

Table S1 Percentile flow at major downstream points

	Miyamae Bridge	Yodo Bridge	Hirakata Bridge
25th Percentile	16,09,632	90,19,080	121,01,184
50th Percentile	20,55,456	105,68,880	150,85,440
95th Percentile	52,76,621	404,71,790	352,21,306

To minimize the uncertainty due to the river flow, daily measurement of river flow (conducted by Ministry of Land, Infrastructure, Transport and Tourism, Japan) was obtained for Miyamae, Yodo and Hirakata Bridges (downstream). From 2002 to 2004 (3 years) data was used to calculate 25th, 50th and 95th percentile of the flow at Miyamae and Yodo Bridge, whilst from 2003 to 2006 (4 years) data was used for Hirakata Bridge.

Table S2 Traveling time derived from Yodo River survey¹⁷

STP ID	Flow time to Hirakata Bridge (h)				
	2005 Mar.	2005 Nov.	2006 Sep.	2007 Nov.	2008 Dec.
B	15	21	14	15	14
D1	13	18	12	15	12
D2	13	12	12	15	12
A	8	11	11	9	11
G	12	13	13	14	14
F	11	12	12	13	13
C	8	9	9	9	9
E	6	7	7	7	7

The area (square feet) of the flow and the speed of the flow: To get the area we measured the depth and width of the river at a particular cross-section perpendicular to the flow direction. The depths were measured at a number of points across the bed, and draw a cross section.

Speed measurement of the flow at the same section: This was performed with a flow meter or collected from the local government. The speed was calculated in feet per second.

The total flow is the area times the speed was measured in cubic feet per second.