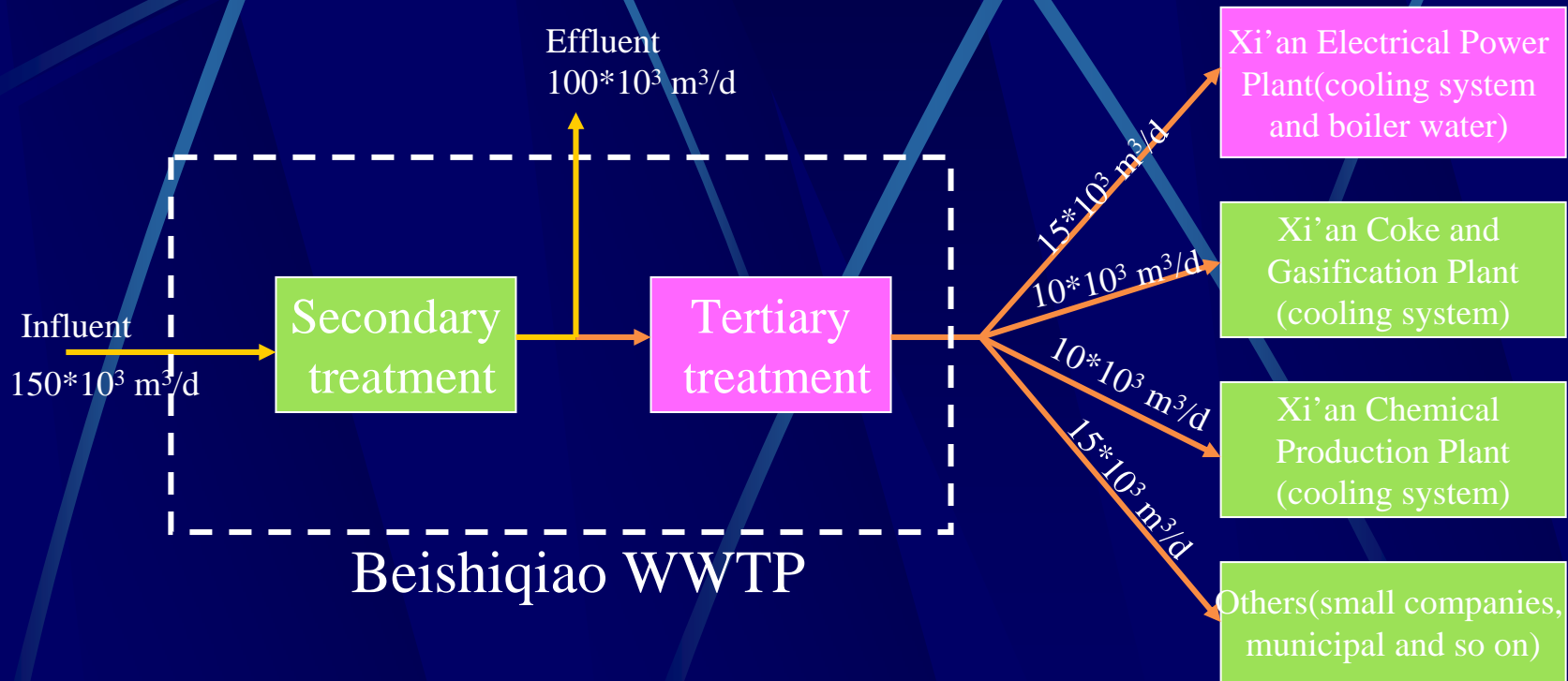
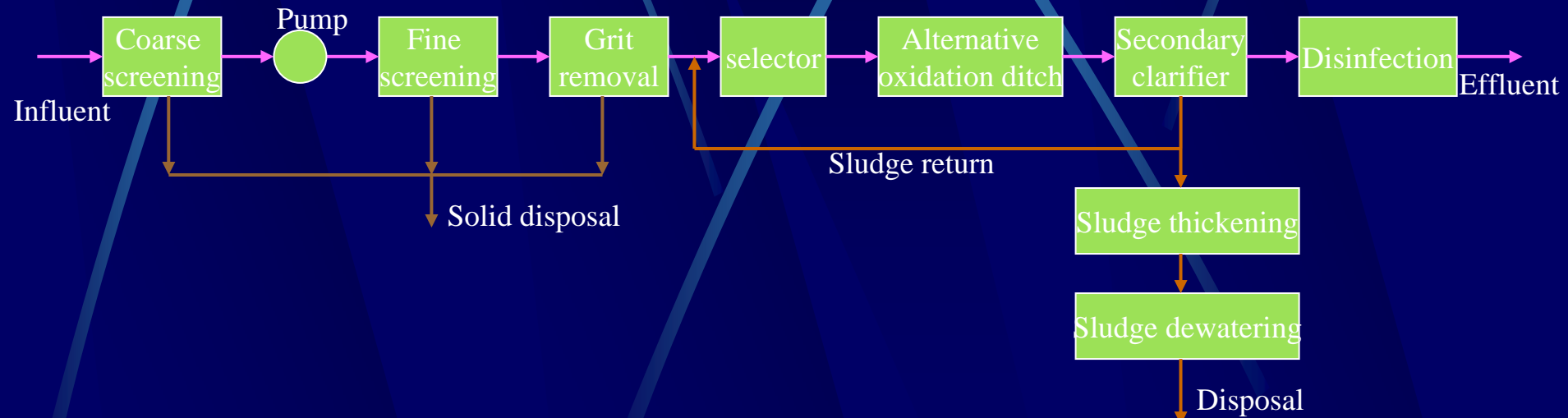


Water reuse and recycling – a case in Xi'an

Schematic of Water Reuse in Beishiqiao region of Xi'an



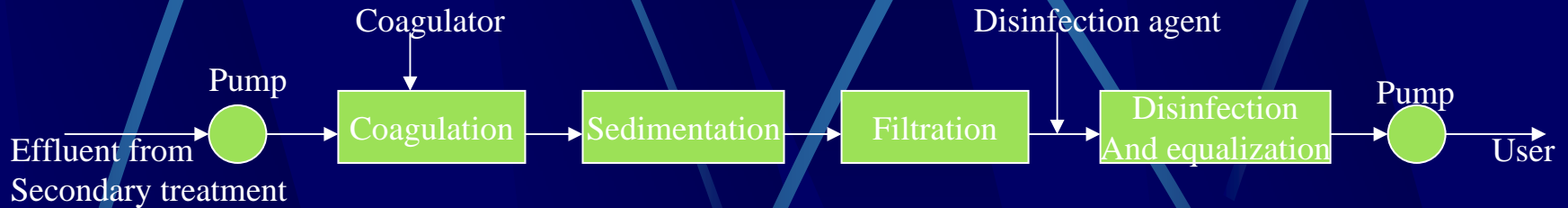
Secondary Treatment Process in Beishiqiao WWTP



Water Quality from Secondary Treatment

| Item | Influent | Effluent |
|---------------------------|----------|----------|
| pH | 7.72 | 7.78 |
| BOD ₅ (mg/L) | 194.28 | 11.14 |
| COD _{cr} (mg/L) | 315.66 | 20.32 |
| SS (mg/L) | 424.14 | 10.45 |
| TP (mg/L) | 3.13 | 1.15 |
| NH ₃ -N (mg/L) | 17.60 | 1.11 |

Tertiary treatment process in Beishiqiao WWTP



Coagulator: PAC + PAM

Disinfection agent: Cl₂

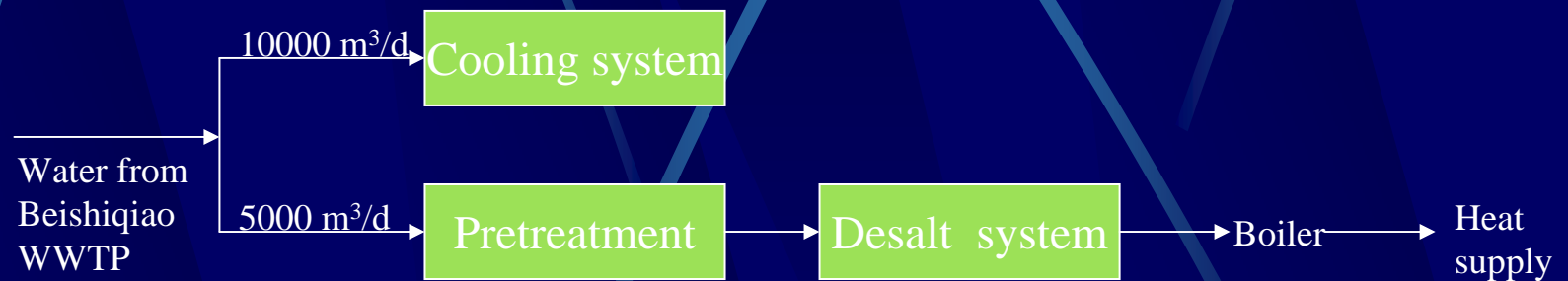
Main Process parameters (Tertiary Treatment)

- Capacity: $50 \cdot 10^3 \text{ m}^3/\text{d}$;
- HRT in coagulation: 30 min
- Coagulator concentration:
PAC: 30 mg/L; PAM: 1.0 mg/L
- HRT in sedimentation: 2.0h;
- Filtration velocity: 8 m/h.

Pilot Plant Experiment Results (Tertiary Treatment)

| Item | Influent | Effluent |
|---------------------------|----------|----------|
| pH | 7.7 | 7.2 |
| BOD ₅ (mg/L) | 15.66 | 3.38 |
| COD _{cr} (mg/L) | 28.37 | 8.24 |
| SS (mg/L) | 21.24 | 0.78 |
| TP (mg/L) | 0.51 | 0.35 |
| NH ₃ -N (mg/L) | 0.65 | 0.39 |

Schematic of Water Reuse in Xi'an Electrical Power Plant



Pretreatment Process for Boiler Water



Process specification

- Lime precipitation: to remove Ca^{2+} and Mg^{2+} from water;
- Sand filtration: to remove SS from water;
- GAC adsorption: to remove soluble COD from water

Main Process Parameters

- Capacity: 5000 m³/d
- HRT in lime precipitation: 2.0h, in which
Mixed and reaction: 0.5h; sedimentation: 1.5h
- Lime concentration: 100 mg/L
- PAC concentration: 40 mg/L
- Filtration velocity in Sand Filter: 10 m/h
- Filtration velocity in GAC Adsorption: 10/h