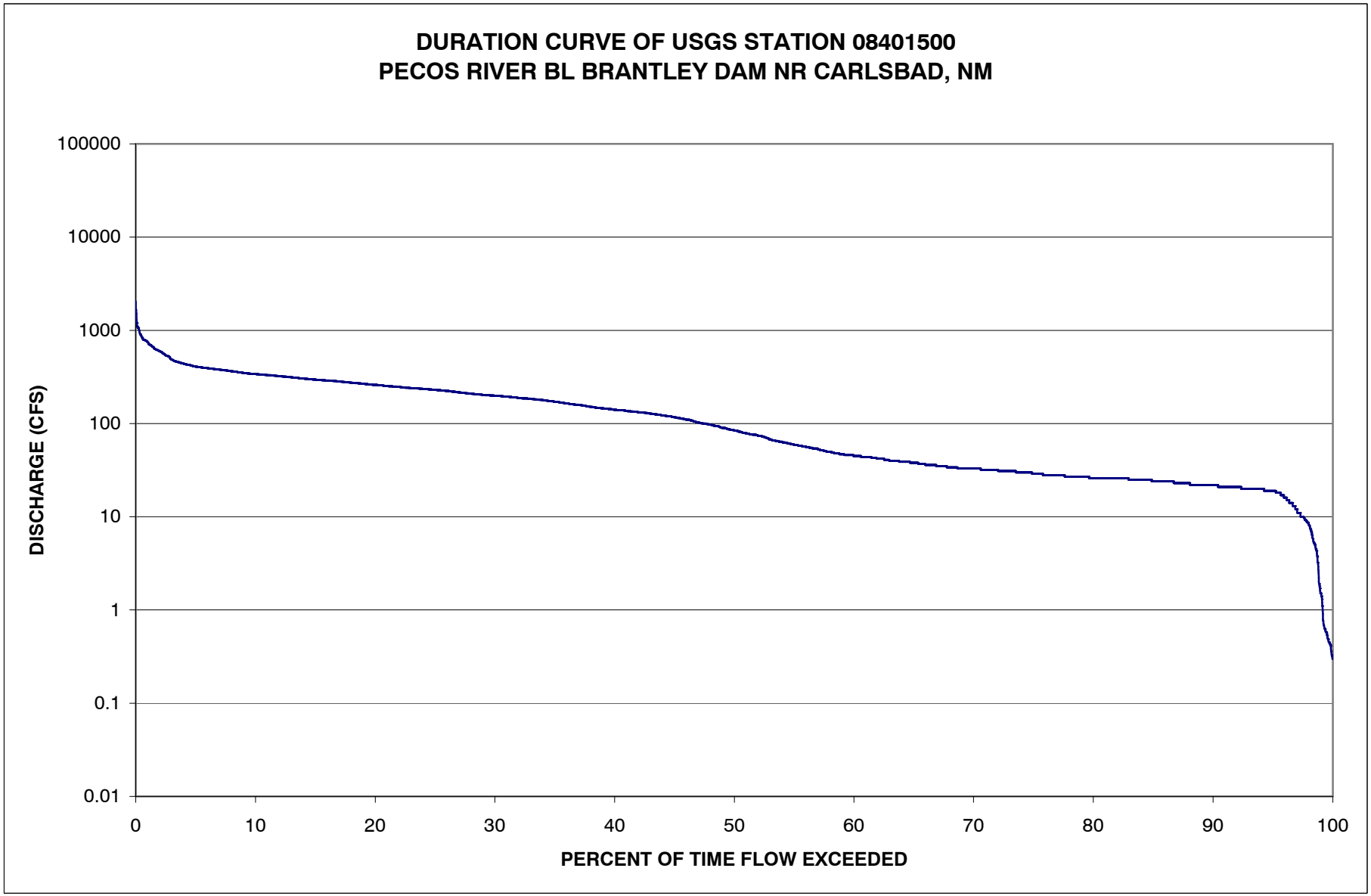
DURATION CURVE OF USGS STATION 08401500
PECOS RIVER BL BRANTLEY DAM NR CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K16a

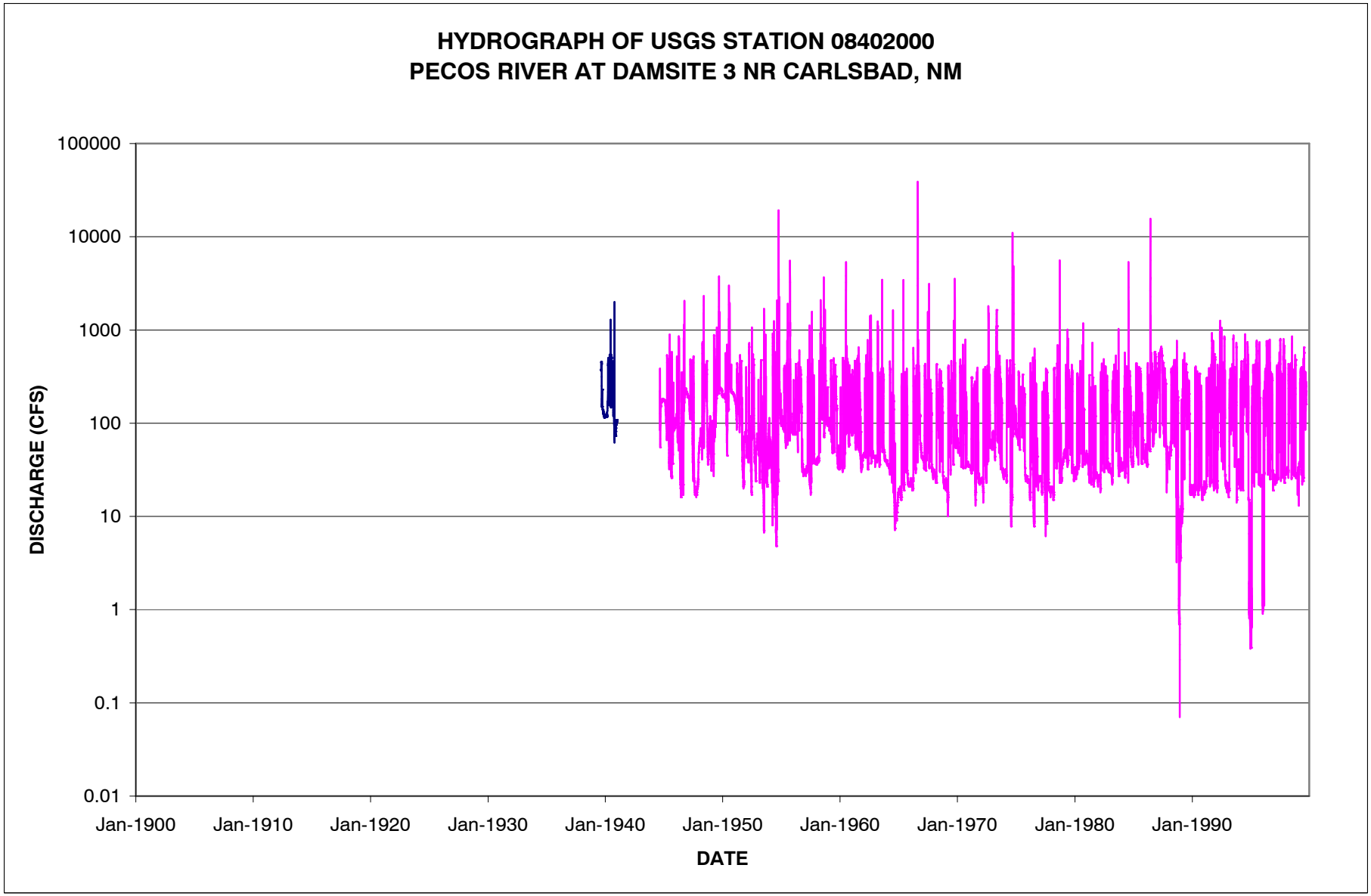
HYDROGRAPH OF USGS STATION 08402000
PECOS RIVER AT DAMSITE 3 NR CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K16b

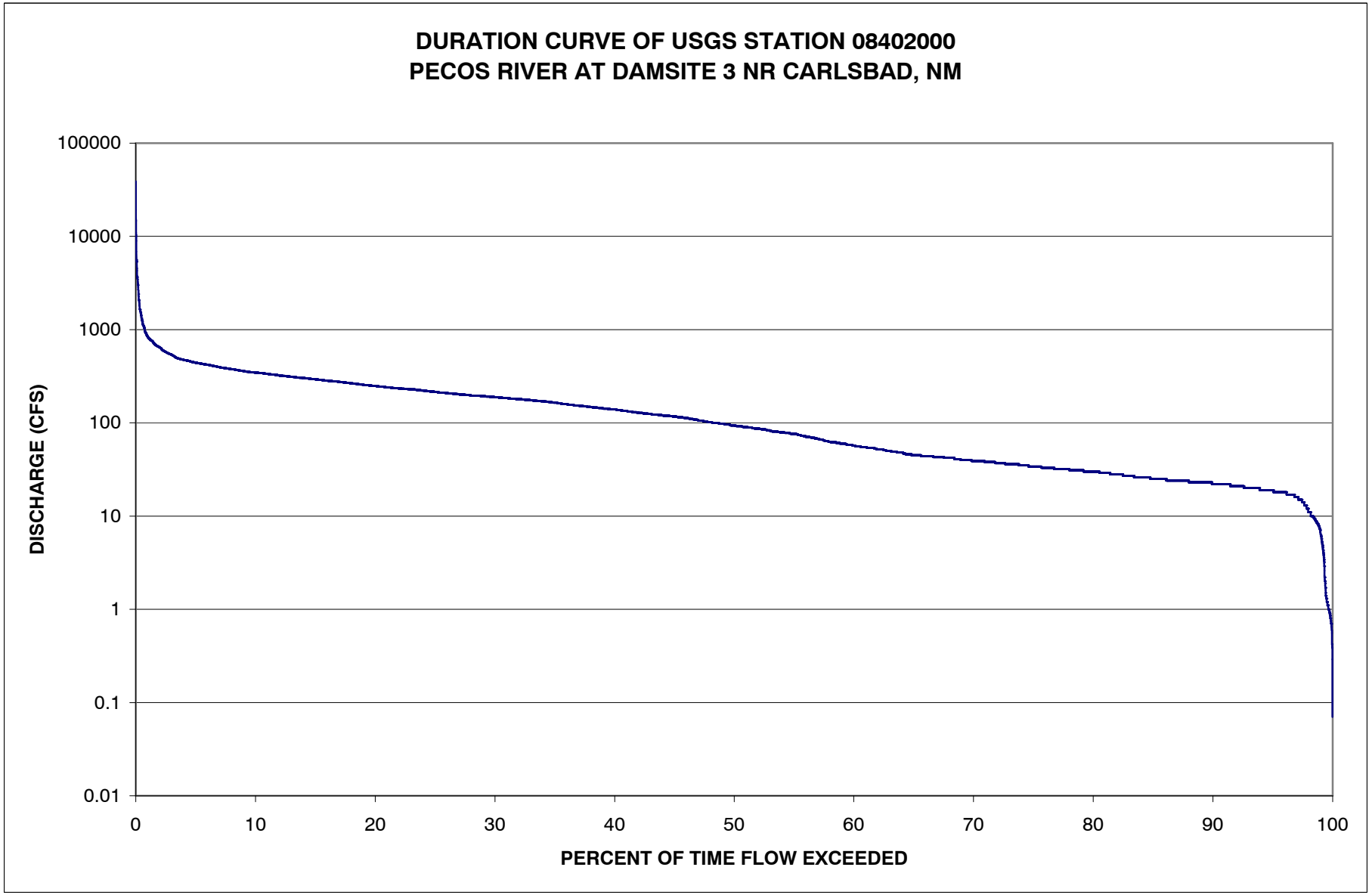
DURATION CURVE OF USGS STATION 08402000
PECOS RIVER AT DAMSITE 3 NR CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K17a

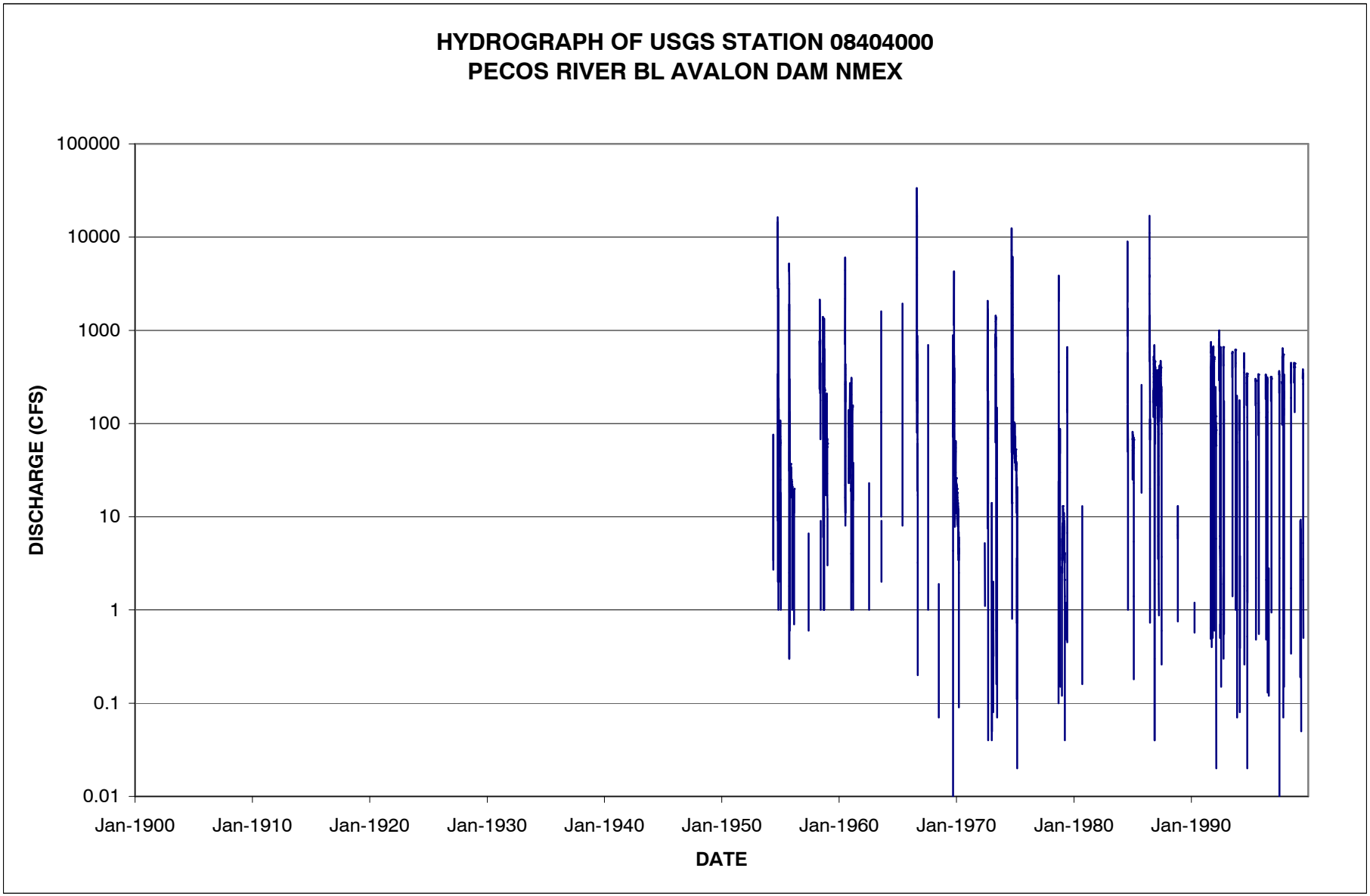
HYDROGRAPH OF USGS STATION 08404000
PECOS RIVER BL AVALON DAM NMEX
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K17b

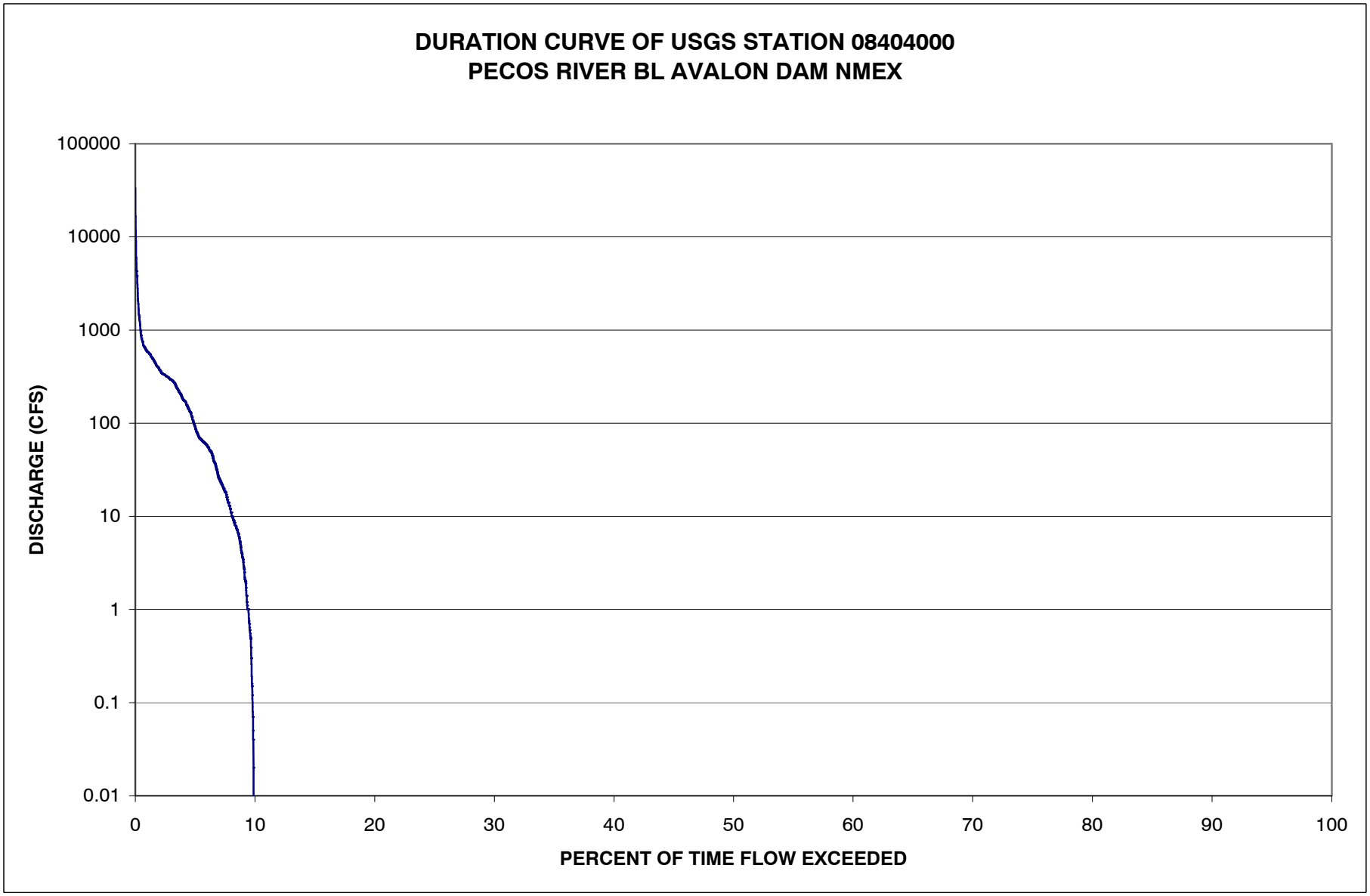
DURATION CURVE OF USGS STATION 08404000
PECOS RIVER BL AVALON DAM NMEX
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K18a

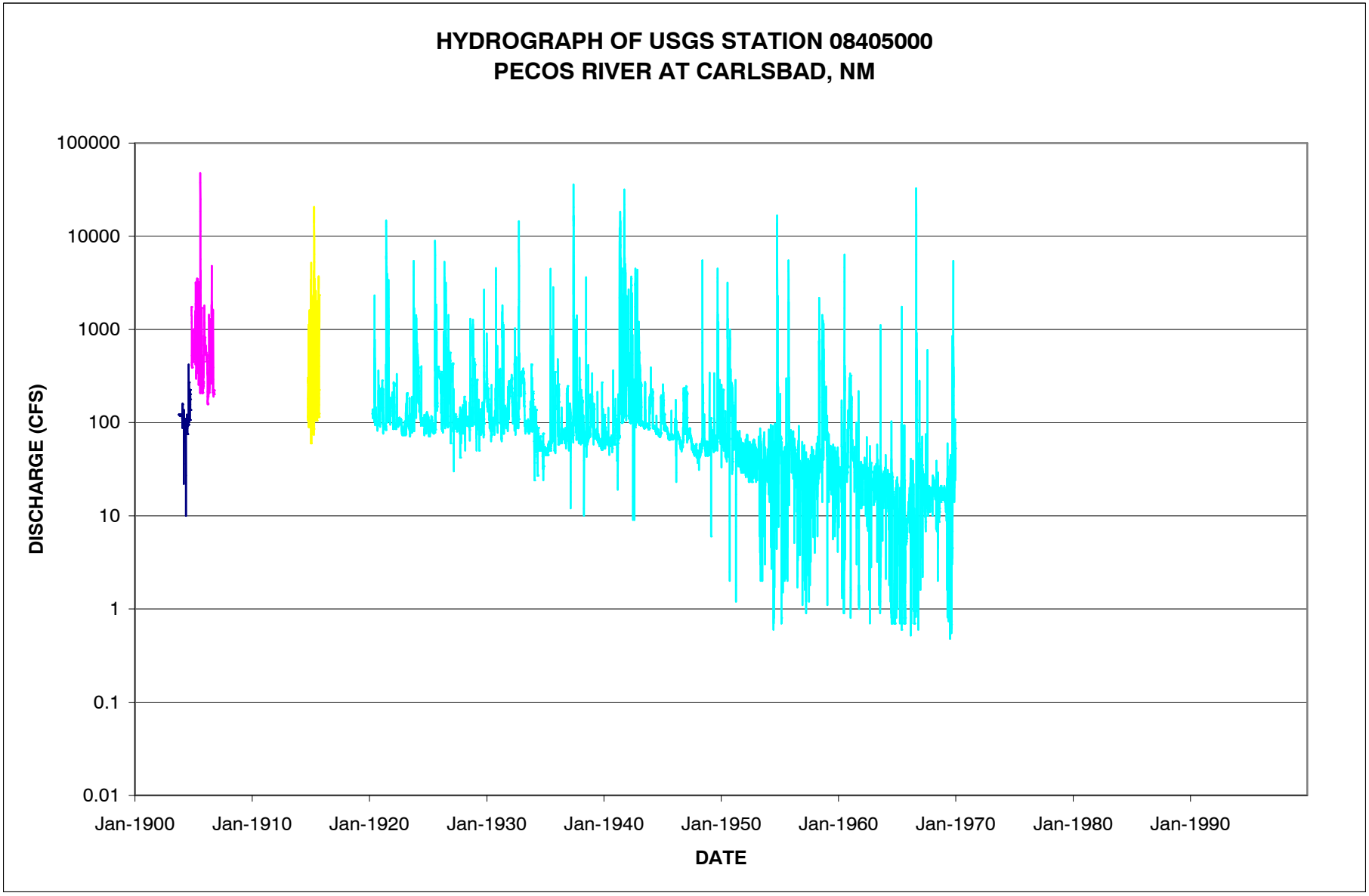
HYDROGRAPH OF USGS STATION 08405000
PECOS RIVER AT CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K18b

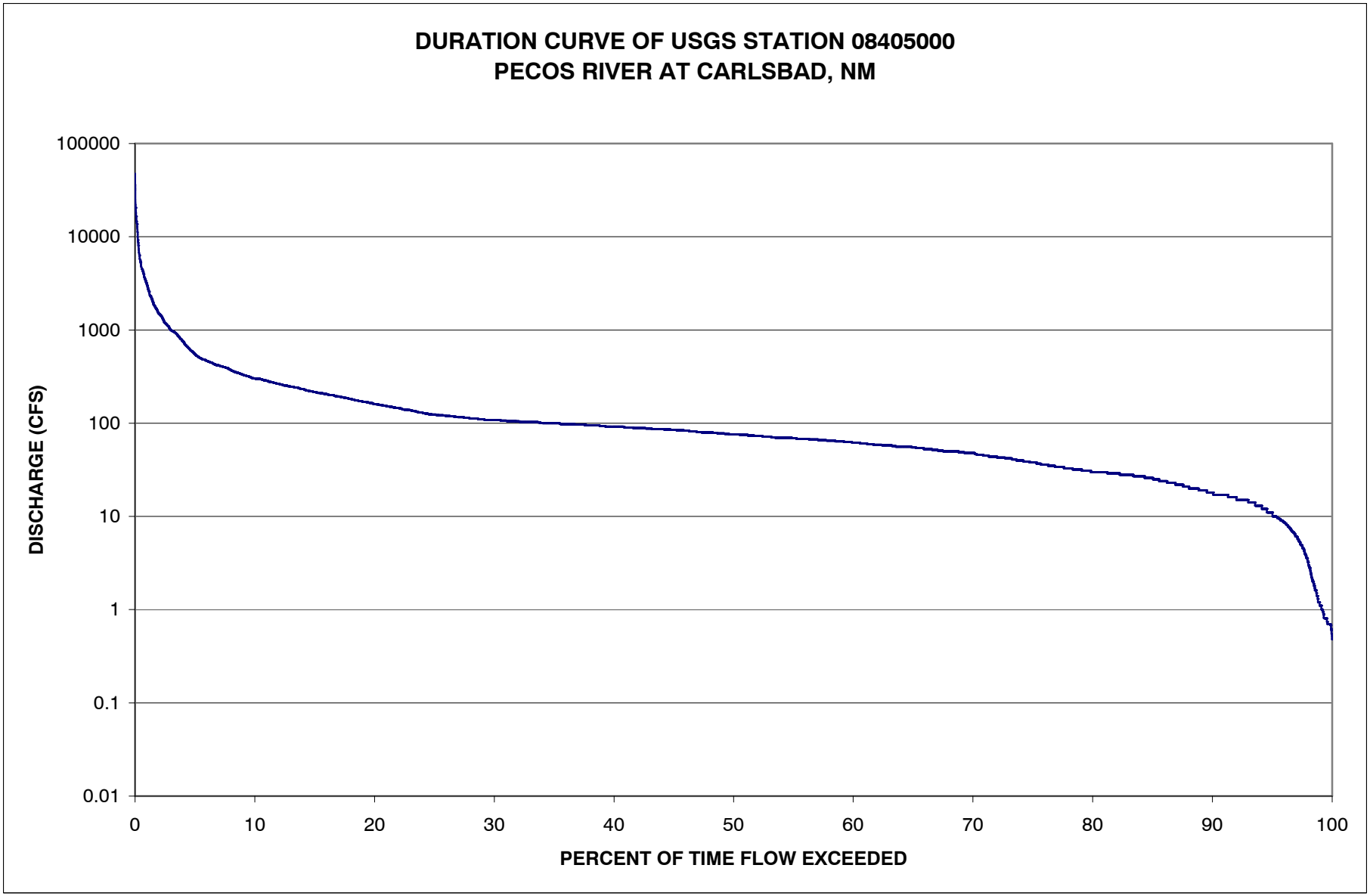
DURATION CURVE OF USGS STATION 08405000
PECOS RIVER AT CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K19a

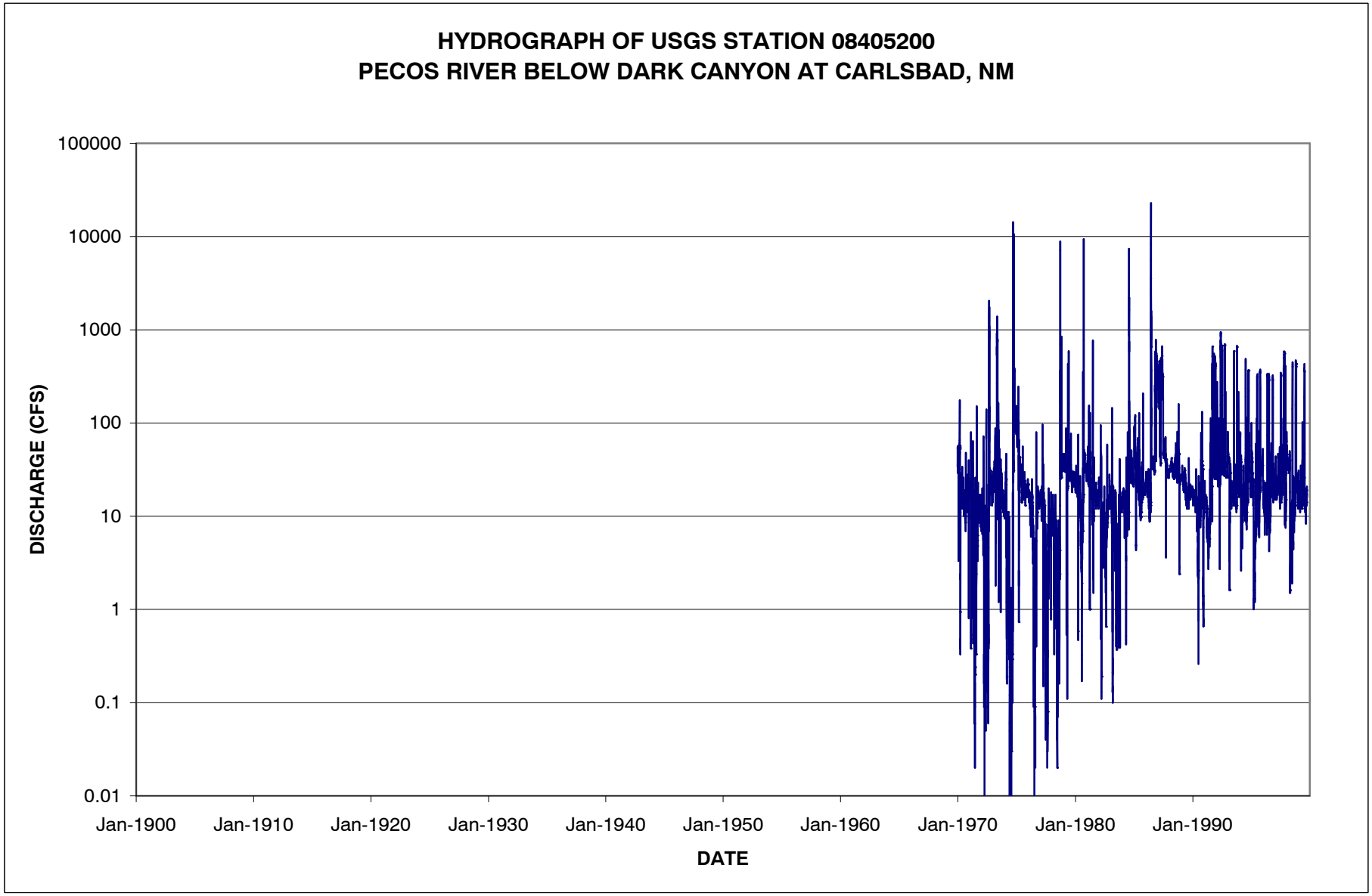
HYDROGRAPH OF USGS STATION 08405200
PECOS RIVER BELOW DARK CANYON AT CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K19b

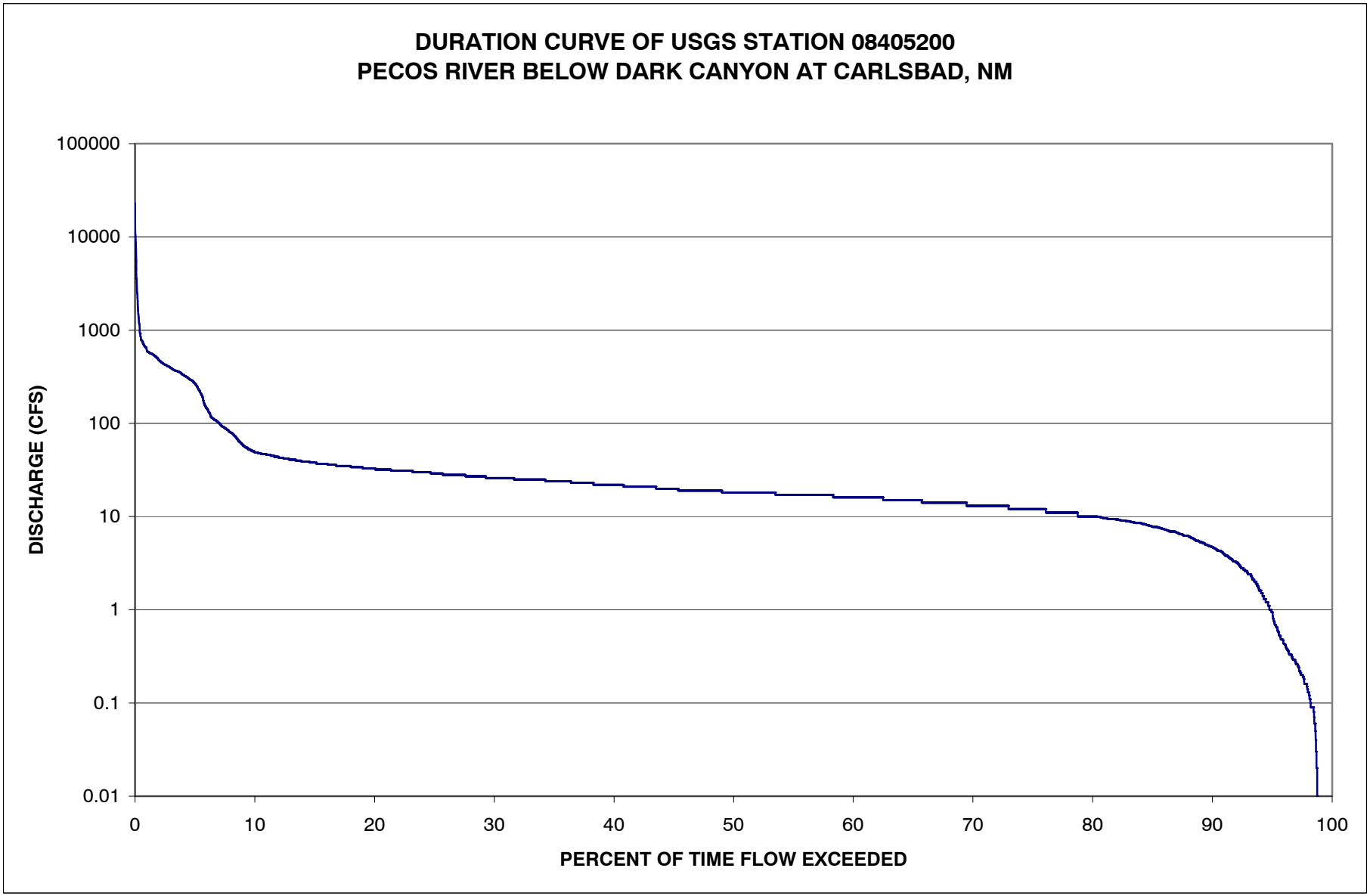
DURATION CURVE OF USGS STATION 08405200
PECOS RIVER BELOW DARK CANYON AT CARLSBAD, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K20a

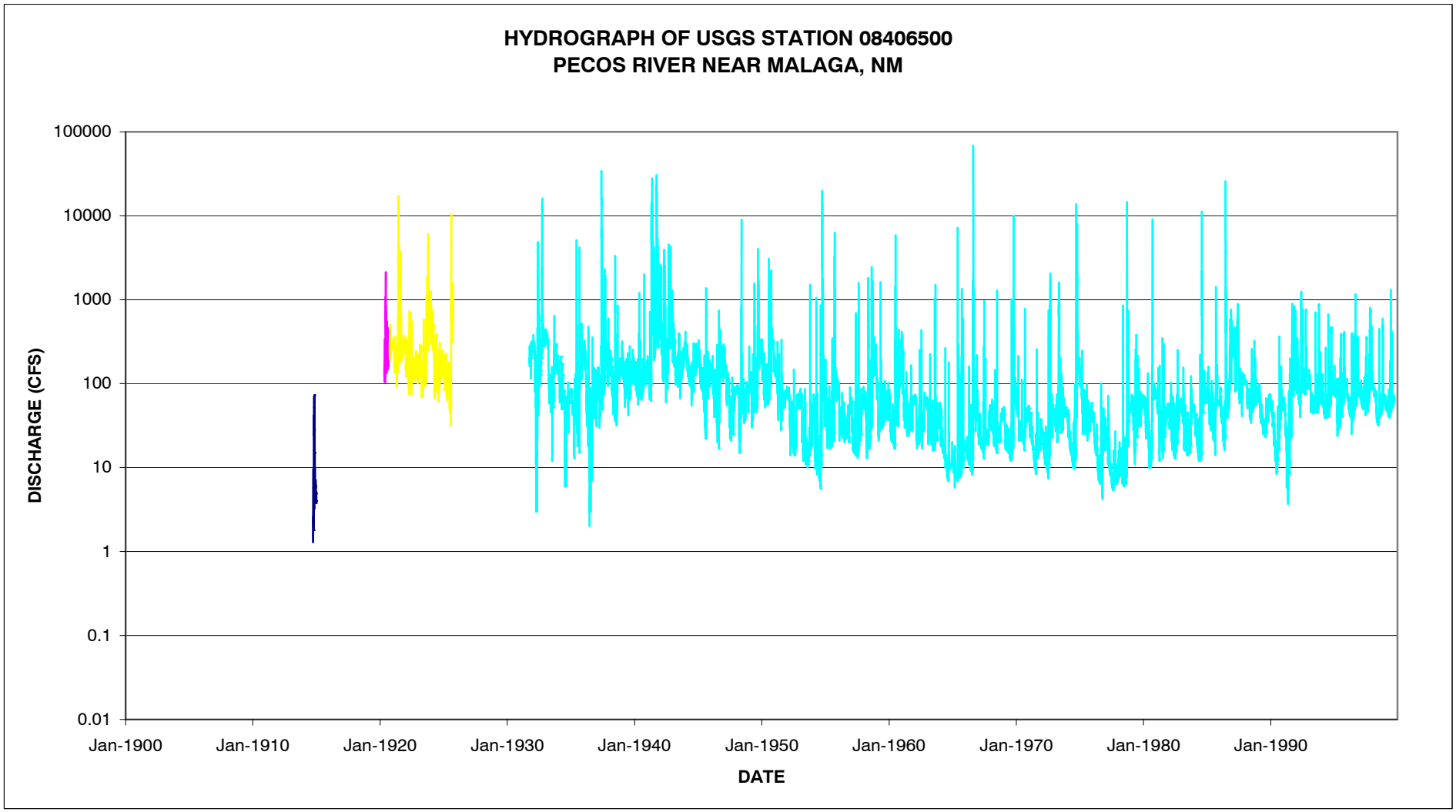
HYDROGRAPH OF USGS STATION 08406500
PECOS RIVER NEAR MALAGA, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K20b

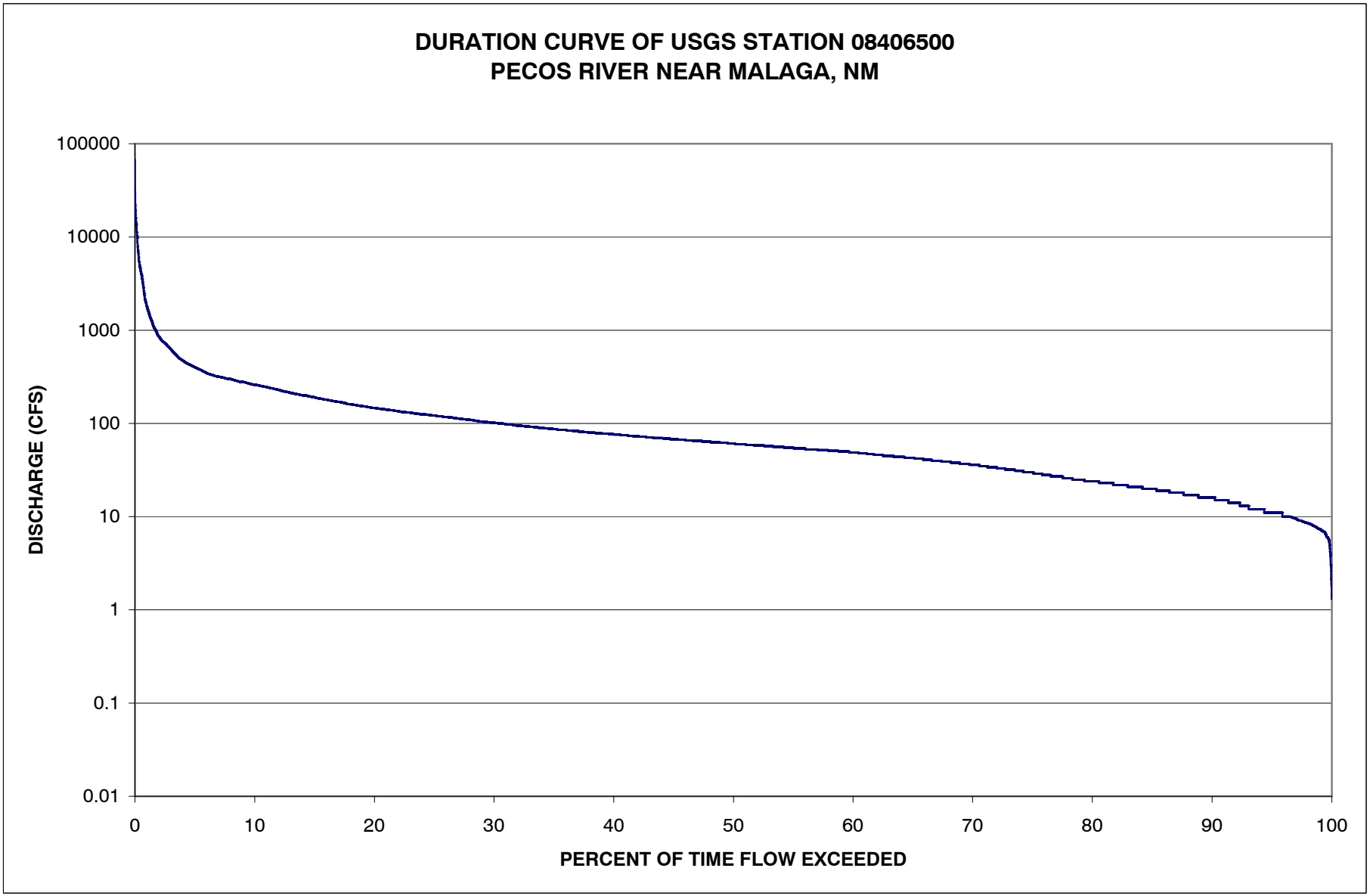
DURATION CURVE OF USGS STATION 08406500
PECOS RIVER NEAR MALAGA, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K21a

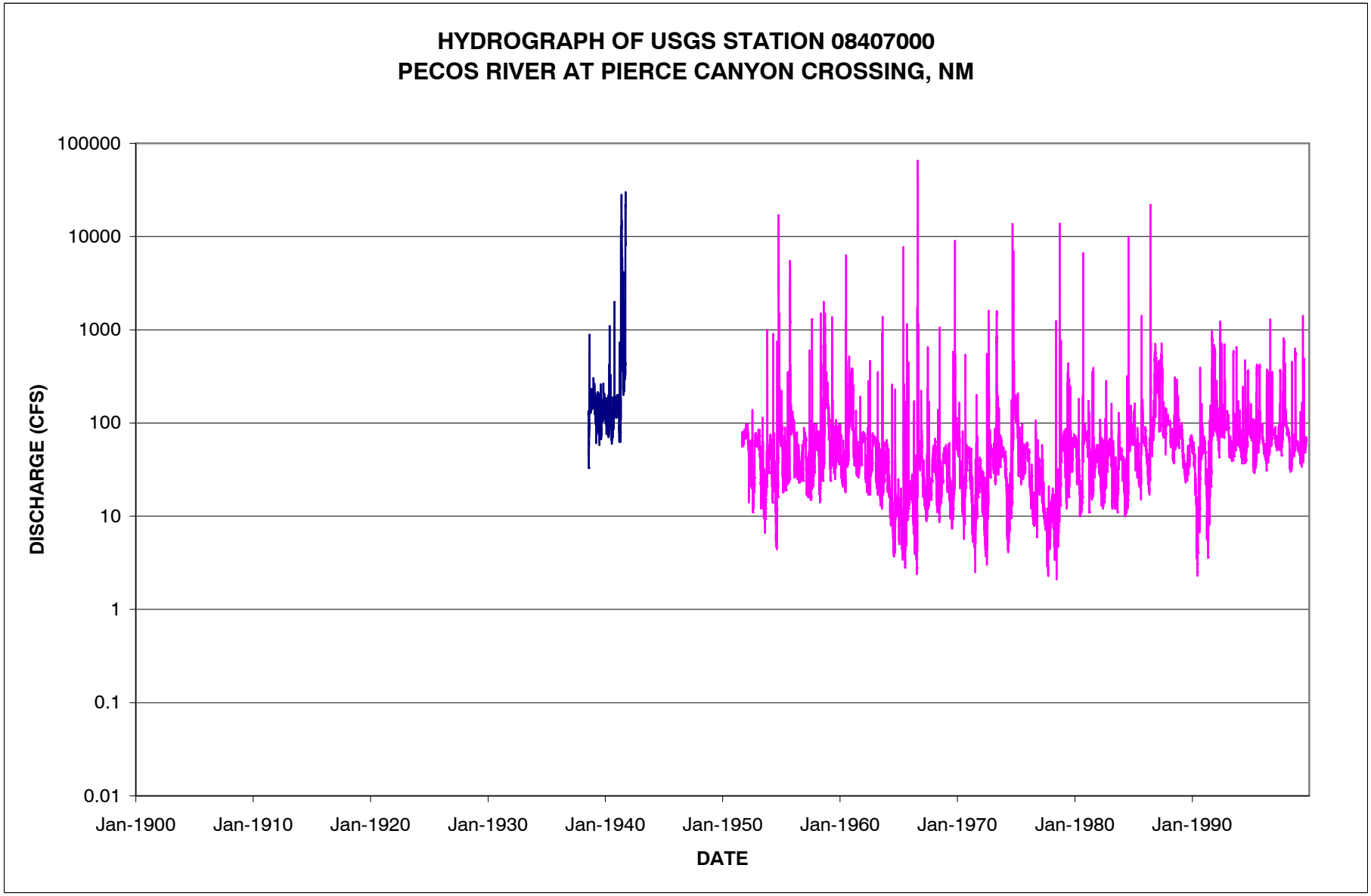
HYDROGRAPH OF USGS STATION 08407000
PECOS RIVER AT PIERCE CANYON CROSSING, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K21b

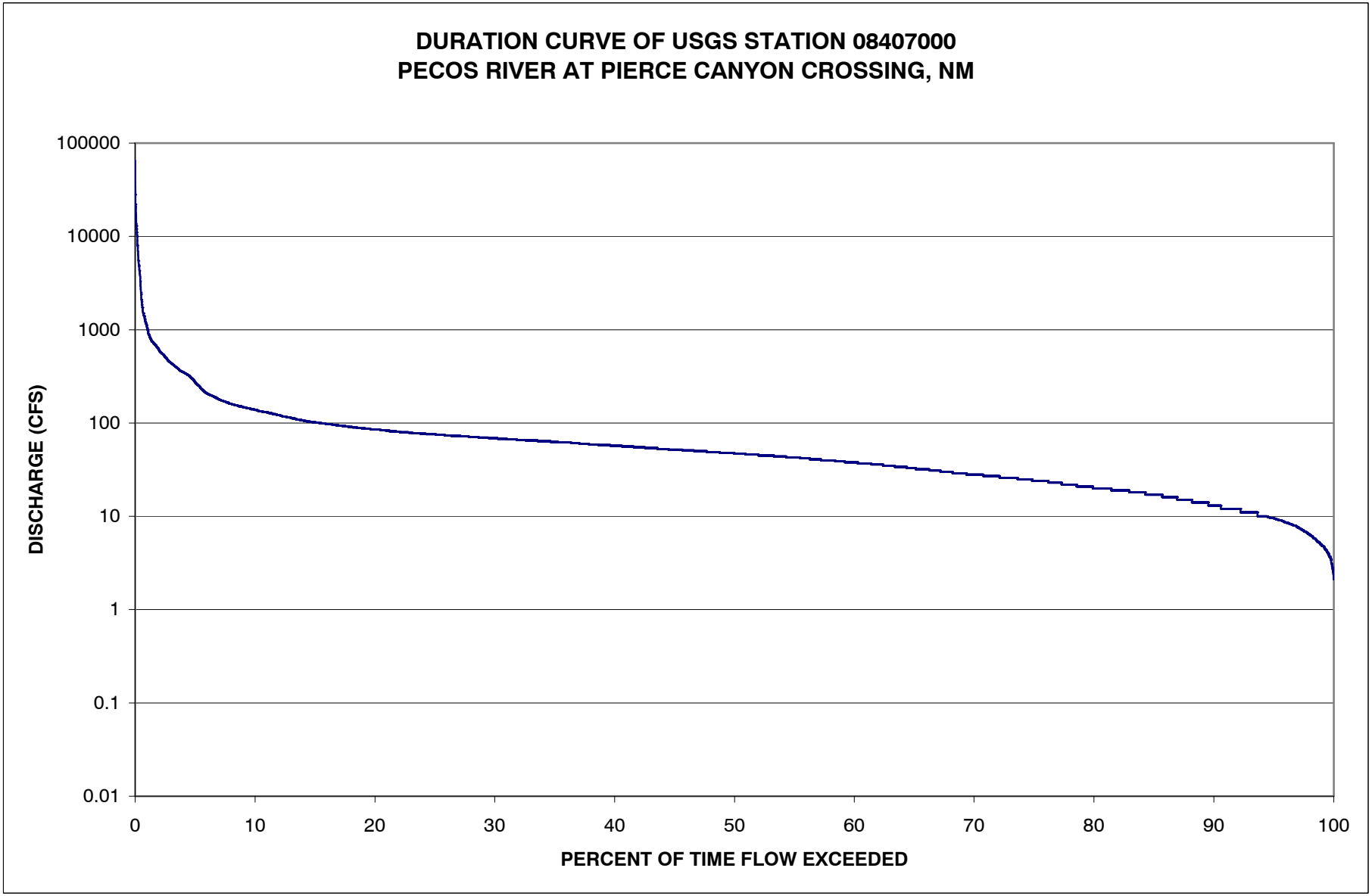
DURATION CURVE OF USGS STATION 08407000
PECOS RIVER AT PIERCE CANYON CROSSING, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

FIGURE K22a

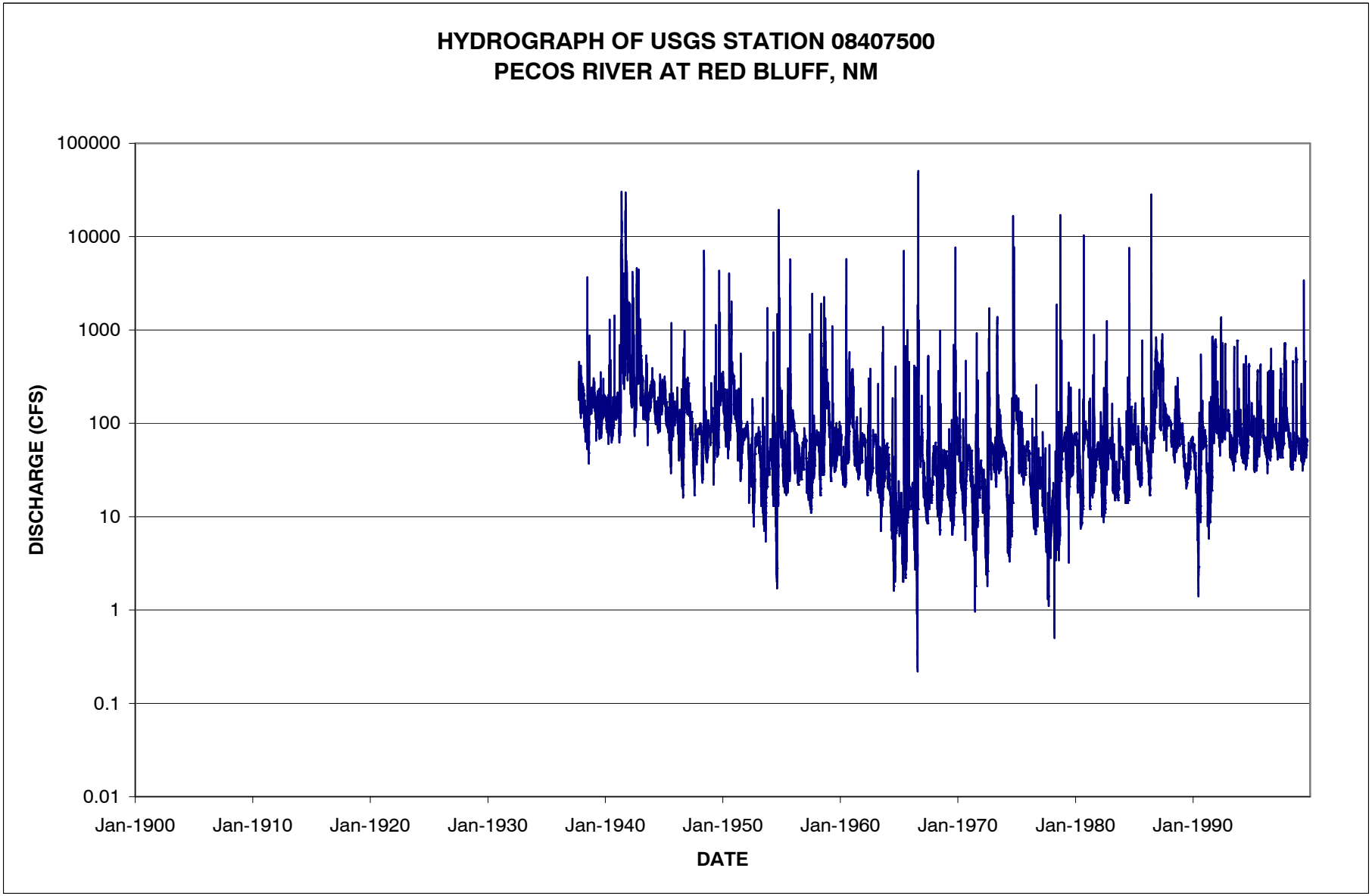
HYDROGRAPH OF USGS STATION 08407500
PECOS RIVER AT RED BLUFF, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1900
Jan-1910
Jan-1920
Jan-1930
Jan-1940
Jan-1950
Jan-1960
Jan-1970
Jan-1980
Jan-1990
DATE

FIGURE K22b

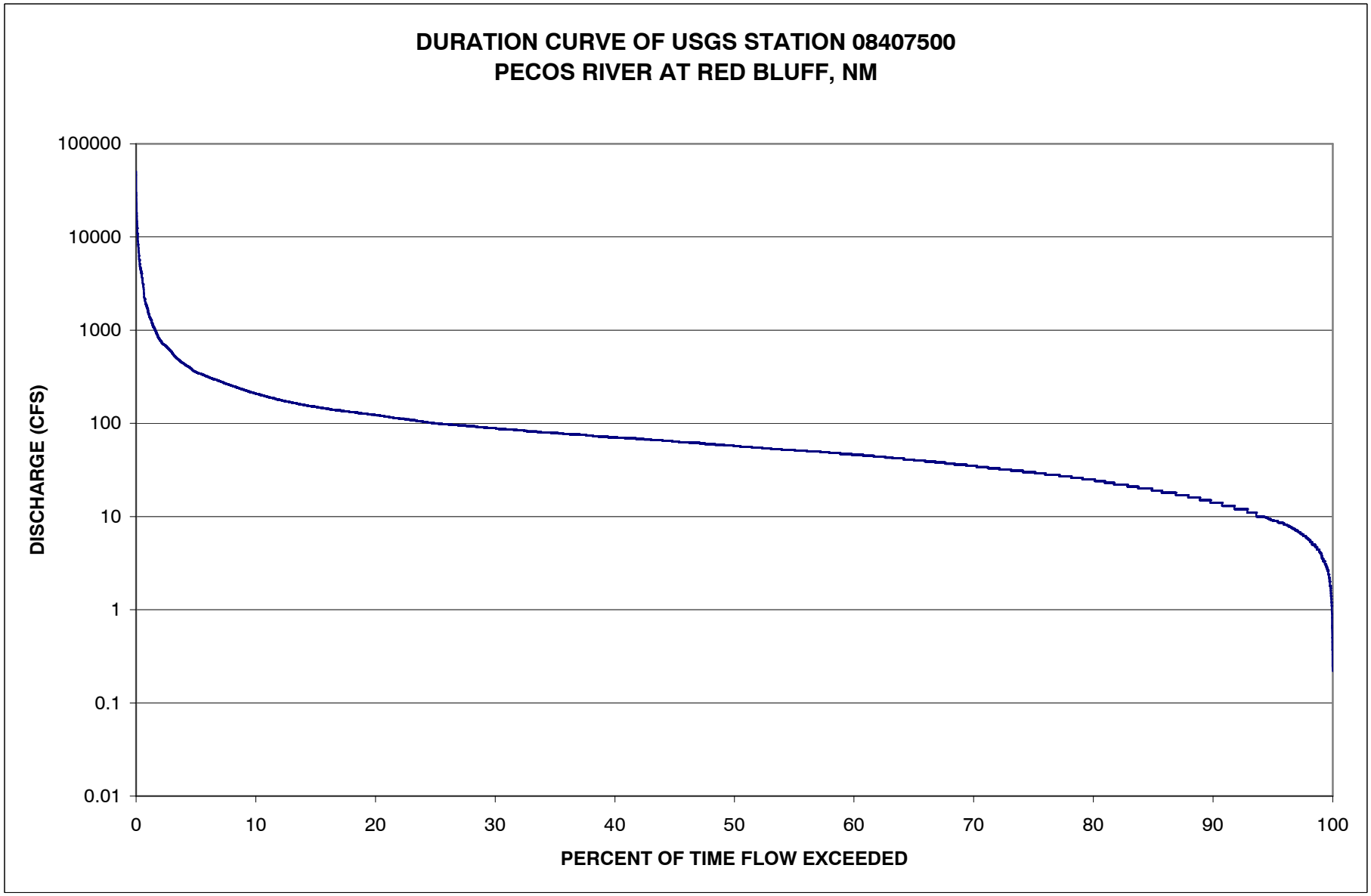
DURATION CURVE OF USGS STATION 08407500
PECOS RIVER AT RED BLUFF, NM
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
0.01
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW EXCEEDED

TABLE J1. SURFACE WATER GAGE SUMMARY

Gage Number	Gage Name	Period of Record		Area	Average Runoff	Runoff Per Area
		From	To	(miles)	(AFY)	(AFY/mile^2)
8384500	Pecos River Below Sumner Dam, NM	1913	1998	4,390	151,890	34.6
8385000	Fort Sumner Main Canal Near Fort Sumner, NM	1940	1998	0	37,280	---
8385500	Pecos River Near Fort Sumner, NM	1995	1998	0	119,540	---
8385520	Pecos River Below Fort Sumner, NM	1957 1962	1958 1970	5,600	---	---
8385522	Pecos River Below Taiban Creek Near Fort Sumner, NM	1993	1998	0	150,930	---
8385620	Pecos River Below Yeso Arroyo Near Fort Sumner, NM	1965	1968	7,000	---	---
8385630	Pecos River Near Dunlap, NM	1994	1998	0	142,280	---
8385640	Pecos River Above Huggins Creek Near Roswell, NM	1965	1968	7,800	---	---
8385648	Pecos River Above Acme, NM	1993	1998	0	142,240	---
8386000	Pecos River Near Acme, NM	1938	1998	11,380	131,240	11.5
8386900	F. Herrera Ditch S. at Hollywood, NM	1961	1982	0	270	---
8387000	Rio Ruidoso at Hollywood, NM	1954	1998	120	14,270	118.9
8387600	Eagle Creek Below South Fork Near Alto, NM	1970	1998	8	2,040	250.6
8387800	Eagle Creek Near Alto, NM	1970	1980	16	1,250	79.6
8388000	Rio Ruidoso at Hondo, NM	1931	1954	290	14,000	48.3
8388500	Rio Bonito at Angus, NM	1930	1931	46	---	---
8389500	Rio Bonito at Hondo, NM	1931	1954	295	7,500	25.4
8390000	Rio Hondo at Hondo, NM	1930 1981	1931 1997	1,000	---	---
8390100	Rio Hondo at Picacho, NM	1957	1961	715	14,970	20.9
8390500	Rio Hondo at Diamonds A Ranch Near Roswell, NM	1940	1998	947	18,390	19.4
8390800	Rio Hondo Below Diamond A Dam Near Roswell, NM	1964	1998	963	11,430	11.9
8393200	Rocky Arroyo Above Two Rivers Reservoir Near Roswell, NM	1964	1979	31	590	19.0
8393300	Rocky Arroyo Below Rocky Dam, NM	1964	1979	65	1,240	19.1
8393500	Rio Hondo at Roswell, NM	1903 1982	1906 1996	0	13,690	---
8393600	North Spring River at Roswell, NM	1959	1977	20	30	1.5
8393610	Rio Hondo Near Roswell, NM	1998	1998	0	4,720	---
8394100	Pecos River Near Hagerman, NM	1968	1990	13,630	---	---

TABLE J1. SURFACE WATER GAGE SUMMARY

Gage Number	Gage Name	Period of Record		Area	Average Runoff	Runoff Per Area
		From	To	(miles)	(AFY)	(AFY/mile^2)
8394500	Rio Felix at Old Highway Bridge Near Hagerman, NM	1940	1986	932	10,400	11.2
8395000	Rio Felix Near Hagerman, NM	1932	1939	934	---	---
8395500	Pecos River Near Lake Arthur, NM	1939	1998	14,760	162,820	11.0
8396000	Cottonwood Creek Near Lake Arthur, NM	1933	1964	199	3,930	19.7
8396025	Eagle Draw at Artesia, NM	---	---	---	---	---
8396500	Pecos River Near Artesia, NM	1906	1998	15,300	200,530	13.1
8397600	Rio Peñasco Near Dunken, NM	1957	1961	583	4,160	7.1
8398500	Rio Peñasco at Dayton, NM	1952	1998	1,060	3,490	3.3
8399500	Pecos River (Kaiser Channel) Near Lakewood, NM	1951	1998	0	121,260	---
8400000	Fourmile Draw Near Lakewood, NM	1952	1998	265	2,520	9.5
8401000	Pecos River Below McMillan Dam, NM	1907	1987	16,990	73,260	4.3
8401200	South Seven River Near Lakewood, NM	1964	1996	220	2,880	13.1
8401500	Pecos River Below Brantley Dam Near Carlsbad, NM	1973	1998	17,650	109,510	6.2
8401900	Rocky Arroyo at Highway Bridge Near Carlsbad, NM	1964	1998	285	4,510	15.8
8402000	Pecos River at Damsite 3 Near Carlsbad, NM	1940	1998	17,980	119,130	6.6
8403500	Carlsbad Main Canal at Head Near Carlsbad, NM	1940	1998	0	77,330	---
8404000	Pecos River Below Avalon Dam, NM	1952	1998	18,080	26,520	1.5
8405000	Pecos River at Carlsbad, NM	1905	1969	18,100	150,630	8.3
8405150	Dark Canyon at Carlsbad, NM	1973	1998	451	3,400	7.5
8405200	Pecos River Below Dark Canyon at Carlsbad, NM	1970	1998	18,550	43,460	2.3
8405300	Rattlesnake Spring Near White City, NM	1961	1962	0	---	---
8405500	Black River Above Malaga, NM	1947	1998	343	9,580	27.9
8406500	Pecos River Near Malaga, NM	1921	1998	19,190	124,720	6.5
8407000	Pecos River at Pierce Canyon Crossing, NM	1939	1998	19,260	69,850	3.6
8407500	Pecos River at Red Bluff, NM	1938	1998	19,540	111,330	5.7

Table I1. Land Area Between Precipitation Contours in the Lower Pecos Valley Planning Region

Average Annual Precipitation (inches)	Area (acres)	Average Annual Volume (AF)
10-12	13,040	11,953
12-14	5,720,720	6,197,447
14-16	3,330,550	4,163,187
16-18	839,670	1,189,532
18-20	396,020	627,032
20-24	255,700	468,783
24-28	158,490	343,395
28-32	42,330	105,825
32-36	200	567
Totals	10,756,720	13,107,721

Source: National Resource Conservation Service, 2001, Average Annual Precipitation 1961 – 1990: http://www.ftw.nrcs.usda.gov/prism.html.

Table I2. Land Area Between Elevation Contours in the Pecos Valley Planning Region

Elevation Range (feet)	Area (acres)
2700-2999	112,430
3000-3499	1,303,310
3500-3999	2,487,950
4000-4499	2,314,780
4500-4999	1,144,760
5000-5499	937,700
5500-5999	730,020
6000-6499	654,140
6500-6999	450,830
7000-7499	222,410
7500-7999	167,550
8000-8499	120,920
8500-8999	64,990
9000-9499	33,300
9500-9999	6920
10,000-10,499	2860
10,500-10,999	1150
11,000-11,499	310
11,500-11,886	70
Total	10,756,400

Source: New Mexico Resource Geographic Information System (RGIS) Clearinghouse, National Elevation Dataset, produced by U.S. Geological Survey, distributed by Earth Data Analysis Center, University of New Mexico, Albuquerque, New Mexico.

Status of Hydrographic Surveys on the Lower Pecos River[1]

Rio Peñasco Hydrographic Survey

The survey involves approximately 5,500 acres of land irrigated by surface water, ground water and surface water supplemented by ground water. The Rio Peñasco drainage area encompasses about 1,080 square miles and extends from the Pecos River on the east to the Cloudcroft vicinity on the west, a distance of approximately 95 miles. The survey was inactive in fiscal year 1998-99, due to priority being placed on other projects. The Rio Peñasco hydrographic survey will be reported in two volumes as follows:

Hope Section

The final edit of the updates and subsequent revisions of the original Hope Section survey has been completed. The survey is now ready for publication. This updated report involves 93 sub-files which represent a total of 63 owners. The survey found a total of 3047.55 acres irrigated from surface water and 31 stock ponds.

Upper Peñasco Mainstem

The compilation work on the Upper Peñasco Mainstem is approximately 95% complete. There are currently 31 map sheets covering approximately 2000.0 acres adjudicated in Court Cause 712 Equity. Map sheets 1 through 28 are complete, for a total of 28 map sheets covering 177 subfiles. Current data compilation reflects 679.0 acres found irrigated and in agreement with Court Cause 712 Equity. In addition, 125.3 acres were found irrigated for which no record was found in Court Cause 712 Equity or SEO files, and 221.1 acres were adjudicated (or permitted) and found not irrigated.

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[1] OSE, 2000, 1998-1999 Annual Report.

Agua Chiquita Section

The compilation of the Agua Chiquita, a tributary of the Upper Peñasco, is 100% complete. A total of 17 map sheets were required to cover this portion of the hydrographic survey. A total of 100 subfiles represent the Agua Chiquita covering 477.2 acres adjudicated in Court Cause 712, equity and/or in SEO files. The present survey found 237.6 acres irrigated and in agreement with Court Cause 712, Equity. There were 237.1 acres adjudicated and found not irrigated.

Bluewater Creek Section

The Bluewater Creek Section was an area that was never mapped or field checked when this survey began. Bluewater Creek is also a tributary of the Upper Peñasco. The control and the mapping of this area has been performed. A total of 7 map sheets were needed to cover this section. All the map sheets have been compiled covering 7 subfiles and 103.2 acres of irrigated land, 54.0 acres of land which were classified F-5, and 38.6 declared but found not irrigated.

Rio Hondo-Bonito-Ruidoso Section

The adjudication suit affecting water rights in the Hondo, Bonito and Ruidoso area is currently in the inter se phase.

Carlsbad Underground Water Basin

The Carlsbad Underground Basin will be reported in three volumes to include all water uses in the Carlsbad Underground Water Basin. Volume I includes all irrigation uses and multiple-use rights with irrigation (i.e. irrigation and industrial) within the Carlsbad Irrigation District. Volume II will include all uses within the basin except irrigation within the Carlsbad Irrigation District and the Black River drainage, and Volume III will include irrigation uses in the Black River Drainage Basin except that part of the Black River drainage within the Carlsbad Irrigation District.

Carlsbad Irrigation District (Volume I)

This survey involves 573 owners of approximately 25,000 acres irrigated by surface water, ground water and surface water supplemented by ground water. The hydrographic survey report, which consists of four volumes, was published in 1987. Due to delays in the adjudication process, this survey has required updating for ownership and land subdivisions. All four volumes are being republished. The entire survey is scheduled for publication in 2000.

Carlsbad Underground Basin (Volume II)

This survey will report all the remaining water uses outside the boundaries of the Carlsbad Irrigation District within the Carlsbad Groundwater Basin. This survey is now being updated and revised and is scheduled for publication by in late 2001.

Black River Section (Volume III)

The Black River is a west-side tributary of the Pecos River in southern Eddy County. Irrigation uses in the Black River system include 2,442 acres reported in the Carlsbad Irrigation District section and 2,458 acres outside the district. Irrigated lands outside the district are covered in this survey. The maps are complete. The report requires only an updating of ownership and is scheduled for completion in late 2000.

Status of Adjudications on the Pecos River[1]

The adjudication of the Pecos River Stream System began in 1956 with the filing of the action denominated *State of New Mexico ex rel. State Engineer v. Lewis* in the Fifth Judicial District Court. The objective at that time was to adjudicate all groundwater rights in the Roswell Artesian Basin to obtain administrative control of illegal and excessive pumping. Because a number of groundwater rights were supplemental to the Hagerman Canal surface-water rights, a separate action was filed to adjudicate the Canal. After all rights had been adjudicated and subfile orders had been entered, the two cases were consolidated and a partial final decree was entered by the District Court adopting all subfile orders. In 1972, the adjudication was expanded to include the Hondo Basin because of anticipated large new diversions by the Mescalero Apache Indian Tribe. The Tribe's rights were adjudicated, along with all nonIndian rights in the Hondo Basin. That portion of the *Lewis* case is complete.

In 1976, after the Carlsbad Irrigation District asked the State Engineer to administer priorities, the *Lewis* case was expanded to the entire Pecos River Stream System. It was the State Engineer's position that priorities could not be enforced until all rights had been adjudicated and all junior rights given the opportunity to challenge the Irrigation District's rights.

The Carlsbad Irrigation District's priority call continues to be one of the two driving forces behind the *Lewis* adjudication. The other is the Supreme Court's Amended Decree in *Texas v. New Mexico*. Under the Amended Decree, New Mexico is required to meet its water-delivery obligations to Texas under the Pecos River Compact within a relatively short time frame; if it underdelivers, the shortfall must be remedied within six months.

The State has three current objectives in the *Lewis* adjudication: (1) perform preliminary work necessary to enforce the Carlsbad Irrigation District's priority

[1] OSE, 2000, 1998-1999 Annual Report.

call, (2) perform work necessary to increase stateline flows and meet New Mexico's delivery obligations to Texas under the Pecos River Compact and (3) perform preliminary work necessary to enjoin uses if New Mexico underdelivers. The state's current areas of concentration in furtherance of these objectives are the Carlsbad and Roswell Basins. A description of the status of the State's efforts in the various sections within this massive adjudication follows.

Hondo Adjudication: This adjudication as between claimants and the State was completed in August 1997. Plans are being finalized for *inter se* proceedings.

Roswell Adjudication: The State is currently undertaking the readjudication of priority dates of pre1947 groundwater rights. All water-rights owners with priorities of 1946 or earlier have been served with an Order to Show Cause. The State served interrogatories to the approximately 700 to 800 claimants who filed answers to the Order to Show Cause. Many claimants have served answers to the interrogatories and the state is currently evaluating the answers. Many other claimants have withdrawn their responses to the Order to Show Cause and the State has and will continue to file motions to adjudicate their priorities in accordance with their subfile orders. The State has completed the structure of the database for analyzing the claims.

Carlsbad Project Adjudication: The court ordered and the State conducted supplemental service of the Stipulated Offer of Judgment. A special committee counsel, appointed by the Judge Pro Tem, submitted a proposed Pretrial Order which the court entered on February 26, 1996. In accordance with the Pretrial Order, briefing on procedural issues has been completed. Briefing on threshold legal issues has been completed. The State filed its Motion to Consolidate Member and Project Adjudications In Part on April 12, 1996 and the Motion was subsequently granted. The purpose of consolidation is to allow members to participate in briefing on issues which potentially affect them such as ownership of water rights. The court has issued its decision on all but one of the threshold legal issues.

Carlsbad Member Adjudication: Joinder of the Carlsbad Irrigation District members and other water-rights claimants within the Carlsbad Irrigation District boundaries is complete. Contemporaneously with joinder of Carlsbad Irrigation District members, the State served its Motion to Consolidate Member and Project Adjudications In Part. The District Court granted the State's Motion for Leave to File Consolidated Reply to all responses filed in connection with the State's Motion to Consolidate. The State filed a consolidated reply after all District members had been joined in the adjudication, the District's members had been served with the State's Motion to Consolidate and the time for filing responses had expired. The first volume of the member hydrographic survey has been completed and offers of judgment are being prepared. The remaining volumes should be published in the next several months.

Carlsbad Underground Basin: The hydrographic survey will need to be completed prior to the joinder of water rights owners and service of offers of judgment.

Black River Adjudication: Once again, the Hydrographic Survey Report and maps for this section must be completed prior to joinder and service of offers of judgment.

Gallinas Basin: The State has finalized the adjudication of the Storrie Project subfiles. Due to the pressing demands of other adjudications, the remainder of the subfiles will have to await staff availability before they may be completed.

Las Vegas *Inter Se* Proceedings: Trial on the City's appropriative water rights claims was held in Las Vegas, New Mexico in February 1997. The court's decision was rendered and the City appealed. The appeals court affirmed the trial court's decision. This event could have triggered action by the New Mexico Supreme Court on the pending writ of certiorari involving the City's Pueblo water rights claim; however, the City and the State Engineer have requested that the high court further stay matters to enable the litigants to explore settlement options.

TABLE 1 FROM PECOS ACCOUNTING 98 DATA.XLS

SPREADSHEET FOR CACULATING STATE LINE DEPARTURES IN

NEW MEXICO'S PECOS RIVER WATER DELIVERY OBLIGATION TO TEXAS

Prepared by: J. W. Longworth, ISC, March, 1999

05/07/01 09:00 AM Estimate of WY 1998 Departure = **1.7** TAF

Table 1. General Calculation of Annual Departures, TAF for WY 1998

	1996	1997	1998
B.1.a. Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R blw Alamogordo Dam	134.2	160.0	191.1
(b) Flood inflow Alamogordo Dam to Artesia (Table 2)	9.4	13.1	6.1
(c) Flood inflow Artesia to Carlsbad (Table 3)	10.3	1.0	4.7
(d) Flood inflow Carlsbad to State Line (Table 4)	10.5	6.6	1.4
Total annual flood inflow	164.4	180.7	203.2
(2) Index inflow (3-year average)			182.8
B.1.b. 1947- Condition Delivery Obligation (Index Outflow)			81.1
B.1.c. Average Historical (Gaged) Outflow			
(1) Annual historical outflow			
(a) Gaged flow Pecos R at Red Bluff, NM	72.8	98.1	66.7
(b) Gaged flow Delaware R nr Red Bluff, NM	5.6	2.5	0.9
Total annual historical outflow	78.4	100.7	67.5
(2) Average historical outflow (3-year average)			82.2
B.1.d. Annual Departure			1.1
C. Adjustments to Computed Departure			
(1) Adjustments for depletions above Alamogordo Dam			
(a) Depletions due to irrigation (Table 5)	-2.2	-3.6	0.8
(b) Depl from operation of Santa Rosa Reservoir (Table 6)	3.5	0.6	3.9
(c) Transfer of water use to upstream of Alamogordo Dam	0.0	0.0	0.0

Recomputed Index Inflows

(1) Annual flood inflow			
(a) Gaged flow Pecos R blw Alamogordo Dam	135.5	157.1	195.7
(b) Flood inflow Alamogordo Dam to Artesia	9.4	13.1	6.1
(c) Flood inflow Artesia to Carlsbad	10.3	1.0	4.7
(d) Flood inflow Carlsbad to State Line	10.5	6.6	1.4
Total annual flood inflow	165.7	177.8	207.9
Recomputed index inflow (3-year average)			183.8
Recomputed 1947-Condition Delivery Obligation (Recomputed Index Outflow)			81.8
Recomputed Annual Departures			0.4
Credits to New Mexico			
C.2 Depletions due to McMillan Dike			1.3
C.3 Salvage water analysis			0.0
C.4 Unappropriated flood waters			0.0
C.5 Texas water stored in NM reservoirs			0.0
C.6 Beneficial CU of Delaware River water			0.0
Final Calculated Departure, TAF			**1.7**

MANUAL OF PROCEDURES TO COMPUTE
PECOS RIVER COMPACT COMPLIANCE[1]

1. The so-called "annual flood inflow" for the Alamogordo Dam[2] to state line reach is defined as the sum of the measured flow of the Pecos River below Alamogordo Dam plus the estimated flood inflows from the Alamogordo Dam to Artesia, Artesia to Carlsbad and Carlsbad to state line reaches. The current year's "annual flood inflow" is averaged with the annual flood inflows for the two prior years. This three-year average quantity is termed the "Index Inflow" and is used as "x" in the equation

$$y = 0.0489892\ (x)^{1.42318}$$

in order to determine the index outflow "y," New Mexico's three-year average 1947 condition delivery obligation at the new Mexico-Texas state line. This index inflow-index outflow equation was approved June 11, 1984 by the U.S. Supreme Court in the Texas vs. New Mexico Pecos River Compact Litigation, No. 65 Original. This equation will be used to determine New Mexico's 1947 condition delivery obligation imposed by the Pecos River Compact. A comparison of the index outflow with the three-year average historical outflow will identify any delivery depletions from the 1947 condition which might have occurred.

2. There are several factors which, under terms of the Pecos River Compact, might at times increase or decrease New Mexico's obligation to deliver

[1] Written Communication, John Longworth, NMISC to Pete Balleau, BGW, February 9, 2001.
[2] On October 17, 1974, Alamogordo Dam was renamed Sumner Dam by the U.S. Congress under Public Law 93-447, but for purposes of this manual, Sumner Dam has been usually referenced as Alamogordo Dam.

Pecos River water at state line. When appropriate, the following factors may need to be employed to adjust the computed departures in the Compact compliance computations.

a. Adjustments for Depletions above Alamogordo Dam
b. Depletions due to McMillan Dike
c. Salvage Water in New Mexico
d. Unappropriated Flood Waters
e. Texas Water Stored in New Mexico Reservoirs
f. Beneficial Consumptive Use of Waters of Delaware River by Texas

under the constitution which may be reviewed on certiorari by supreme court under § 237(b) [28 U.S.C. 1257(3)]. Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92, 58 S. Ct. 803, 82 L. Ed. 1202 (1938).

Jurisdiction over controversies concerning rights in interstate streams is not different from those concerning boundaries, which have been recognized as presenting federal questions. Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92, 58 S. Ct. 803, 82 L. Ed. 1202 (1938).

Law reviews. — For article, "A Survey of the Evolution of Western Water Law in Response to Changing Economic and Public Interest Demands," see 29 Nat. Resources J. 347 (1989).

Am. Jur. 2d, A.L.R. and C.J.S. references. — 78 Am. Jur. 2d Waters §§ 87, 310.

93 C.J.S. Waters §§ 170, 183, 188.

72-15-17. [Notice of approval.]

Notice of the approval of said compact shall be given by the governor of New Mexico to the governor of Colorado, as provided in Article VII of said compact.

History: 1978 Comp., § 72-15-17, enacted by Laws 1923, ch. 7, § 2.

72-15-18. [Ratification and approval.]

The ratification and approval of said compact by this state shall not be binding or obligatory until it shall have been likewise approved by the legislature of the state of Colorado and by the congress of the United States.

History: 1978 Comp., § 72-15-18, enacted by Laws 1923, ch. 7, § 3.

72-15-19. [Pecos River Compact.]

That the state of New Mexico does hereby ratify, approve and adopt the compact aforesaid, which is as follows:

PECOS RIVER COMPACT

The state of New Mexico and the state of Texas, acting through their commissioners,
John H. Bliss for the state of New Mexico and
Charles H. Miller for the state of Texas,
after negotiations participated in by Berkeley Johnson, appointed by the president as the representative of the United States of America, have agreed respecting the uses, apportionment and deliveries of the water of the Pecos river as follows:

ARTICLE I

The major purposes of this compact [this section] are to provide for the equitable division and apportionment of the use of the waters of the Pecos river; to promote interstate comity; to remove causes of present and future controversies; to make secure and protect present development within the states; to facilitate the construction of works for:

(a) the salvage of water;

(b) the more efficient use of water; and

(c) the protection of life and property from floods.

ARTICLE II

As used in this compact:

(a) the term "Pecos river" means the tributary of the Rio Grande which rises in north-central New Mexico and flows in a southerly direction through New Mexico and Texas and joins the Rio Grande near the town of Langtry, Texas, and includes all tributaries of said Pecos river;

(b) the term "Pecos river basin" means all of the contributing drainage area of the Pecos river and its tributaries above its mouth near Langtry, Texas;

(c) "New Mexico" and "Texas" means the state of New Mexico and the state of Texas, respectively; "United States" means the United States of America;

(d) the term "commission" means the agency created by this compact for the administration thereof;

(e) the term "deplete by man's activities" means to diminish the stream flow of the Pecos river at any given point as a result of beneficial consumptive uses of water within the Pecos river basin above such point. For the purposes of this compact it does not include the diminution of such flow by encroachment of salt cedars or other like growth, or by deterioration of the channel of the stream;

(f) the term "report of the engineering advisory committee" means that certain report of the engineering advisory committee dated January, 1948, and all appendices thereto; including, basic data, processes and analyses utilized in preparing that report, all of which were reviewed, approved and adopted by the commissioners signing this compact at a meeting held in Santa Fe, New Mexico, on December 3, 1948, and which are included in the minutes of that meeting;

(g) the term "1947 condition" means that situation in the Pecos river basin as described and defined in the report of the engineering advisory committee. In determining any question of fact hereafter arising as to such situation, reference shall be made to, and decisions shall be based on, such report;

(h) the term "water salvaged" means that quantity of water which may be recovered and made available for beneficial use and which quantity of water under the 1947 condition was nonbeneficially consumed by natural processes;

(i) the term "unappropriated floodwaters" means water originating in the Pecos river basin above Red Bluff dam in Texas, the impoundment of which will not deplete the water usable by the storage and diversion facilities existing in either state under the 1947 condition and which if not impounded will flow past Girvin, Texas.

ARTICLE III

(a) Except as stated in Paragraph (f) of this article, New Mexico shall not deplete by man's activities the flow of the Pecos river at the New Mexico-Texas state line below an amount which will give to Texas a quantity of water equivalent to that available to Texas under the 1947 condition.

(b) Except as to the unappropriated floodwaters thereof, the apportionment of which is included in and provided for by Paragraph (f) of this article, the beneficial consumptive use of the waters of the Delaware river is hereby apportioned to Texas, and the quantity of such beneficial consumptive use shall be included in determining waters received under the provisions of Paragraph (a) of this article.

(c) The beneficial consumptive use of water salvaged in New Mexico through the construction and operation of a project or projects by the United States or by joint undertakings of Texas and New Mexico, is hereby apportioned forty-three percent (43%) to Texas and fifty-seven percent (57%) to New Mexico.

(d) Except as to water salvaged, apportioned in Paragraph (c) of this article, the beneficial consumptive use of water which shall be nonbeneficially consumed, and which is recovered, is hereby apportioned to New Mexico but not to have the effect of diminishing the quantity of water available to Texas under the 1947 condition.

(e) Any water salvaged in Texas is hereby apportioned to Texas.

(f) Beneficial consumptive use of unappropriated flood waters is hereby apportioned fifty percent (50%) to Texas and fifty percent (50%) to New Mexico.

ARTICLE IV

(a) New Mexico and Texas shall cooperate to support legislation for the authorization and construction of projects to eliminate nonbeneficial consumption of water.

(b) New Mexico and Texas shall cooperate with agencies of the United States to devise and effectuate means of alleviating the salinity conditions of the Pecos river.

(c) New Mexico and Texas each may:

(i) construct additional reservoir capacity to replace reservoir capacity made unusuable [unusable] by any cause;

(ii) construct additional reservoir capacity for utilization of water salvaged and appropriated floodwater apportioned by this compact to such state;

(iii) construct additional reservoir capacity for the purpose of making more efficient use of water apportioned by this compact to such state.

(d) Neither New Mexico nor Texas will oppose the construction of any facilities permitted by this compact, and New Mexico and Texas will cooperate to obtain the construction of facilities that will be of joint benefit to the two states.

(e) The commission may determine the conditions under which Texas may store water in works constructed in and operated by New Mexico.

(f) No reservoir shall be constructed and operated in New Mexico above Avalon dam for the sole benefit of Texas unless the commission shall so determine.

(g) New Mexico and Texas each has the right to construct and operate works for the purpose of preventing flood damage.

(h) All facilities shall be operated in such manner as to carry out the terms of this compact.

ARTICLE V

(a) There is hereby created an interstate administrative agency to be known as the "Pecos river commission." The commission shall be composed of one commissioner representing each of the states of New Mexico and Texas, designated or appointed in accordance with the laws of each such state, and, if designated by the president, one commissioner representing the United States. The president is hereby requested to designate such a commissioner. If so designated, the commissioner representing the United States shall be the presiding officer of the commission, but shall not have the right to vote in any of the deliberations of the commission. All members of the commission must be present to constitute a quorum.

(b) The salaries and personal expenses of each commissioner shall be paid by the government which he represents. All other expenses which are incurred by the commission incident to the administration of this compact and which are not paid by the United States shall be borne equally by the two states. On or before November 1 of each even-numbered year the commission shall adopt and transmit to the governors of the two states and to the president a budget covering an estimate of its expenses for the following two years. The payment of the expenses of the commission and of its employees shall not be subject to the audit and accounting procedures of either of the two states. However, all receipts and disbursements of funds handled by the commission shall be audited yearly by a qualified independent public accountant and the report of the audit shall be included in, and become a part of, the annual report of the commission.

(c) The commission may appoint a secretary who, while so acting, shall not be an employee of either state. He shall serve for such term, receive such salary and perform such duties as the commission may direct. The commission may employ such engineering, legal, clerical and other personnel as in its judgment may be necessary for the performance of its functions under this compact. In the hiring of employees the commission shall not be bound by the civil service laws of either state.

(d) The commission, so far as consistent with this compact, shall have power to:

1. adopt rules and regulations;

2. locate, establish, construct, operate, maintain and abandon water-gaging stations, independently or in cooperation with appropriate governmental agencies;

3. engage in studies of water supplies of the Pecos river and its tributaries, independently or in cooperation with appropriate governmental agencies;

4. collect, analyze, correlate, preserve and report on data as to the stream flows, storage, diversions, salvage and use of the waters of the Pecos river and its tributaries, independently or in cooperation with appropriate governmental agencies;

5. make findings as to any change in depletion by man's activities in New Mexico, and on the Delaware river in Texas;

6. make findings as to the deliveries of water at the New Mexico-Texas state line;

7. make findings as to the quantities of water salvaged and the amount thereof delivered at the New Mexico-Texas state line;

8. make findings as to quantities of water nonbeneficially consumed in New Mexico;

9. make findings as to quantities of unappropriated flood waters;

10. make findings as to the quantities of reservoir losses from reservoirs constructed in New Mexico which may be used for the benefit of both states, and as to the share thereof charged under Article VI hereof to each of the states;

11. acquire and hold such personal and real property as may be necessary for the performance of its duties hereunder and to dispose of the same when no longer required;

12. perform all functions required of it by this compact and do all things necessary, proper or convenient in the performance of its duties hereunder, independently or in cooperation with appropriate governmental agencies;

13. make and transmit annually to the governors of the signatory states and to the president of the United States on or before the last day of February of each year, a report covering the activities of the commission for the preceding year.

(e) The commission shall make available to the governor of each of the signatory states any information within its possession at any time, and shall always provide free access to its records by the governors of each of the states, or their representatives, or authorized representatives of the United States.

(f) Findings of fact made by the commission shall not be conclusive in any court, or before any agency or tribunal, but shall constitute prima facie evidence of the facts found.

(g) The organization meeting of the commission shall be held within four months from the effective date of this compact.

ARTICLE VI

The following principles shall govern in regard to the apportionment made by Article III of this compact:

(a) the report of the engineering advisory committee, supplemented by additional data hereafter accumulated, shall be used by the commission in making administrative determinations;

(b) unless otherwise determined by the commission, depletions by man's activities, state-line flows, quantities of water salvaged and quantities of unappropriated floodwaters shall be determined on the basis of three-year periods reckoned in continuing progressive series beginning with the first day of January next succeeding the ratification of this compact;

(c) unless and until a more feasible method is devised and adopted by the commission the inflow-outflow method, as described in the report of the engineering advisory committee, shall be used to:

(i) determine the effect of the state-line flow of any change in depletions by man's activities or otherwise, of the waters of the Pecos river in New Mexico;

(ii) measure at or near the Avalon dam in New Mexico the quantities of waters salvaged;

(iii) measure at or near the state line any water released from storage for the benefit of Texas as provided for in Subparagraph (d) of this article;

(iv) measure the quantities of unappropriated floodwaters apportioned to Texas which have not been stored and regulated by reservoirs in New Mexico;

(v) measure any other quantities of water required to be measured under the terms of this compact which are susceptible of being measured by the inflow-outflow method;

(d) if unappropriated flood waters apportioned to Texas are stored in facilities constructed in New Mexico, the following principles shall apply:

(i) in case of spill from a reservoir constructed in and operated by New Mexico, the water stored to the credit of Texas will be considered as the first water to spill;

(ii) in case of spill from a reservoir jointly constructed and operated, the water stored to the credit of either state shall not be affected;

(iii) reservoir losses shall be charged to each state in proportion to the quantity of water belonging to that state in storage at the time the losses occur;

(iv) the water impounded to the credit of Texas shall be released by New Mexico on the demand of Texas;

(e) water salvaged shall be measured at or near the Avalon dam in New Mexico and to the quantity thereof shall be added a quantity equal to the quantity of salvaged water depleted by man's activities above Avalon dam. The quantity of water salvaged that is apportioned to Texas shall be delivered by New Mexico at the New Mexico-Texas state line. The quantity of unappropriated floodwaters impounded under Paragraph (d) of this article, when released shall be delivered by New Mexico at the New Mexico-Texas state line in the quantity released less channel losses. The unappropriated floodwaters apportioned to Texas by this compact that are not impounded in reservoirs in New Mexico shall be measured and delivered at the New Mexico-Texas state line;

(f) beneficial use shall be the basis, the measure and the limit of the right to use water.

ARTICLE VII

In the event of importation of water by man's activities to the Pecos river basin from any other river basin the state making the importation shall have the exclusive use of such imported water.

ARTICLE VIII

The provisions of this compact [this section] shall not apply to, or interfere with, the right or power of either signatory state to regulate within its boundaries the appropriation, use and control of water, not inconsistent with its obligations under this compact.

ARTICLE IX

In maintaining the flows at the New Mexico-Texas state line required by this compact, New Mexico shall in all instances apply the principle of prior appropriation within New Mexico.

ARTICLE X

The failure of either state to use the water, or any part thereof, the use of which is apportioned to it under the terms of this compact, shall not constitute a relinquishment of the right to such use, nor shall it constitute a forfeiture or abandonment of the right to such use.

ARTICLE XI

Nothing in this compact shall be construed as:

(a) affecting the obligations of the United States under the treaty with the United Mexican States (treaty series 994);

(b) affecting any rights or powers of the United States, its agencies or instrumentalities, in or to the waters of the Pecos river, or its capacity to acquire rights in and to the use of said waters;

(c) subjecting any property of the United States, its agencies or instrumentalities, to taxation by any state or subdivision thereof, or creating any obligation on the part of the United States, its agencies or instrumentalities, by reason of the acquisition, construction or operation of any property or works of whatever kind, to make any payment to any state or political subdivision thereof, state agency, municipality or entity whatsoever, in reimbursement for the loss of taxes;

(d) subjecting any property of the United States, its agencies or instrumentalities, to the laws of any state to an extent other than the extent to which such laws would apply without regard to this compact.

ARTICLE XII

The consumptive use of water by the United States or any of its agencies, instrumentalities or wards shall be charged as a use by the state in which the use is made; provided, that such consumptive use incident to the diversion, impounding or conveyance of water in one state for use in the other state shall be charged to such latter state.

ARTICLE XIII

This compact shall not be construed as establishing any general principle or precedent applicable to other interstate streams.

ARTICLE XIV

This compact may be terminated at any time by appropriate action of the legislatures of both of the signatory states. In the event of such termination, all rights established under it shall continue unimpaired.

ARTICLE XV

This compact shall become binding and obligatory when it shall have been ratified by the legislature of each state and approved by the congress of the United States. Notice of ratification by the legislature of each state shall be given by the governor of that state to the governor of the other state and to the president of the United States, and the president is hereby requested to give notice to the governor of each state of approval by the congress of the United States.

In witness whereof, the commissioners have executed three counterparts hereof each of which shall be and constitute an original, one of which shall be deposited in the archives of the department of state of the United States, and one of which shall be forwarded to the governor of each state.

Done at the city of Santa Fe, state of New Mexico, this 3rd day of December, 1948.

.....
JOHN H. BLISS
Commissioner for the state of New Mexico

.....
CHARLES H. MILLER
Commissioner for the state of Texas

APPROVED

.....
BERKELEY JOHNSON
Representative of the United States of America

History: 1978 Comp., § 72-15-19, enacted by Laws 1949, ch. 6, § 1.

Compiler's notes. — The first Pecos River Compact was ratified and approved, with reservations, by Laws 1933, ch. 166.

In Subparagraph (ii) of Paragraph (c) of Article IV of this compact, the words " . . . water salvaged and appropriated floodwater . . . ' do not conform to the printed session laws of 1949. However, an error was made in the printing of the 1949 session laws. The word "appropriated" appears in the enrolled and engrossed bill which ratified this compact and should have appeared in the printed session laws instead of "unappropriated." Thus, the language appearing in this section is correct.

Supreme court's jurisdiction to resolve controversies between two states, U.S. Const., art. III, § 2, cl. 1, extends to a properly framed suit to apportion the waters of an interstate stream between states through which it flows, to a suit to enforce a prior apportionment, and to a suit by one state to enforce its compact with another state or to declare rights under a compact, such as the Pecos River Compact. Texas v. New Mexico, 462 U.S. 554, 103 S. Ct. 2558, 77 L. Ed. 2d 1 (1983).

Reformation of compact is not within supreme court's equitable powers: It cannot appoint a tie-breaker or master to control the diversion of interstate waters on a day-to-day basis, even with the consent of the states involved. Texas v. New Mexico, 462 U.S. 554, 103 S. Ct. 2558, 77 L. Ed. 2d 1 (1983).

Remedying past failures to perform. — There is nothing in the nature of compacts generally or of this Compact in particular that counsels against rectifying a failure to perform in the past as well as ordering future performance called for by the Compact. Texas v. New Mexico, 482 U.S. 124, 107 S. Ct. 2279, 96 L. Ed. 2d 105 (1987).

The matter of remedying past water shortages caused by New Mexico's underdeliveries was returned to a special master for such further proceedings as he

deemed necessary and for his ensuing recommendation as to whether New Mexico should be allowed to elect a monetary remedy and, if so, to suggest the size of the payment and other terms that the state must satisfy. Texas v. New Mexico, 482 U.S. 124, 107 S. Ct. 2279, 96 L. Ed. 2d 105 (1987).

Good faith belief in compliance. — New Mexico's good faith belief that it was complying with this Compact would not permit the state to escape liability for what had been adjudicated to be past failures to perform its duties under the Compact. Texas v. New Mexico, 482 U.S. 124, 107 S. Ct. 2279, 96 L. Ed. 2d 105 (1987).

Decree ordering state to comply with compact and appointing river master. — See Texas v. New Mexico, 485 U.S. 388, 108 S. Ct. 1201, 99 L. Ed. 2d 450 (1988).

Law reviews. — For article, "A Survey of the Evolution of Western Water Law in Response to Changing Economic and Public Interest Demands," see 29 Nat. Resources J. 347 (1989).

For article, "Equitable Apportionment After *Vermejo:* The Demise of a Doctrine," see 29 Nat. Resources J. 565 (1989).

Am. Jur. 2d, A.L.R. and C.J.S. references. — 78 Am. Jur. 2d Waters §§ 87, 310.

93 C.J.S. Waters §§ 170, 183, 188.

72-15-20. [Notice of approval.]

Notice of approval of said compact shall be given by the governor of New Mexico to the governor of Texas and to the president of the United States as provided in Article XV of said compact.

History: 1978 Comp., § 72-15-20, enacted by Laws 1949, ch. 6, § 2.

72-15-21. [Ratification and approval.]

The ratification and approval of said compact by this state shall not be binding or obligatory until it shall have been likewise approved by the legislature of the state of Texas and consented to by the congress of the United States of America.

History: 1978 Comp., § 72-15-21, enacted by Laws 1949, ch. 6, § 3.

72-15-22. [Commissioner.]

The governor shall, within thirty days after this act [this section] becomes effective, appoint a commissioner who shall represent the state of New Mexico on the commission provided for by Article 5 of the Pecos River Compact [72-15-19 NMSA 1978] between the states of New Mexico and Texas. Such commissioner shall be charged with the administration of the provisions of said compact and shall have the power to discharge the duties prescribed by the terms of said compact. Such commissioner shall serve for a term of two years from and after the date of his appointment and until a successor, who shall serve for a like term, is appointed and qualified. Until otherwise provided by law, he shall receive a salary of $300.00 each month. He shall be allowed his actual expenses when travelling in the discharge of his duties. He shall have authority to meet and confer with the Texas member of the commission at such points within the states of New Mexico and Texas or elsewhere as the commission may see fit. He may make such investigations and appoint such engineering, legal and clerical aid as may be necessary to protect the state of New Mexico and to carry out and enforce the terms of said compact and may fix their salaries and necessary expenses. He may incur necessary office expenses and other expenses incident to the proper performance of his duties and the proper administration of the Pecos River Compact. Such commissioner shall not incur any financial obligation on behalf of the state of New Mexico until the legislature shall have provided and appropriated money therefor. The salary of the commissioner and all expenses incurred by him in the performance of his official duties including the salaries and expenses of the commission employees shall be paid by the state treasurer on vouchers submitted by the commissioner out of moneys appropriated for such purposes by the legislature.

History: 1978 Comp., § 72-15-22, enacted by Laws 1949, ch. 128, § 1.

Am. Jur. 2d, A.L.R. and C.J.S. references. — 78 Am. Jur. 2d Waterworks and Water Companies § 4.

94 C.J.S. Waters § 315.

72-15-23. [Rio Grande Compact.]

The state of New Mexico does hereby ratify, approve and adopt the compact aforesaid, which is as follows:

RIO GRANDE COMPACT

Signed at Santa Fe, New Mexico, March 18, 1938.

The state of Colorado, the state of New Mexico and the state of Texas, desiring to remove all causes of present and future controversy among these states and between citizens of one of these states and citizens of another state with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a compact for the attainment of these purposes, and to that end, through their respective governors, have named as their respective commissioners:

for the state of Colorado — M. C. Hinderlider

for the state of New Mexico — Thomas M. McClure

for the state of Texas — Frank B. Clayton

who, after negotiations participated in by S. O. Harper, appointed by the president as the representative of the United States of America, have agreed upon the following articles, to wit:

ARTICLE I

(a) The state of Colorado, the state of New Mexico, the state of Texas and the United States of America, are hereinafter designated "Colorado," "New Mexico," "Texas" and the "United States," respectively.

(b) "The commission" means the agency created by this compact [this section] for the administration thereof.

(c) The term "Rio Grande basin" means all of the territory drained by the Rio Grande and its tributaries in Colorado, in New Mexico and in Texas above Fort Quitman, including the closed basin in Colorado.

(d) The "closed basin" means that part of the Rio Grande basin in Colorado where the streams drain into the San Luis lakes and adjacent territory, and do not normally contribute to the flow of the Rio Grande.

(e) The term "tributary" means any stream which naturally contributes to the flow of the Rio Grande.

(f) "Transmountain diversion" is water imported into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande basin, exclusive of the closed basin.

(g) "Annual debits" are the amounts by which actual deliveries in any calendar year fall below scheduled deliveries.

(h) "Annual credits" are the amounts by which actual deliveries in any calendar year exceed scheduled deliveries.

(i) "Accrued debits" are the amounts by which the sum of all annual debits exceeds the sum of all annual credits over any common period of time.

(j) "Accrued credits" are the amounts by which the sum of all annual credits exceeds the sum of all annual debits over any common period of time.

(k) "Project storage" is the combined capacity of Elephant Butte reservoir and all other reservoirs actually available for the storage of usable water below Elephant Butte and above the first diversion to lands of the Rio Grande project, but not more than a total of 2,638,860 acre-feet.

FIGURE D1
PRECIPITATION STATIONS

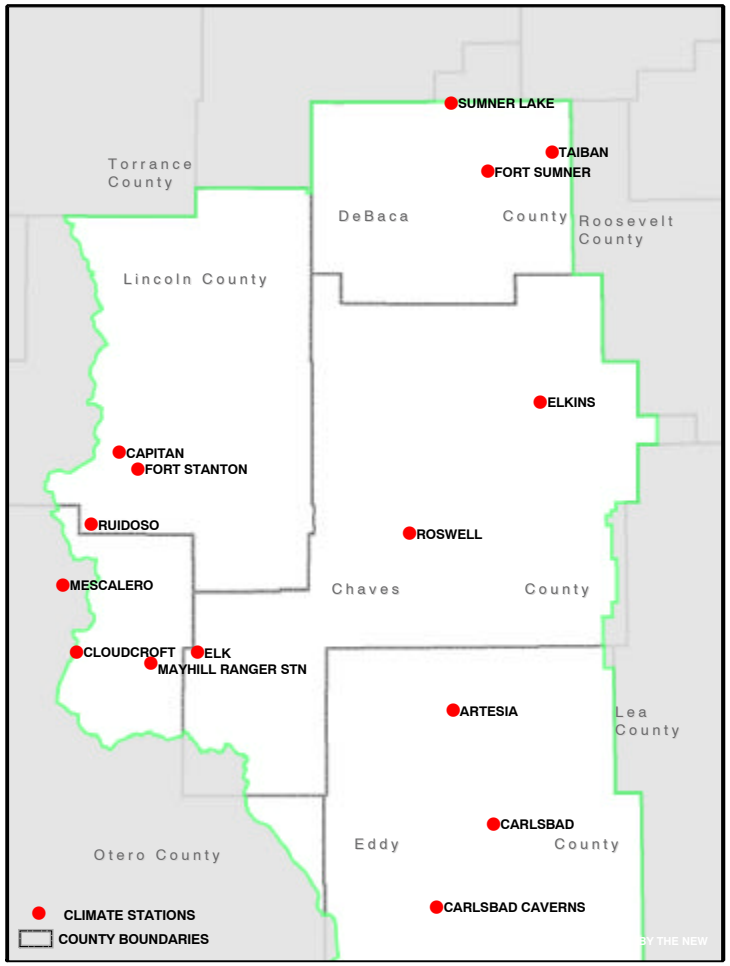
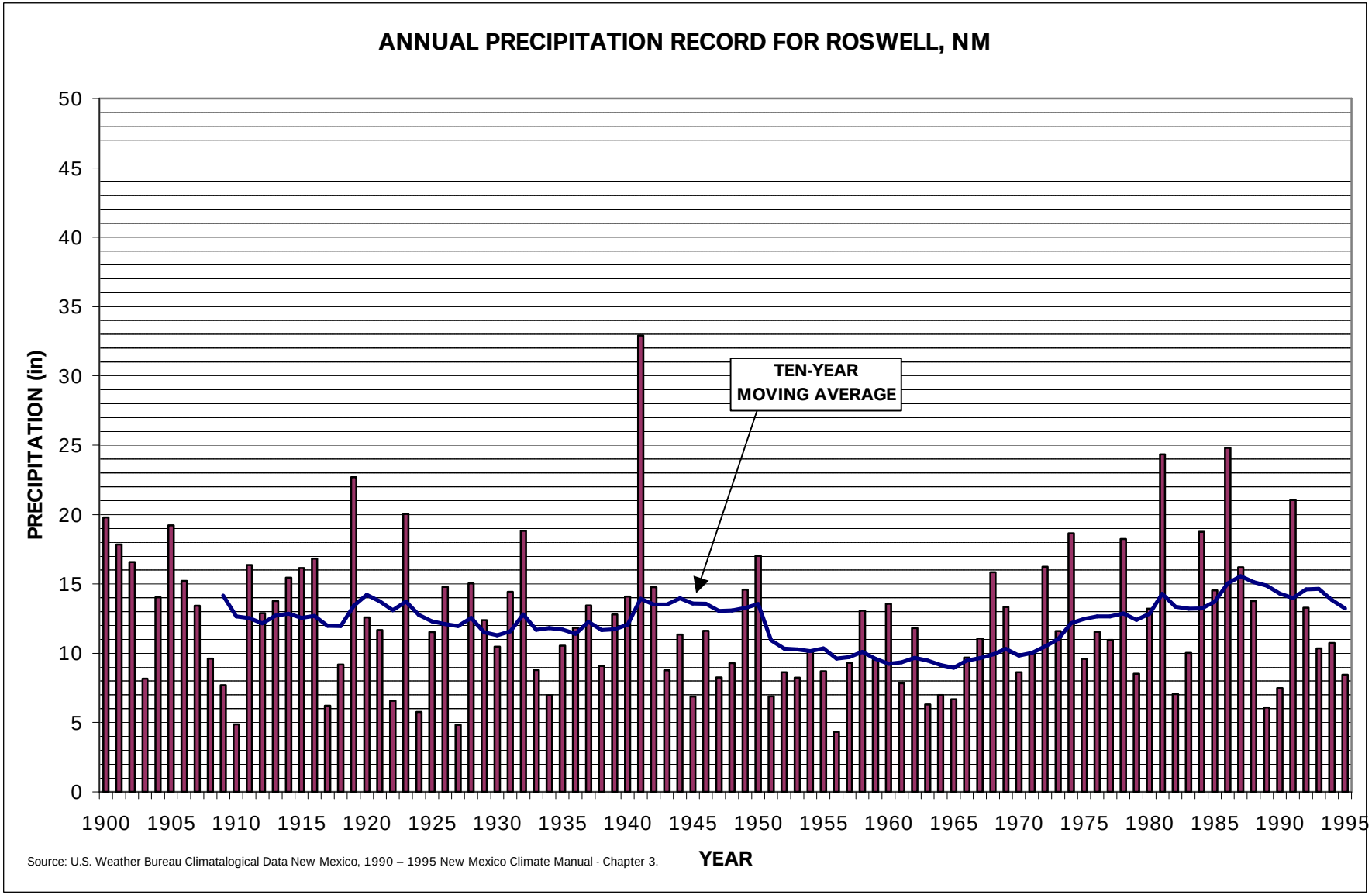


FIGURE D2


ANNUAL PRECIPITATION RECORD FOR ROSWELL, NM
PRECIPITATION (in)
0
5
10
15
20
25
30
35
40
45
50
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
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1970
1975
1980
1985
1990
1995
YEAR
TEN-YEAR
MOVING AVERAGE
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D3

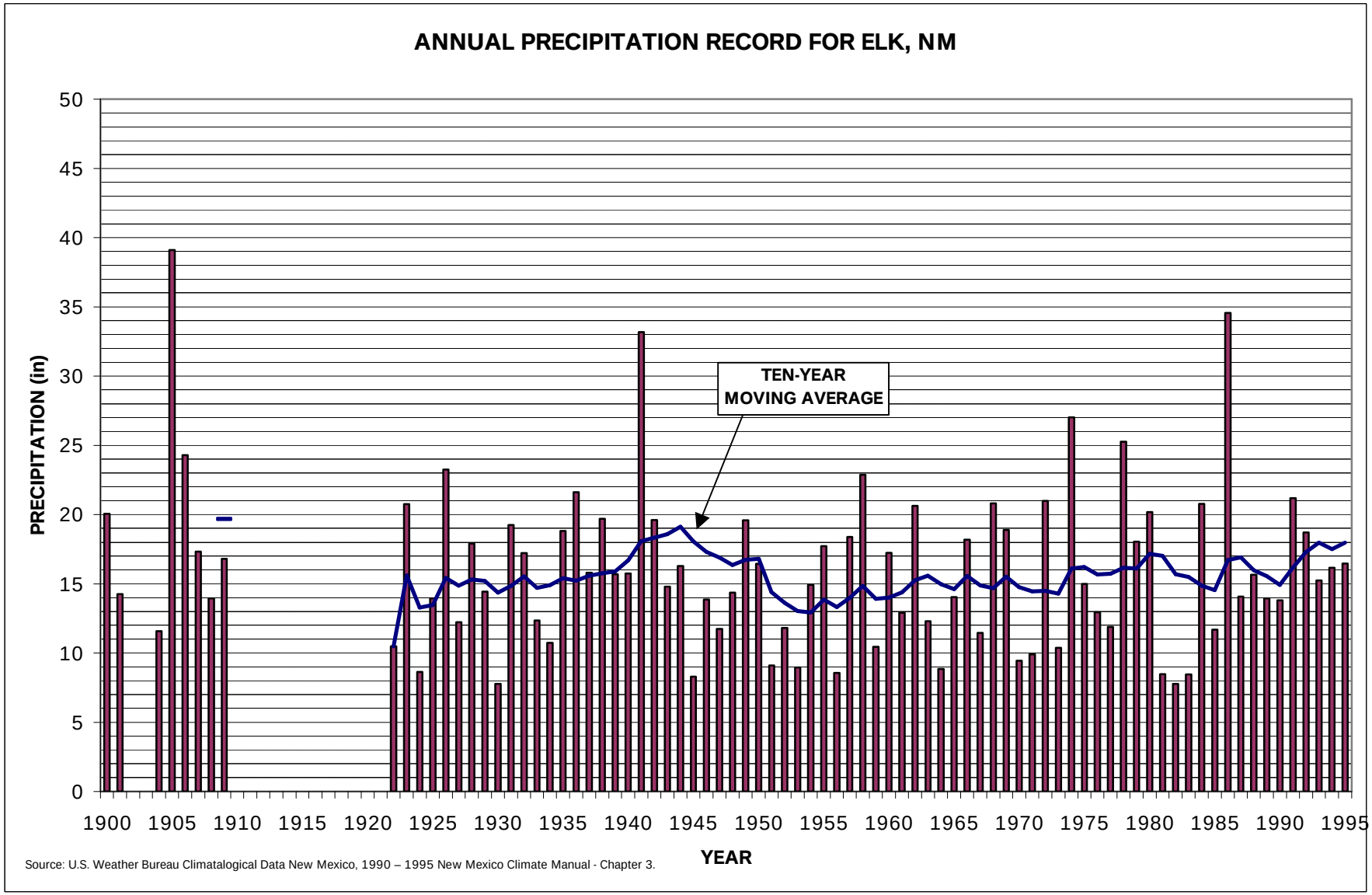
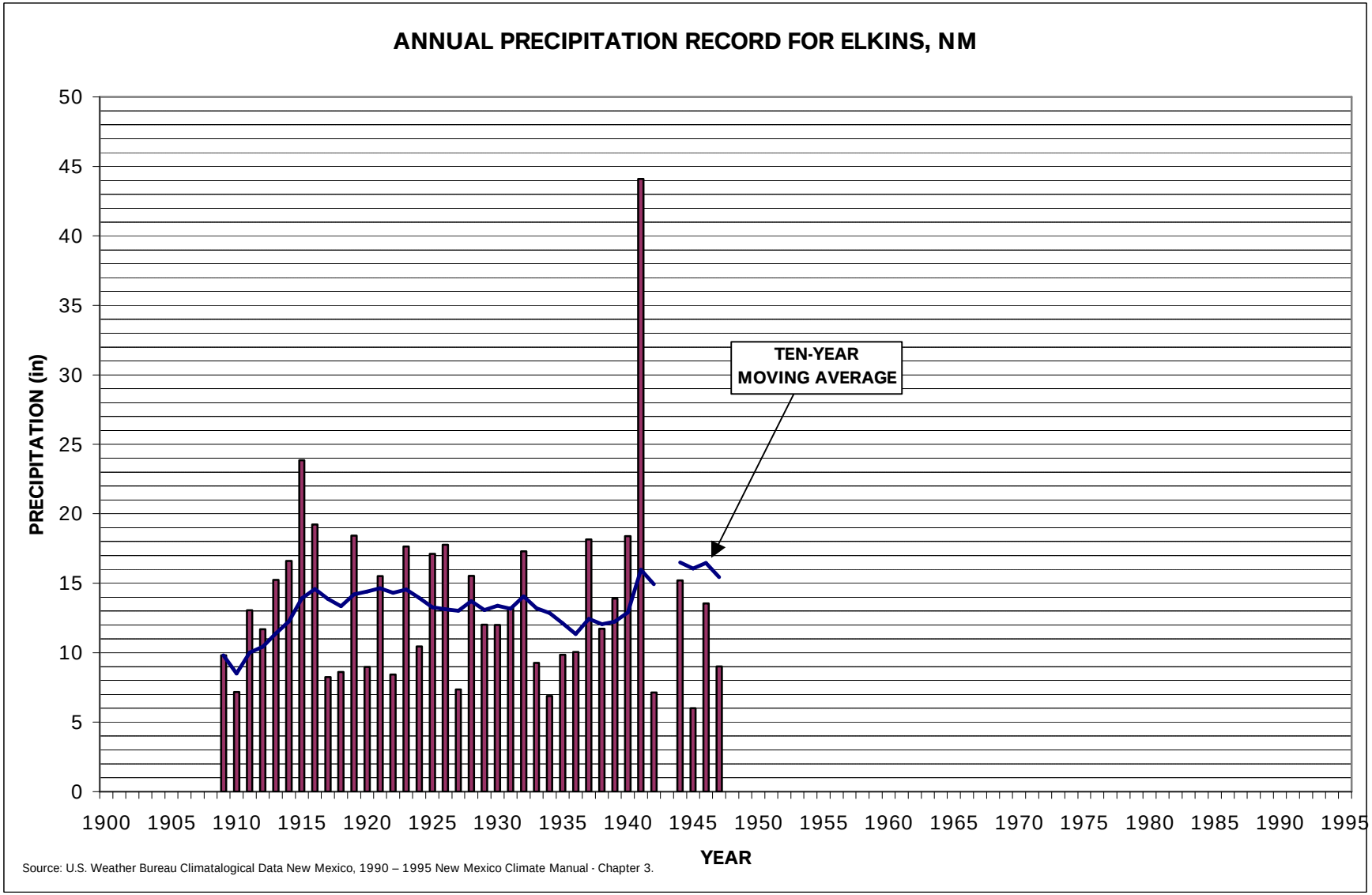
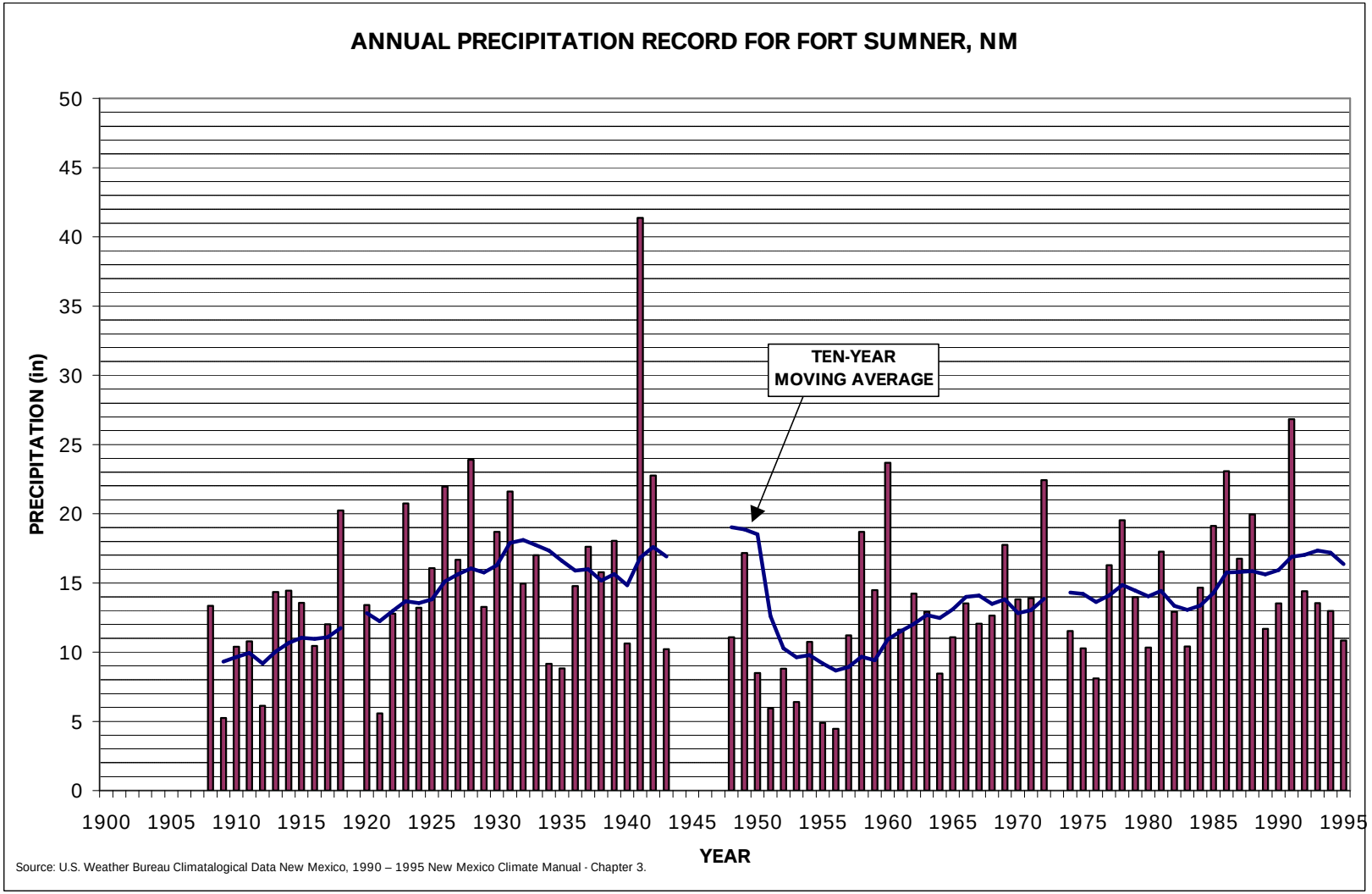

ANNUAL PRECIPITATION RECORD FOR ELK, NM
PRECIPITATION (in)
0
5
10
15
20
25
30
35
40
45
50
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
YEAR
TEN-YEAR
MOVING AVERAGE
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D4



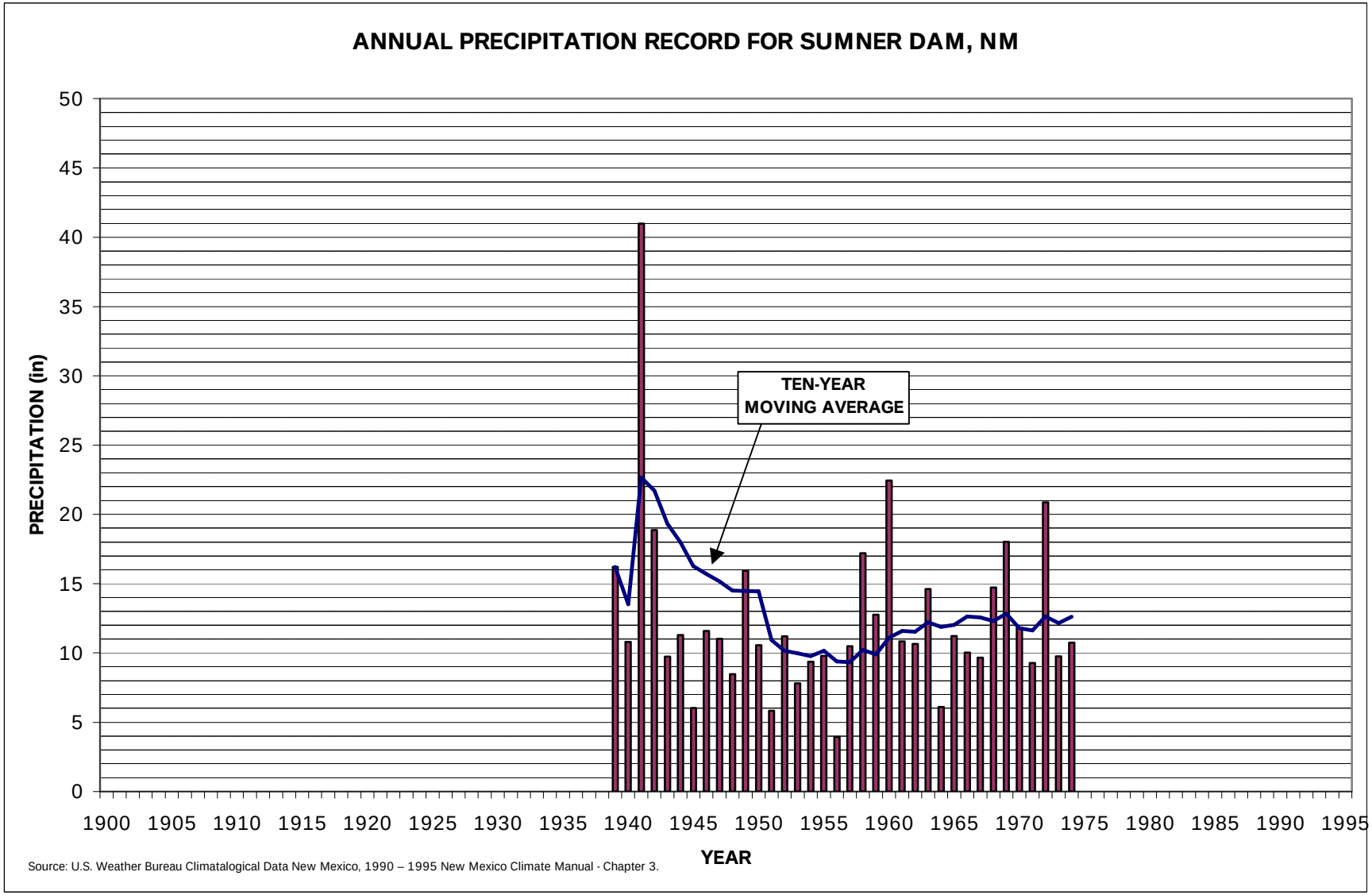
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D5



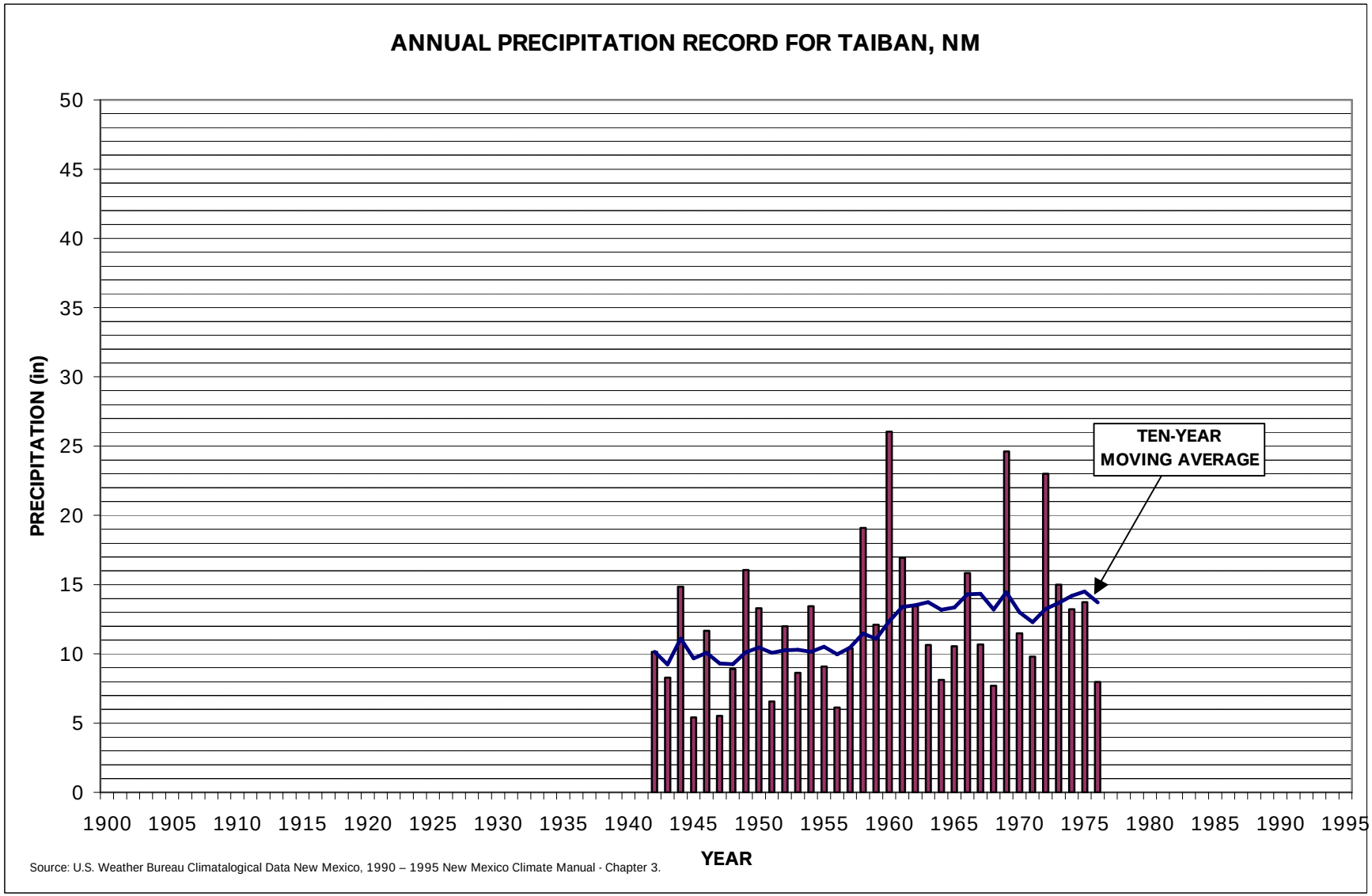
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D6



Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D7



Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D8

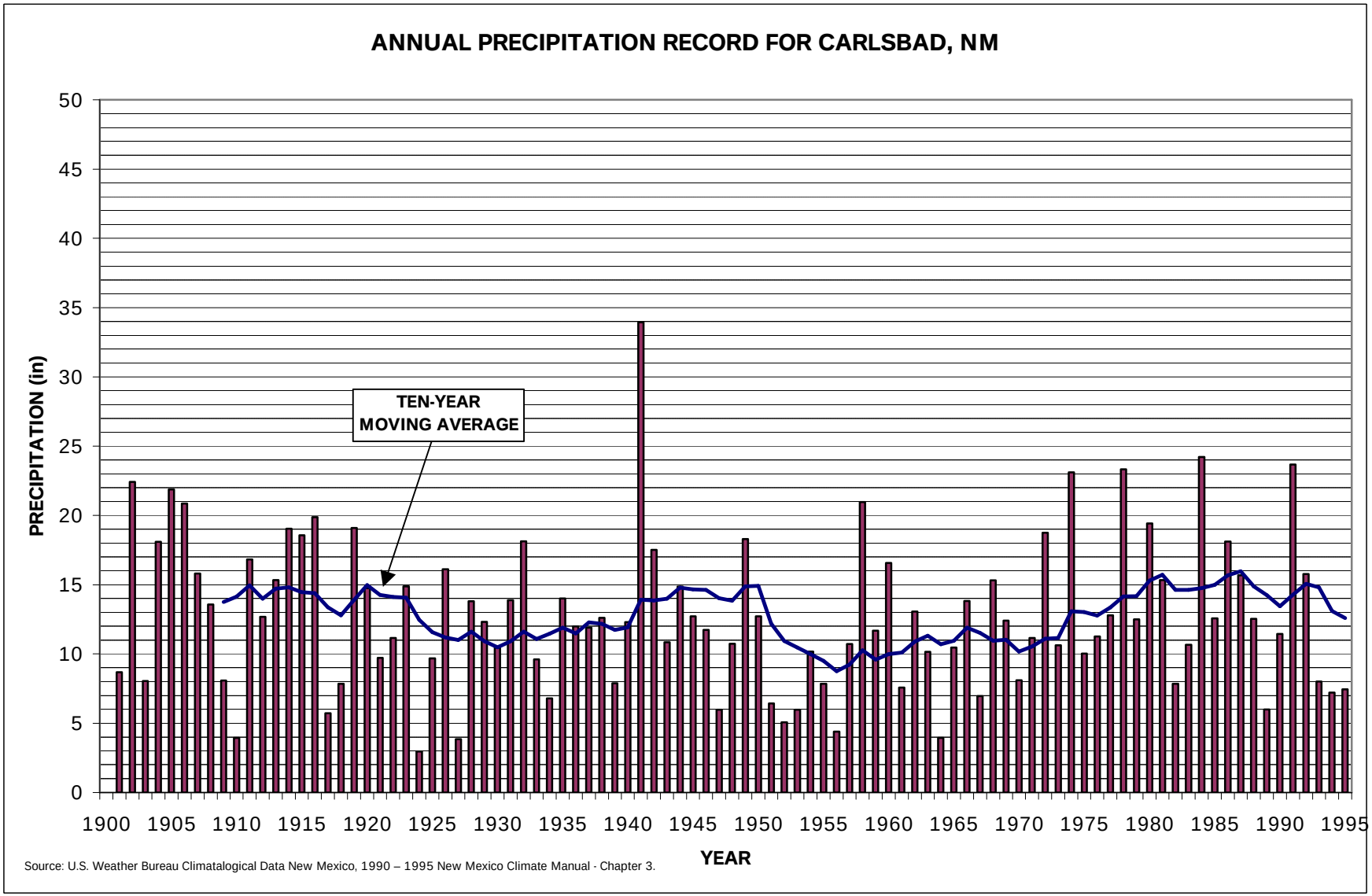
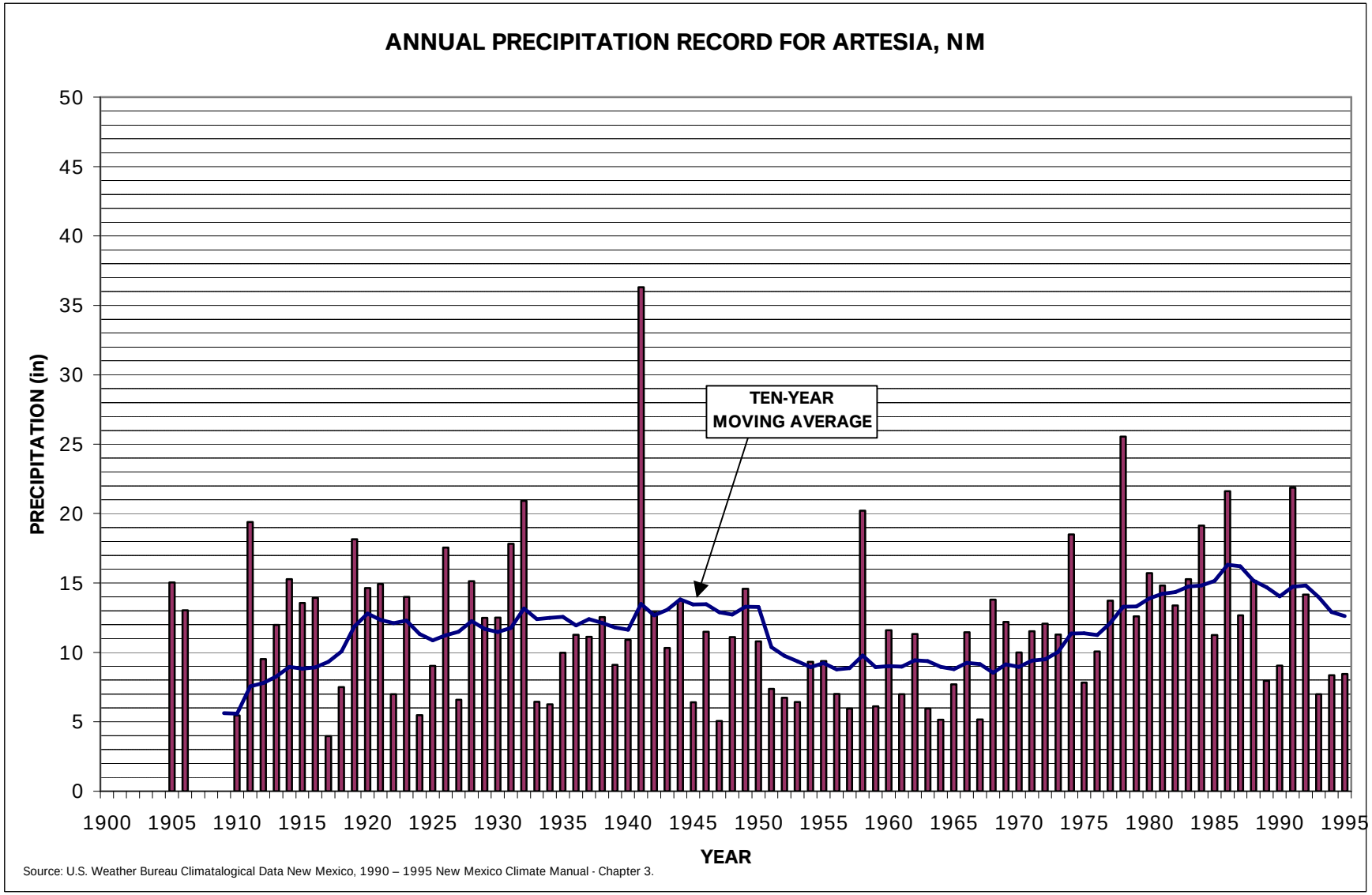
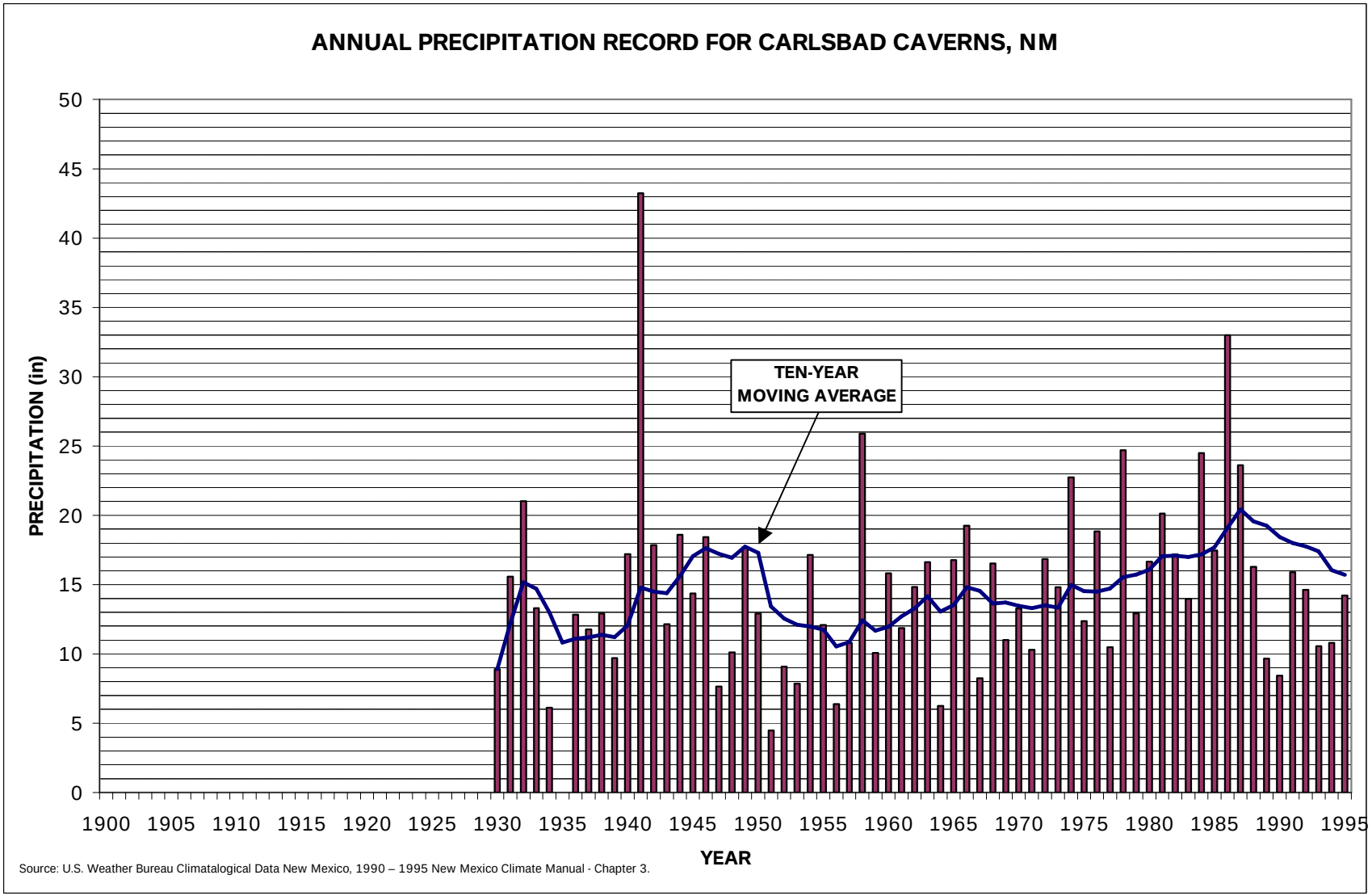

ANNUAL PRECIPITATION RECORD FOR CARLSBAD, NM
PRECIPITATION (in)
50
45
40
35
30
25
20
15
10
5
0
TEN-YEAR
MOVING AVERAGE
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
YEAR
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D9



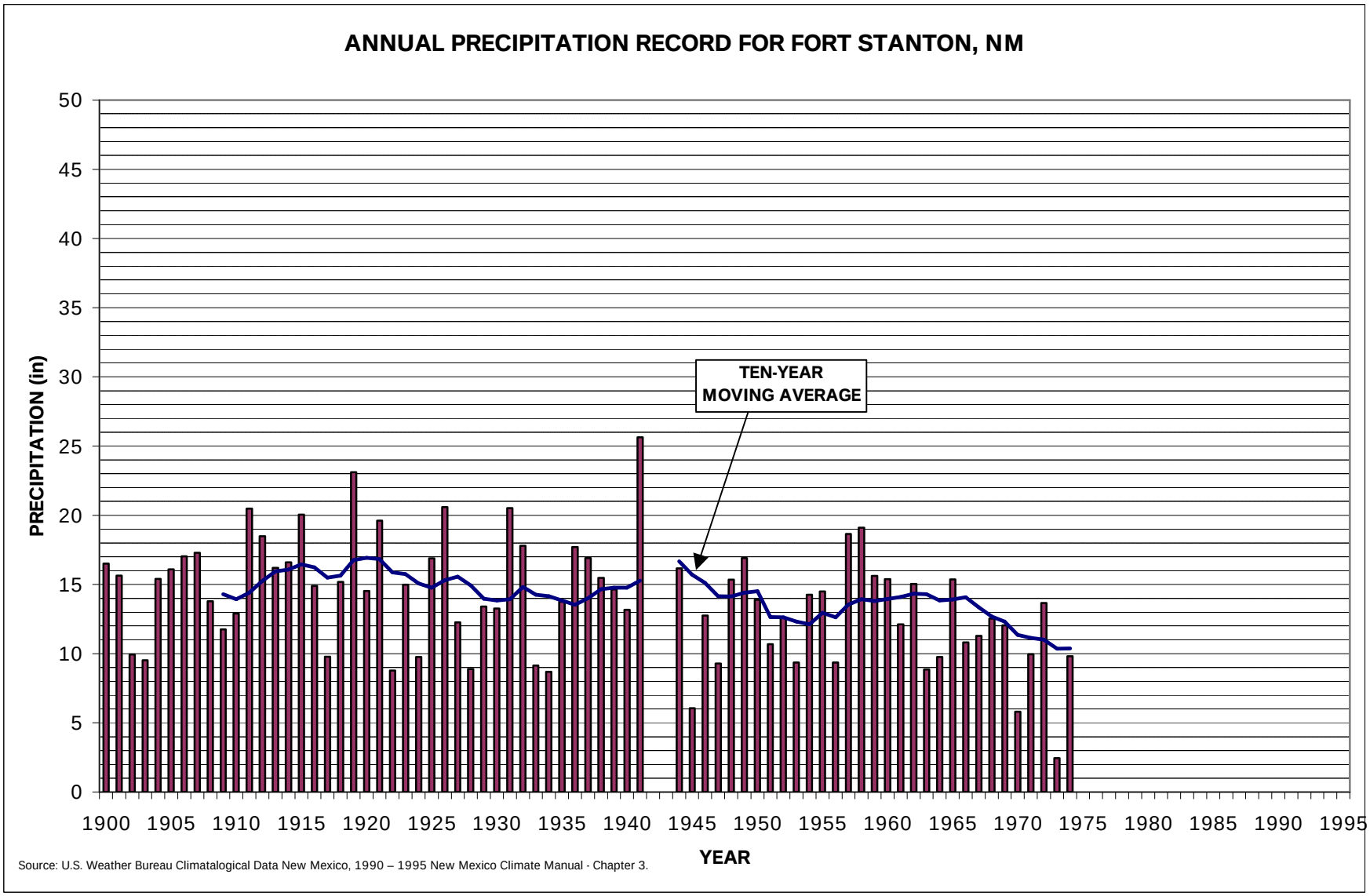
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D10



Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D11



Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D12

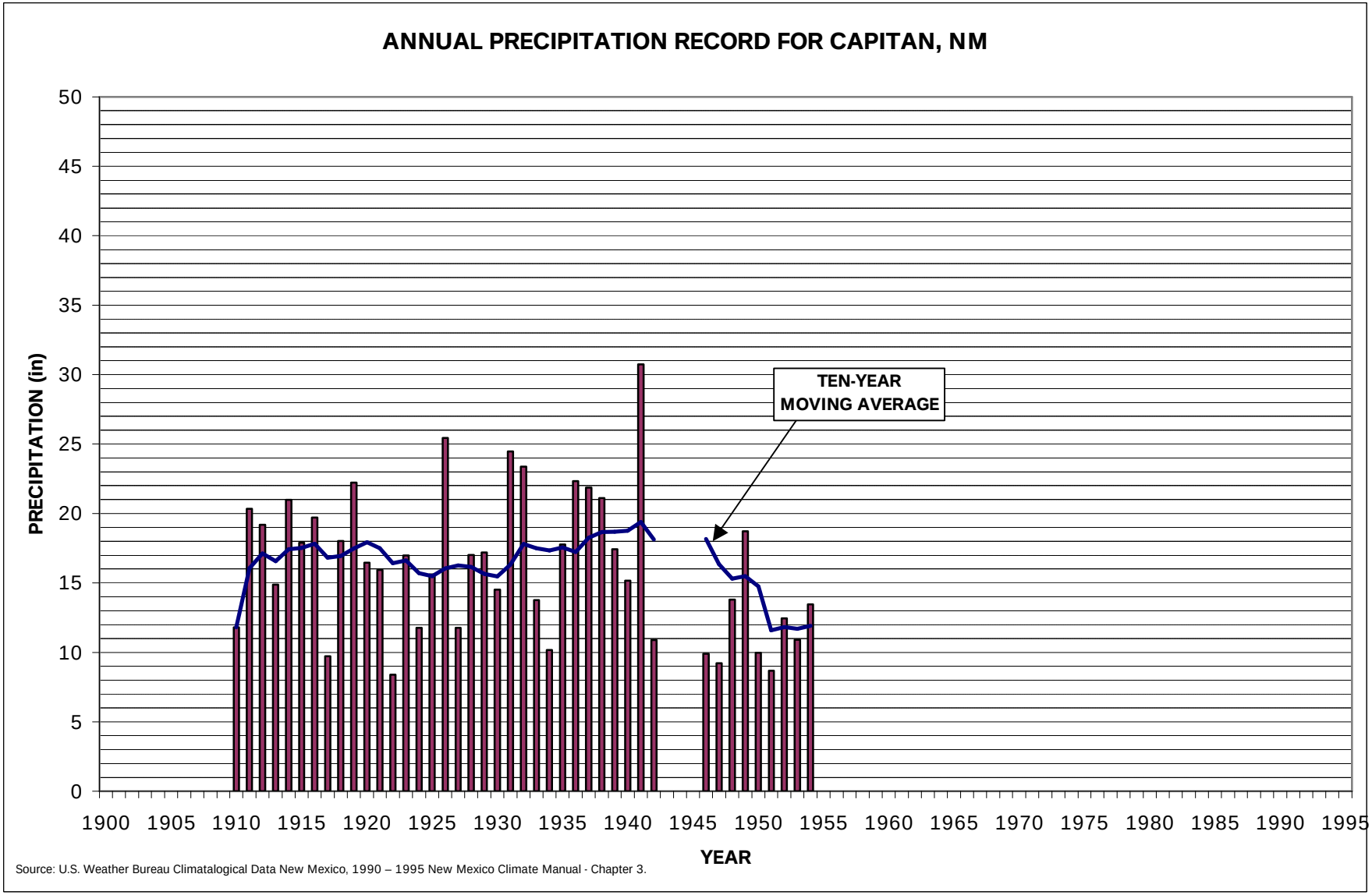
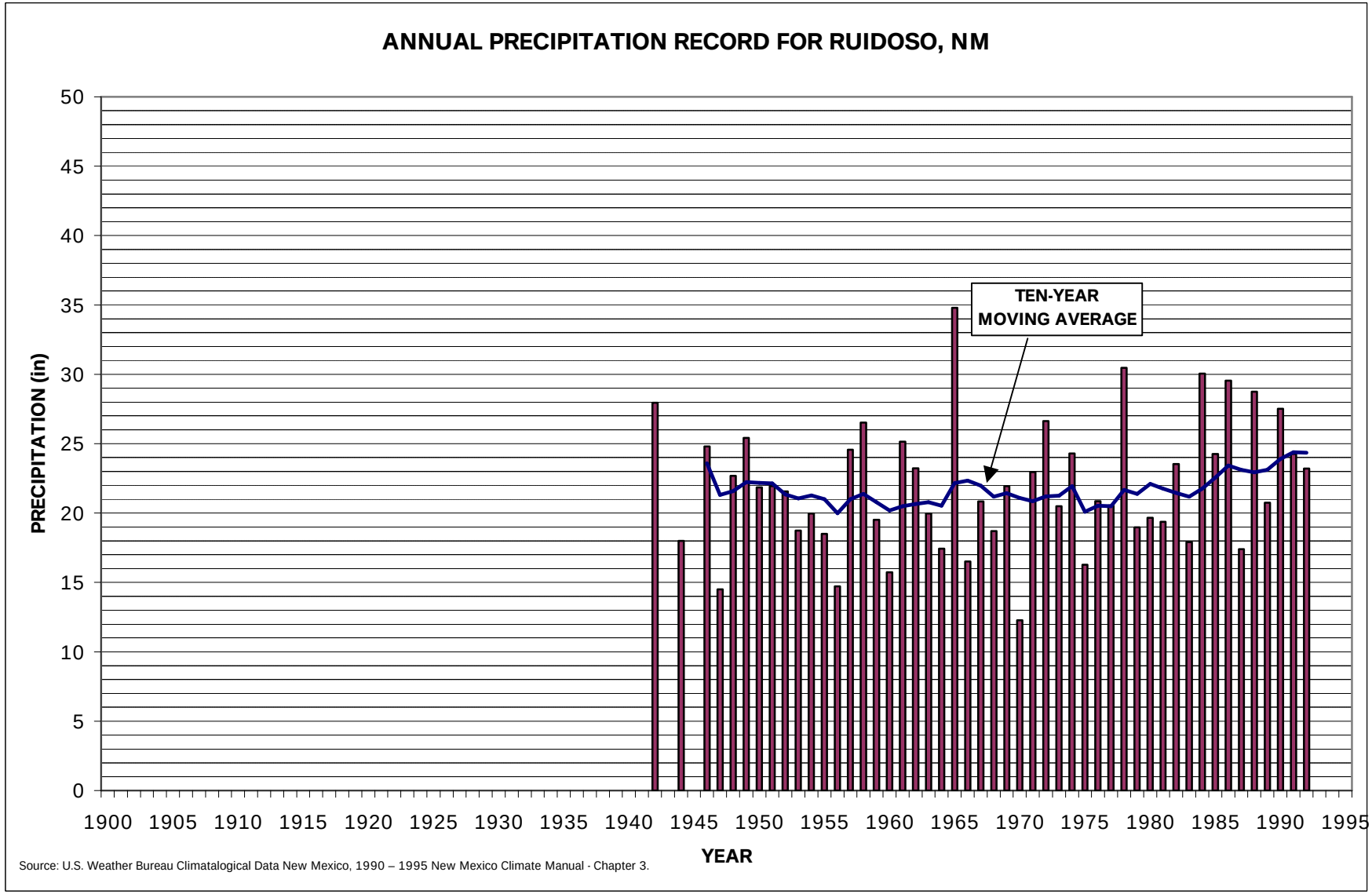
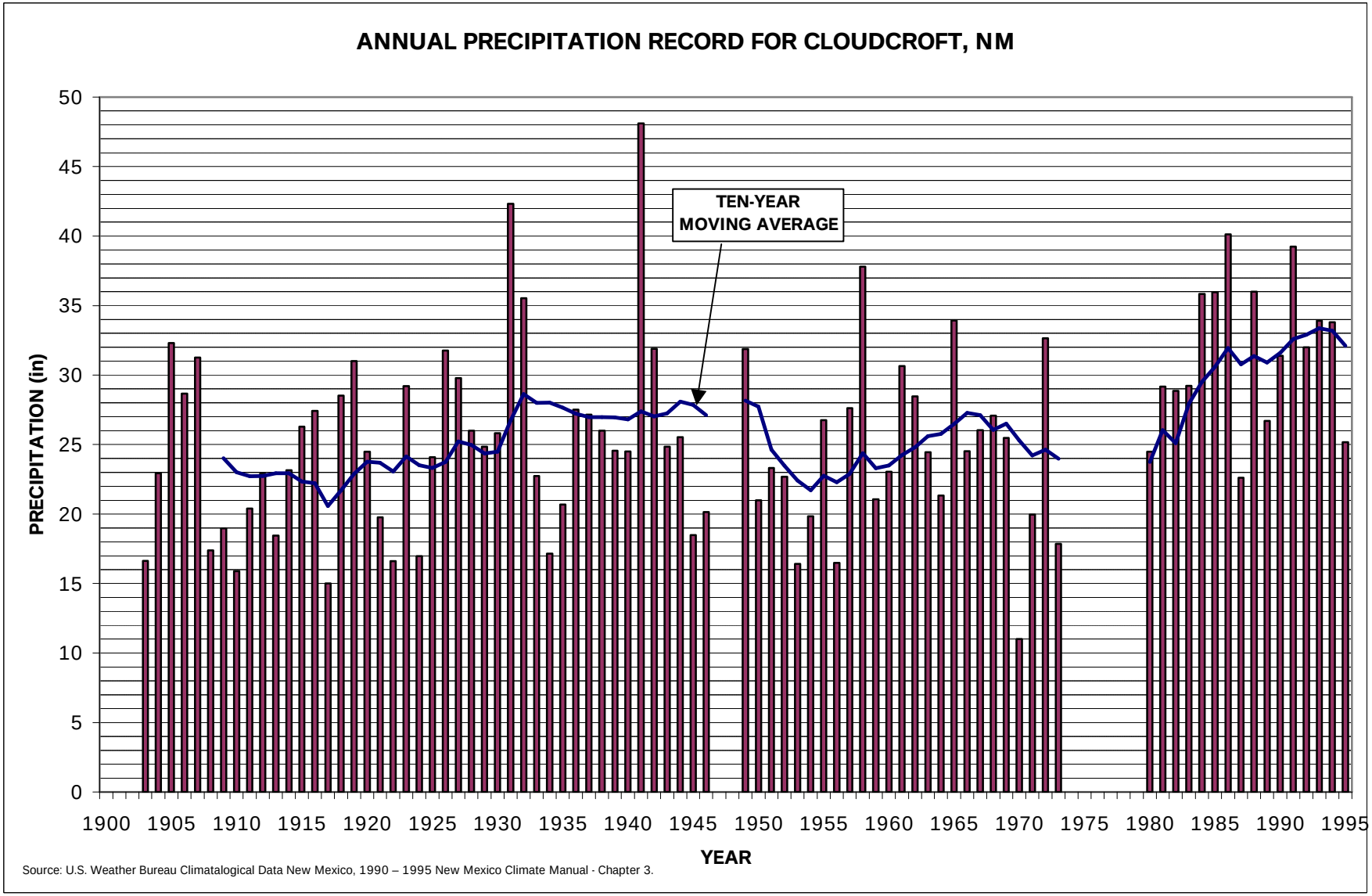

ANNUAL PRECIPITATION RECORD FOR CAPITAN, NM
PRECIPITATION (in)
50
45
40
35
30
25
20
15
10
5
0
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
YEAR
TEN-YEAR
MOVING AVERAGE
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D13



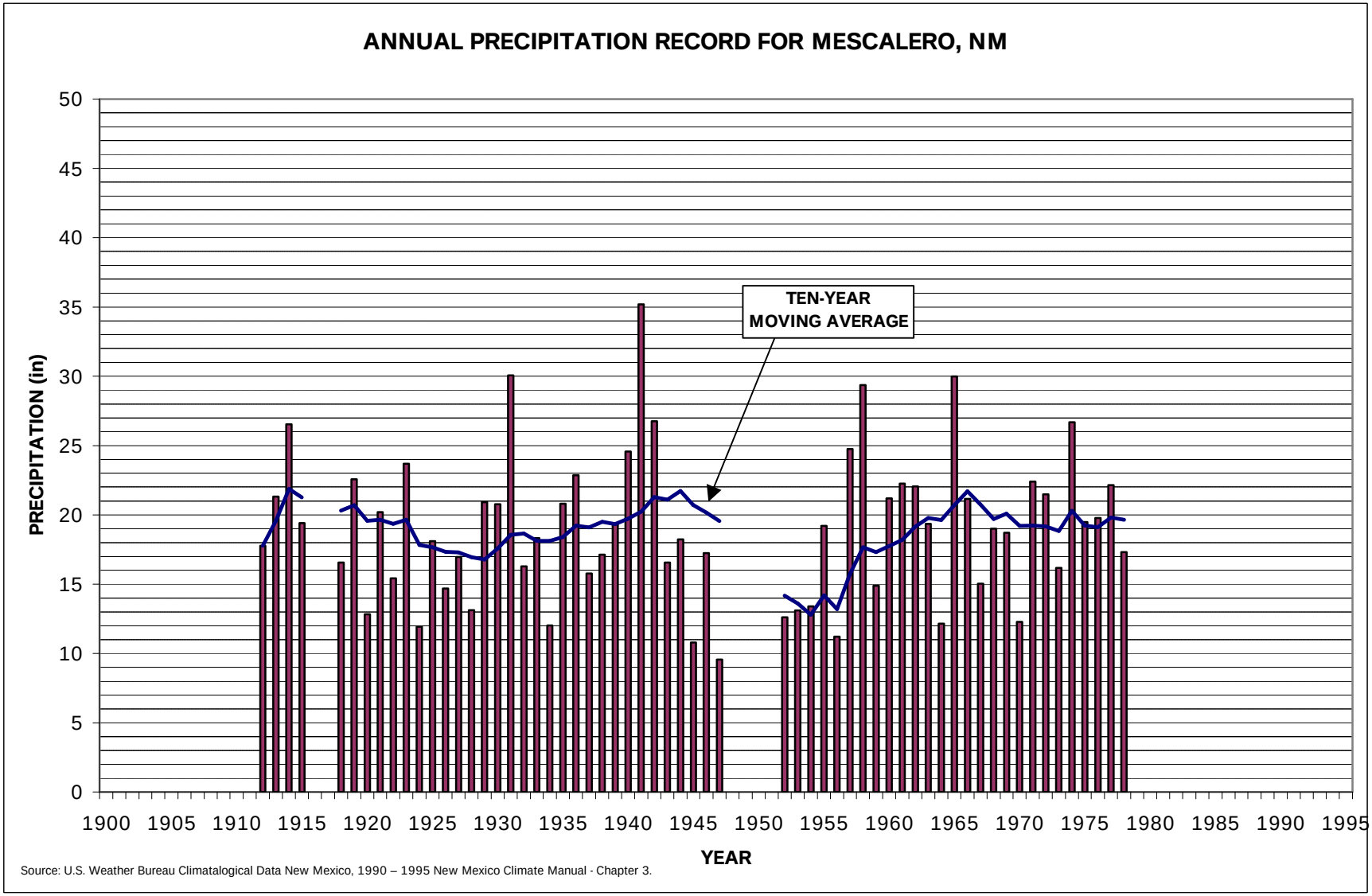
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D14



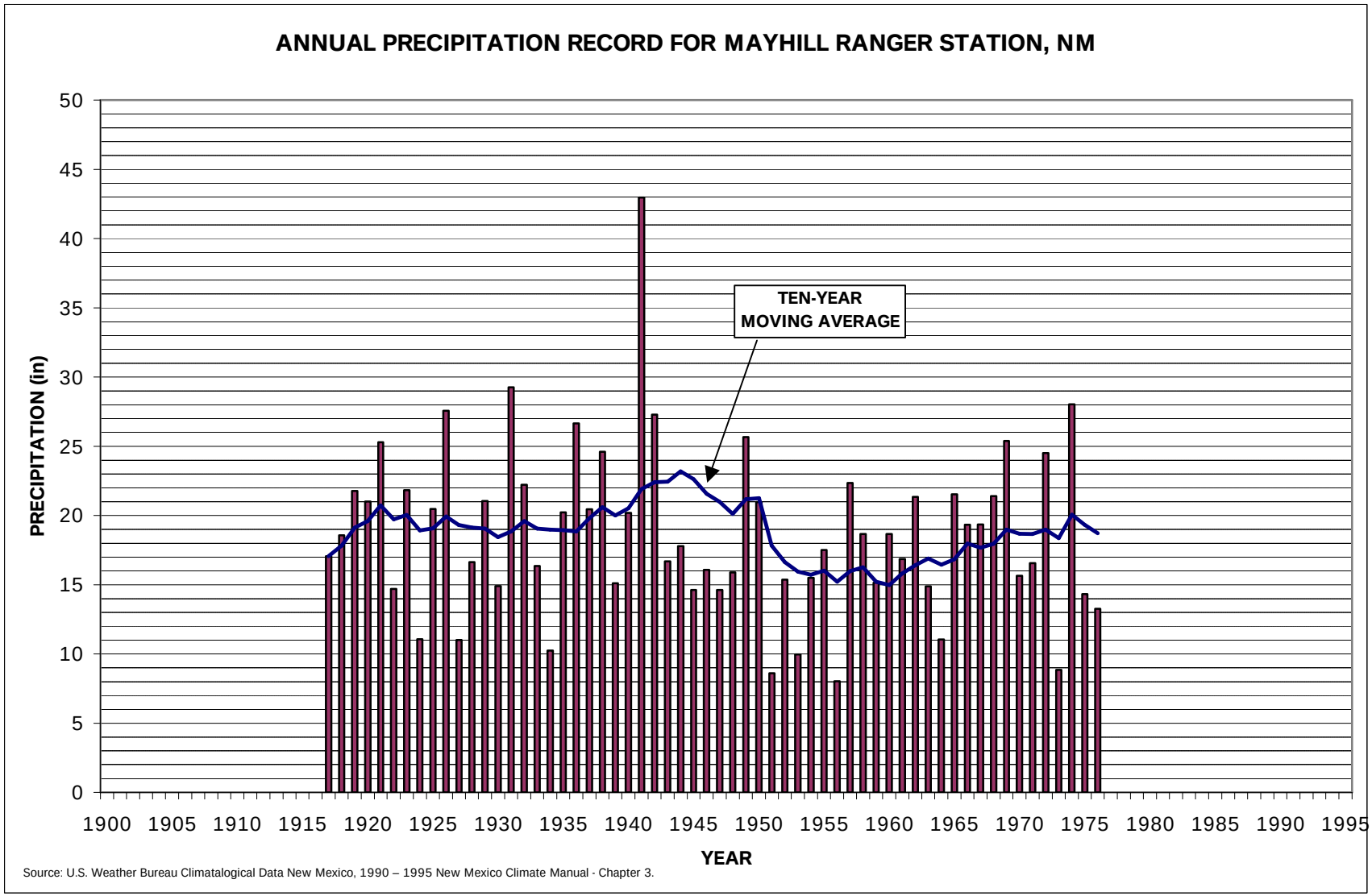
Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D15



Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

FIGURE D16



Source: U.S. Weather Bureau Climatalogical Data New Mexico, 1990 – 1995 New Mexico Climate Manual - Chapter 3.

PVWU views population forecasts

Barbara Brooks
Record Artesia Bureau

ARTESIA — The Pecos Valley Water Users looked at population projections at its meeting Friday.

PVWU will use the figures, provided by the Bureau of Business and Economic Research, to estimate future water demands on the basis of past and current water consumption.

The bureau's regional plan uses historical data to project water usage for counties in the Lower Pecos River Basin through the year 2060. Tom Davis, representing the Carlsbad Irrigation District and a member of the PVWU, said he feels the plan's projections for future population growth are too high, while other counties think the projections are too low.

"There is a lot of controversy as to how accurate the plan is for rural areas;" Davis said.

PVWU chairman Debbie Hughes said the bureau is trying to make sure everyone uses the same type of source to project water usage in their area.

"However, some counties in the state are concerned that they may run out of water in 20 years," Hughes said.

The PVWU represents water consumers located in the Lower Pecos Drainage Basin. Geographically the planning region includes all or parts of DeBaca, Chaves, Eddy, Lincoln and Otero counties, making it the largest planning area in the state.

Members of the association consist primarily of water consumers such as local government entities, irrigation districts and development districts which have a special economic interest in the region's planning and use of water resources. The organization serves as the primary representative body of water interests in the basin and as the regional contact for the Interstate Stream Commission and the New Mexico State Engineers office.

The PVWU, through the regional water-planning process, will assist the ISC and other agencies with the compilation of water supply and use data as well as other water-related studies.

The PVWU was formed under a joint powers agreement to develop a regional water plan for the Lower Pecos Basin using existing and available information along with public input and support. The organization will organize and collect this data in order to recommend action to balance water demands and supply. The PVWU set the following dates for public regional water plan public meetings:

- 7 p.m. Sept. 19, DeBaca Service Center, Ft. Sumner;
- 1:30 p.m. Sept. 27, CVE Room, Artesia;
- 1:30 p.m. Oct. 4, Carlsbad Commissioner Room, Carlsbad;
- 1:30 p.m. Oct. 6, Roswell Inn, Roswell;
- 7 p.m. Oct. 10, Hope Fire Station;
- 7 p.m. Oct. 17, Dexter/Hagerman;

10 a.m. Oct.24, Ruidoso Downs Village Hall, Ruidoso Downs.

Davis said the meetings are being held solely to provide public input for plans for future water use in the area.

"These meetings have no relationship to the Pecos River Adjudication suit or any other correspondence from the State Engineer's office or Interstate Streams Commission," he said, adding that these other items will not be discussed at the meetings.

The next meeting of the Pecos Valley Water Users is scheduled for 10 a.m. Friday, Oct. 6, at the Roswell Inn.

PUBLIC MEETING NOTICE

THE PECOS VALLEY WATER USERS ORGANIZATION

7:00 P.M. TUESDAY, SEPTEMBER 19, 1995
FT. SUMNER COMMUNITY CENTER

Purpose of the meeting is to gather public input and provide information concerning the PVWUO's scope of work and the proposed water resource plan for the Lower Pecos River Basin. All interested persons are encouraged to attended to submit ideas, supporting data and testimony and other relevant information.

This public meeting is a cooperative effort of all parties in the organization to plan for the future use of the water in the Basin. This meeting has no relationship to the Pecos River Adjudication suit or any other recent correspondence you may have received from the State Engineer or the Interstate Stream Commission. These items will not be discussed at this meeting.

In addition to the meeting in Ft. Sumner, public meetings are also tentively scheduled for the follow, locations and dates: Artiesa – Central Valley Electric Community Room, 1:30 p.m. September 27; Carlsbad – Eddy County Commission Room, 1:30 p.m. October 4; Roswell – Roswell Inn, 1:30 p.m. October 6; Hope – Hope Fire Station, 7:00 p.m. October 10; Hagerman – Hagerman High School Auditorium, 7:00 p.m. October 17, and Ruidoso Downs – Ruidoso Downs Village Hall, 10 a.m. October 24.

With minimum three day's notice, Americans with Disabilities Act compliance auxiliary aids will be made available. Also with sufficient notice, a translator will be provided for non-English speaking persons. These accommodations may be arranged by calling Mike McCan at (505) 624-6131. Individuals unable to attend the meeting may send written comments to the Pecos Valley Water Users Organization, Post Office Box 2313, Carlsbad, NM 88220.

PUBLISHER'S AFFIDAVIT

STATE OF NEW MEXICO
COUNTY OF
LINCOLN } SS.

Before me, the undersigned, personally appeared Ruth Hammond, who being sworn states:

That she is the publisher of the Lincoln County News, a weekly newspaper of general paid circulation, which is entered under the second class privilege in Lincoln County, New Mexico; that said newspaper has been so published in Lincoln County, New Mexico, continuously and uninterruptedly during the period of more than twenty-six consecutive weeks next prior to the first issue containing the attached legal notice; that the notice attached hereto is Cause in the Court in and for Lincoln County, New Mexico, was published in said newspaper for ONE successive issues, the last publication being dated October 19, 1995 and the last publication being dated October 19, 1995 that such legal notice was published in a newspaper duly qualified for that purpose within the meaning of Chapter 167, New Mexico Session Laws of 1937; and the payment therefor in the sum of $ 72.24 is to be assessed as court costs in said cause.

Ruth Hammond
PUBLISHER

Subscribed and sworn to before me this 19th day of October, 1995

Alice C Hammond
NOTARY PUBLIC

My Commission Expires July 1st, 1996

PUBLIC MEETING NOTICE

THE PECOS VALLEY WATER USERS ORGANIZATION

10 A.M. TUESDAY, OCTOBER 24, 1995

RUIDOSO DOWNS VILLAGE HALL

Purpose of the meeting is to gather public input and provide information concerning the PVWUO's scope of work and the proposed water resource plan for the Lower Pecos River Basin. All interested persons are encouraged to attend to submit ideas, supporting data and testimony and other relevant information.

This public meeting is a cooperative effort of all parties in the organization to plan for the future use of the water in the Basin. This meeting has no relationship to the Pecos River Adjudication suit or any recent correspondence you may have received from the State Engineer or the Interstate Stream Commission. These items will not be discussed at this meeting.

With minimum three days notice, Americans with Disabilities Act compliance auxiliary aids will be made available. Also with sufficient notice, a translator will be provided for non-english speaking persons. These accommodations may be arranged by calling Mike McCan at (505) 624-6131.

Individuals unable to attend the meeting may send written comments to the Pecos Valley Water Users Organization, Post Office Box 2313, Carlsbad, NM 88220.

NOTICIA PARA JUNTA PUBLICA

LA ORGANIZACION DE USUARIOS DE AGUA DE PECOS VALLEY (PECOS VALLEY WATER USERS ORGANIZATION PVWUO)

10 A.M. EL 24 DE OCTUBRE, 1995

AYUNTAMIENTO DE RUIDOSO DOWNS

El proposito de la junta es para reunir informacion sobre el alcance de trabajo de la Organizacion de los Usuarios de Agua de Pecos Valley (PVWUO) y plan propuesto para los recursos de agua en el Lower Pecos River Basin (Cuenca Baja del Rio Pecos Bajo). Todos las personas interesados pueden atender y traer ideas, informacion y testimonio en favor del proyecto ademas de otra informacion relevante.

Esta junta publica es un esfuerzo cooperativo de todos los participantes de la organizacion interesados en el futuro uso del agua de la Cuenca. Esta junta no es relacionado al Pecos River Adjudication Suit (Pleito Legal del Adjudicacion del Rio Pecos) ni contectado a la correspondencia mandado recientements de las oficina del ingeniero del Estado ni la Comision interestado de Agua. Esos articulos no seran discutido en esta junta.

Con un minimo de tres dias de notificacion en avanzado, ayuda auxiliar estara proporcionada y asi estar en cumplimiento con el Acto de Americanos Incapacitados. Tambien con suficiente notificacion, se proporcionara un traductor para los que no hablen ingles. Se puede pedir estos servicios llamando a Mike McCan al (505) 624-6131.

Los individuos que no pueden atender la junta pueden enviar sus comentarios por escrito al: Pecos Valley Users Organization, P.O. Box 2313, Carlsbad, NM, 88220.

Published in the Lincoln County News on October 19, 1995.

Water users group to hold series of meetings

The Pecos Valley Water Users Organization will hold a series of public hearings to obtain input, testimony and relevant information regarding the future use of water in the lower Pecos River basin.

The Pecos Valley Water Users Organization represents water consumers located in the lower Pecos drainage basin, which includes all or part of DeBaca, Chaves, Eddy, Lincoln and Otero counties. The organization serves as the primary representative body of water interests in the basin and as the regional contact for the Interstate Stream Commission and the State Engineer Office.

The Pecos Valley Water Users Organization was formed to develop a regional water plan for the lower Pecos River basin utilizing public input and existing available information.

The public meetings will be held during the months of September and October at the following locations:

- Fort Sumner, 7 p.m., Tuesday, Sept. 19, Fort Sumner Community Center;
- Artesia, 1:30 p.m., Wednesday, Sept 27, Central Valley Electric Community Room, Artesia;
- Carlsbad, 1:30 p.m., Wednesday, Oct. 4, Eddy County Commission Meeting Room, Carlsbad;
- Roswell, 1:30 p.m., Friday, Oct. 6, Roswell Inn;
- Hope/Mayhill, 7 p.m., Tuesday, Oct. 10, Hope Fire Station;
- Dexter/Hagerman 7 p.m., Tuesday, Oct. 17, Hagerman High School auditorium;
- Lincoln County, 10 a.m., Tuesday, Oct. 24, Ruidoso Downs Village Hall.

For more information, interested persons may contact Mike McCan, at 624-6131.

Pecos Valley Water Users Organization – Citizen Participation Plan

In an effort to encourage citizen participation, the PVWUO has prepared and adopted this CPP. This is the first plan developed by PVWUO and is included here to demonstrate their efforts to include the public in the development of this Regional Water Plan.

Objectives

The PVWUO will provide for and encourage citizen participation within their area of jurisdiction.

1. Adopt and circulate an Open Meetings Resolution which provides citizens with reasonable notice of PVWUO meetings, actions and functions.

2. Develop press releases on PVWUO meetings, actions and hearings and circulate to newspapers, radio and television media.

3. Develop and maintain listings of groups and representatives.

Strategies

The PVWUO will provide citizens with reasonable and timely access to local meetings, information and records.

1. Public notices, press releases, etc., should allow a minimum of seven-days notice to citizens. Public hearing notices will be published in the non-legal section of newspapers or in other local media. Evidence of compliance

with these regulations will be provided; i.e., hearing notices, minutes of public meetings, list of needs and activities to be under taken, etc. Amendments to goals, objectives and applications are also subject to public participation.

2. Meetings, hearings, etc., should be conducted at times and locations conducive to public attendance, e.g., evenings and Saturdays.

The PVWUO will provide for technical assistance to groups and representatives that request assistance in developing proposals in accordance with the procedures developed by the state. Such assistance need not include providing funds to such groups.

A translator will also be provided to identify how the needs of non-English speaking residents will be met in the case of public hearings where a significant number of residents can be reasonably expected to participate. American Disabilities Act notification and meeting provisions will be included in the notices.

Action Plan

The PVWUO will conduct a series of four meetings throughout the basin and regional water planning area.

The meetings will be held in four primary areas and in three secondary places. The primary meeting places will be Carlsbad, Artesia, Roswell and Fort Sumner. The secondary meeting places will be Hope/Mayhill, Ruidoso/Capitan and Dexter/Hagerman.

1. The first meeting's purpose is to educate and relay the scope of work to the public. An information data sheet or brochure will be provided to participants of these meetings. Target date of meeting: Mid September - October, 1995.

2. The second meeting will report on progress to the public. This could be an actual meeting or news releases. Target date of meeting: February, 1996.

3. A third meeting will be an open meeting with the public where a draft report is submitted for review and comment. Meetings will be held in all areas, primary and secondary.

4. The last meeting will reveal the draft report after review of comments from the public meetings. Meetings will be held in primary areas.

Pecos Valley Water Users Organization Board Member Responsibilities

Assignments to interested board members or individuals:

1. Assemble educational fact sheet or "story" data for public enlightenment.

2. Public news releases to the media (newspapers of record, organizational newsletters, etc.).

3. Direct mailings to known concerned organizations and individuals.

Any individual board members that would like to give talks to talk shows, television, regional fairs, organizations, etc. could schedule these at their convenience.

Table Q1. Pecos Valley Water Balance Annual Values

	Inflow Components (AF)					Outflow Components (AF)					
Year	Inflow Below Sumner Dam[1]	Tributary Yield[2]	Yield from Aquifer Storage[3]	Release from Reservoir Storage[4]	Total Inflow	Outflow at Red Bluff[5]	Managed Consumptive Use[6]	Unmanaged Evapo-transpiration[7]	Replenishment of Aquifer Storage[8]	Filling of Reservoir Storage[4]	Total Outflow
1905	238900	844800	0	0	1083700	-850300	-98275	-135125	0	0	-1083700
1906	234600	463300	0	0	697900	-345400	-102250	-250250	0	0	-697900
1907	198800	567100	0	0	765900	-330000	-110425	-325475	0	0	-765900
1908	158000	669700	0	0	827700	-316200	-123800	-387700	0	0	-827700
1909	147900	506700	0	0	654600	-183300	-132400	-338900	0	0	-654600
1910	168700	429600	0	0	598300	-213500	-141000	-243800	0	0	-598300
1911	194200	513200	0	0	707400	-270600	-149600	-287200	0	0	-707400
1912	167800	387500	0	0	555300	-178100	-158200	-219000	0	0	-555300
1913	161700	476600	0	0	638300	-359900	-166800	-111600	0	0	-638300
1914	307500	483400	0	0	790900	-429000	-175400	-186500	0	0	-790900
1915	321900	624400	0	0	946300	-607900	-184000	-154400	0	0	-946300
1916	243900	596900	0	0	840800	-361800	-192600	-286400	0	0	-840800
1917	141400	436300	0	0	577700	-144800	-201200	-231700	0	0	-577700
1918	134400	452600	0	0	587000	-111800	-209800	-265400	0	0	-587000
1919	474200	1007600	0	0	1481800	-828900	-218400	-434500	0	0	-1481800
1920	198600	447900	0	0	646500	-231100	-227000	-188400	0	0	-646500
1921	314700	624300	0	0	939000	-489100	-230055	-219845	0	0	-939000
1922	117700	471900	0	0	589600	-148900	-233109	-207591	0	0	-589600
1923	193200	525600	0	0	718800	-243900	-236164	-238736	0	0	-718800
1924	182600	454800	0	0	637400	-162700	-239218	-235482	0	0	-637400
1925	156600	591800	0	0	748400	-246300	-242273	-259827	0	0	-748400
1926	209800	578100	16300	0	804200	-289900	-249684	-264616	0	0	-804200
1927	164600	450000	16300	0	630900	-124200	-257095	-249605	0	0	-630900
1928	136000	561400	16300	0	713700	-210400	-264506	-238794	0	0	-713700
1929	174000	436400	16300	0	626700	-150200	-271918	-204582	0	0	-626700
1930	175600	526700	16300	0	718600	-211600	-279329	-227671	0	0	-718600
1931	199900	495500	16300	0	711700	-218500	-286740	-206460	0	0	-711700
1932	175200	626100	16300	0	817600	-383900	-288539	-145162	0	0	-817600
1933	168600	441100	16300	0	626000	-155200	-290337	-180463	0	0	-626000
1934	131300	462900	16300	0	610500	-81000	-292136	-237365	0	0	-610500
1935	176800	565100	16300	0	758200	-147500	-293934	-316766	0	0	-758200
1936	164100	449900	16300	0	630300	-117800	-295733	-216768	0	0	-630300
1937	355700	776400	16300	0	1148400	-593300	-297531	-257569	0	0	-1148400

	Inflow Components (AF)					Outflow Components (AF)					
Year	Inflow Below Sumner Dam[1]	Tributary Yield[2]	Yield from Aquifer Storage[3]	Release from Reservoir Storage[4]	Total Inflow	Outflow at Red Bluff[5]	Managed Consumptive Use[6]	Unmanaged Evapo-transpiration[7]	Replenishment of Aquifer Storage[8]	Filling of Reservoir Storage[4]	Total Outflow
1938	218400	530500	16300	0	765200	-147100	-299330	-318771	0	0	-765200
1939	176600	514600	45750	0	736950	-110500	-301128	-325322	0	0	-736950
1940	176909	417328	75200	0	669437	-101702	-304635	-263100	0	0	-669437
1941	609495	1479718	104650	0	2193863	-1622622	-308141	-263100	0	0	-2193863
1942	396639	511217	134100	0	1041956	-467209	-311648	-263100	0	0	-1041956
1943	160688	402591	163550	0	726828	-148574	-315154	-263100	0	0	-726828
1944	130412	378251	193000	0	701664	-119903	-318661	-263100	0	0	-701664
1945	127863	356375	193000	0	677239	-91972	-322167	-263100	0	0	-677239
1946	105073	384981	193000	0	683054	-94280	-325674	-263100	0	0	-683054
1947	97887	372376	193000	0	663263	-70982	-329180	-263100	0	0	-663263
1948	116195	382165	193000	0	691360	-95574	-332687	-263100	0	0	-691360
1949	131772	428276	193000	0	753048	-153755	-336193	-263100	0	0	-753048
1950	130642	442445	193000	0	766087	-163287	-339700	-263100	0	0	-766087
1951	149607	331518	193000	0	674126	-71326	-339700	-263100	0	0	-674126
1952	126526	322014	193000	0	641540	-38740	-339700	-263100	0	0	-641540
1953	96049	344887	193000	0	633936	-31136	-339700	-263100	0	0	-633936
1954	65764	511862	229300	0	806926	-204126	-339700	-263100	0	0	-806926
1955	133113	336286	229300	0	698699	-95899	-339700	-263100	0	0	-698699
1956	132602	275573	229300	0	637475	-34675	-339700	-263100	0	0	-637475
1957	111159	296483	229300	0	636941	-34141	-339700	-263100	0	0	-636941
1958	228119	279170	229300	0	736589	-133789	-339700	-263100	0	0	-736589
1959	119705	304682	229300	0	653688	-50888	-339700	-263100	0	0	-653688
1960	127017	348594	229300	0	704911	-102111	-339700	-263100	0	0	-704911
1961	150583	279265	229300	0	659148	-56348	-339700	-263100	0	0	-659148
1962	130941	278243	229300	0	638485	-35685	-339700	-263100	0	0	-638485
1963	128197	277133	229300	0	634631	-31831	-339700	-263100	0	0	-634631
1964	84869	320690	211400	0	616960	-14160	-339700	-263100	0	0	-616960
1965	102872	331258	211400	0	645530	-41250	-339700	-263100	0	-1480	-645530
1966	127724	603864	169120	0	900708	-295698	-339700	-263100	0	-2210	-900708
1967	113687	384200	126840	910	625637	-22837	-339700	-263100	0	0	-625637
1968	111496	433155	84560	0	629211	-26411	-339700	-263100	0	0	-629211
1969	169798	451449	42280	0	663527	-60727	-339700	-263100	0	0	-663527
1970	121266	509932	0	1730	632928	-30128	-339700	-263100	0	0	-632928
1971	105740	515451	0	1270	622462	-19662	-339700	-263100	0	0	-622462

	Inflow Components (AF)					Outflow Components (AF)					
Year	Inflow Below Sumner Dam[1]	Tributary Yield[2]	Yield from Aquifer Storage[3]	Release from Reservoir Storage[4]	Total Inflow	Outflow at Red Bluff[5]	Managed Consumptive Use[6]	Unmanaged Evapo-transpiration[7]	Replenishment of Aquifer Storage[8]	Filling of Reservoir Storage[4]	Total Outflow
1972	112563	535933	0	0	648496	-43196	-339700	-263100	0	-2500	-648496
1973	213179	465108	0	2400	680687	-77887	-339700	-263100	0	0	-680687
1974	139129	632298	0	0	771428	-165678	-339700	-263100	0	-2950	-771428
1975	97517	546345	0	2560	646422	-43622	-339700	-263100	0	0	-646422
1976	102915	518613	0	0	621528	-17788	-339700	-263100	0	-940	-621528
1977	89702	522177	0	1330	613209	-10409	-339700	-263100	0	0	-613209
1978	107351	577169	0	0	684520	-78960	-339700	-263100	0	-2760	-684520
1979	120040	545803	0	1630	667472	-39672	-339700	-263100	-25000	0	-667472
1980	148179	570445	0	0	718624	-65054	-339700	-263100	-50000	-770	-718624
1981	68658	646502	0	1720	716880	-39080	-339700	-263100	-75000	0	-716880
1982	148143	563327	0	80	711550	-33750	-339700	-263100	-75000	0	-711550
1983	164136	541646	0	0	705782	-26922	-339700	-263100	-75000	-1060	-705782
1984	104090	654031	0	0	758121	-80021	-339700	-263100	-75000	-300	-758121
1985	104543	625450	0	40	730033	-52233	-339700	-263100	-75000	0	-730033
1986	105801	841730	0	0	947531	-268471	-339700	-263100	-75000	-1260	-947531
1987	196705	643699	0	1090	841494	-163694	-339700	-263100	-75000	0	-841494
1988	163207	589360	0	3601	756168	-59318	-339700	-263100	-75000	-19050	-756168
1989	136885	565955	0	11590	714430	-35129	-339700	-263100	-75000	-1501	-714430
1990	102829	611354	0	0	714182	-32792	-339700	-263100	-75000	-3590	-714182
1991	122725	671641	0	270	794636	-107256	-339700	-263100	-75000	-9580	-794636
1992	143903	656977	0	0	800881	-121611	-339700	-263100	-75000	-1470	-800881
1993	157189	589798	0	540	747527	-66397	-339700	-263100	-75000	-3330	-747527
1994	173929	566133	0	4000	744062	-66262	-339700	-263100	-75000	0	-744062
1995	196814	556505	0	0	753319	-69239	-339700	-263100	-75000	-6280	-753319
1996	134247	609374	0	8090	751711	-72161	-339700	-263100	-75000	-1750	-751711
1997	160037	616989	0	0	777026	-98136	-339700	-263100	-75000	-1090	-777026
1998	191083	567325	0	0	758408	-66678	-339700	-263100	-75000	-13930	-758408
1999	71757	638932	0	21109	731798	-53998	-339700	-263100	-75000	0	-731798
Overall Average	165069	515292	61092	673	742127	-174857	-293990	-256671	-15789	-819	-742127
Average Since Compact	130011	491162	84709	1207	707089	-74917	-339303	-263100	-28302	-1468	-707089
Average Last Decade	145451	608503	0	3401	757355	-75453	-339700	-263100	-75000	-4102	-757355

	Inflow Components (AF)					Outflow Components (AF)					
Year	Inflow Below Sumner Dam[1]	Tributary Yield[2]	Yield from Aquifer Storage[3]	Release from Reservoir Storage[4]	Total Inflow	Outflow at Red Bluff[5]	Managed Consumptive Use[6]	Unmanaged Evapo-transpiration[7]	Replenishment of Aquifer Storage[8]	Filling of Reservoir Storage[4]	Total Outflow

Data sources:

[1]1905-1937: Natural Resources Planning Board, 1942, Regional Planning Part X - Pecos River Basin (Pecos River near Guadalupe gage); 1938-1999: U.S. Geological Survey, Website, 2000, http://water,nm,usgs.gov/ (Pecos River below Sumner Dam gage).

[2]1905-1939: Natural Resources Planning Board, 1942, Regional Planning Part X - Pecos River Basin; 1940-1999, tributary yield is a balancing term computed by subtracting all other inflows from the total outflow.

[3]Saleem, Z. A., and Jacob, C. E., 1971, Dynamic Programming Model and Quantitative Analysis, Roswell Basin, New Mexico: Water Resources Research Institute in cooperation with New Mexico Institute of Mining and Technology.

[4]Electronic communication, R. Gold, U.S. Geological Survey to C. Cook, Balleau Groundwater, Inc, January 23, 2001.

[5]1905-1937: Natural Resources Planning Board, 1942, Regional Planning Part X - Pecos River Basin (Pecos River near Angeles, TX gage); 1938-1999: U.S. Geological Survey, Website, 2000, http://water,nm,usgs.gov/ (Pecos River near Red Bluff gage).

[6]1905-1939: Natural Resources Planning Board, 1942, Regional Planning Part X - Pecos River Basin; 1940-1999: sum of crop and urban vegetation evapotranspiration (128,000 ac x 2.5 ft/yr = 321,000 AFY) from U.S. Geological Survey, 2000, National Land Cover Database, http://mapping.usgs.gov/ and reservoir evaporation (18,700 AFY) from National Resource Conservation Service, 2000, Basin Area Reservoir Summary (Total managed use = 321,000 + 18,700 = 339,700 AFY).

[7]1905-1939: balancing term computed by subtracting all other outflows from total inflow; 1940-1999 based on area of riparian vegetation evapotranspiration (70500 ac x 3 ft/yr = 211,500 AFY) and open water evaporation (51,600 AFY)from U.S. Geological Survey, 2000, National Land Cover Database, http://mapping.usgs.gov/ and BGW LANDSAT classification (Total umnanaged loss = 211,500 + 51,600 = 263,100 AFY).

[8]Estimated based on the magnitude of groundwater level recovery in the 1980s and 1990s.