



LakeCounty

*Lake County Public Works
enhanced Biological Nutrient Removal
Improvements*

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Operations Manager

eBNR Program & Current NPDES Permit

Mill Creek WRF

- Total Phosphorus reporting with 1.0 mg/L limit (2012)
- Total Nitrogen Monitoring
- Nutrient Implementation Plan by 2019 (NARP)

New Century Town WRF

- 3-yrs Compliance Schedule for eBNR development
- Total Phosphorus Monitoring (pending 1.0 mg/L limit)
- Total Nitrogen Monitoring
- Nutrient Implementation Plan by 2019 (NARP)

Des Plaines River WRF

- 3-yrs Compliance Schedule for eBNR development
- Total Phosphorus Monitoring (pending 1.0 mg/L limit)
- Total Nitrogen Monitoring
- Nutrient Implementation Plan by 2019 (NARP)

Methods used to Remove Nutrient in Wastewater

Chemical

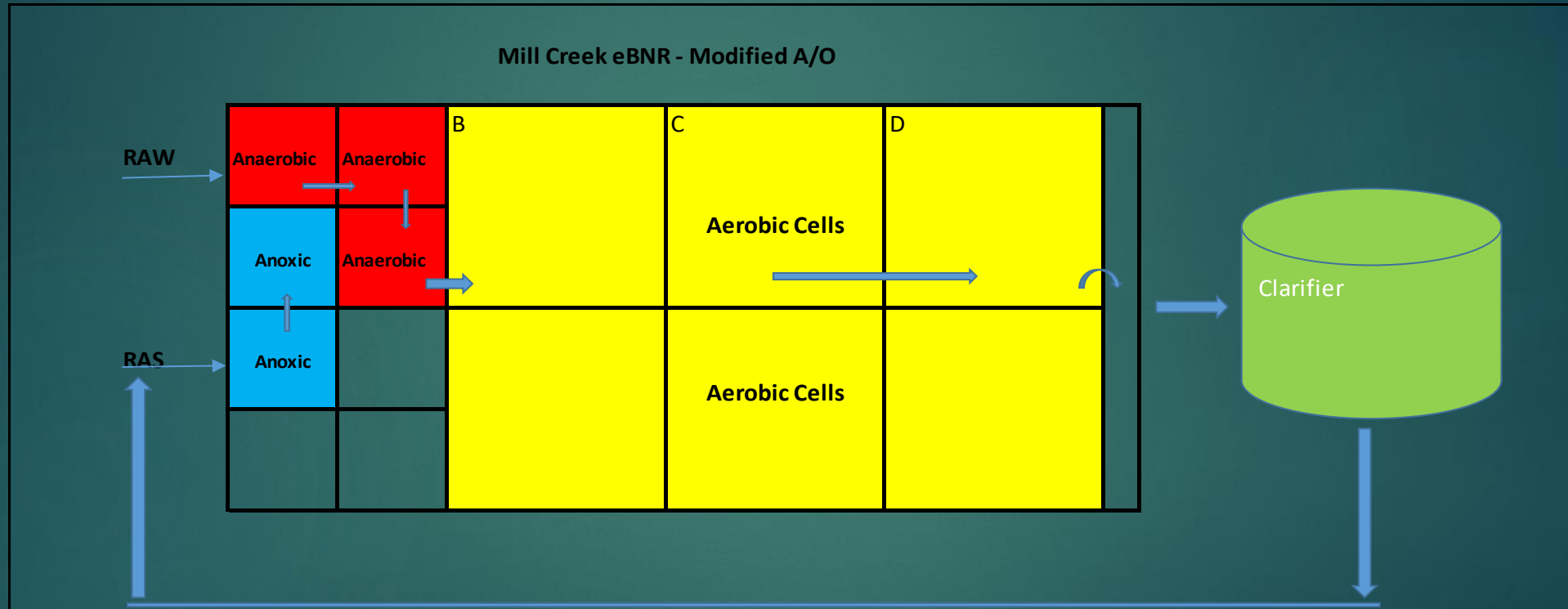
- ❖ Aluminum Sulfate
- ❖ Ferric Chloride

Biological

- ❖ A/O = Anerobic and Aerobic
- ❖ A2O = Anoxic, Anaerobic, and Aerobic
- ❖ Johannesburg
- ❖ Bardenpho
- ❖ MLE = Modified Ludzack Ettinger
- ❖ S2eBPR (side stream enhanced Biological Phosphorus Removal)

LCPW Biological Approach to Nutrient Removal

Mill Creek WRF



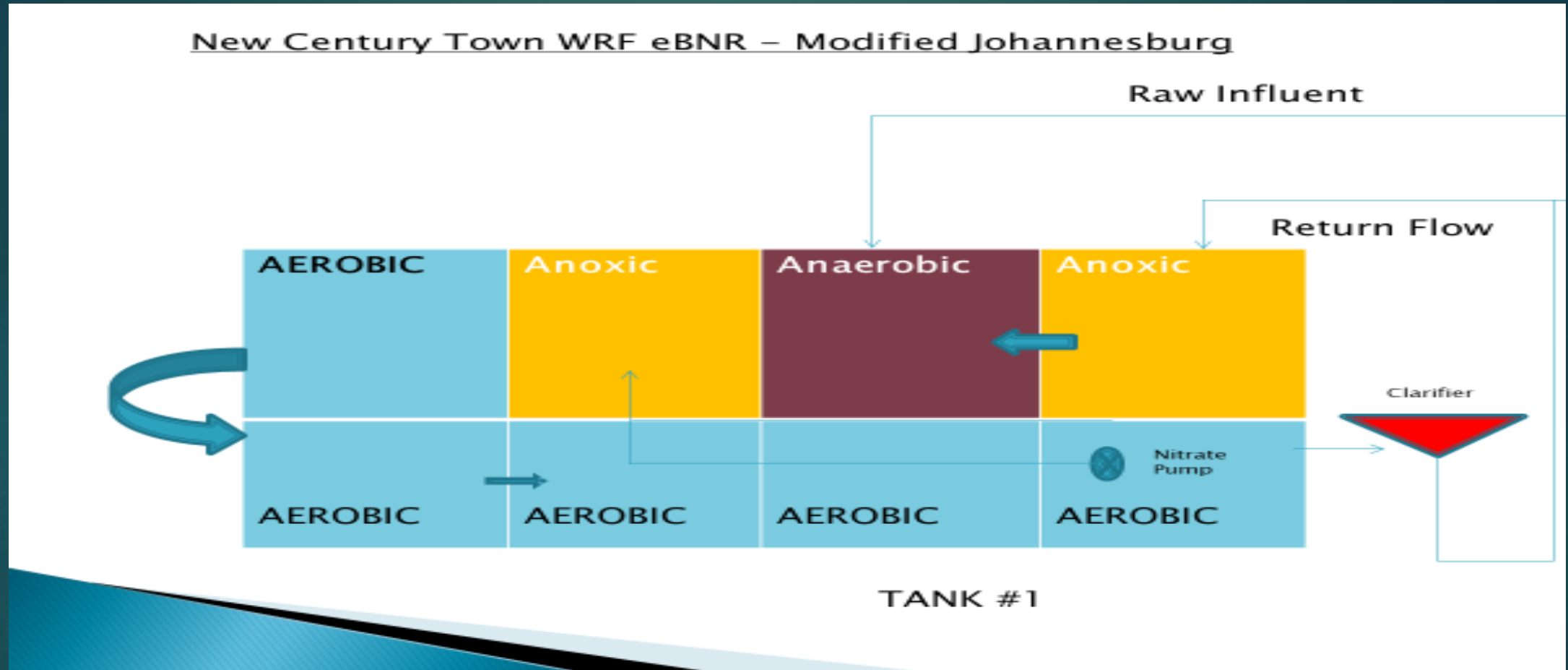
DAF = 2.1 MGD

DMF = 7.8 MGD

Construction Cost = \$1,850,000

LCPW Biological Approach to Nutrient Removal

New Century Town WRF



DAF = 6.0 MGD

DMF = 18.0 MGD

Construction Cost = \$1,400,000

LCPW Biological Approach to Nutrient Removal

Des Plaines River WRF

Des Plaines River WRF eBNR – Modified Johannesburg



DAF = 16.0 MGD

DMF = 51.8 MGD

Construction cost = \$3,700,000

Plant Performance

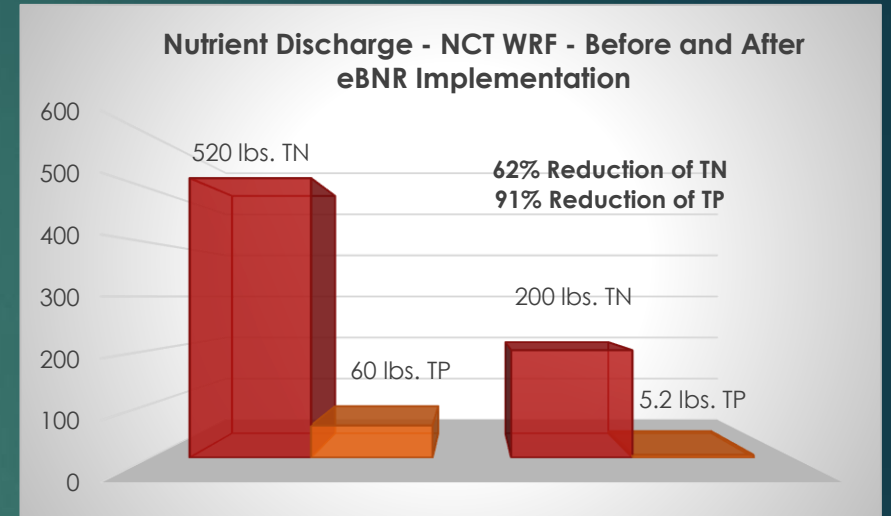
New Century Town WRF

Before eBNR

- TN discharge/month = 520 lb
- TP discharge/month = 60 lb

After eBNR

- TN discharge/month = 200 lb
- TP discharge/month = 5.2 lb
- December's TP Avg = 0.22 mg/L



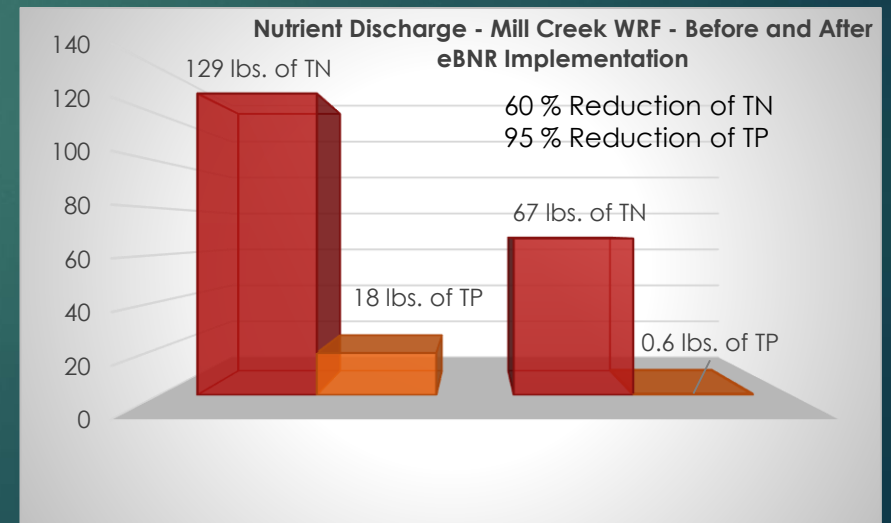
Mill Creek WRF

Before eBNR

- TN discharge/month = 129 lb
- TP discharge/month = 18 lb

After eBNR

- TN discharge/month = 67 lb
- TP discharge/month = 0.6 lb
- December's TP Avg. = 0.07 mg/L



Plant Performance (cont.)

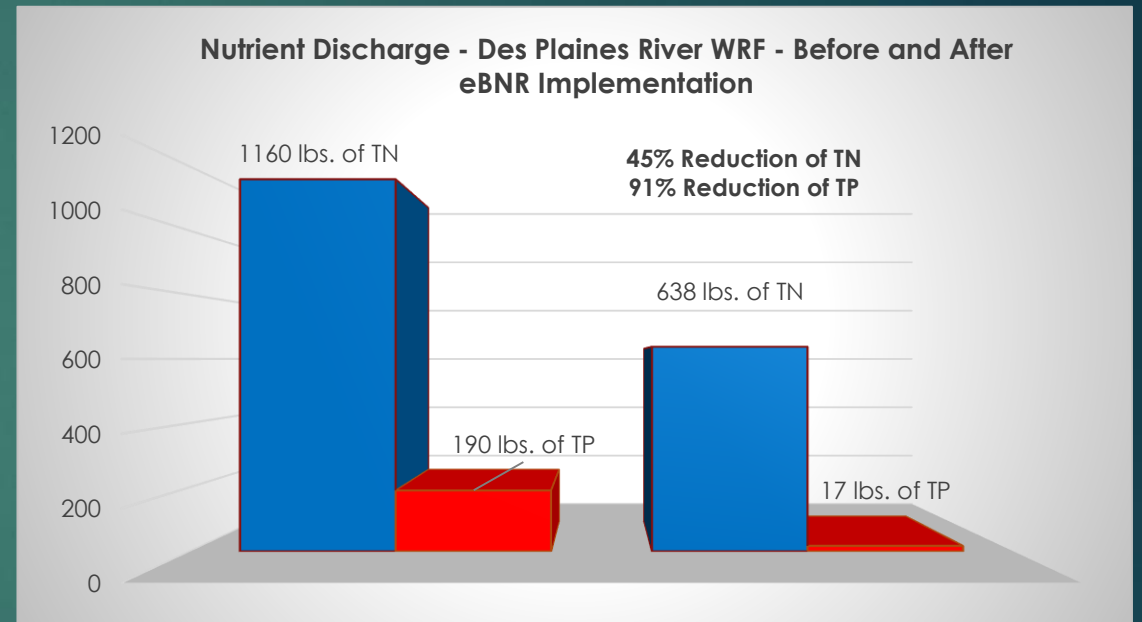
Des Plaines River WRF

Before eBNR

- TN discharge/month = 1160 lb
- TP discharge/month = 190 lb

After eBNR

- TN discharge/month = 638 lb
- TP discharge/month = 17 lb
- December's TP Avg. = 0.22 mg/L



QUESTIONS??