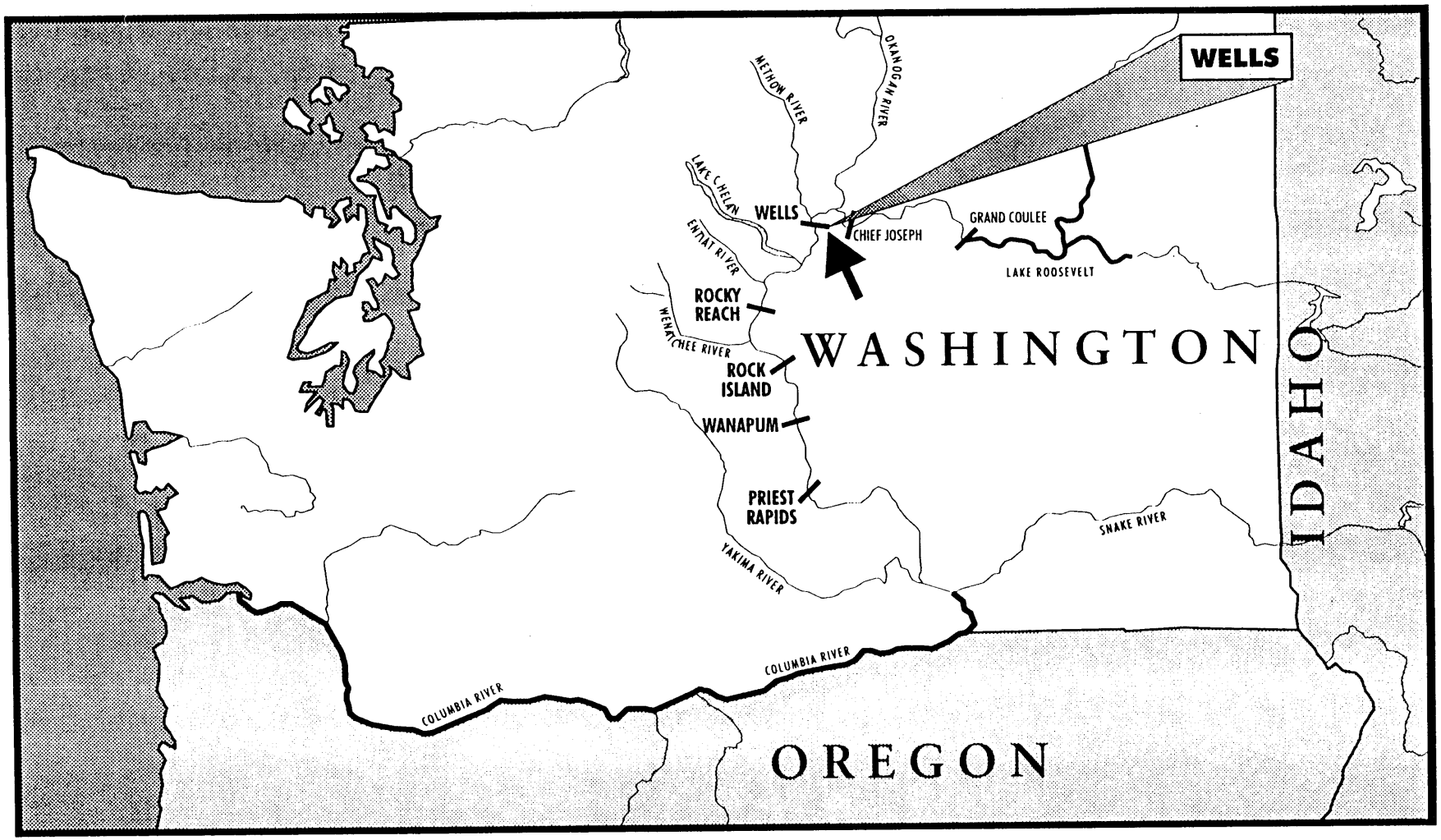


Figure 1-1. Location of Wells dam and other mid-Columbia Public Utility District and federal dams in the mid-Columbia reach (PUD projects in bold). loc-dam.wel

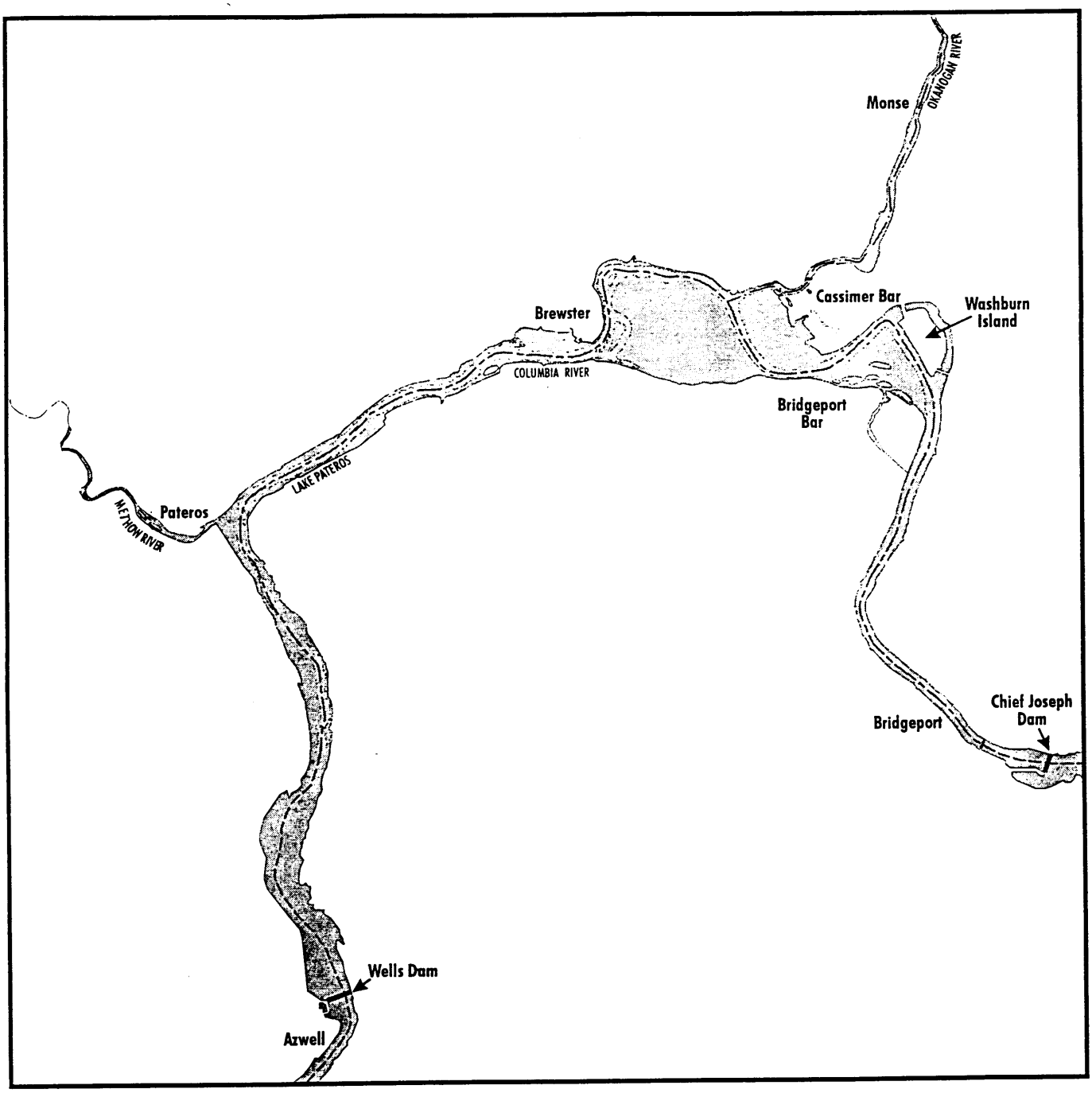


Figure 2-1. The mid-Columbia River in the vicinity of the Wells project.

vici-pro.we2

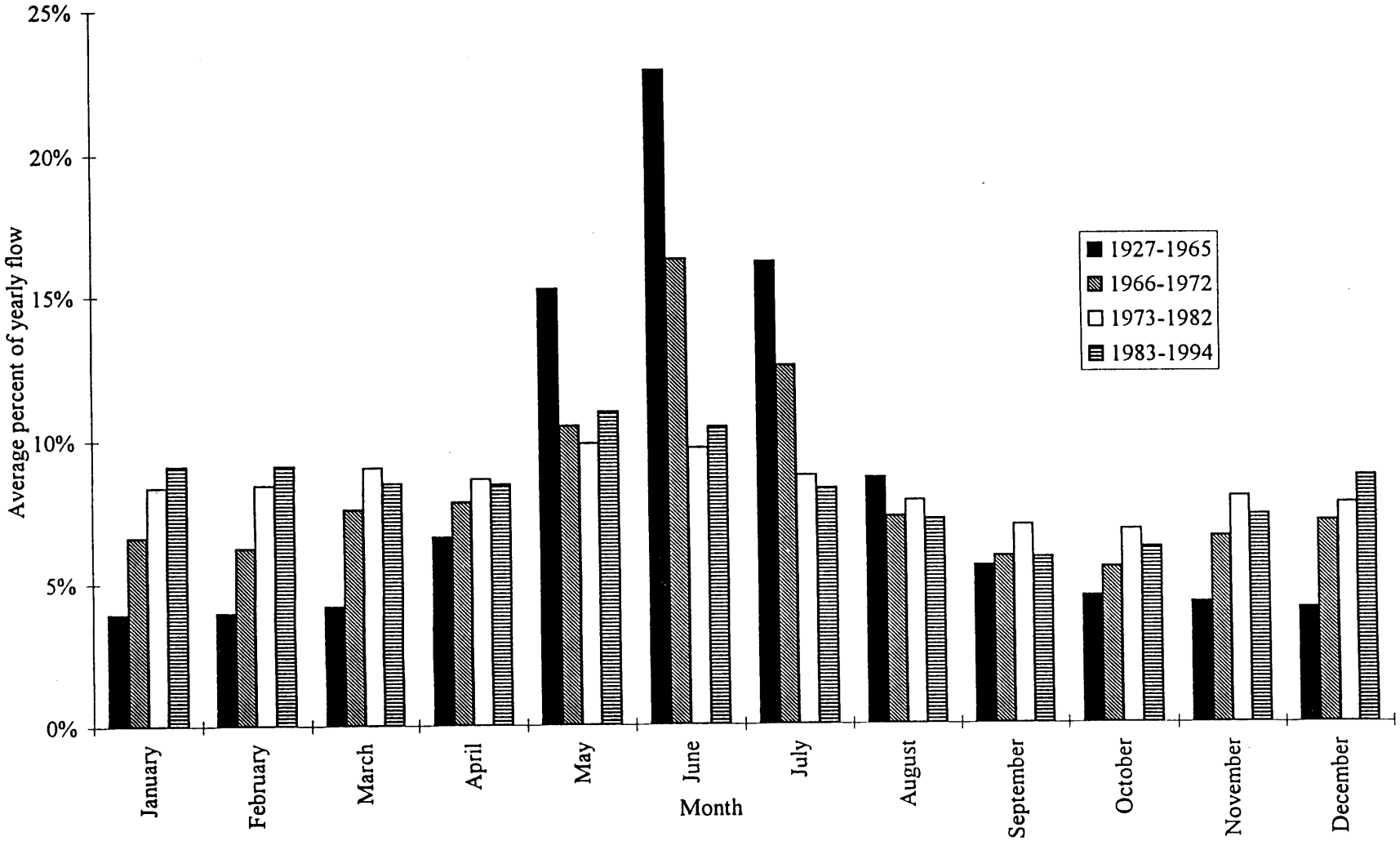


Figure 2-2. Average monthly flow at Wells dam during four different time periods of operation: 1927-1965, 1966-1972, 1973-1982, and 1983-present (USACE 1995d).

avgflow.wc2

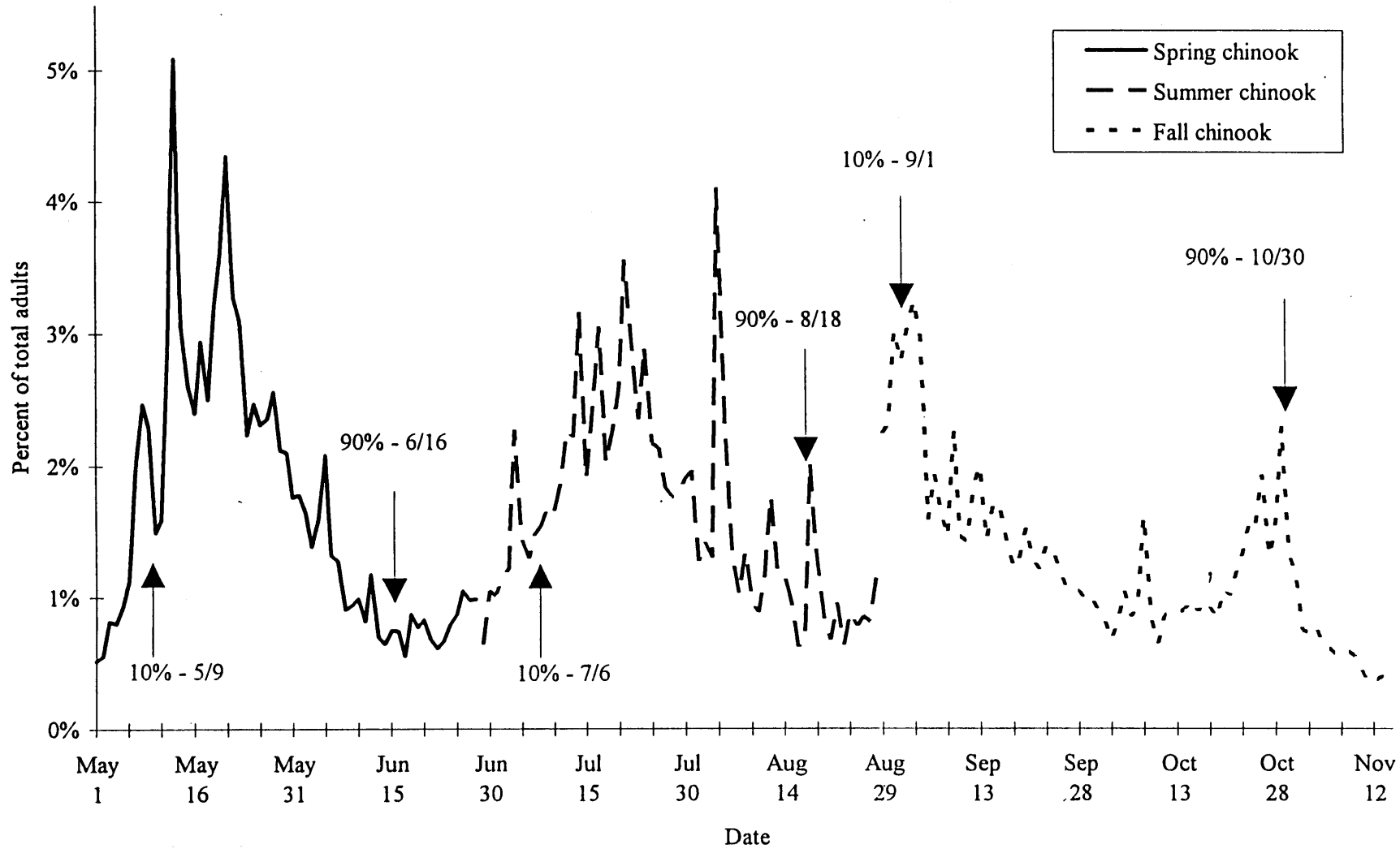


Figure 2-3. Average arrival timing of adult spring (stream-type), summer and fall (ocean-type) chinook salmon at Wells dam from 1977 to 1994 (Source: FPC 1995).

chinook.we2

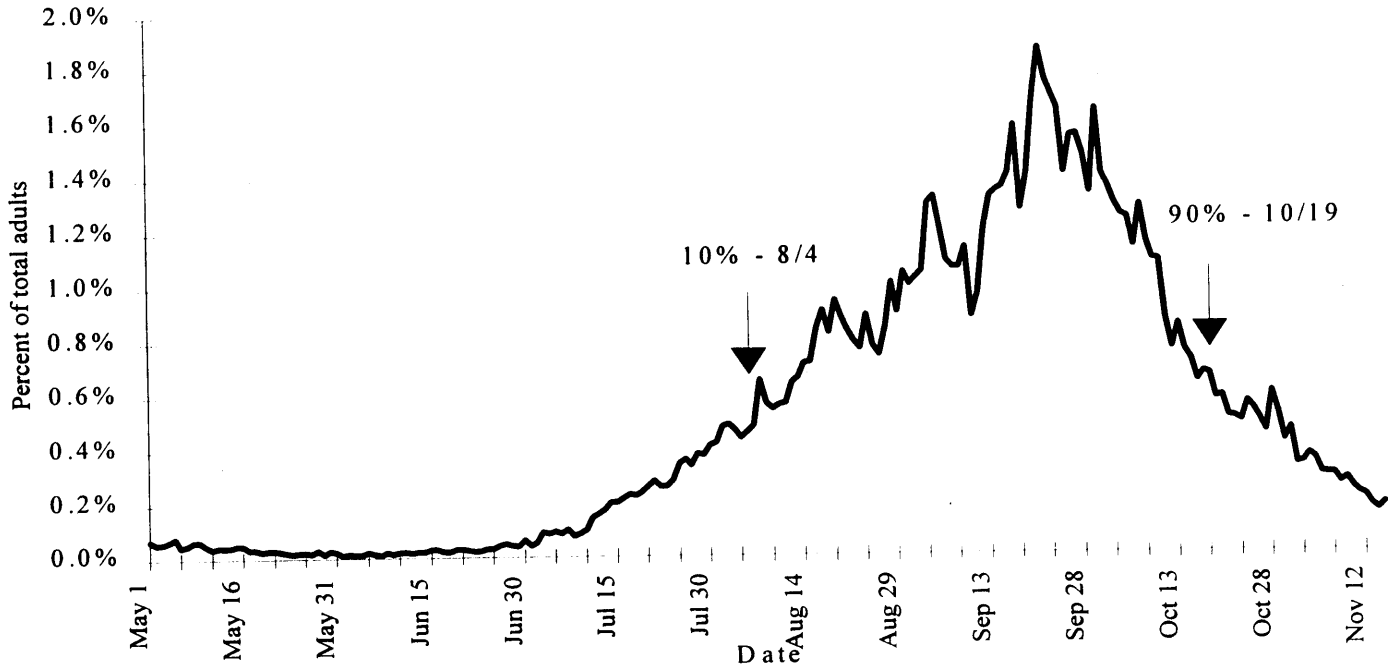


Figure 2-4. Average arrival timing of adult summer steelhead at Wells dam from 1977 to 1994 (Source: FPC 1995).

steelhed we2

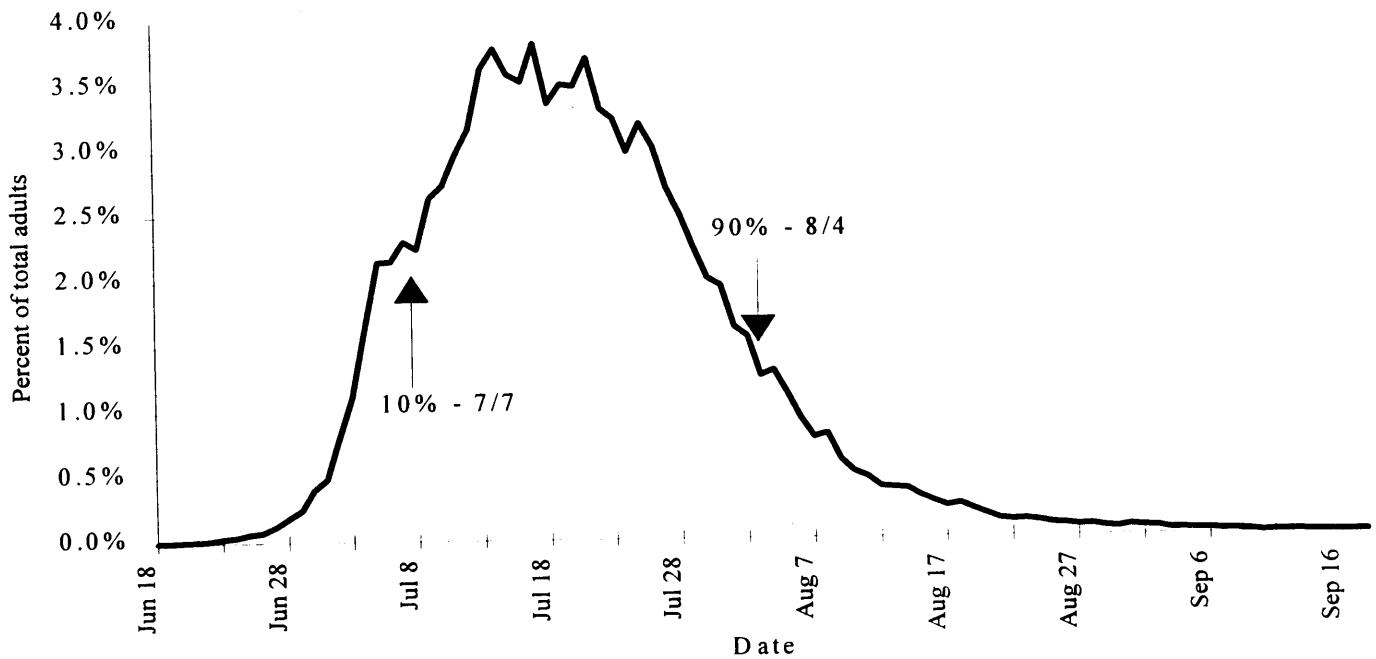


Figure 2-5. Average arrival timing of adult sockeye salmon at Wells dam from 1977 to 1994 (Source: FPC 1995).

sockeye.we2

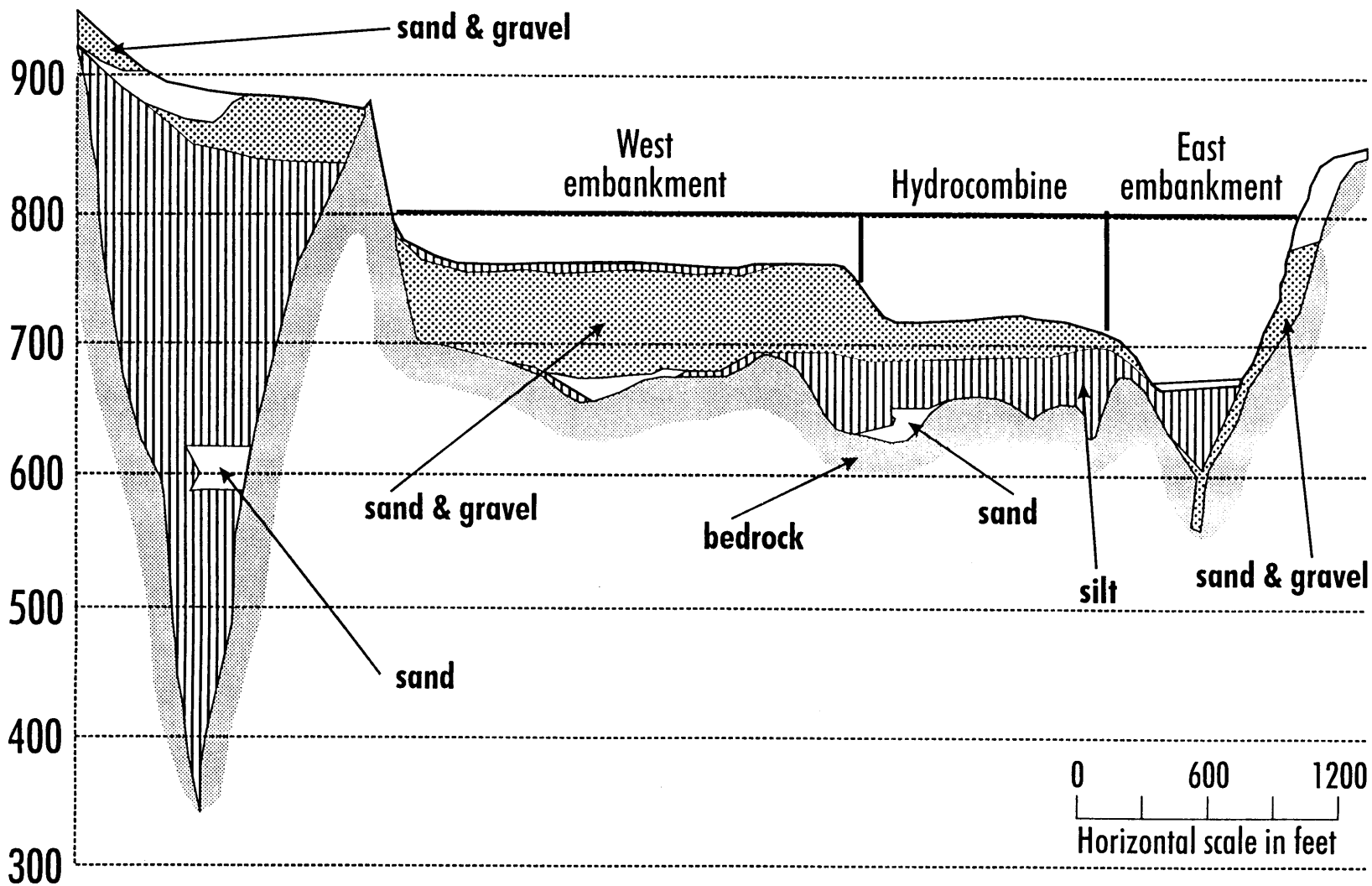


Figure 2-6. Transverse cross section of the river channel in the vicinity of Wells dam (Source: DCPUD 1987).
cros-sec.we2

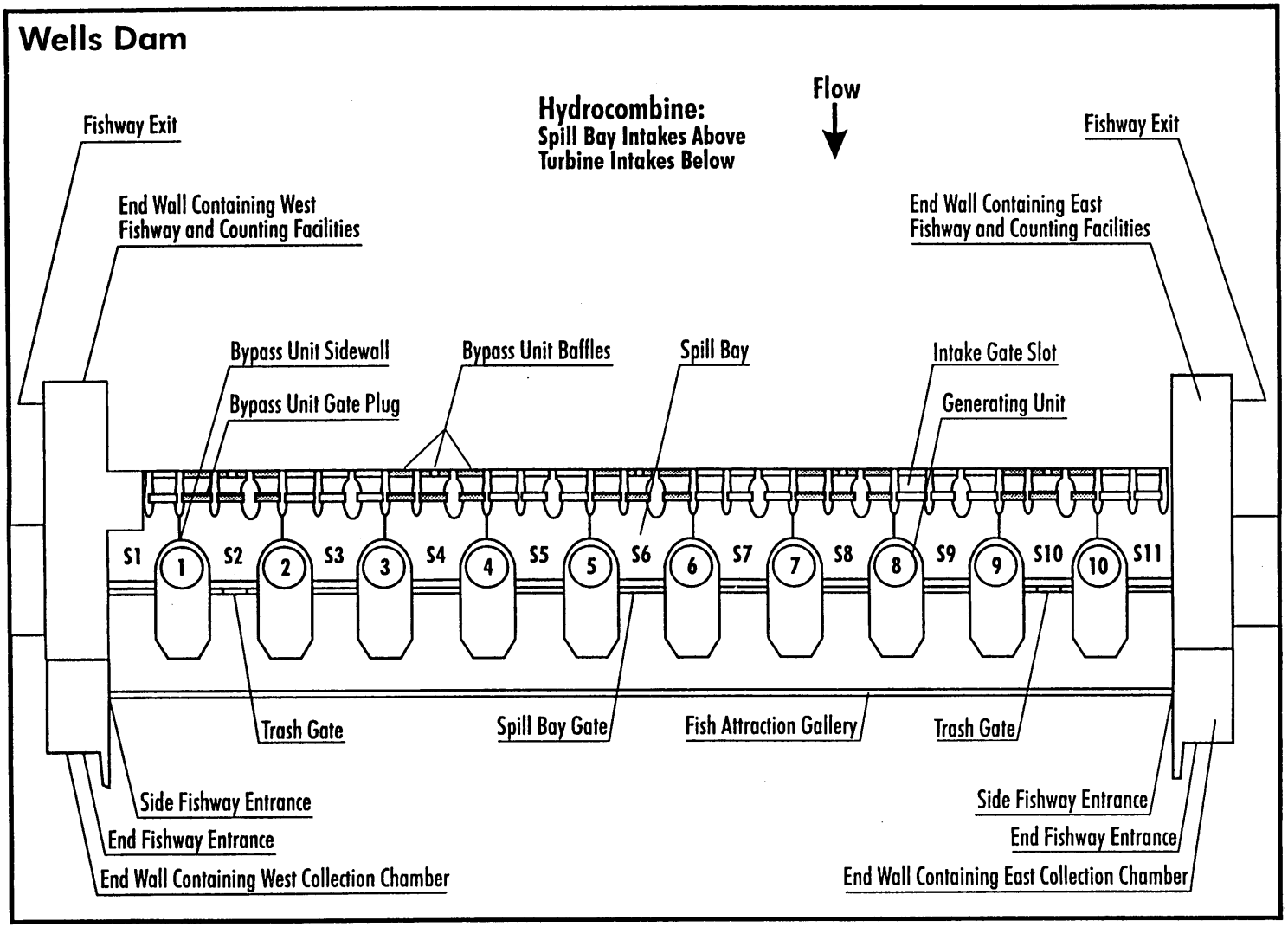


Figure 2-7. Wells dam fish passage and protection facilities.

pass-pro.we2

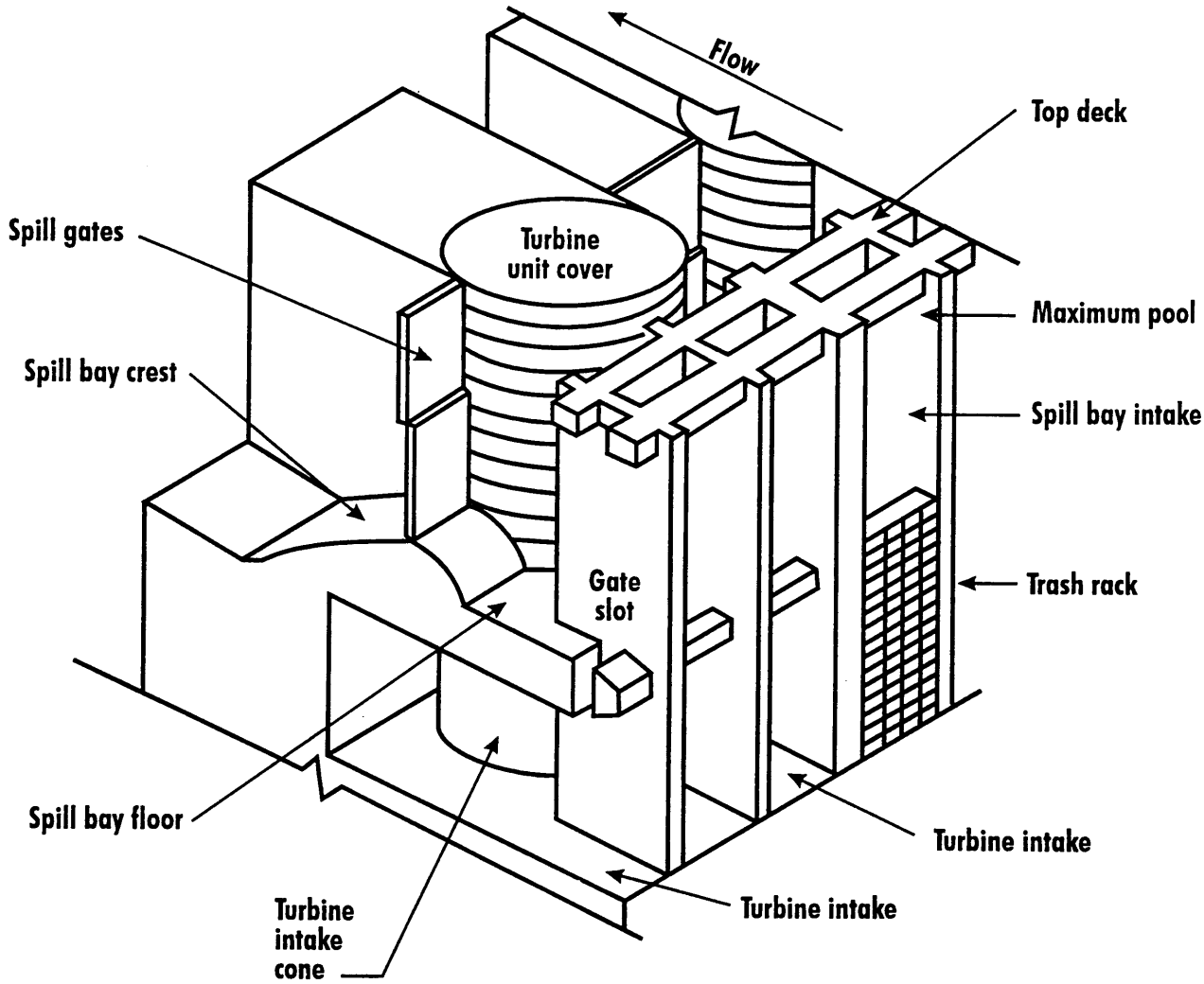


Figure 2-8. Schematic view of Wells dam intakes (Source: USDOE et al. 1993).
intakes.we2

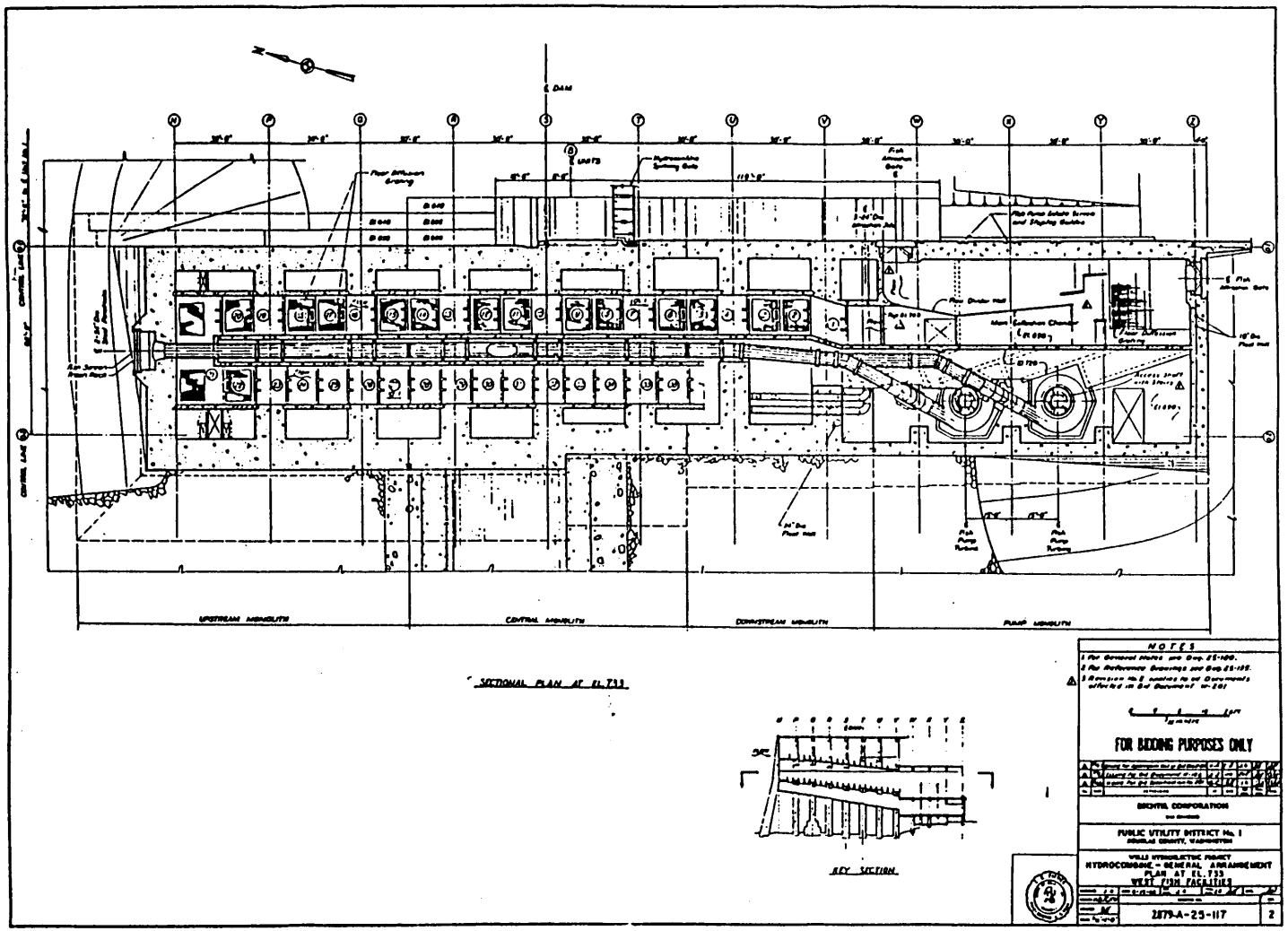


Figure 2-9. Wells dam fishway plan at elevation 733 msl (Source: DCPUD 1993).

fishway.we2

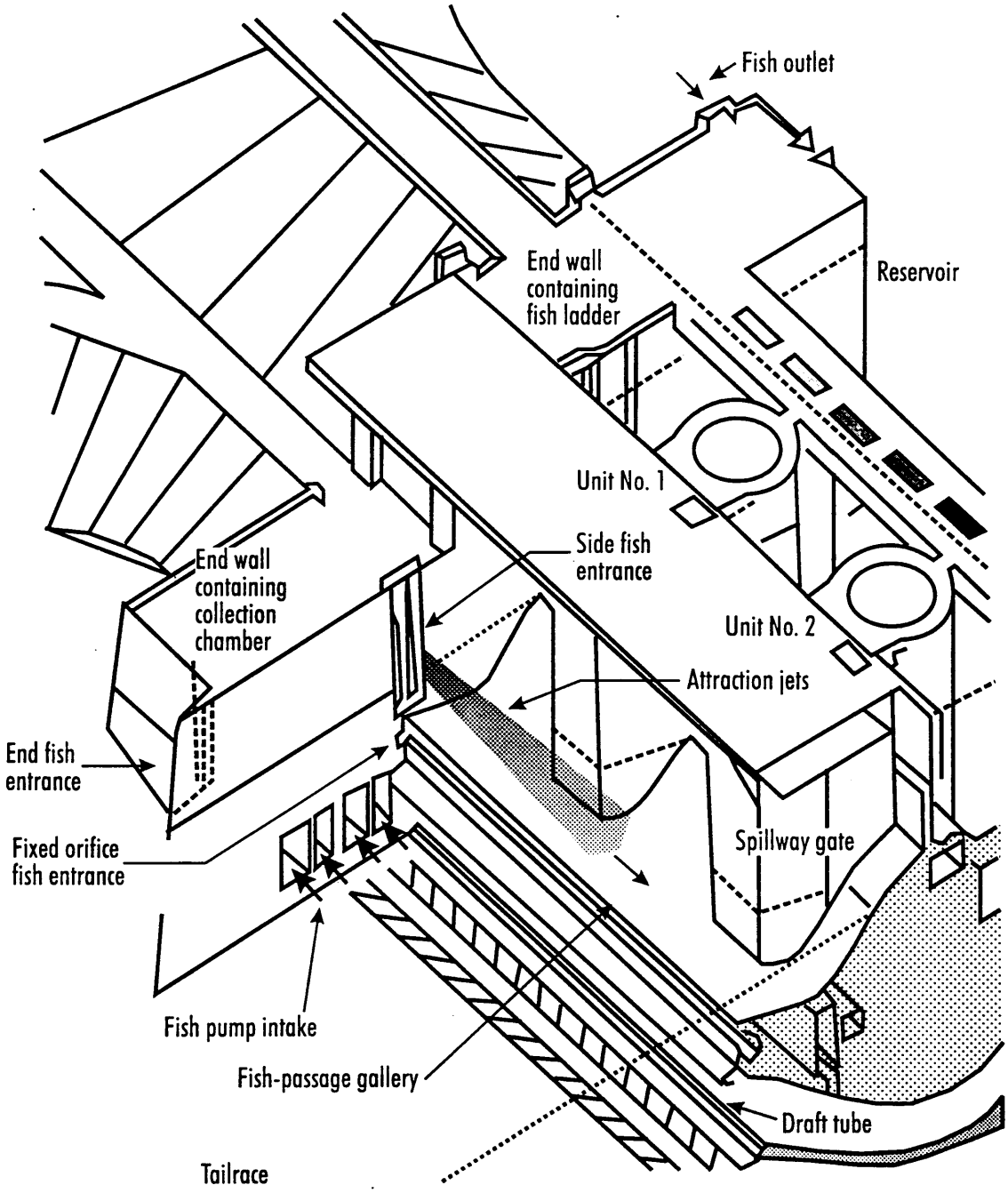
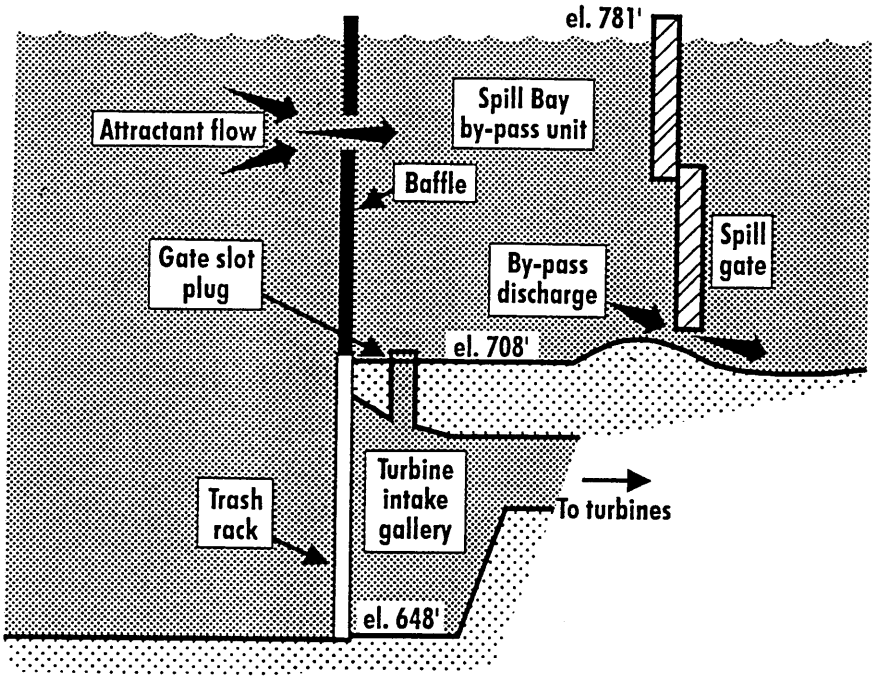
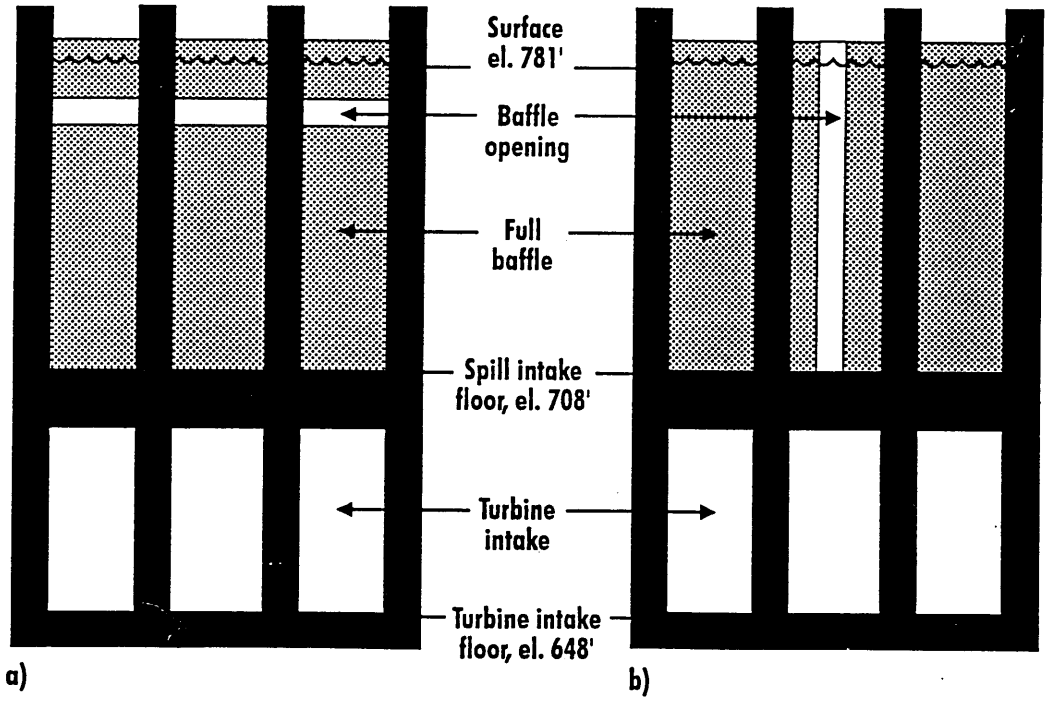


Figure 2-10. Schematic view of Wells dam right bank fishway (Source: DCPUD 1987).
schemat.we2



SIDE VIEW



FRONT VIEW

Figure 2-11. Wells hydrocombine front and side views of downstream fish passage/protection bypass unit, showing horizontal and vertical baffle openings and attractant flows.

bypass.we2

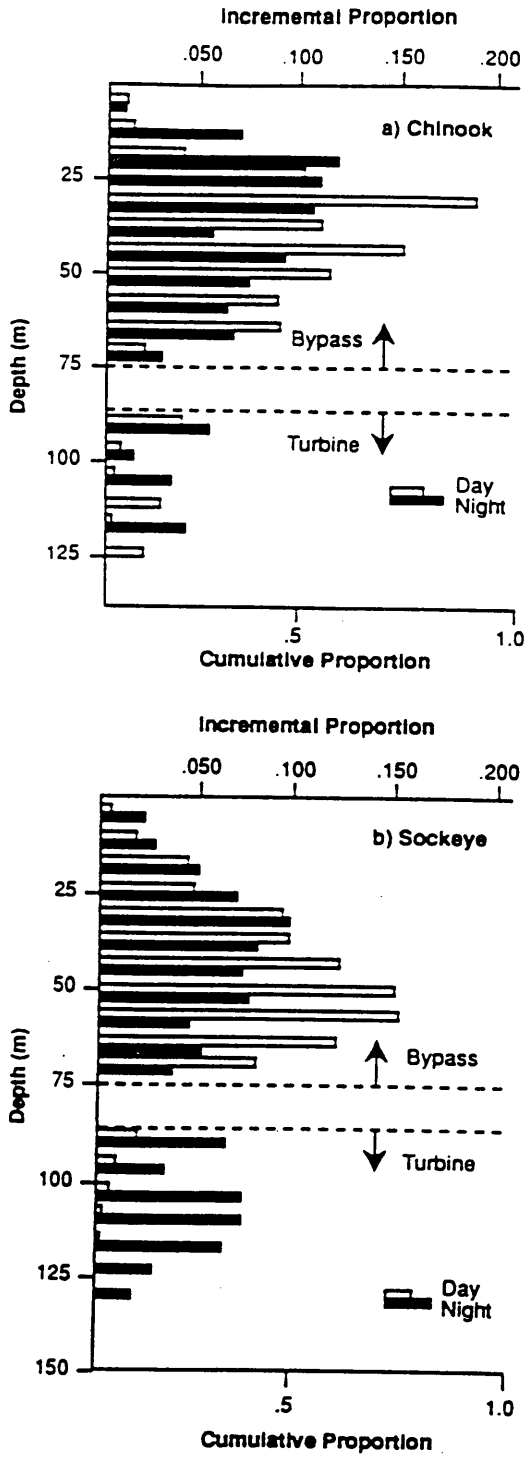


Figure 3-1. Vertical distribution of (a) chinook and (b) sockeye from simultaneous fyke net samples in a bypass intake (0-70 feet) and the turbine intake (80-130 feet) at Wells dam during spring 1985 (Source: Johnson et al. 1992).

vert-dis.we3

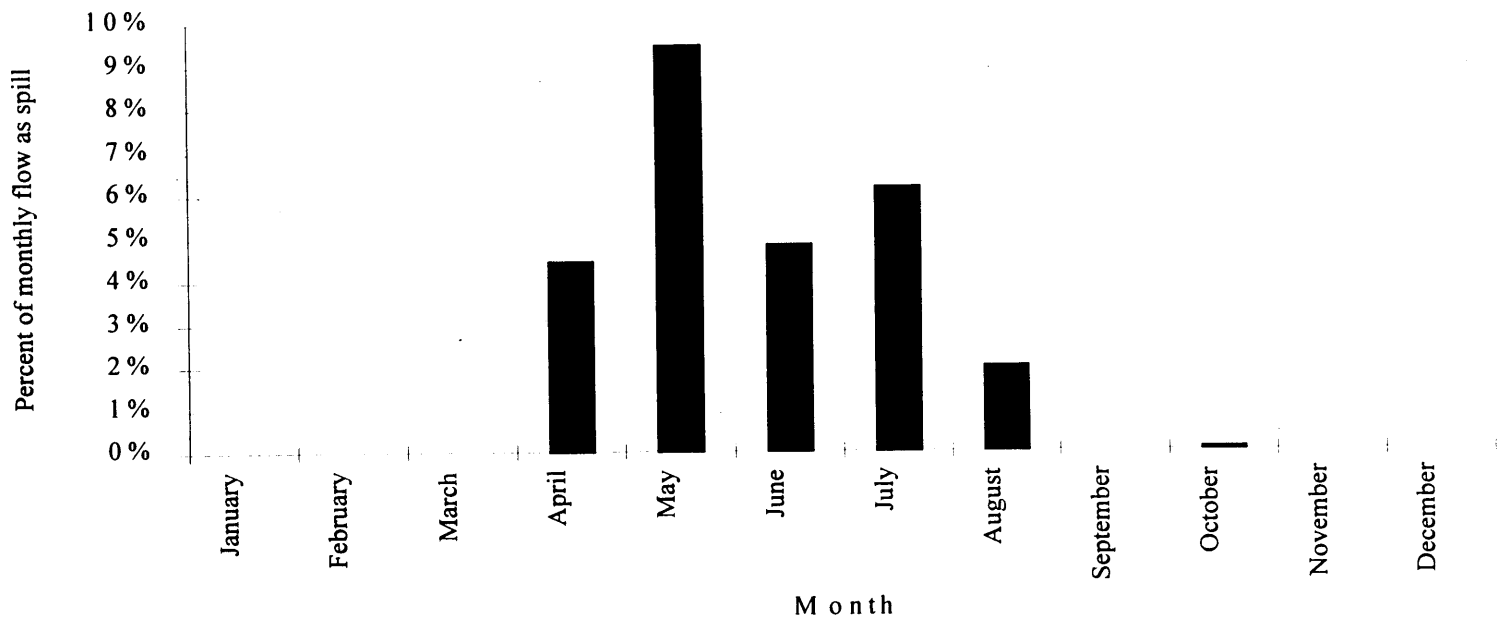


Figure 3-2. Average percent of monthly flow spilled at Wells dam from 1990 to 1994 (Source: USACE 1995d).
avg%flow.we3

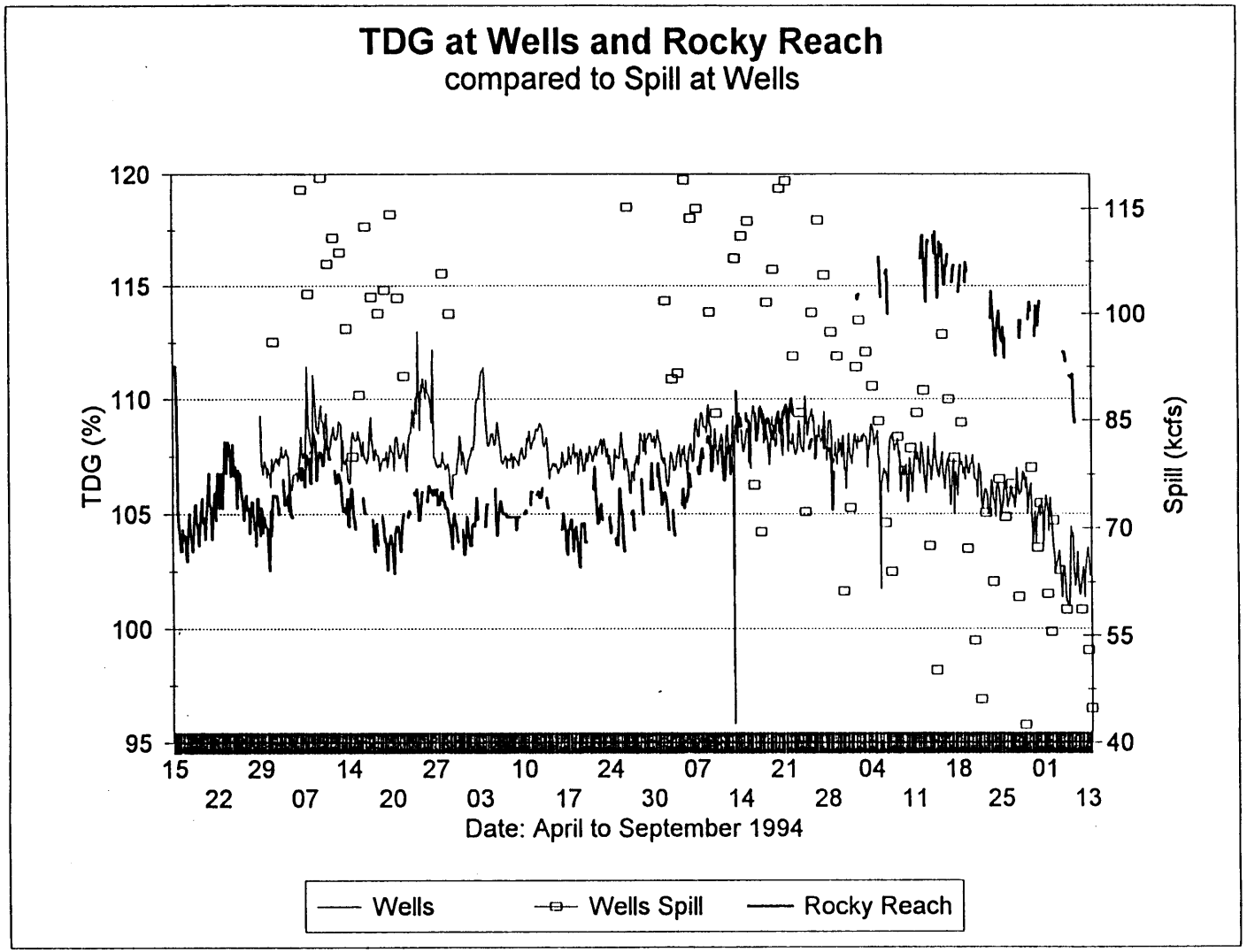


Figure 3-3. Total dissolved gas (TDG) at Wells and Rocky Reach forebays, and spill at Wells dam during April to September 1994 (Source: USACE 1995d).

tdg-#2.we3

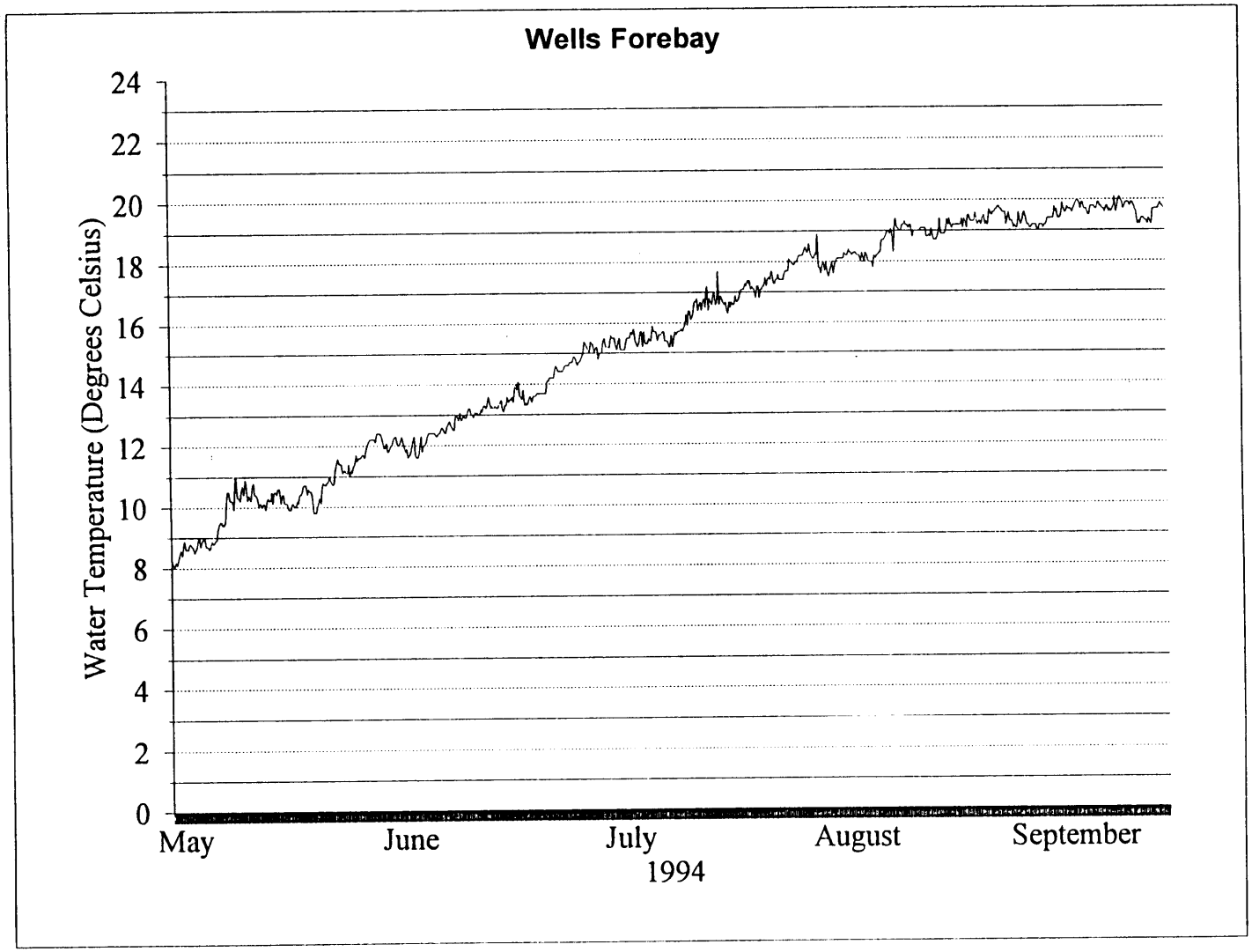
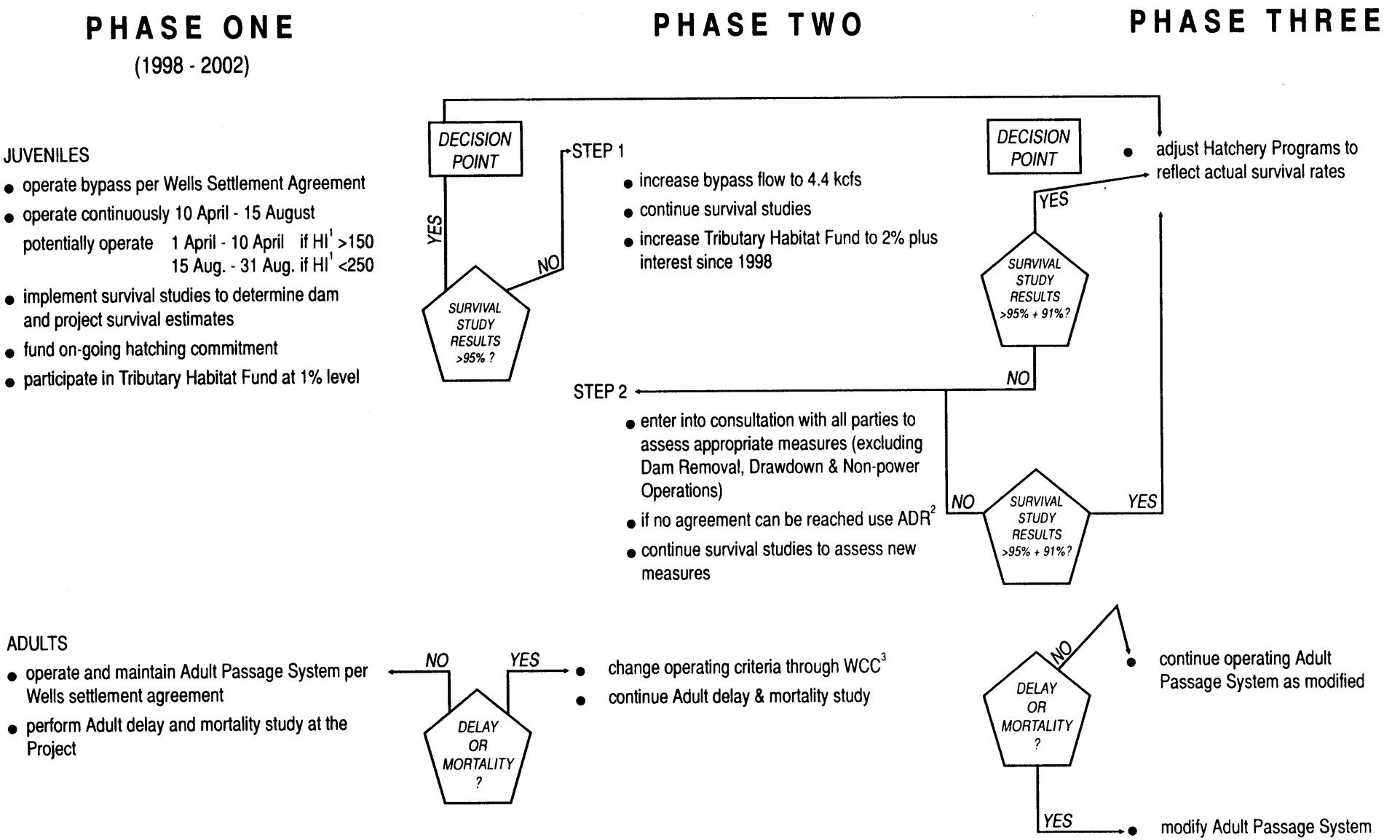


Figure 3-4. Water temperature measured in the forebay of Wells dam in 1994 (Source: USACE 1995d).

wat-temp.we3

Wells Hydroelectric Project - HCP Decision Process



[1] HI= Hydroacoustic index as verified by fyke netting
[2] ADR= Alternate Dispute Resolution
[3] WCC= Wells Project Coordinating Committee

Figure 5-1. Decision process for Wells project mitigation measures.