

China has established a water quality classification system based on purpose of use and protection target, following Environmental Quality Standard GB3838-2002.

Grade I – Mainly applicable to the source of water bodies and national nature preserves.

Grade II – Mainly applicable to class A water source protection area for centralized drinking water supply, sanctuaries for rare species of fish, and spawning grounds for fish and shrimps.

Grade III – Mainly applicable to class B water source protection area for centralized drinking water supply, sanctuaries for common species of fish, and swimming zones.

Grade IV – Mainly applicable to water bodies for general industrial water supply and recreational waters in which there is not direct human contact with the water.

Grade V – Mainly applicable to water bodies for agricultural water supply and for general landscape requirements.

Grade V+ - Essentially useless

The surface water quality data for state-controlled stations were extracted from the series of China Environmental Quality Reports, which were published by the State Environmental Protection Administration from 2004 to 2015.

Table S1: Surface water quality in S County from 2004-2015

| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| SY River | V+ | V+ | V+ | V+ | V+ | V+ | V+ | V+ | NA | V | V | IV |
| FQ river | V+ | V+ | V+ | V+ | V+ | V+ | V | NA | NA | NA | NA | NA |

'NA' means no data.