EXHIBIT B

PROJECT OPERATION AND RESOURCE UTILIZATION

NORTHERN ILLINOIS HYDROPOWER, LLC.
DRESDEN ISLAND HYDROELECTRIC PROJECT
(FERC NO. 12626)

EXHIBIT B
PROJECT OPERATION AND RESOURCE UTILIZATION

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

NORTHERN ILLINOIS HYDROPOWER, LLC.
DRESDEN ISLAND HYDROELECTRIC PROJECT
(FERC NO. 12626)

EXHIBIT B
PROJECT OPERATION AND RESOURCE UTILIZATION

1.0 PROJECT OPERATION

1.1 Current Operations at the ACOE Dresden Island Lock and Dam

The U.S. Army Corps of Engineers (ACOE) operates the Illinois Waterway to provide transportation for barge traffic from Lake Michigan at Chicago, Illinois to the Mississippi River at Grafton, Illinois. The Illinois Waterway flows 327 miles through eight navigational pools from Lake Michigan to the Mississippi River. Locks and dams are located at Lockport (mile 291.1), Brandon Road (mile 286.0), Dresden Island (mile 271.5), Marseilles (247.0), Starved Rock (mile 231.0), Peoria (mile 157.7), and LaGrange (mile 80.2). The existing Dresden Island Lock and Dam navigational pool, with a water surface elevation held constant at 504.5.0 ft NGVD, extends upstream just over 14.5 miles to the Brandon Road Dam. Water is released at the same rate as it enters the facility. The Applicant proposes to operate the plant on a strict run-of-river mode where outflow will not exceed inflow. Operation of the plant would be in compliance with the ACOE's reservoir regulation and navigation guidelines.

1.2 Average Annual Plant Factor

At a net head of 17.5 feet, the proposed Project would have a nameplate generating capacity of approximately 10.2 MW. The projected average annual output for the plant is 59,257 MWh. Based on this proposed capacity and annual generation, the average annual plant factor, would be approximately 0.66, or 66%.

1.3 Operating Control

The Applicant will control the Project with an automated system that will automatically start, run, and shut down the turbines. The automated control package will have overload, fault, and runaway speed protection. The system will allow instantaneous access by the ACOE to modify hydroelectric operations in response to emergencies related to the Lock operation or flood control.

1.4 Operation during Adverse, Mean, and High Water Years

In mean water years, the Applicant would operate the plant in a run-of-river mode, where outflow would not exceed inflow. In adverse water (low water) years, the plant would not operate if generation would cause a drawdown of the impoundment below 504.5 ft. When inflow exceeds the hydraulic capacity of the proposed Project, the Applicant would operate the powerhouse to full capacity and allow additional water to spill over the dam. Under extreme high water conditions, operations will be adjusted or shut down as necessary to protect the turbine-generator equipment, pass flood flows, or otherwise be curtailed as dictated by ACOE operations and all of the water would spill over the dam. The proposed project is designed so there is no effect upon the flood capacity of the dam or other existing facilities.

2.0 DEPENDABLE CAPACITY AND AVERAGE ANNUAL ENERGY PRODUCTION

Based on the current design calculations, the average annual energy production would be approximately 59,257,000 kWh. The dependable capacity of the project has been assumed to be the capacity the site could provide from a flow equal to the 90% exceedance on the annual flow duration curve. As can be seen in Appendix A, the 90% flow exceedance value is approximately 3,100 cfs. Therefore, with an assumed total generating efficiency of 80% at that flow, the project would have a dependable capacity of 3.7 MW. The sections below provide the hydrologic information for the Project.

2.1 Flow Data

The average annual daily flow at the Dresden Island site is approximately 9,000 cfs; peak flows occur in spring and minimum flows in the summer and fall. Table 2.1-1 provides the mean, minimum, and maximum recorded flow at the ACOE Dresden Island Lock and Dam gage.

The Applicant retrieved average daily river flow at the Dresden Island Lock and dam via an ACOE website, and analyzed the average daily river flow data on a monthly and annual basis (ACOE, 2008). The analysis used a period of record of June 1987 to June of 2008. To confirm the accuracy of the calculated flows, the Applicant compared the reported values to the previously mentioned Draft Feasibility Report for Hydropower developed by the ACOE in 1981.

The analysis showed that the maximum daily flow from 1987 to 2008 was 61,222 cfs. The minimum daily flow during this period was 631 cfs. The mean daily flow was 8,986 cfs. The ACOE maintains the pool elevation at 504.5 ft NGVD for navigational purposes. The ACOE operates the dam in a run-of-river mode, and the navigational pool provides no storage. As can be seen on the Annual Flow Duration curves in Appendix A, flows rarely drop below 1,700 cfs, partly because of required navigational releases from Lake Michigan. However, there are some days in which the ACOE reported very low river flows. Twenty-five miles downstream, the Marseilles Lock and Dam controls the normal tailwater pool elevation of 485.5 ft NGVD. During extremely high flows, the tailwater elevation increases, reducing the difference in elevation between the reservoir and the tailwater pool. During the peak flow of record in 1957, it was reported that the difference in the elevation of the upper and lower pools was approximately 1.5 feet (Village of Channahon, 1983). Appendix A contains flow duration curves.

Table 2.1-1. Mean, minimum, and maximum, recorded flow at Illinois River at Dresden Island Lock and Dam. Period of record: 1987 - 2008

Month	Mean (cfs)	Minimum (cfs)	Maximum (cfs)
January	10,221	1,246	55,334
February	10,256	1,890	56,345
March	12,089	1,867	46,028
April	11,693	1,265	38,036
May	10,547	2,507	57,436
June	10,419	1,875	57,119
July	7,990	1,266	52,935
August	7,092	636	50,711
September	6,294	642	26,084
October	5,787	631	36,902
November	7,023	1,253	61,222
December	8,269	1,264	40,175

Source: ACOE, 2008

2.1.1 Area-Capacity Curve

The proposed Project is located at a federal facility operated by the ACOE. The ACOE does not have information related to the gross storage capacity of the impoundment. There is no usable capacity in the Dresden Island pool, as the ACOE operates the facility at a constant elevation for navigation. The Applicant proposes to operate the facility as run-of-river based upon ACOE requirements.

2.1.2 Hydraulic Capacity of the Power Plant

The hydraulic capacity of the proposed powerhouse is approximately 7,500 cfs.

2.1.3 Tailwater Rating Curve

The Applicant will develop the final tailwater rating curve after it completes bathymetric surveys and hydraulic modeling as part of the final design of the powerhouse.

2.1.4 Power Plant's Capacity vs. Head

At a net head of 17.5 ft, the proposed Project would likely have a total generating capacity of approximately 10.2 MW. Because the ACOE operates the impoundment at a constant level, normal and minimum head are typically the same; however, it has been reported that the tailwater level rises significantly under extreme flows, thus reducing the head at the project. A 1982 analysis by the ACOE (Appendix B) shows the annual head-duration curve exceeding 18 feet almost 80% of the time. The final capacity vs. head calculations will be refined during equipment design and will be finalized upon installation.

3.0 UTILIZATION OF PROJECT POWER

On average, less than 2% of the Project's annual electric production would likely be consumed by the station itself. The remainder of the electricity generated would likely be sold to a regional utility for distribution to its end users. The amount of power sold would vary yearly in proportion to available water.

4.0 PLANS FOR FUTURE DEVELOPMENT

4.1 Development of the Project

The Applicant does not currently have any additional plans for future development at this site.

4.2 Development of Other Projects

In addition to the Dresden Island Hydroelectric Project, the Applicant proposes to develop a similar project upstream at the Brandon Road Lock and Dam. The Brandon Road Lock and Dam Project is being pursued in a separate licensing process under FERC Project Number 12717.

References:

ACOE. 2008. Rivergages.com, Water Levels of Rivers and Lakes. Accessed online from http://www2.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid+IL03&fid=JOLI2&dt=S on October 2008.

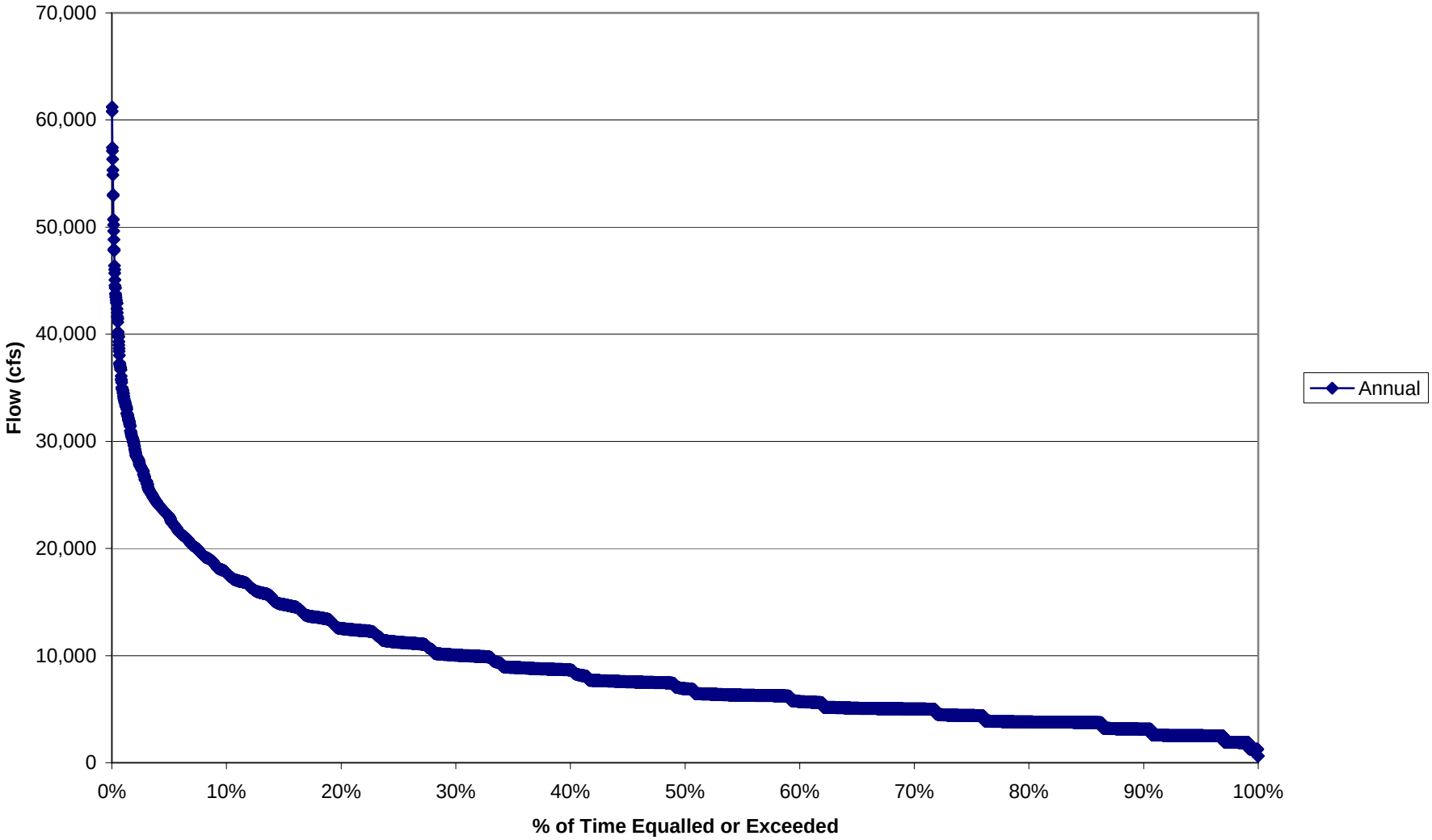
Village of Channahon. 1983. License application.

APPENDIX A

Flow Duration Curves for the Proposed Dresden Island Hydroelectric Project

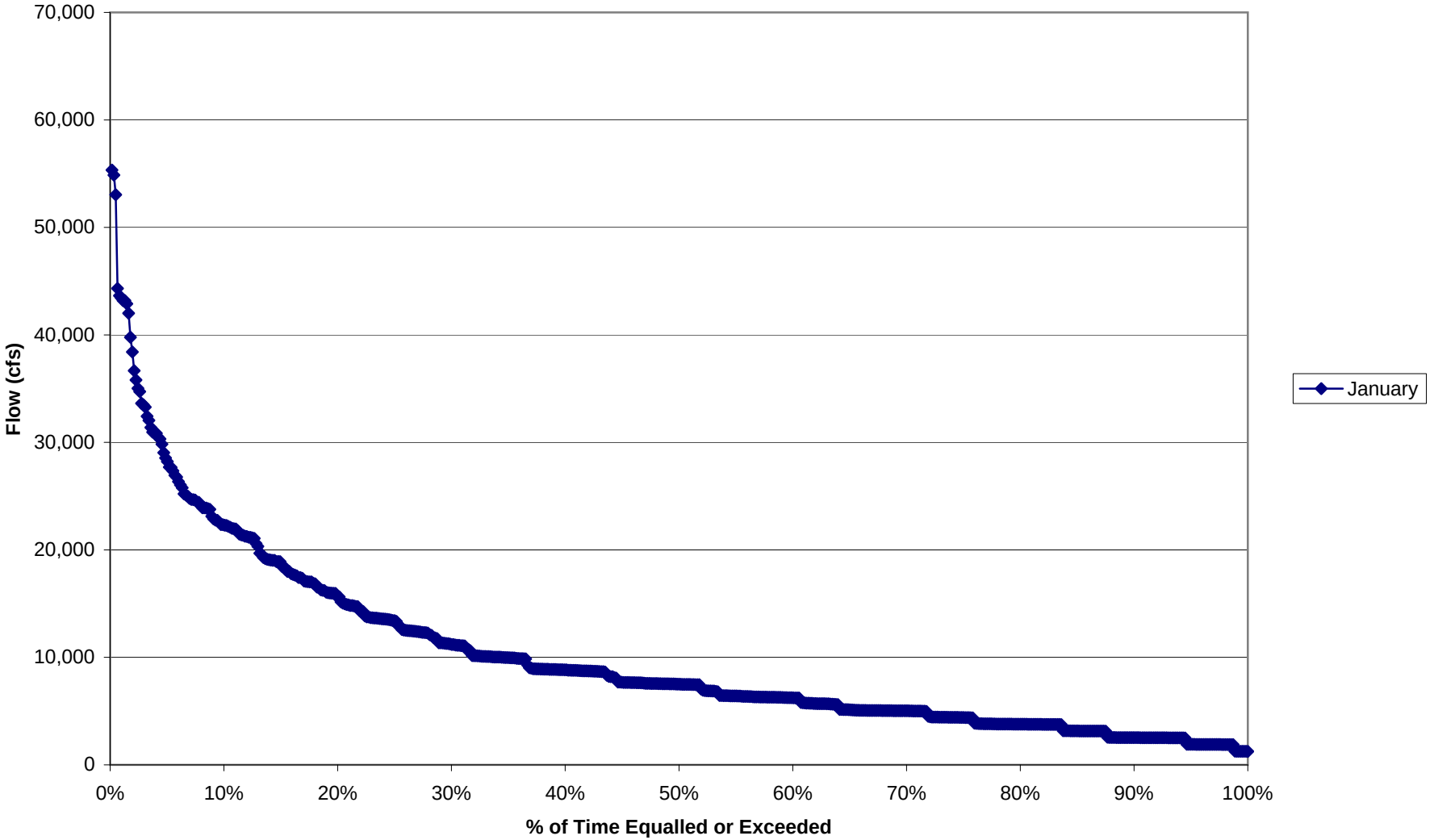
Dresden Island - Annual Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



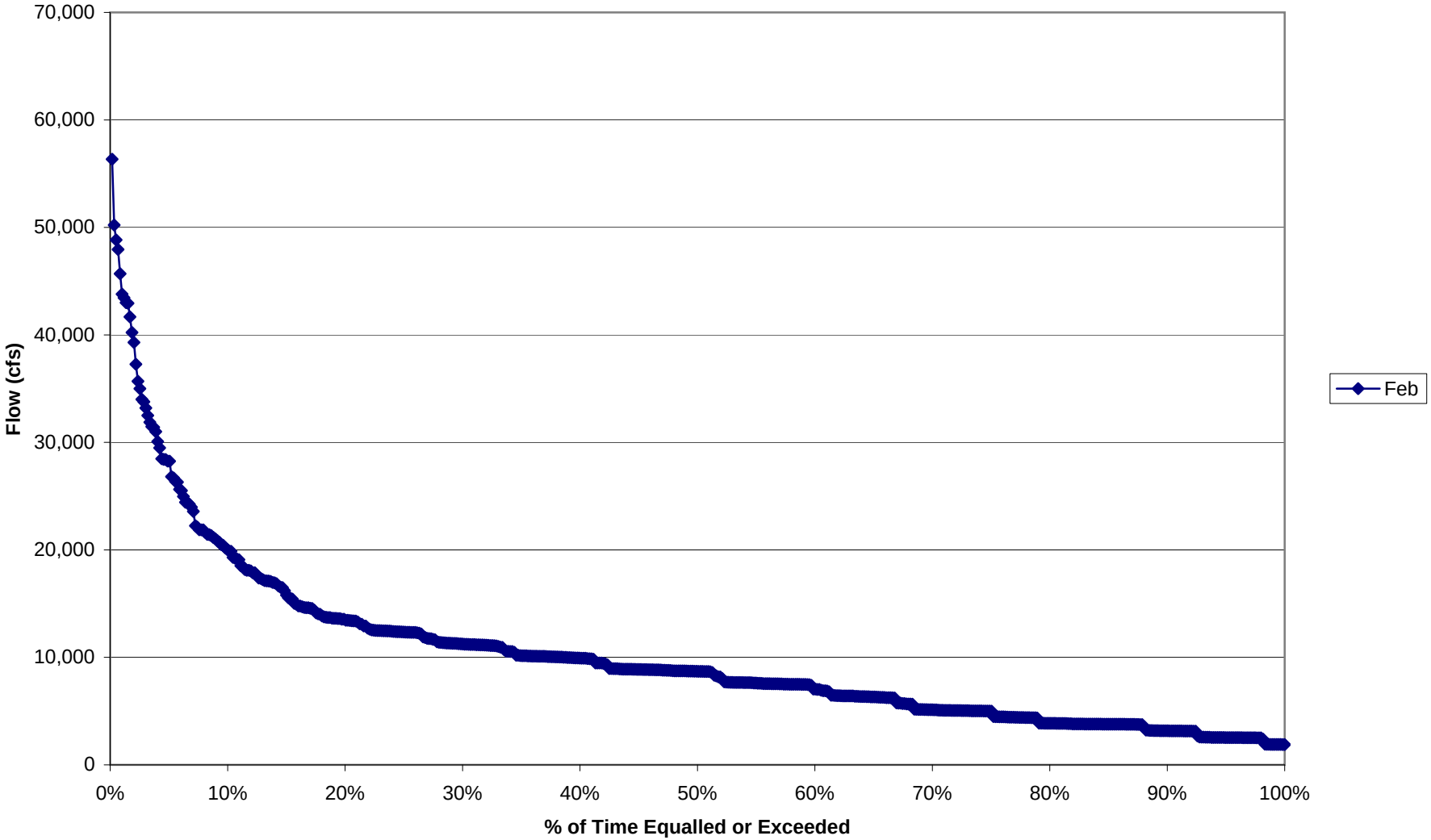
Dresden Island - January Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



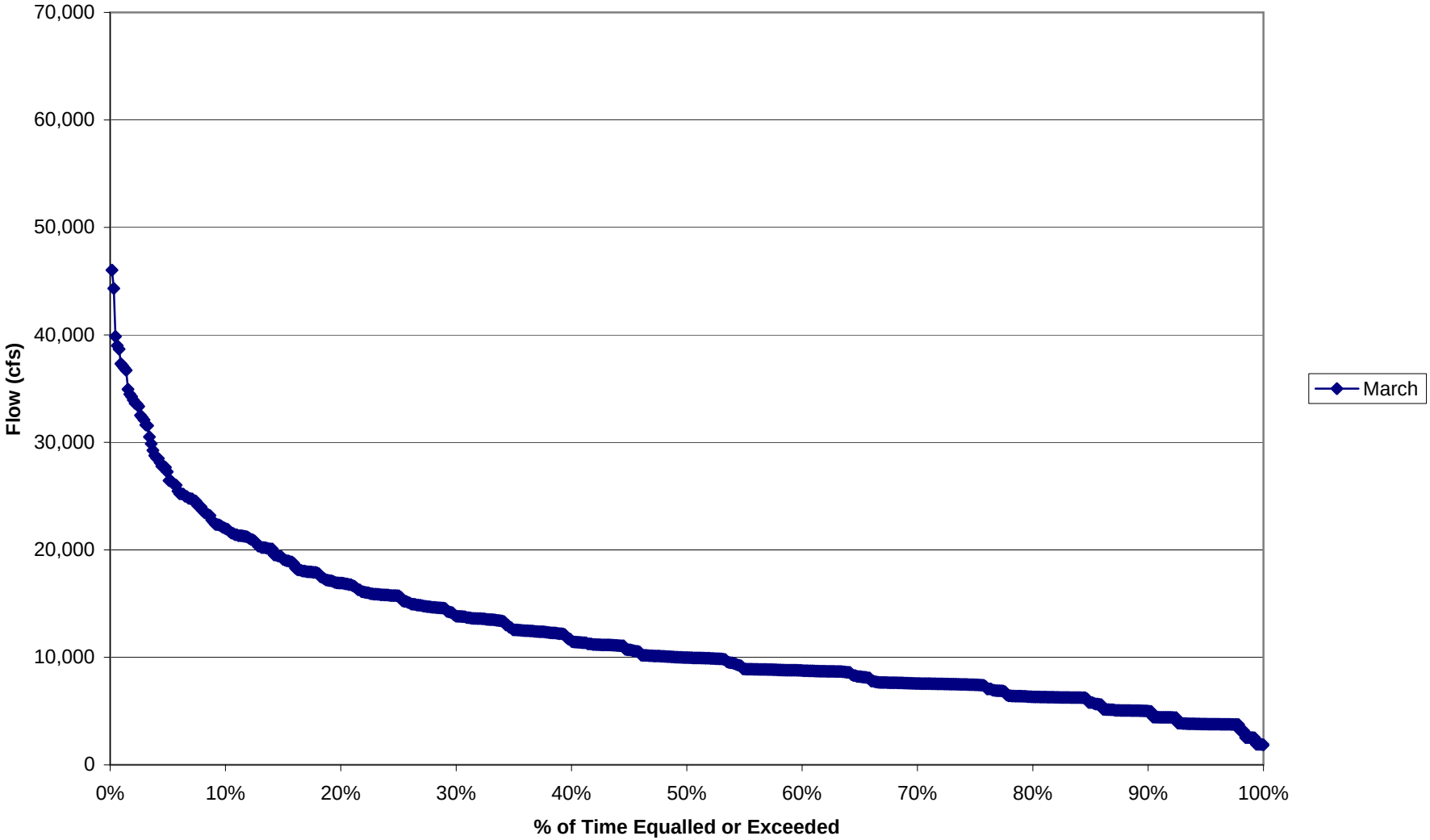
Dresden Island - February Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



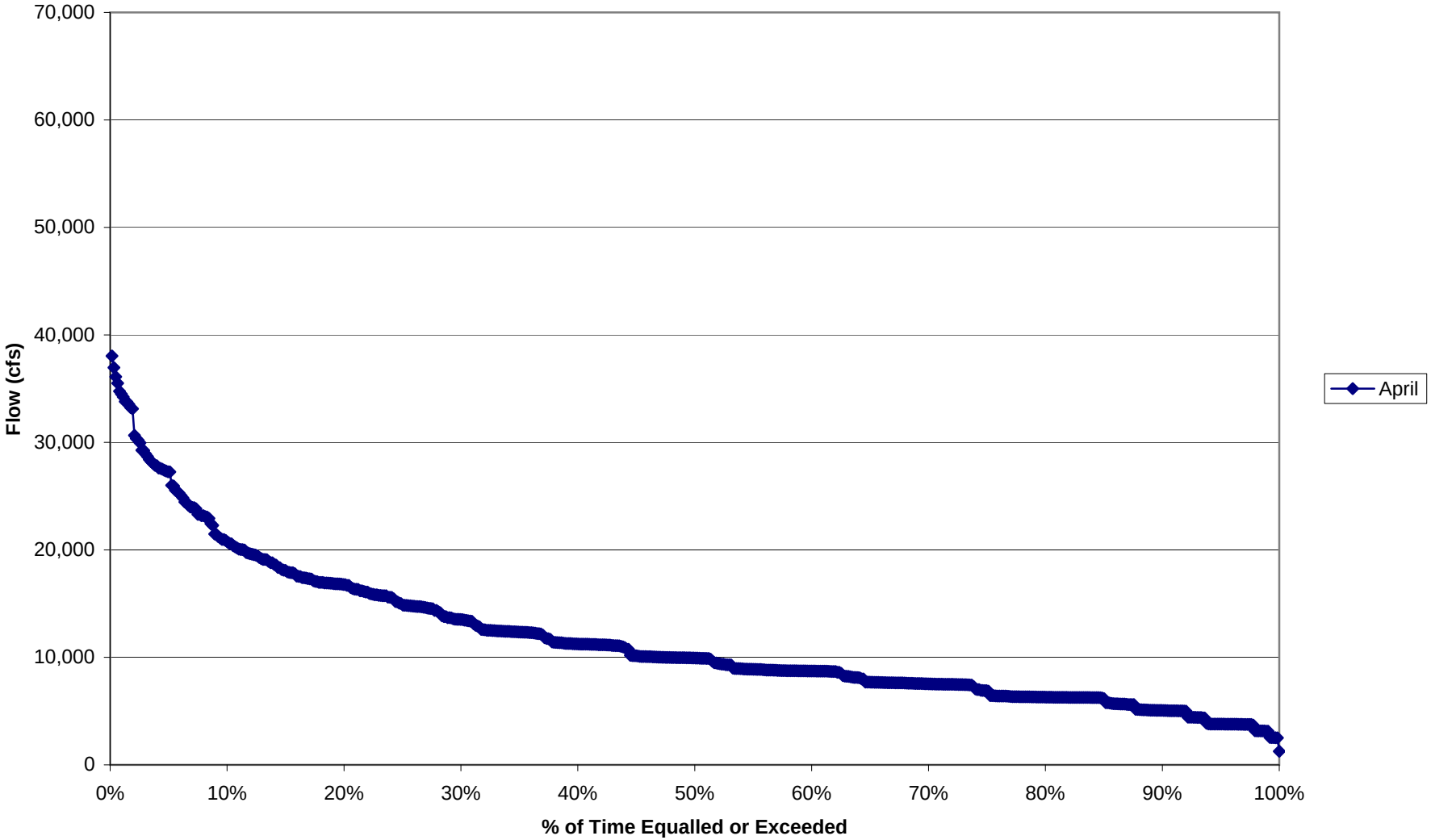
Dresden Island - March Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



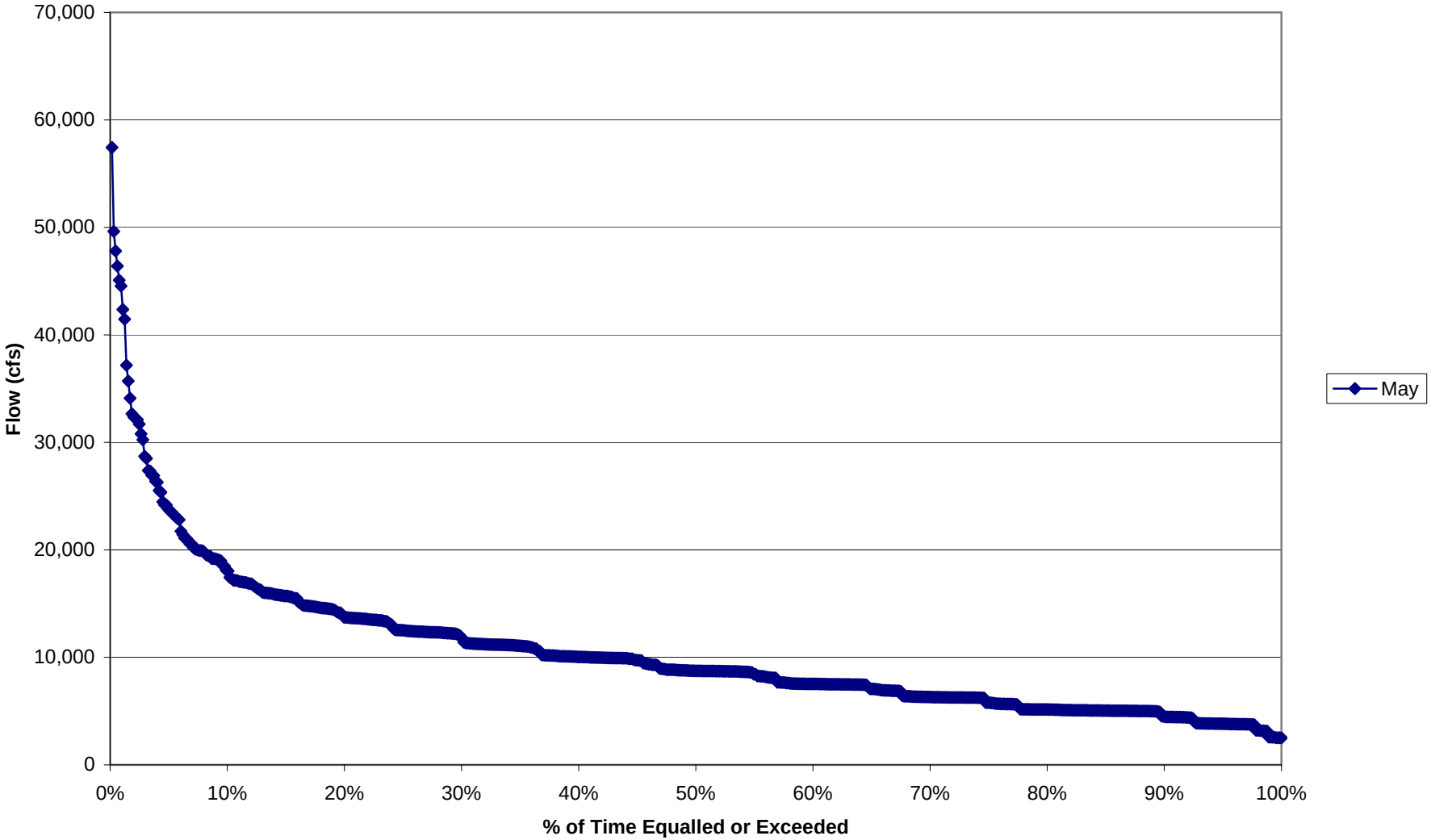
Dresden Island - April Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



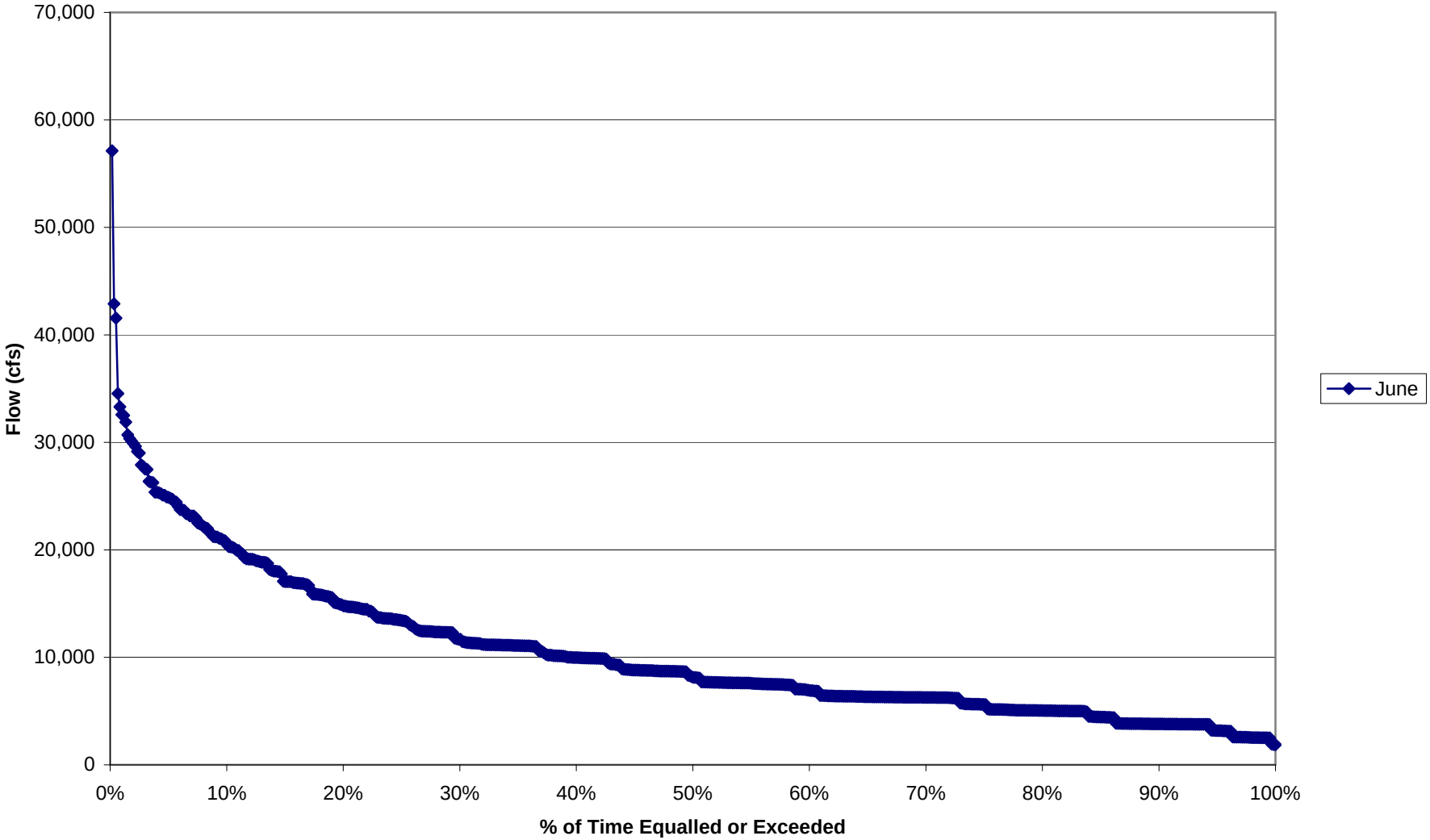
Dresden Island - May Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



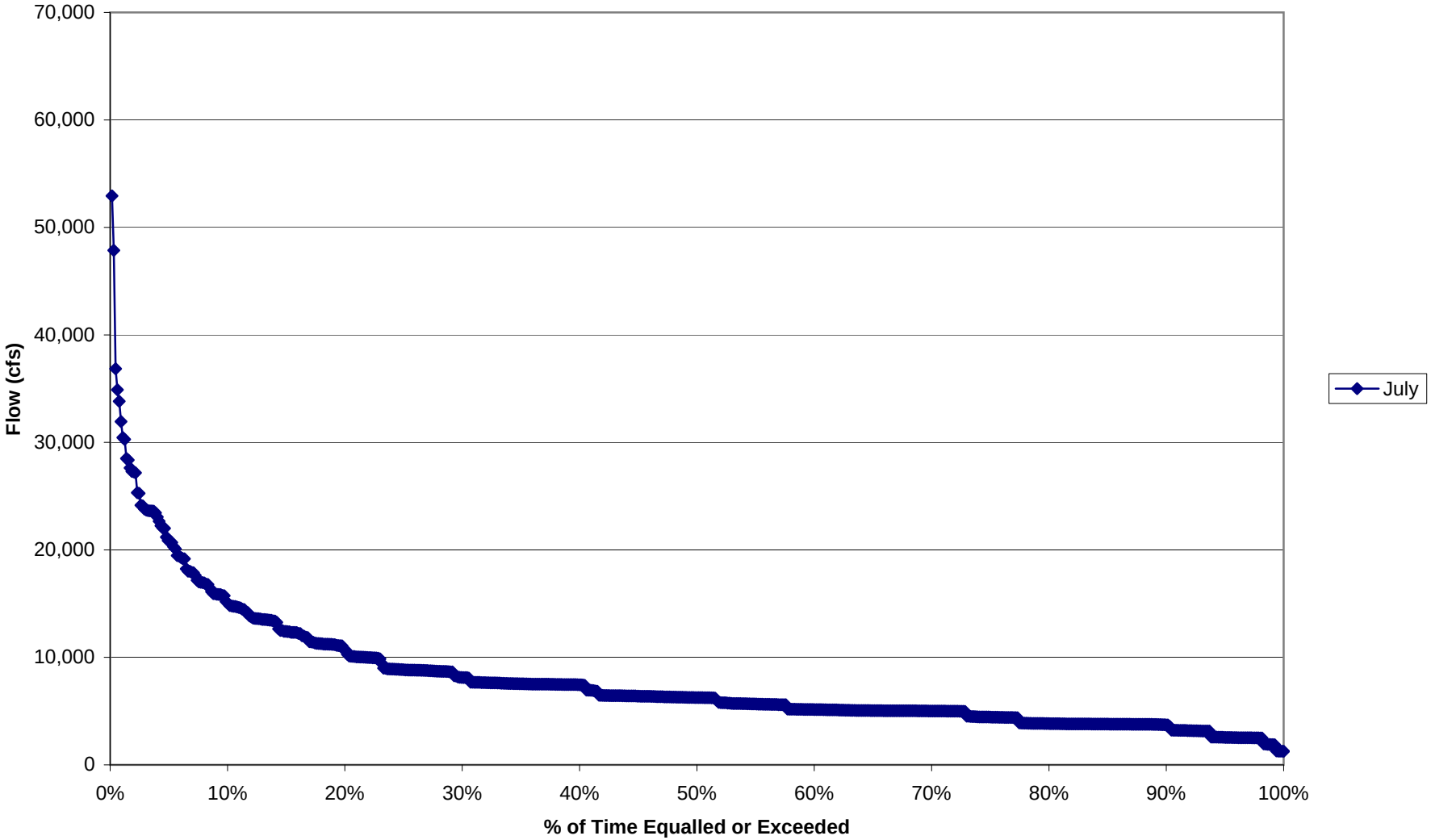
Dresden Island - June Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



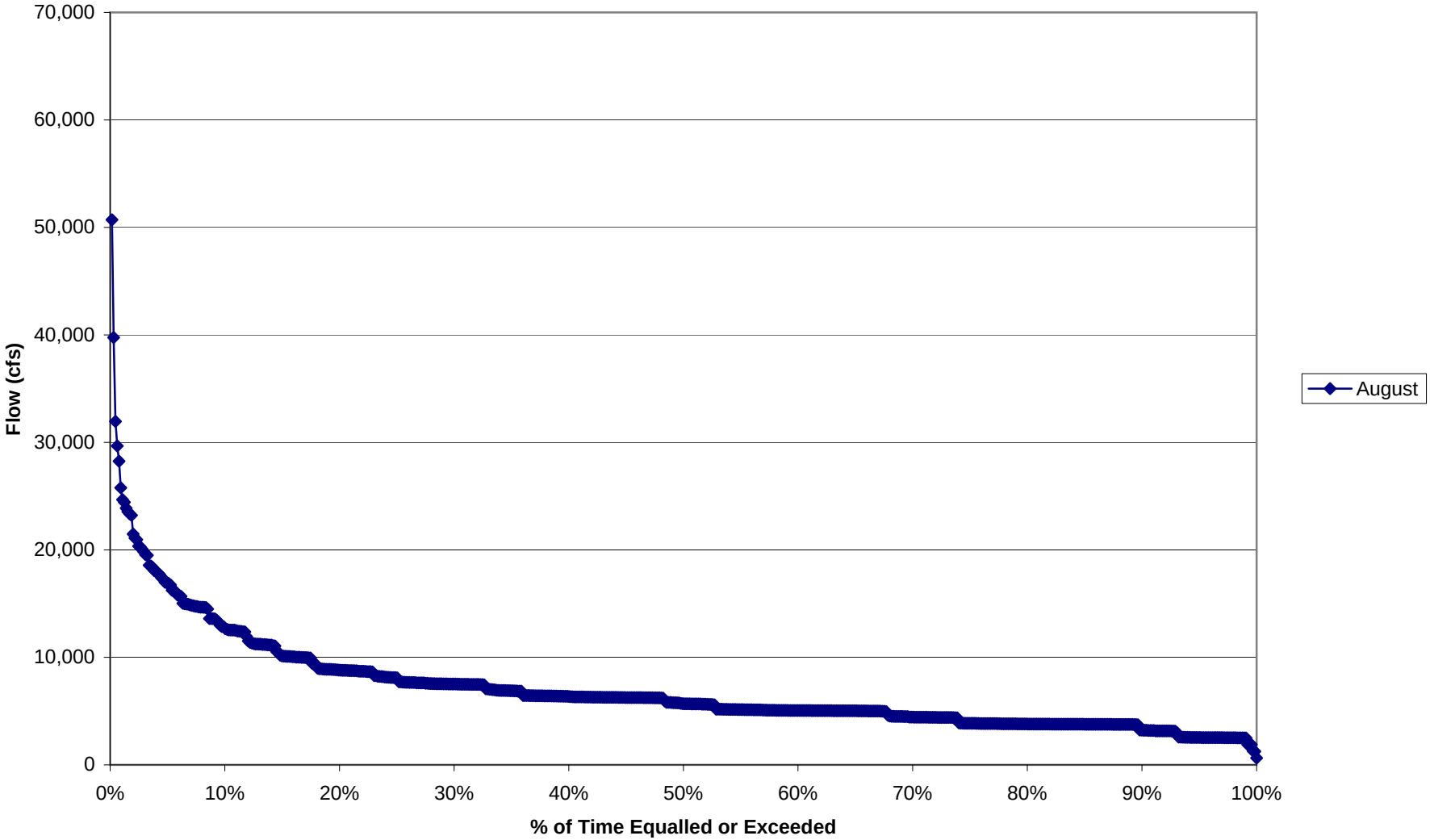
Dresden Island - July Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



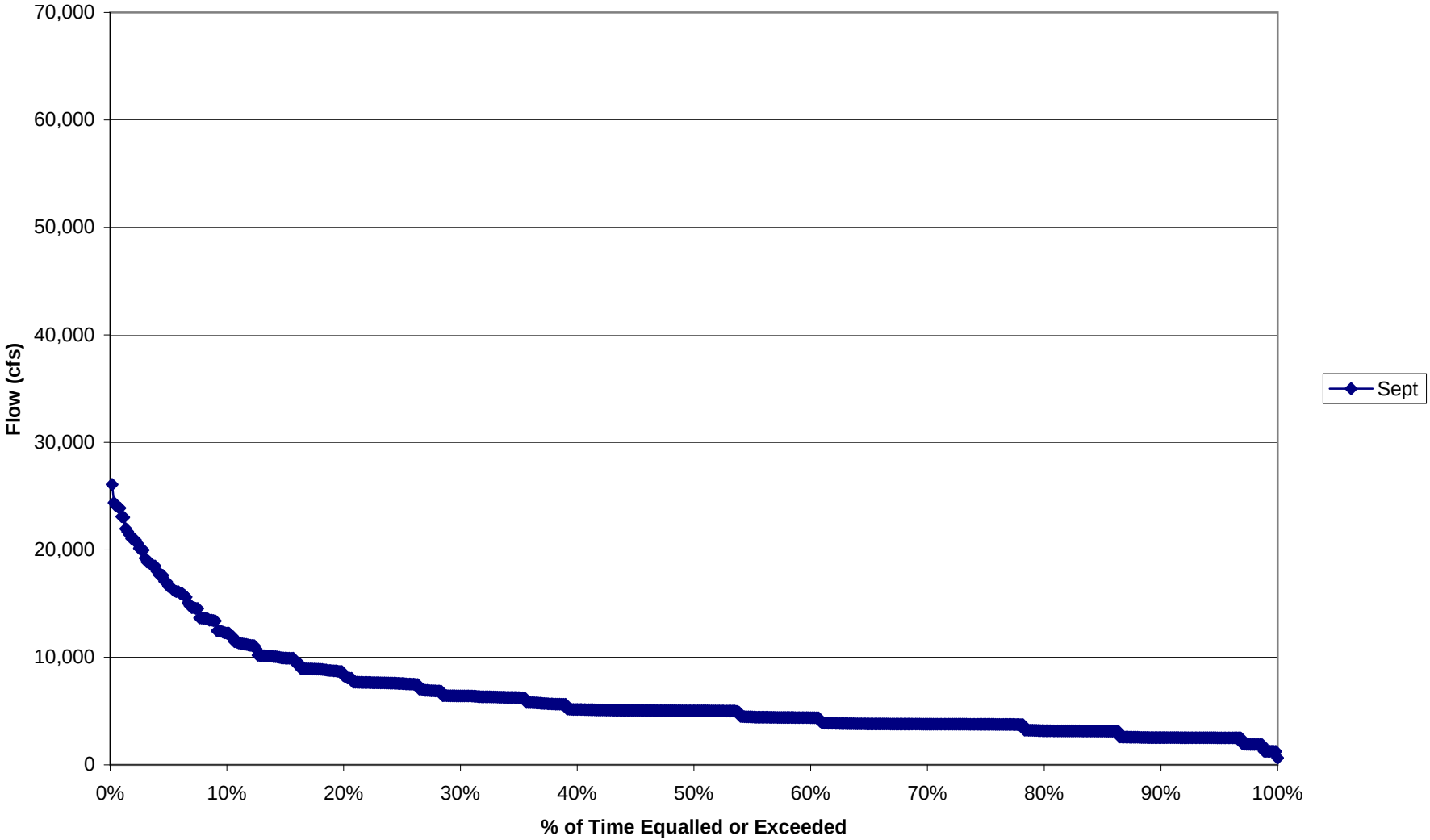
Dresden Island - August Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



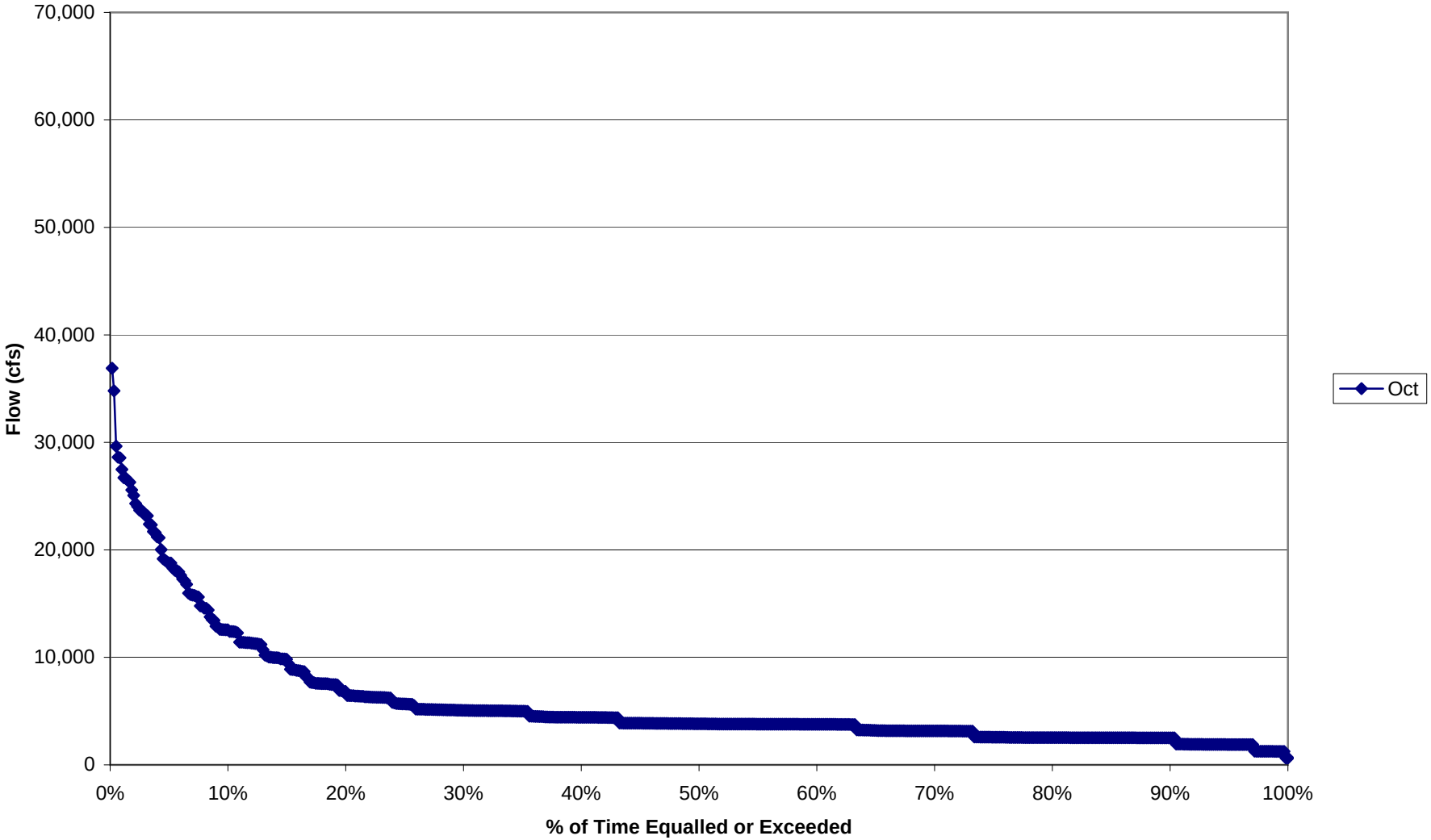
Dresden Island - September Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



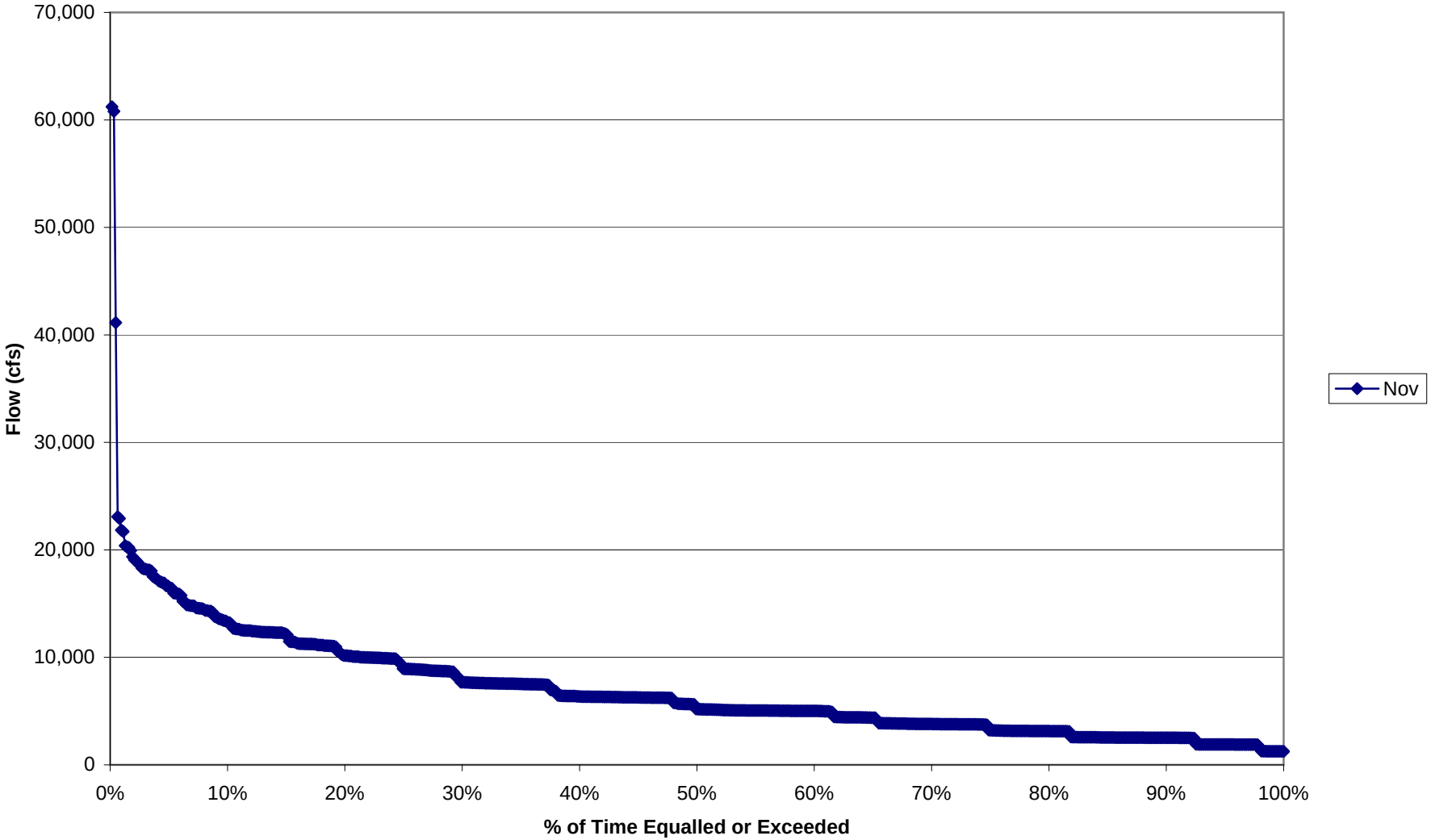
Dresden Island - October Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



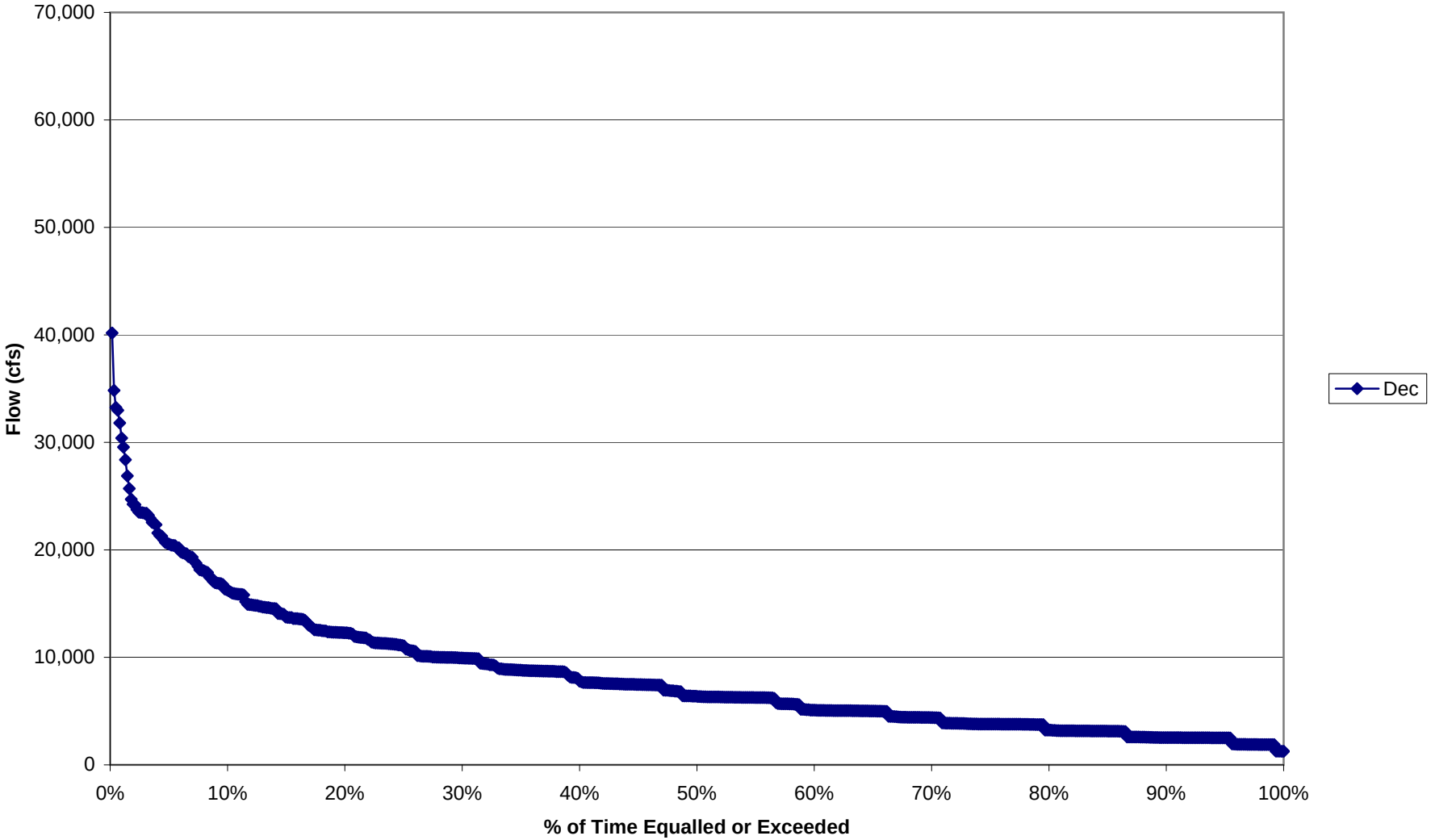
Dresden Island - November Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



Dresden Island - December Flow Duration Curve

(COE Dresden Island Gage - Period of Record: 6/1/1987 - 6/1/2008)



APPENDIX B

Annual Head Duration Curve

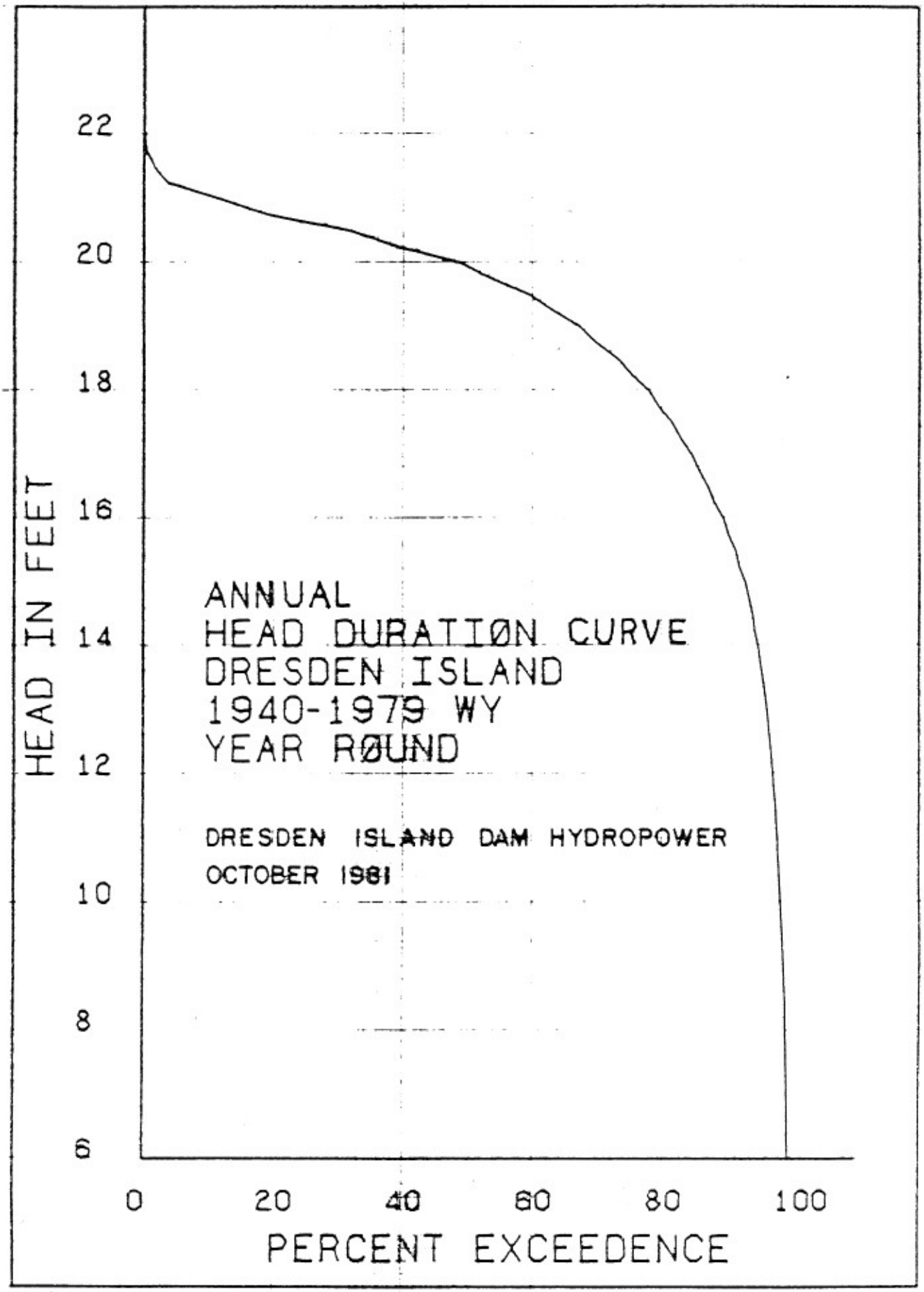

HEAD IN FEET
22
20
18
16
14
12
10
8
6
0
20
40
60
80
100
PERCENT EXCEEDENCE
ANNUAL
HEAD DURATIØN CURVE
DRESDEN ISLAND
1940-1979 WY
YEAR RØUND
DRESDEN ISLAND DAM HYDROPOWER
OCTOBER 1981

PLATE A-15