

SUPPLEMENTARY INFORMATION

Table Supplementary Captions

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Table S1. Classification of land-use cover and hierarchy with respect to Hemeroby index.

Classification	Land-use cover	Area (km ²)	Proportion (%)	Hemeroby index	Disturbed level
1	Paddy land	32	0.02	0.65	Partially disturbed
2	Dry land	57,782	36.87	0.7	Partially disturbed
3	Green land	88,565	56.52	0.55	Partially disturbed
4	Manmade penstock	467	0.30	0.5	Partially disturbed
5	Lake	381	0.24	0.3	Partially disturbed
6	Marsh	628	0.40	0.2	Undisturbed
7	Construction land	8,713	5.56	0.99	Completely disturbed
8	Saline and alkaline land	91	0.06	0.2	Undisturbed
9	Bare land	41	0.03	0.72	Completely disturbed

Table S2. Abbreviation, unit, grading standard, and determination method of 15 hydrochemical indices.

Parameter	Abbreviation		Criterion	Class	
	n	Units		III	Determination method
Total phosphorus	TP	mg	GB3838-200	0.1	Ammonium molybdate spectrophotometry
		L ⁻¹	2		
Total nitrogen	TN	mg	GB3838-200	1	Potassium persulfate ultraviolet spectrophotometry
		L ⁻¹	2		
Chemical oxygen demand	COD	mg	GB3838-200	6	Potassium permanganate titration
		L ⁻¹	2		
Transparency	Tr	m	GB3838-200	0.5	Disk method
			3		
Chlorophyll a	Chla	mg	GB3838-200	0.01	Fluorescence spectrometry/Remote sensing
		L ⁻¹	2		
Manganese	Mn	mg	GB3838-200	0.1	ICP-MS
		L ⁻¹	2		
Copper	Cu	mg	GB3838-200	1	ICP-MS
		L ⁻¹	2		
Zinc	Zn	mg	GB3838-200	1	ICP-MS
		L ⁻¹	2		
Fluoride	F-	mg	GB3838-200	1	Ion chromatography
		L ⁻¹	2		
Chlorine	Cl-	mg	GB3838-200	250	Ion chromatography
		L ⁻¹	2		
Arsenic	As	mg	GB3838-200	0.05	ICP-MS
		L ⁻¹	2		
Sulfate	SO ₄ ²⁻	mg	GB3838-200	250	Ion chromatography
		L ⁻¹	2		
Nitrate	NO ₃ ⁻	mg	GB3838-200	20	Ion chromatography
		L ⁻¹	2		
Ammonia nitrogen	NH ₄ -N	mg	GB3838-200	1	Nessler's reagent colorimetry
		L ⁻¹	2		
Dissolved oxygen	DO	mg	GB3838-200	5	Iodometry
		L ⁻¹	2		

Table S3. Anthropogenic interference levels including Hemoroby index, completely disturbed, and completely disturbed proportion in different watersheds and rivers.

Watershed	River	Watershed area (km ²)	Hemoroby index	Completely disturbed	Completely disturbed proportion (%)
Yellow River	Fen River	38014	0.6218	0.0569	9.15
	Yellow River tributaries	43105	0.6096	0.0231	3.79
	Qin River	12621	0.6209	0.0479	7.72
	Sushui River	5540	0.7036	0.1074	15.27
Hai River	Zhangwei River	15713	0.6323	0.0600	9.49
	Daqing River	2173	0.5832	0.0082	1.40
	Yongding River	22279	0.6418	0.0701	10.93
	Hutuo River	17255	0.6074	0.0515	8.49