

Sinotropia-TAES

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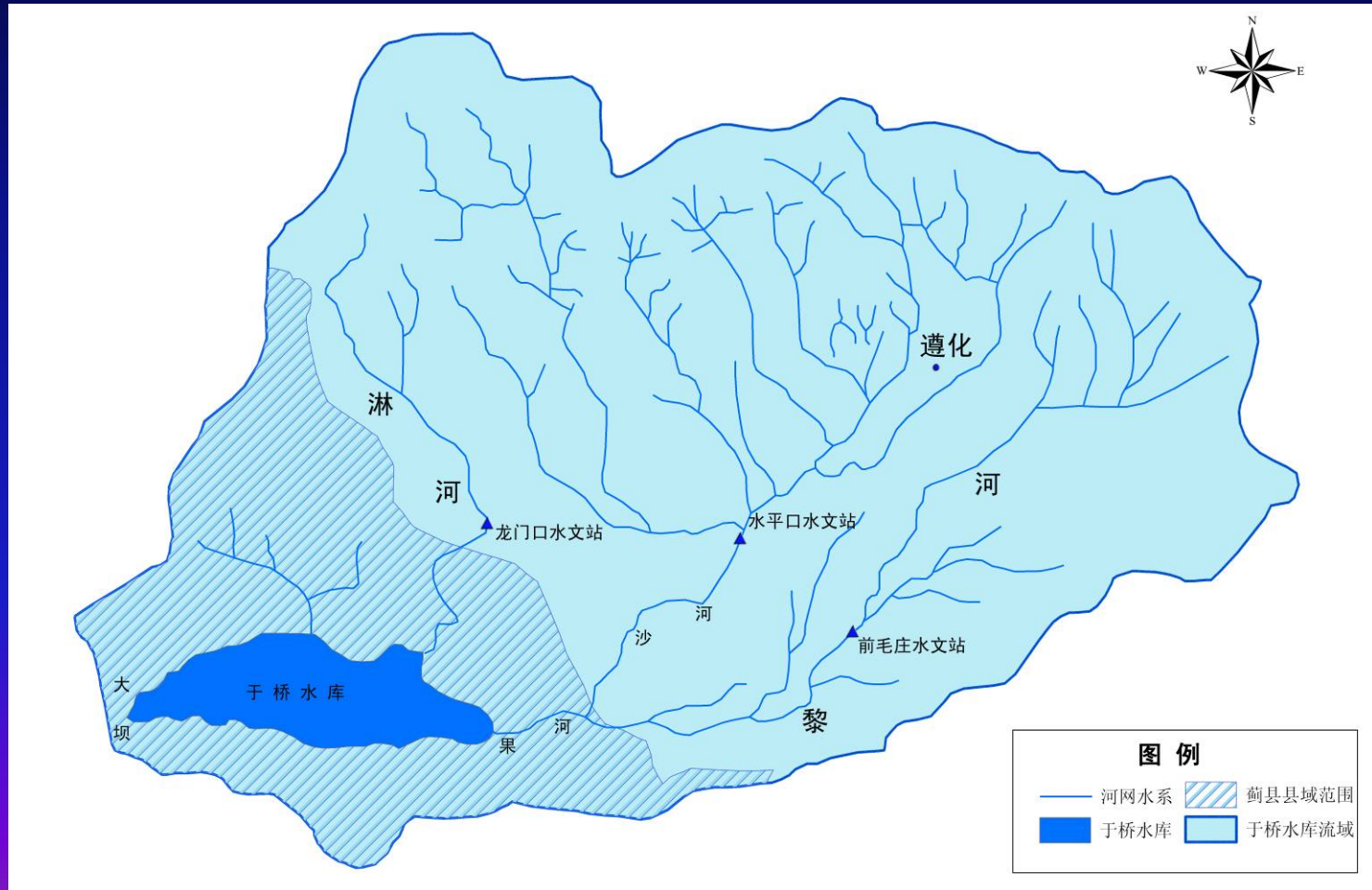
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Location

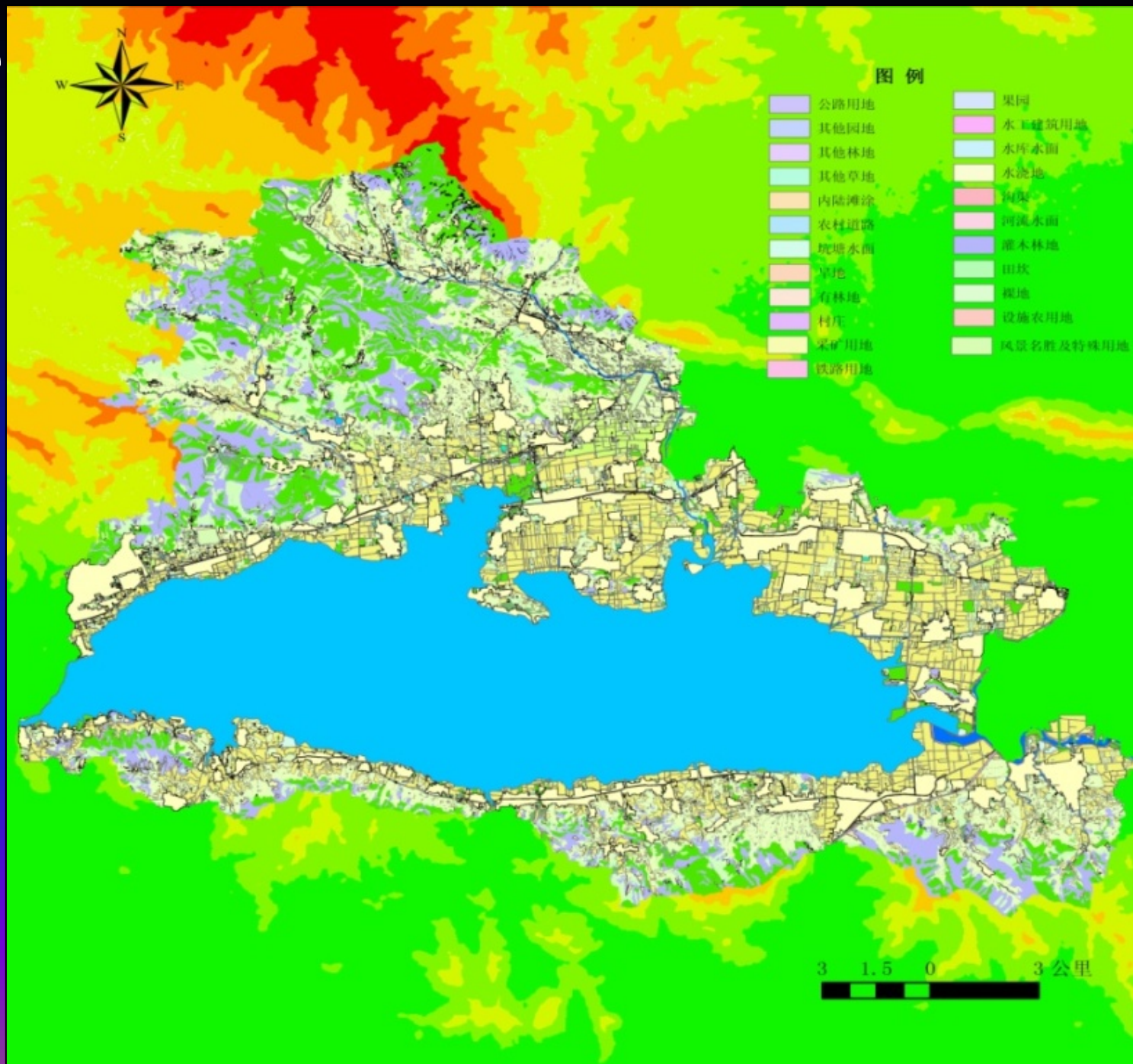


Catchment of Yuqiao Reservoir

于桥水库始建于1959年，改建后成为引滦工程的中转库，于1983年正式启用。于桥水库流域总面积2060km²，主要水系为黎河，沙河和淋河。黎河和沙河在入库前10公里处汇集形成果河。在入库前10公里处汇集形成果河。



Landscape







- **WP1:** *Field sampling and chemical analysis*
 - Instrumentation soil plots in sub-catchments
 - Conduct seasonal synoptic study of water and soil
 - Episode studies
 - Nutrient fractions in river and surface water
 - Use the DGT sampler
 - Monitoring other water quality indices

类别	项目
理化指标	pH、电导率、色度、浊度、透明度、TDS、SS、全盐量、酸度、碱度、钙离子、镁离子、总硬度、碳酸盐、重碳酸盐
无机阴离子	硫化物、氰化物、硫酸盐、氯化物、氟化物、余氯、二氧化硅
营养盐及有机污染指标	溶解氧、COD _{Cr} 、COD _{Mn} 、BOD、TOC、磷酸盐、总磷、总氮、凯式氮、硝氮、亚硝氮、氨氮
金属及其化合物	银、砷、镉、铜、铅、铬、六价铬、汞、锰、镍、锌、硒、钾、钠、钙、镁、铁、亚铁
有机污染物	挥发酚、石油类、动植物油、阴离子表面活性剂、叶绿素a、苯胺类、六六六、滴滴涕等农药残留、挥发性和半挥发性有机物
微生物	细菌总数、粪大肠菌群、总大肠菌群
污泥/固体废物	污泥比阻、MLVSS、MLSS、污泥含水率、有机质
土壤、肥料	全氮、全磷、全钾、pH、土壤含水率、速效磷、速效氮、浸出毒性预处理、铜(含浸出)、铅(含浸出)、锌(含浸出)、镍(含浸出)、铬(含浸出)、六价铬(含浸出)、镉(含浸出)、汞(含浸出)、砷(含浸出)、钙、镁
环境空气与废气	二氧化硫、氮氧化物、氨、甲醛、总悬浮颗粒、非甲烷总烃、挥发性有机物、臭气浓度 二氧化碳、甲烷、氧化亚氮
室内空气	氨、甲醛、苯、可吸入颗粒物、挥发性有机物、氨、菌落总数
生物多样性	植物分类调查、藻类、原生动物和底栖生物鉴别







- **WP2: Catchment processes - the influence of land-use and hydrology on nutrient fluxes into aquatic systems**
 - Study of soil-soil/water interactions
 - Mobilization and fluxes
 - Process oriented studies
 - Episode studies
 - Comparative study

- ***WP5: Nutrient management plan for Yuqiao reservoir***
 - Apply the Circular Economy approach with nutrient at its cores
 - Consideration synergistic and/or antagonistic effect on greenhouse gas sequestration
 - suggest adaptive measures
 - A technical guideline of health risk assessment and pollution control
 - Improve public awareness for nutrient pollution
 - Give comprehensive and targeted presentations

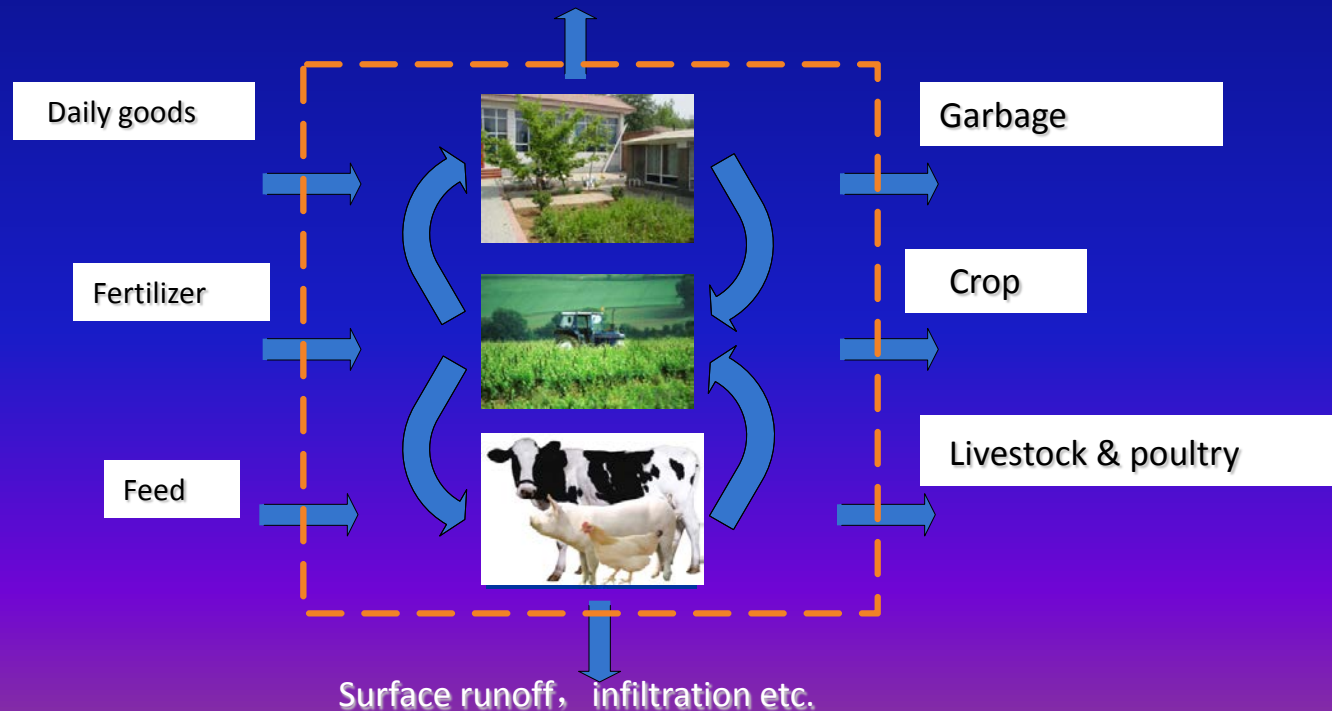
Natural and Social Scientific Questions:

- Eutrophication status and trend assessment (index and predication)
- Mass balance of nutrients and identification of eutrophication controls---(modeling and geochemical markers)
 - Atmospheric deposition (dry and wet)
 - Storm runoff around the Reservoir (controllable factor)
 - Farmland runoff (Integrated Environmental Science and Agricultural Science)
 - Livestock farming
 - Daily life
 - Upstream input
 - Sedimentation and release
 - Application of geochemical markers (^{32}P , ^{15}N and others)
- Algal blooming and related microcystins
 - Pre-warning model for algal blooming
 - Health risk assessment and prevention of microcystins
- Eutrophication counter-measures
 - Regional non-point-source pollution management plan and its application
 - Public awareness (training)

Nutrient Balance Analysis

The input of rural life nutrient cycle comes from means of subsistence, and the output of the cycle is domestic waste which has been transported out of the village. We only estimate quantitatively the nutrient balance of livestock and poultry breeding and farming.

Feed + Fertilizer = (volatilization of fertilizer + Infiltration + Surface runoff) + Manure of livestock & poultry + residue in soil + Livestock & poultry products + Crop + Straw



Nutrient Balance for Farming

■ Nutrient Balance Equation

$$\text{Atmospheric Deposition} + \text{Fertilization Amount} + \text{Soil Background} = \text{Absorption by Plants} + \text{Volatilization} + \text{Infiltration} + \text{Surface Runoff} + \text{Residue}$$

■ Quantitative Determination of Nutrient factors

- Atmospheric Deposition : Precipitation $\times$ Nutrient Amount in rainfall
- Fertilization Amount : Fertilization Amount $\times$ Nutrient Amount in Fertilizer
- Soil Background: Analyze nutrient amount of 0-60cm farming soil
- Absorption by Plants : Analyze nutrient amount of crops dry matter
- Volatilization : Periodical experimental monitoring on nutrient amount of chemical fertilizer, organic fertilizer and soil
- Infiltration : Quantitative measuring of soil profile before and after farming
- Surface Runoff : Collect from runoff pond
- Residue: Nutrient residue analysis on soil experimental data after farming

Q/A

- Study area (whole or part of catchment)
- Participation of local people