EXHIBIT B

PROJECT OPERATION AND RESOURCE UTILIZATION

NORTHERN ILLINOIS HYDROPOWER, LLC
BRANDON ROAD HYDROPOWER PROJECT
(FERC NO. 12717)

APPLICATION FOR LICENSE
FOR MAJOR PROJECT - EXISTING DAM

EXHIBIT B
PROJECT OPERATION AND RESOURCE UTILIZATION

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1.0 PROJECT OPERATION

1.1 Current Operations at the Army Corps of Engineers' 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 Brandon Road Lock and Dam navigational pool, with a water surface elevation held constant at 539.0 ft NGVD, extends upstream just over 5 miles to the Lockport Dam. The ACOE releases water at the same rate as it enters the facility. The Applicant proposes to operate an automatic 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 29 feet, the proposed Project would have a nameplate generating capacity of approximately 10.2 MW. The projected average annual output for the plant is 59,000 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 cease to operate whenever inflow gets lower than the minimum efficient discharge point of one of the two turbines (675 cfs) to ensure that generation would not cause a drawdown of the impoundment below 539.0 ft and all inflows will be discharged through gates in the dam. When inflow exceeds the hydraulic capacity of the proposed Project, NIH would operate the powerhouse at full capacity (4,500 cfs) and allow additional water to spill over the dam.

The tailwater levels below the Brandon Road dam vary between 509.0 ft NGVD and 519.0 ft NGVD, depending on river flow. Consequently, because tailwater elevations are significantly raised under flood 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 59,000,000 kWh. The dependable capacity of the project is assumed to be the capacity the site could provide from a flow equal to the 90% exceedance on the annual flow duration curve. As shown in Appendix A, the 90% flow exceedance value is approximately 1,784 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 flow at the Brandon Road site is approximately 3,800 cfs. The Applicant retrieved average daily river flow at the Brandon Road Lock and dam via an ACOE website, and analyzed the average daily river flow data on a monthly and annual basis (ACOE, 2008). The period of record covered in the Applicant's analysis is from January 1987 to June of 2008. Table 2.1-1 provides the mean, minimum, and maximum recorded flow at the Brandon Road Lock and Dam gage maintained by the ACOE .

The Applicant's analysis showed that the maximum daily flow from 1987 to 2008 was 31,226 cfs. The minimum daily flow during this period was 0 cfs. The mean daily flow was approximately 3,790 cfs. As can be seen on the Annual and Monthly Flow Duration curves in Appendix A, flows rarely drop below 1,700 cfs, partly because of required navigational releases from Lake Michigan. However, on rare occasion, the ACOE reported very low river flows reaching 0 cfs.

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

Month	Mean (cfs)	Minimum (cfs)	Maximum (cfs)
Annual	3,791	0	31,226
January	3,362	83	19,448
February	3,495	41	27,479
March	3,951	444	19,672
April	4,483	0	18,755
May	4,243	0	23,768
June	4,341	542	20,945
July	3,997	0	31,226
August	4,488	1,129	25,829
September	3,867	0	18,661
October	3,055	432	18,979
November	3,065	0	21,250
December	3,033	0	14,304

Source: 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.

2.1.1 Area-Capacity Curve

The proposed Project is located at a federal facility operated by the ACOE. There is no usable capacity in the Brandon Road pool, as the ACOE operates the facility at a constant elevation for navigation. The Applicant proposes to operate the facility as run-of-river utilizing flows in excess of that which is needed for ACOE navigation requirements. The ACOE also does not have information related to the gross storage capacity of the impoundment. For these reasons, an area-capacity curve has not been developed.

2.1.2 Hydraulic Capacity of the Power Plant

The hydraulic capacity of the proposed power plant is approximately 4,500 cfs. The minimum hydraulic capacity of the power plant is 675 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 29 feet, the proposed Project would have a total generating capacity of approximately 10.2 MW. Because the ACOE operates the impoundment at a constant level, normal, maximum and minimum head are the same; however, tailwater levels rise significantly under extreme flows, thus reducing the head at the project. The Applicant will develop a power plant capacity versus head curve in conjunction with development of the final tailwater rating curve. A 1981 analysis by the ACOE (Appendix B) shows the annual head-duration curve; the analysis shows the head exceeding 32 ft approximately 90% of the time.

3.0 UTILIZATION OF PROJECT POWER

On average, the Applicant estimates that less than 2% of the Project's annual electric production would be consumed by the station itself. The Applicant would likely sell the

remainder of the electricity generated to a regional utility for distribution to its end users. The amount of power sold varies 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.

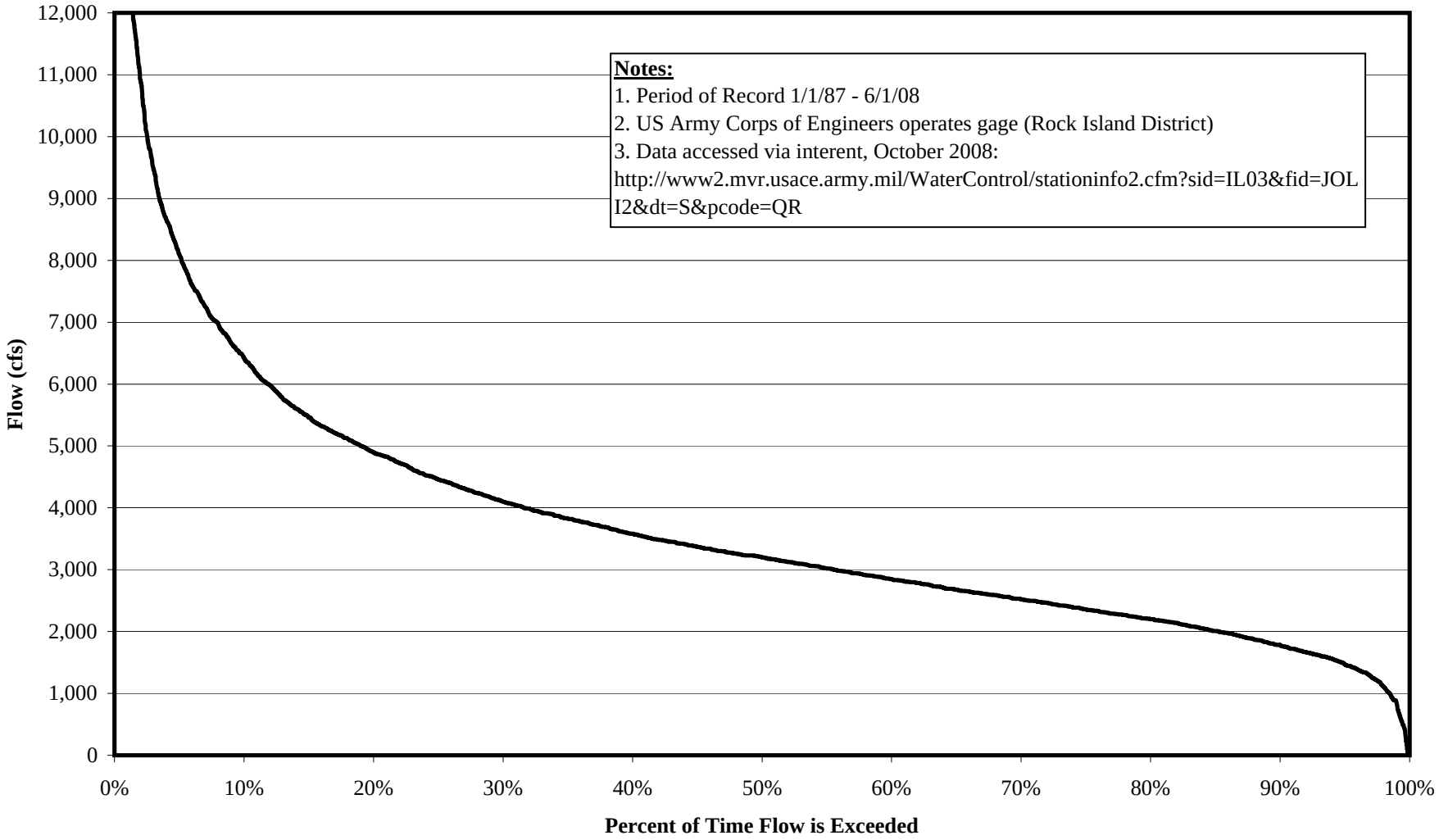
4.2 Development of Other Projects

In addition to the Brandon Road Hydropower Project, the Applicant proposes to develop a similar project downstream at the Dresden Island Lock and Dam. The Applicant is pursuing the Dresden Island Lock and Dam Project in a separate licensing process under FERC Project No. 12626.

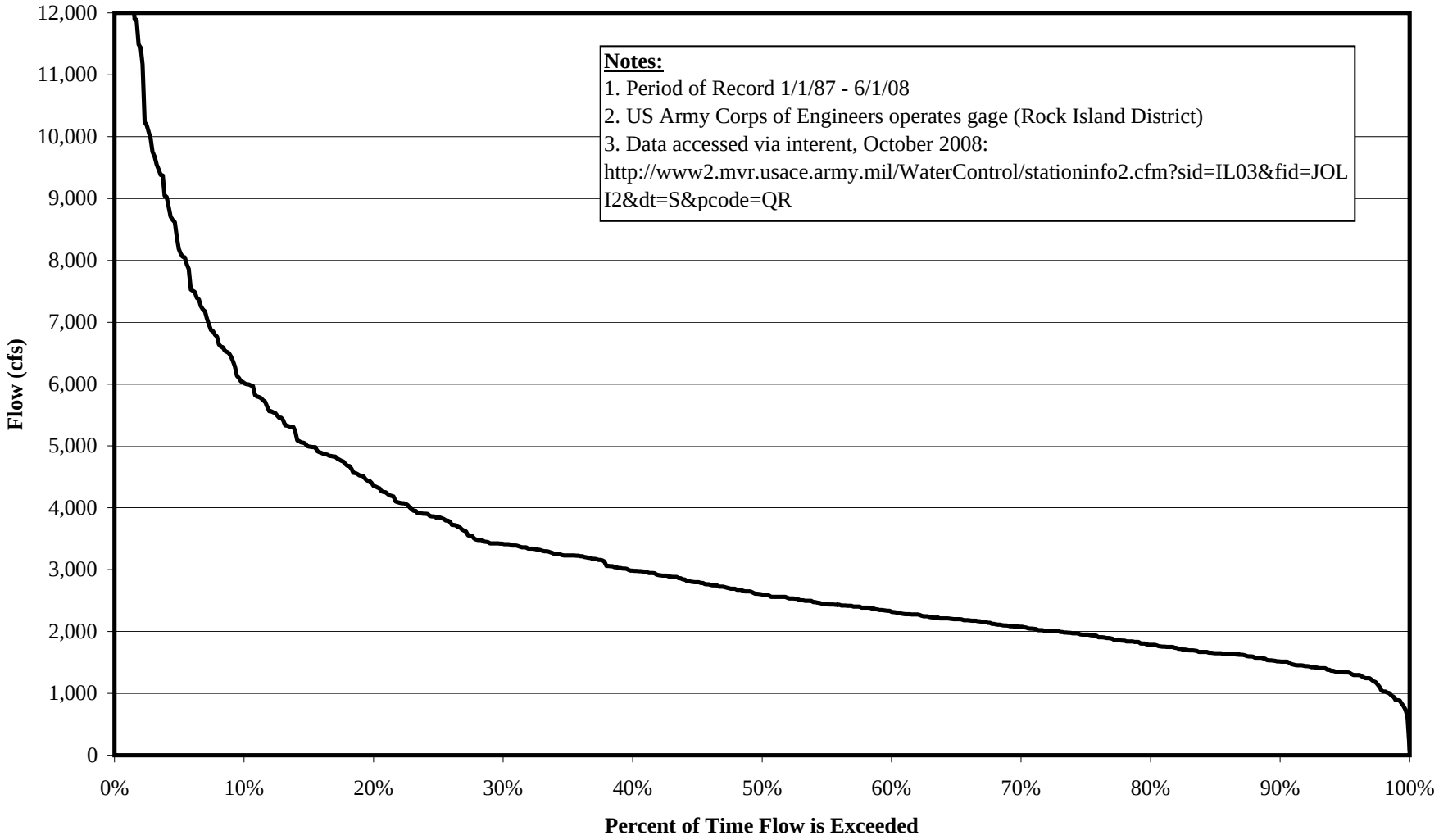
APPENDIX A

FLOW DURATION CURVES FOR THE PROPOSED BRANDON ROAD HYDROELECTRIC PROJECT

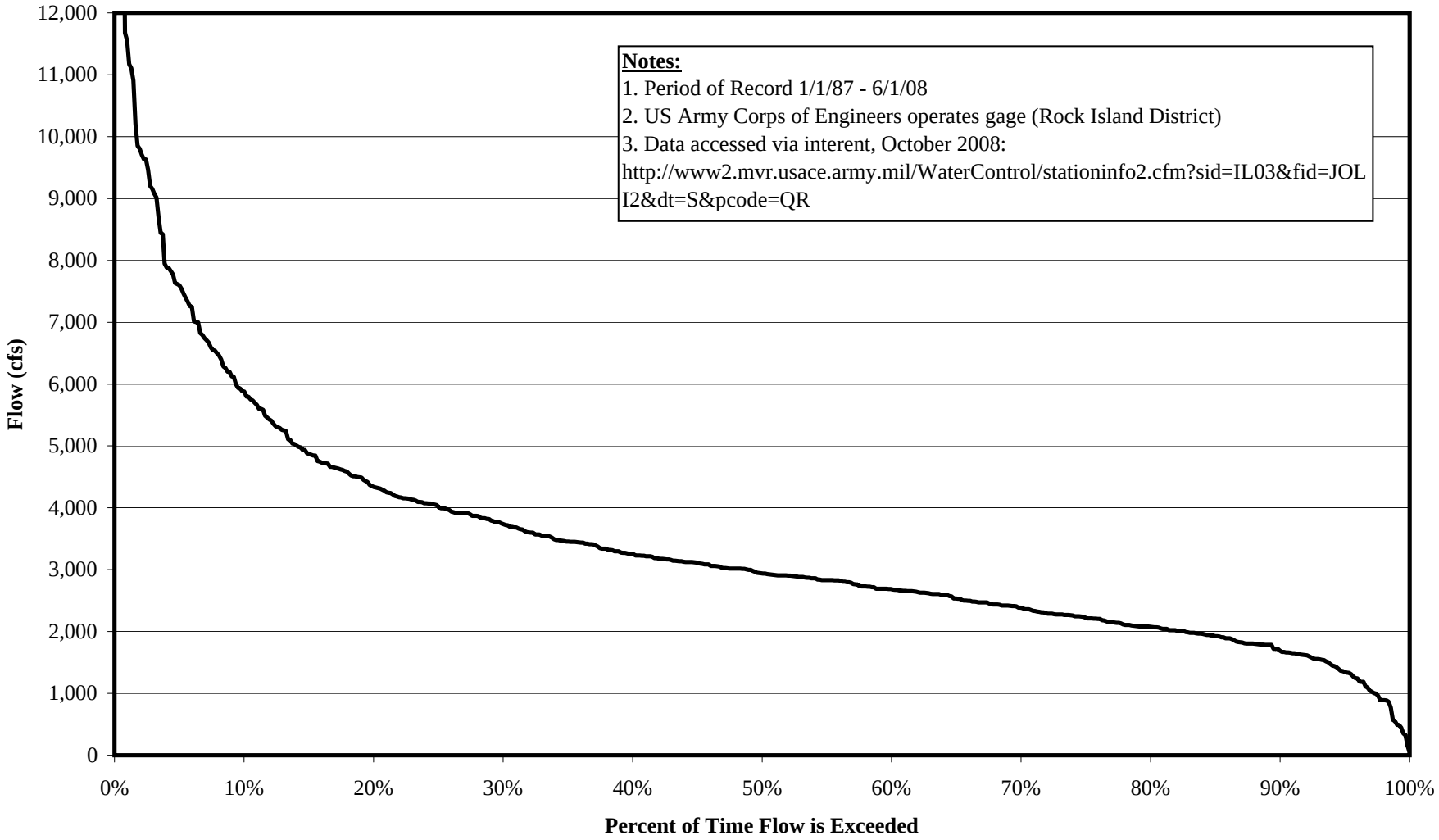
Illinois River at Brandon Road Lock and Dam
Annual Flow Duration Curve



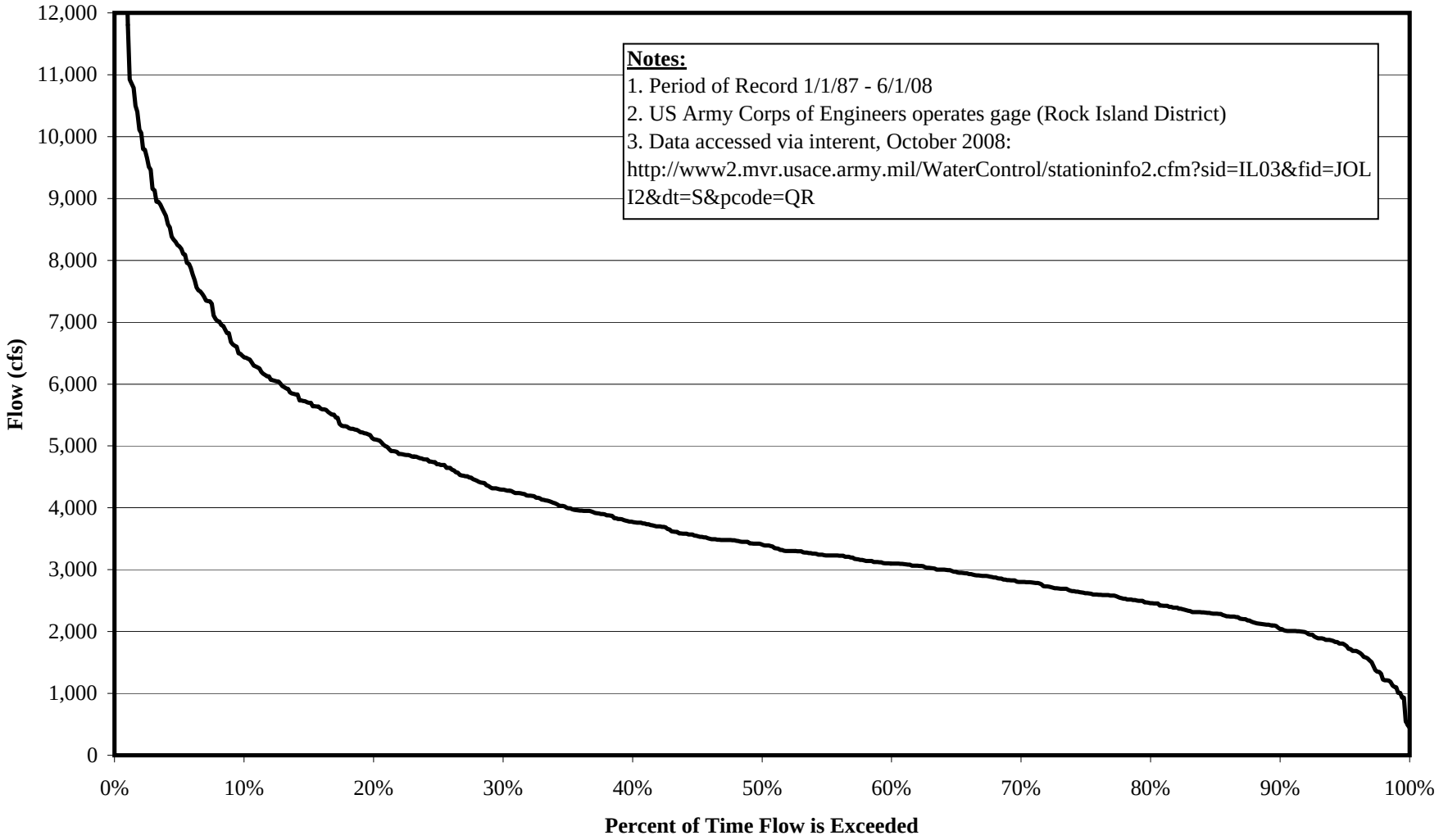
Illinois River at Brandon Road Lock and Dam
January Flow Duration Curve



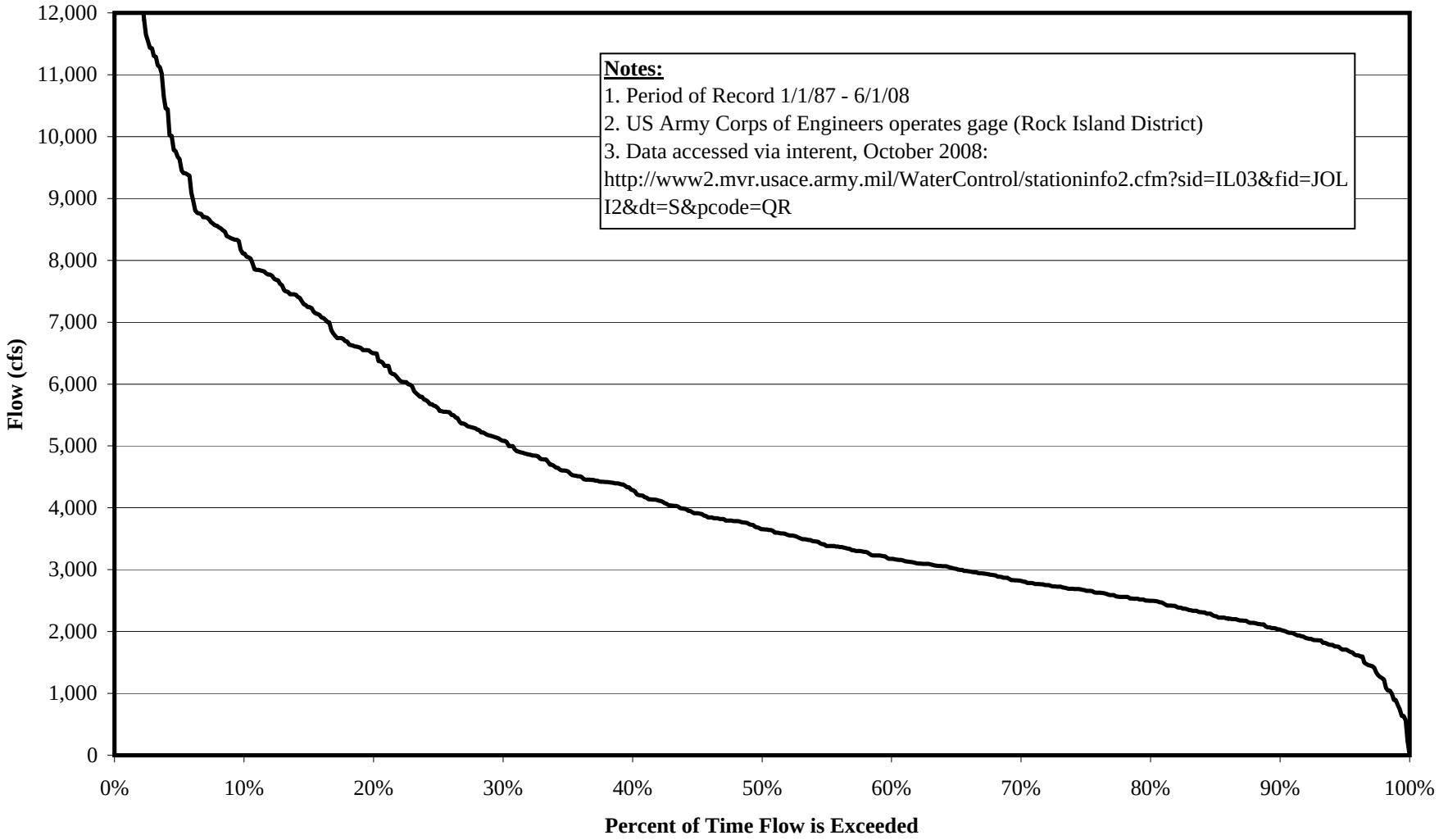
Illinois River at Brandon Road Lock and Dam
February Flow Duration Curve



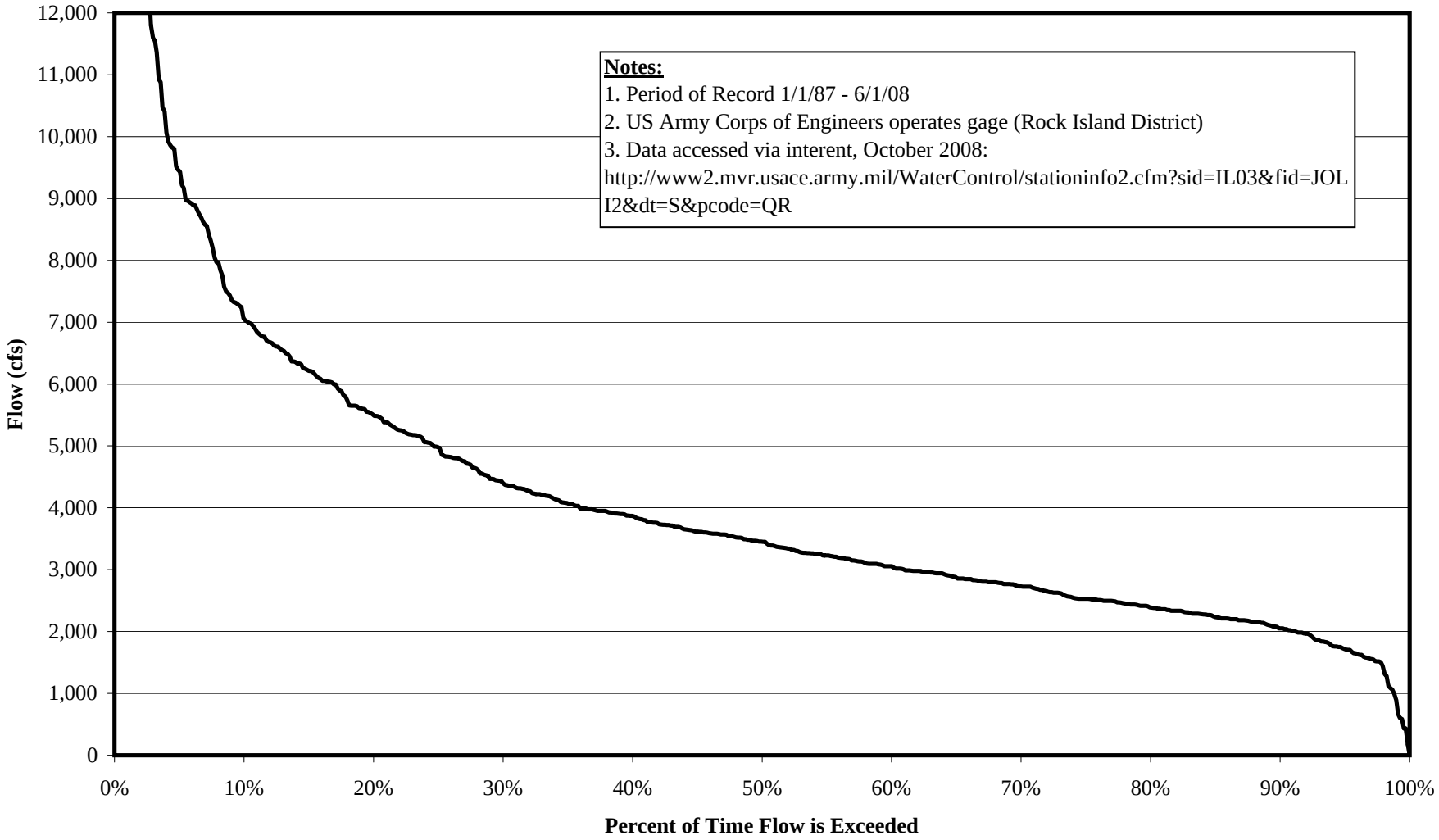
Illinois River at Brandon Road Lock and Dam
March Flow Duration Curve



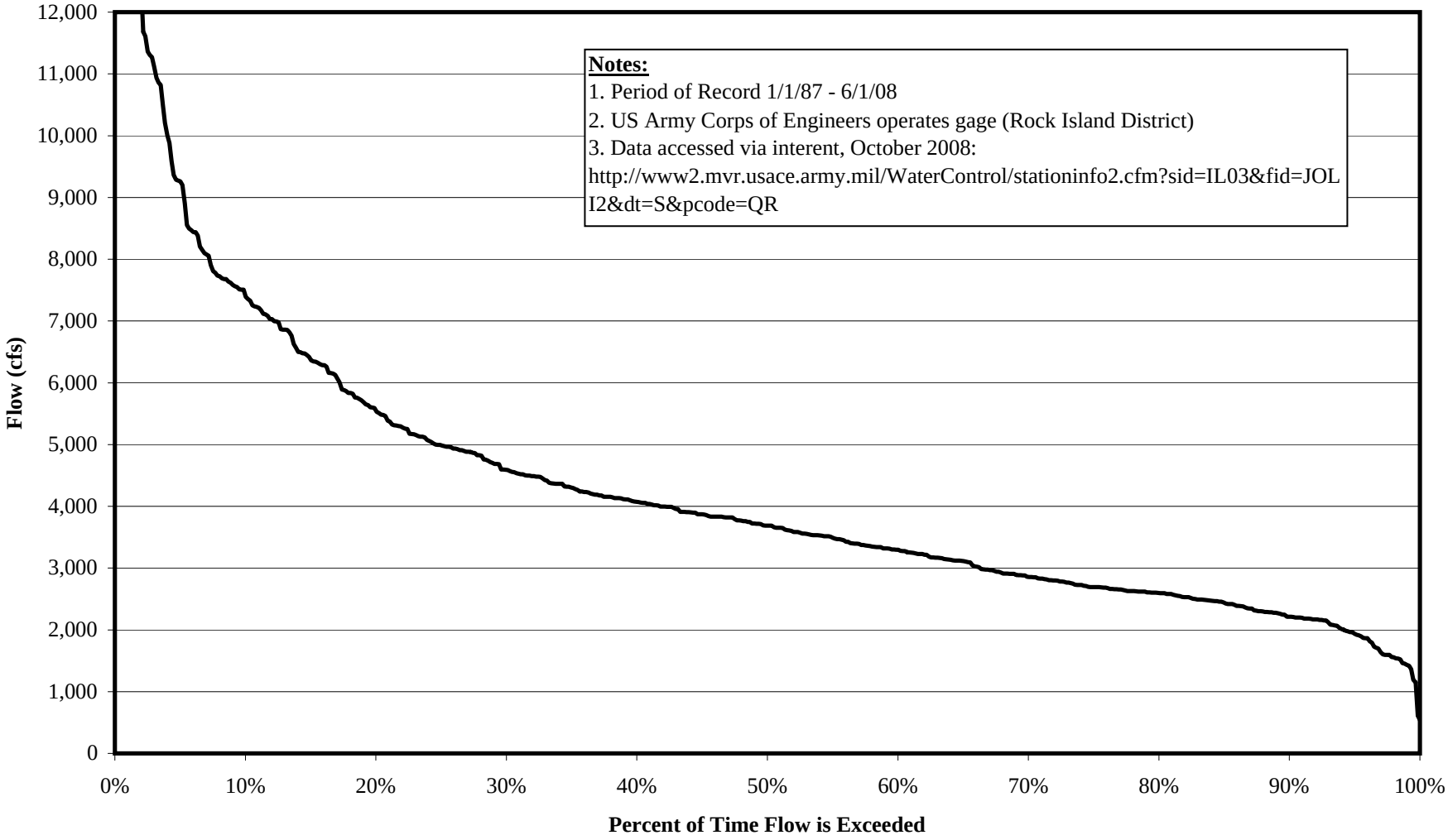
Illinois River at Brandon Road Lock and Dam
April Flow Duration Curve



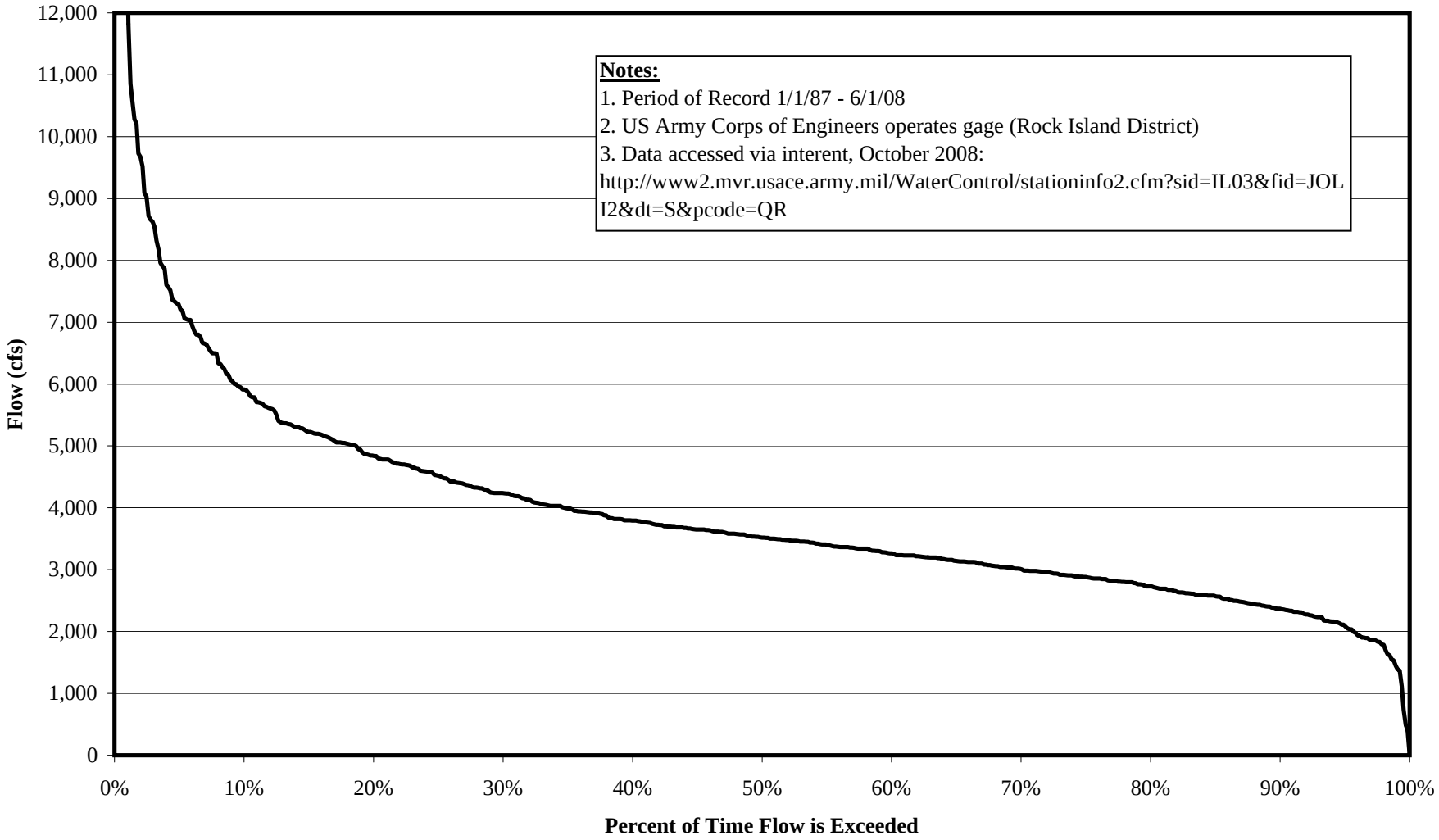
Illinois River at Brandon Road Lock and Dam
May Flow Duration Curve



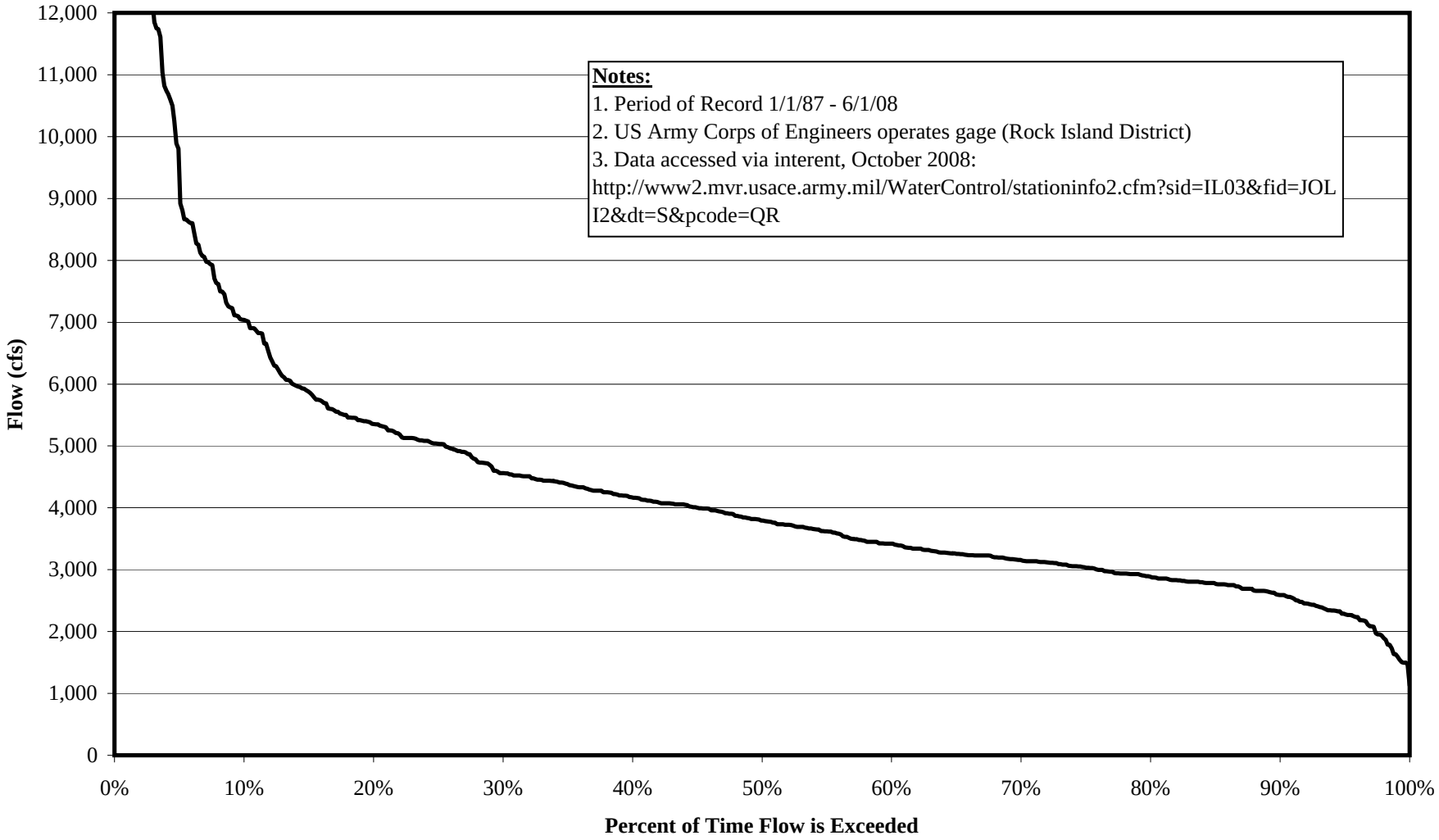
Illinois River at Brandon Road Lock and Dam
June Flow Duration Curve



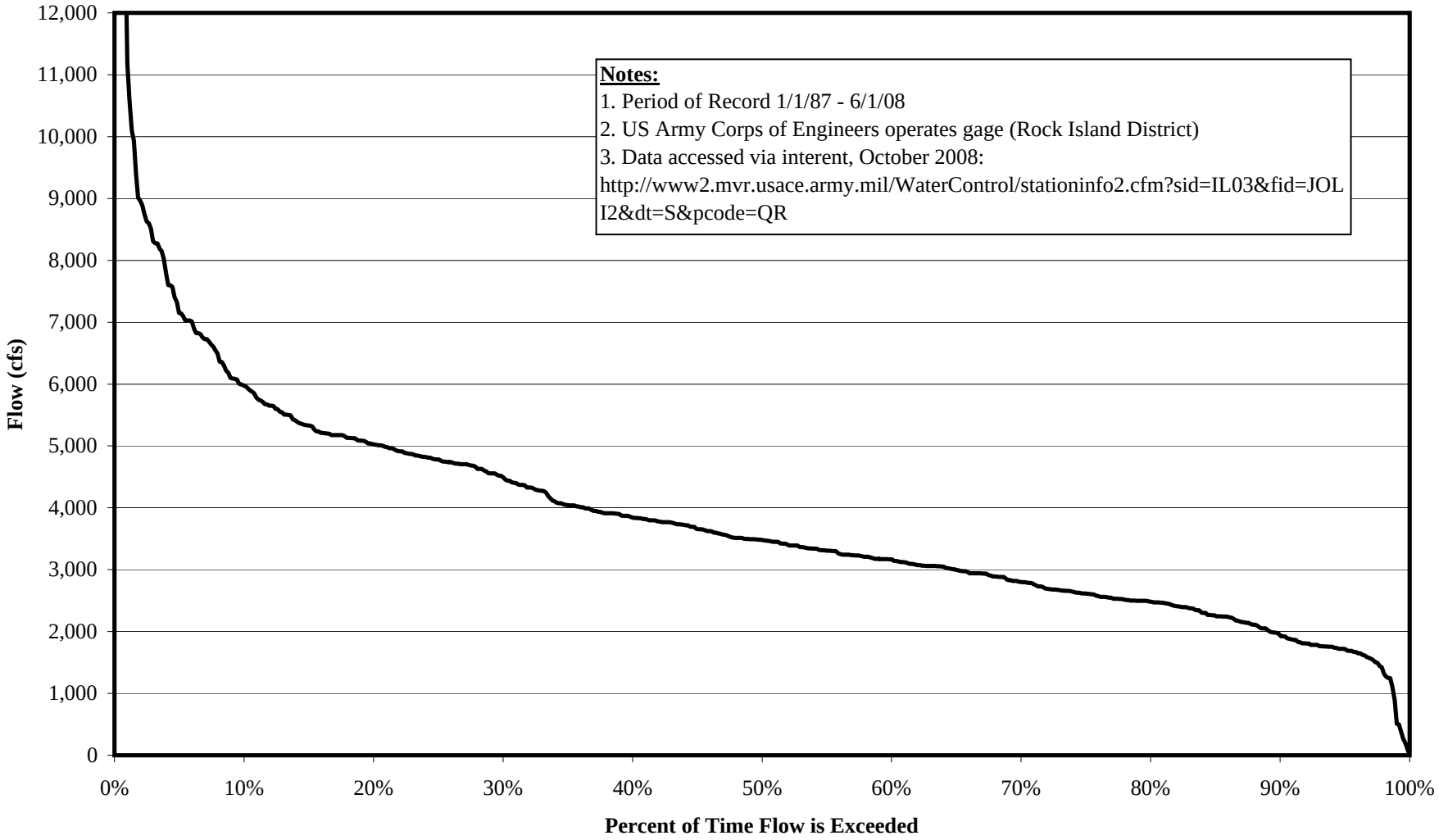
Illinois River at Brandon Road Lock and Dam
July Flow Duration Curve



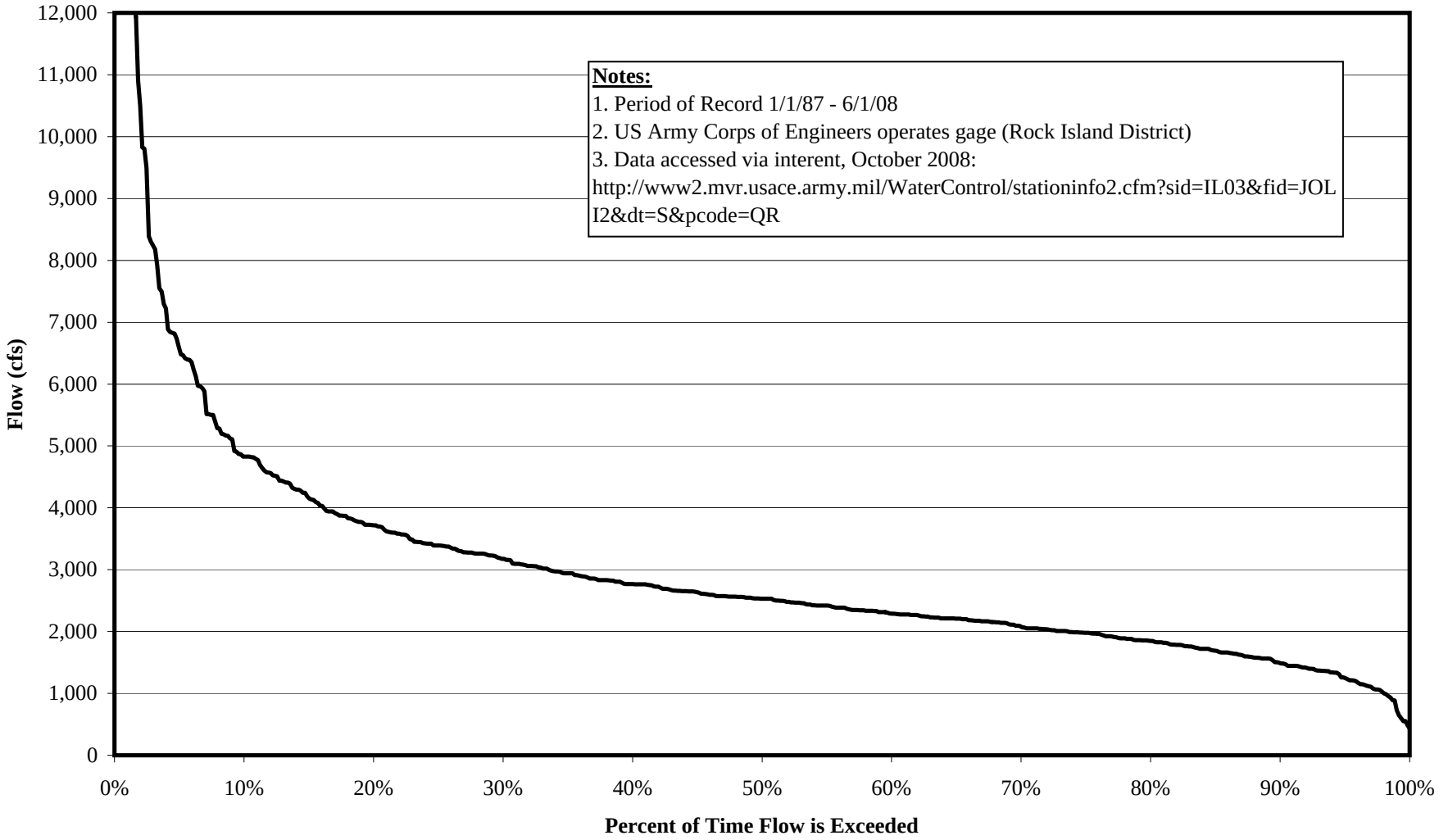
Illinois River at Brandon Road Lock and Dam
August Flow Duration Curve



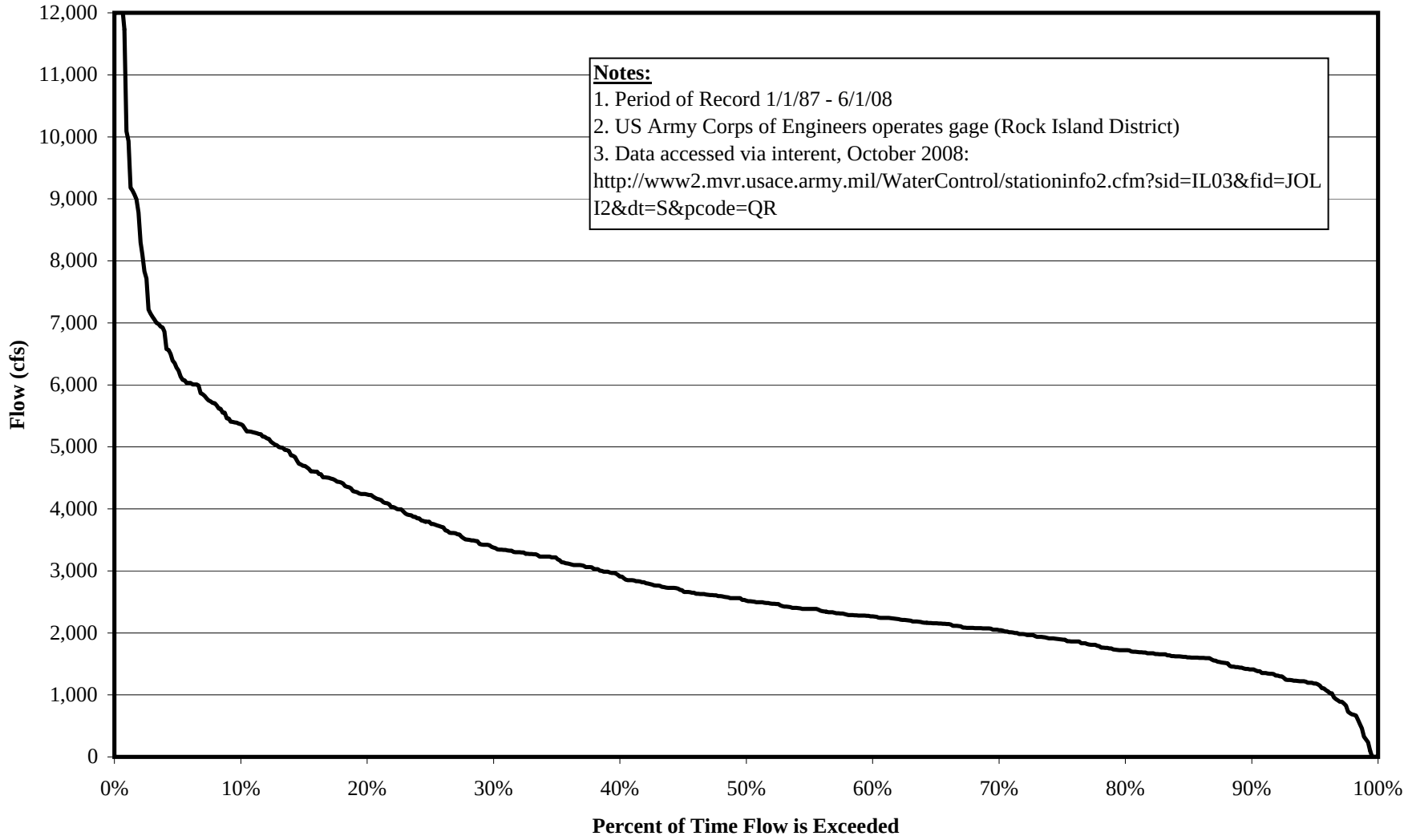
Illinois River at Brandon Road Lock and Dam
September Flow Duration Curve



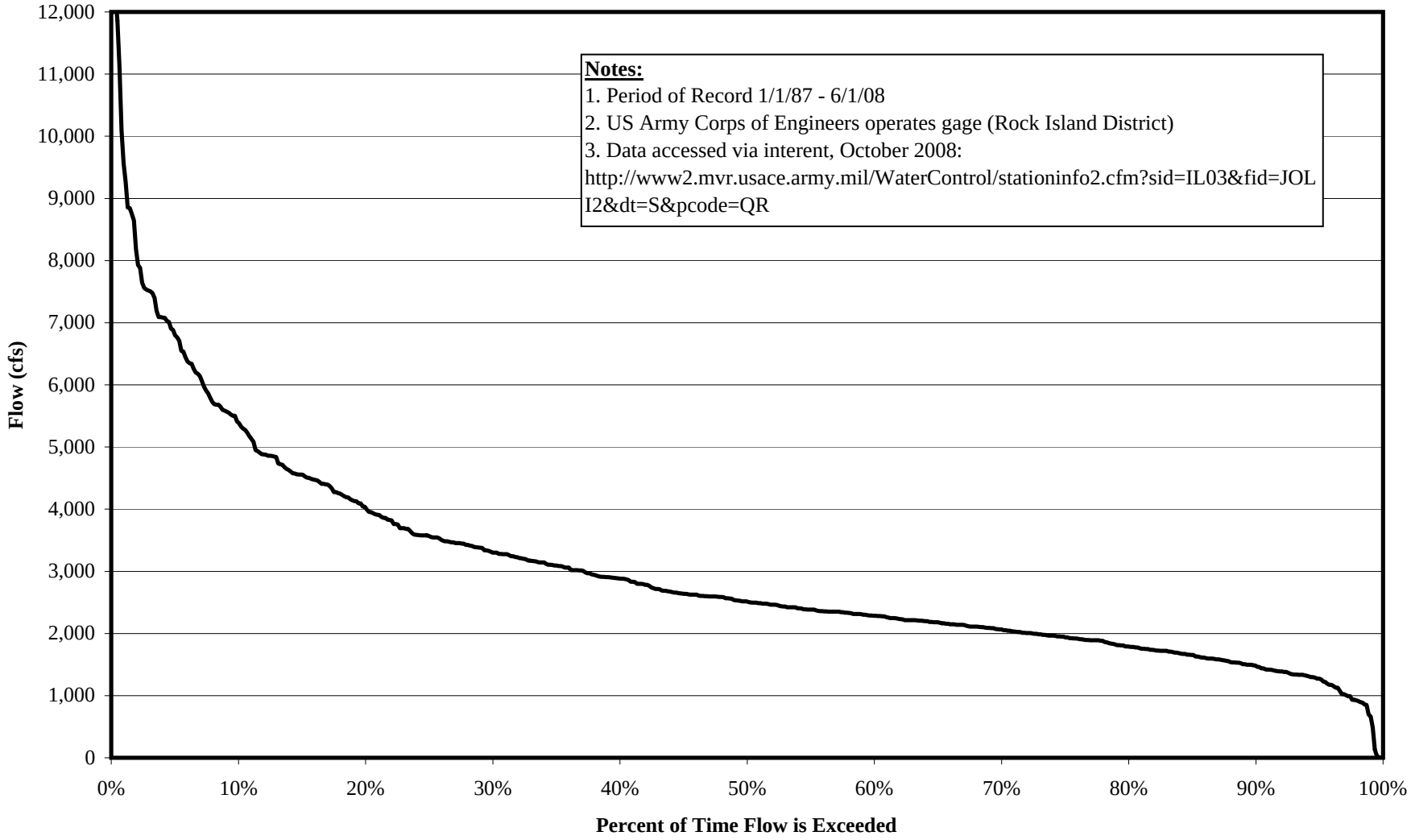
Illinois River at Brandon Road Lock and Dam
October Flow Duration Curve



Illinois River at Brandon Road Lock and Dam
November Flow Duration Curve



Illinois River at Brandon Road Lock and Dam
December Flow Duration Curve



APPENDIX B

HEAD-DURATION CURVE AT THE BRANDON ROAD PROJECT

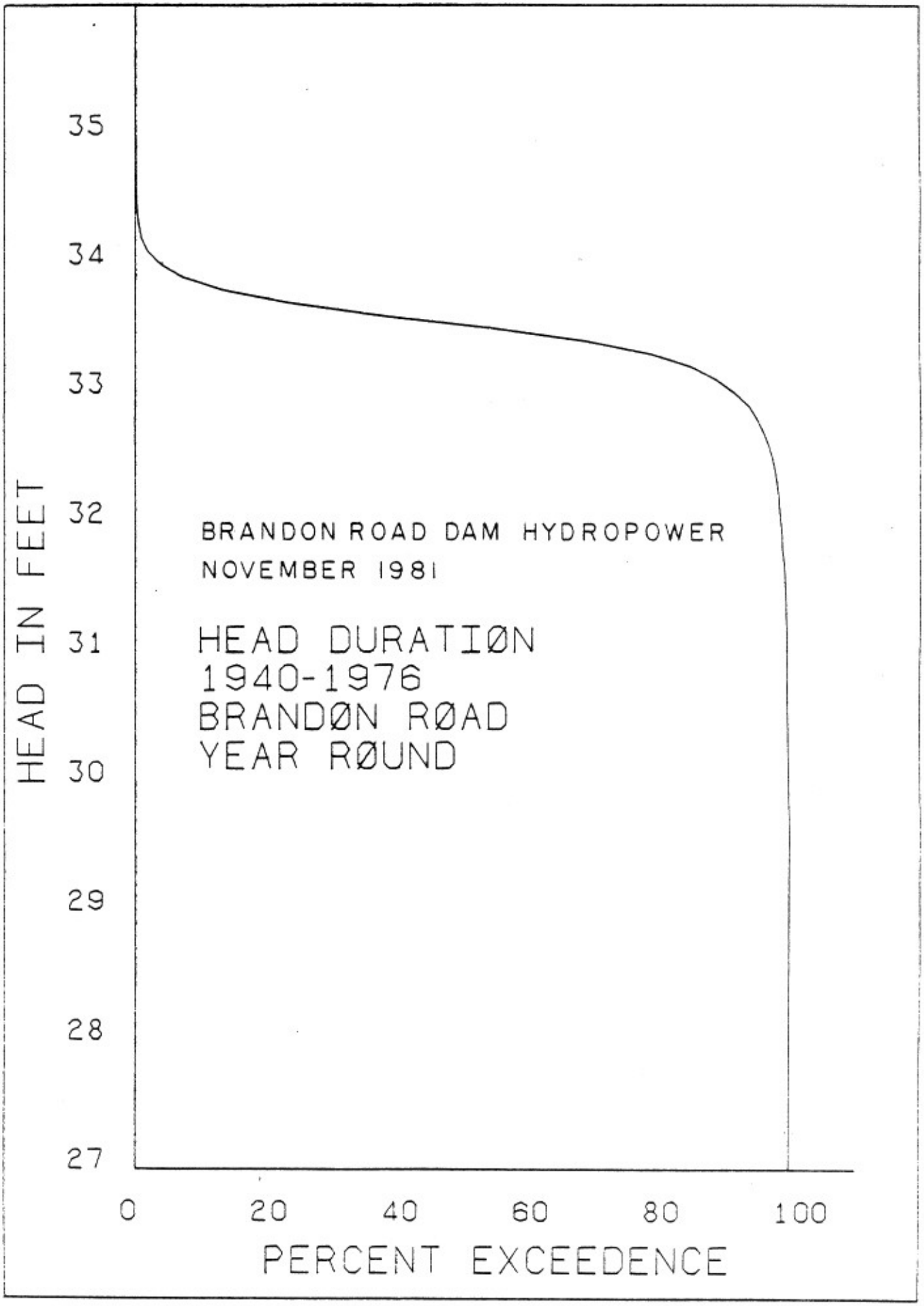

35
34
33
32
31
30
29
28
27
HEAD IN FEET
BRANDON ROAD DAM HYDROPOWER
NOVEMBER 1981
HEAD DURATIØN
1940-1976
BRANDØN RØAD
YEAR RØUND
0
20
40
60
80
100
PERCENT EXCEEDENCE

PLATE A-14