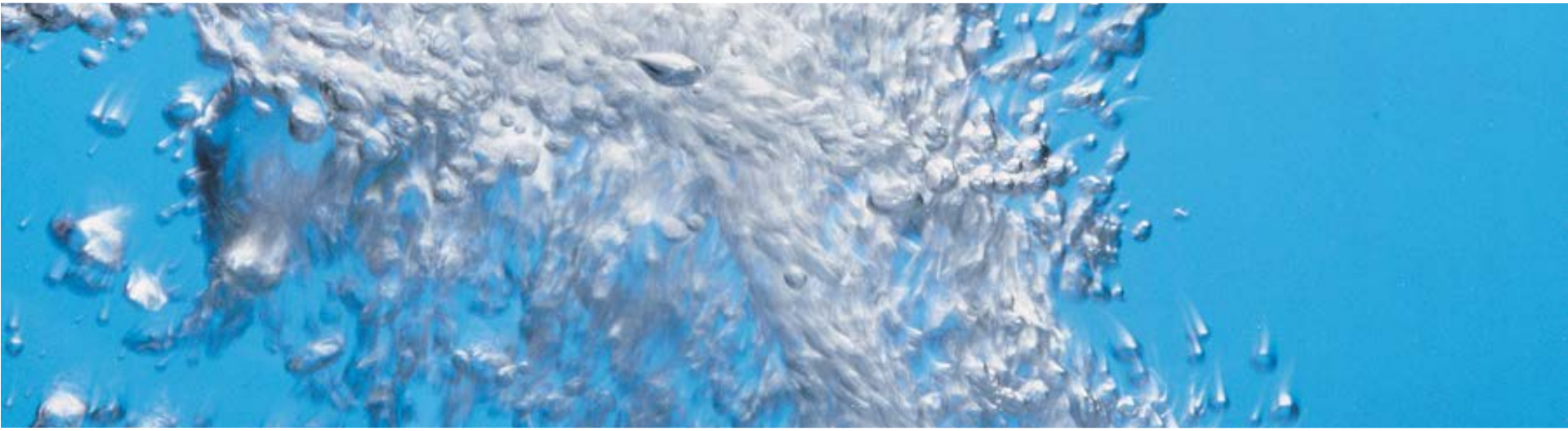

# An Innovative and Cost-Effective Solution for Updating Your Reclaimed Filter Needs


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# Presentation Outline

- Service Area
- Treatment Facilities
- Reclamation Facilities
- Filtration Needs
- Filter Evaluations
- Water Quality Data
- Capital Costs

# Palm Bay Utility Service Area

- 97 square mile service area
- 104,000 population
- Two treatment plant facilities
  - WWTP: 4.0 mgd
  - Troutman Water Reclamation Facility: 1.2 mgd
- Acquired from GDU in 1992

# FDEP Permitted Facilities

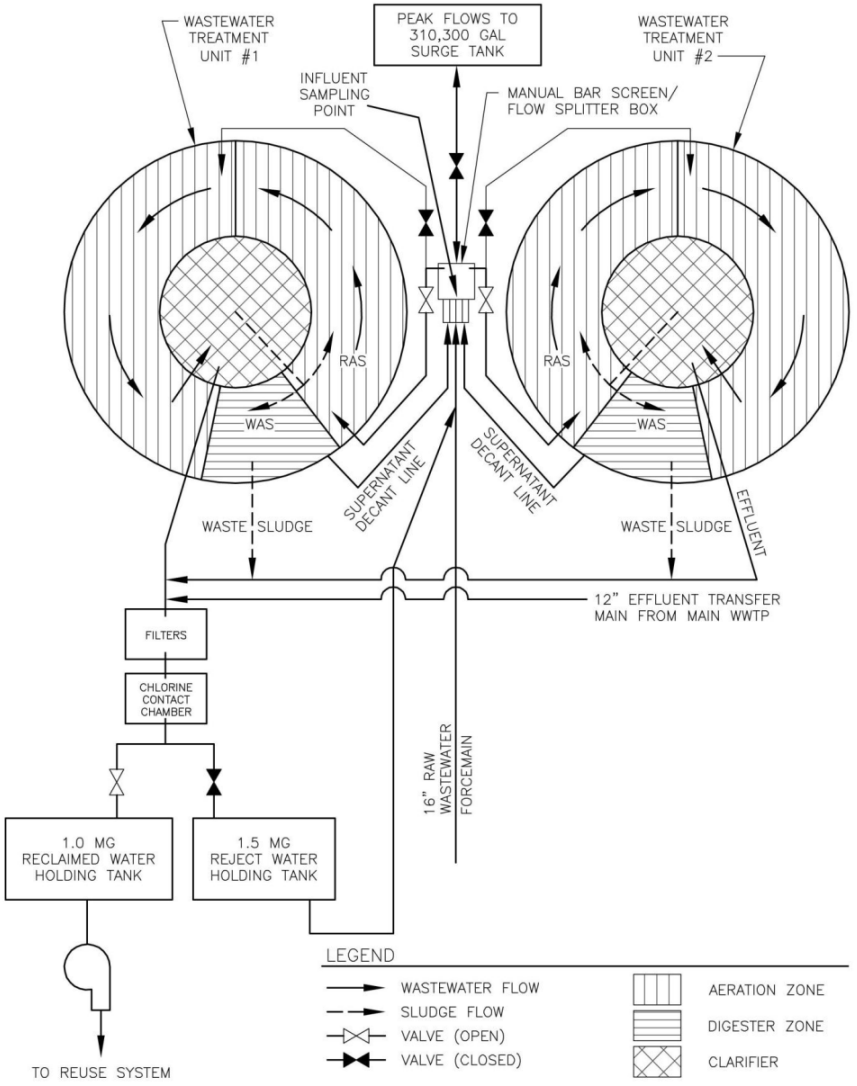
| Facility Component | Permitted Capacity |
|---|---|
| Wastewater Treatment Plant | 4.0 MGD |
| Water Reclamation Facility | 1.2 MGD |
| Reuse System | 2.3 MGD |
| Deep Injection Well | 5.0 MGD |

# Wastewater Treatment Plant Facility

- 4.0 mgd permitted capacity
- Conventional activated sludge treatment plant
  - Pre-treatment  (screening & grit removal)
  - Aeration (1.3 MG)
  - Secondary clarification
- Effluent disposal  - 5.0 mgd deep injection well or pumped to WRF

# Troutman Water Reclamation Facility

- 1.2 mgd AADF capacity
- Screening
- Aeration / Clarification
- Filtration
- Chlorination



# Reclaimed Water Users

| Permitted User | User Type | Capacity (mgd) |
|---|---|---|
| 1. Harris Corporation | Irrigation | 0.570 |
| 2. Intersil | Irrigation & Cooling Tower | 0.440 |
| 3. Sandy Pines (3 Phases) | Irrigation | 0.260 |
| 4. Palm Bay WWTF & WRF | Irrigation | 0.100 |
| 5. Palm Bay Greens | Future Development | 0.210 |
| 6. Knecht Park | Irrigation | 0.097 |
| | **TOTAL REUSE** | **1.677** |

# Original Filtration Design

- 4 DynaSand® upflow sand filters
- Gravity fed from secondary clarifiers
- Tank dimensions:
  - 12’-7”(L) x 8’-2” (W) x 15’ (D)
- Rated capacity = 0.67 mgd/filter (4.55 gpm/ft$^2$)
- Total Filter Capacity = 2.68 mgd (4 filters)

# New Filter Drivers

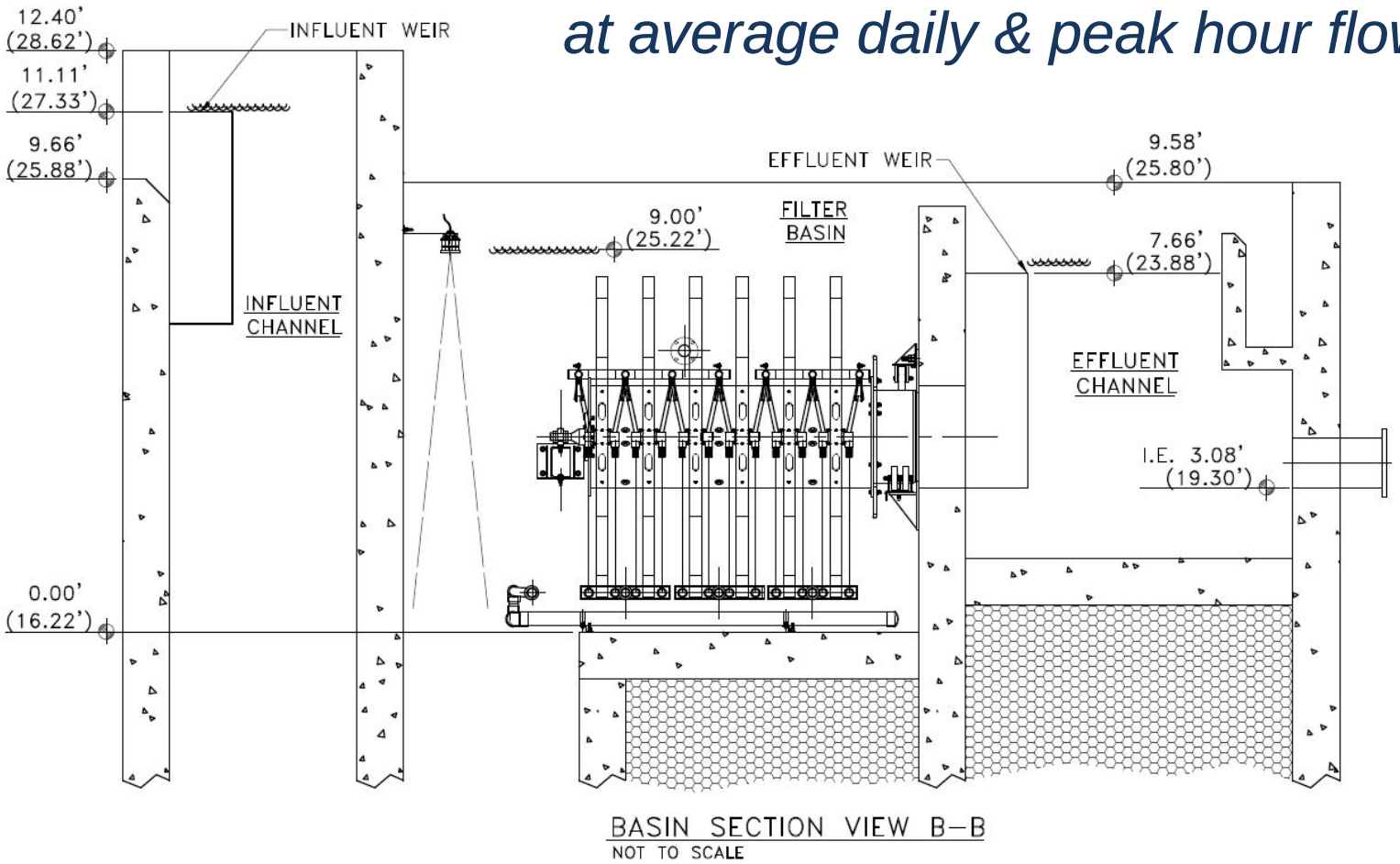
- Future capacity = 4.4 mgd
- Rising O&M costs (existing filters)
- Maintain existing hydraulic profile
- Use existing tankage (capital $ savings)
  - Rehab 3 existing filter banks
  - Use 4th filter bank as a pump or equipment room
- Retrofit a single filter while others remain on-line

# Filter Evaluations

- Three manufacturers evaluated:
  - Kruger/Hydrotech Discfilter
  - Nova Water Technologies
  - Aqua-Aerobic Systems
- Aqua-Aerobic (AquaDisk®)
  - Installed into existing tankage
  - Operate in a submerged environment
  - Maintains existing hydraulics
  - Minimal structural modifications required

# AquaDisk® Cloth Media Filter

*Maintained existing hydraulic profile at average daily & peak hour flow rates.*



# AquaDisk® Cloth Media Filter

- No major structural modifications required
- No modification of the influent channel necessary
- Weir boxes installed for even flow distribution and to avoid hydraulic overloading on a single filter unit

# AquaDisk® Cloth Media Filter

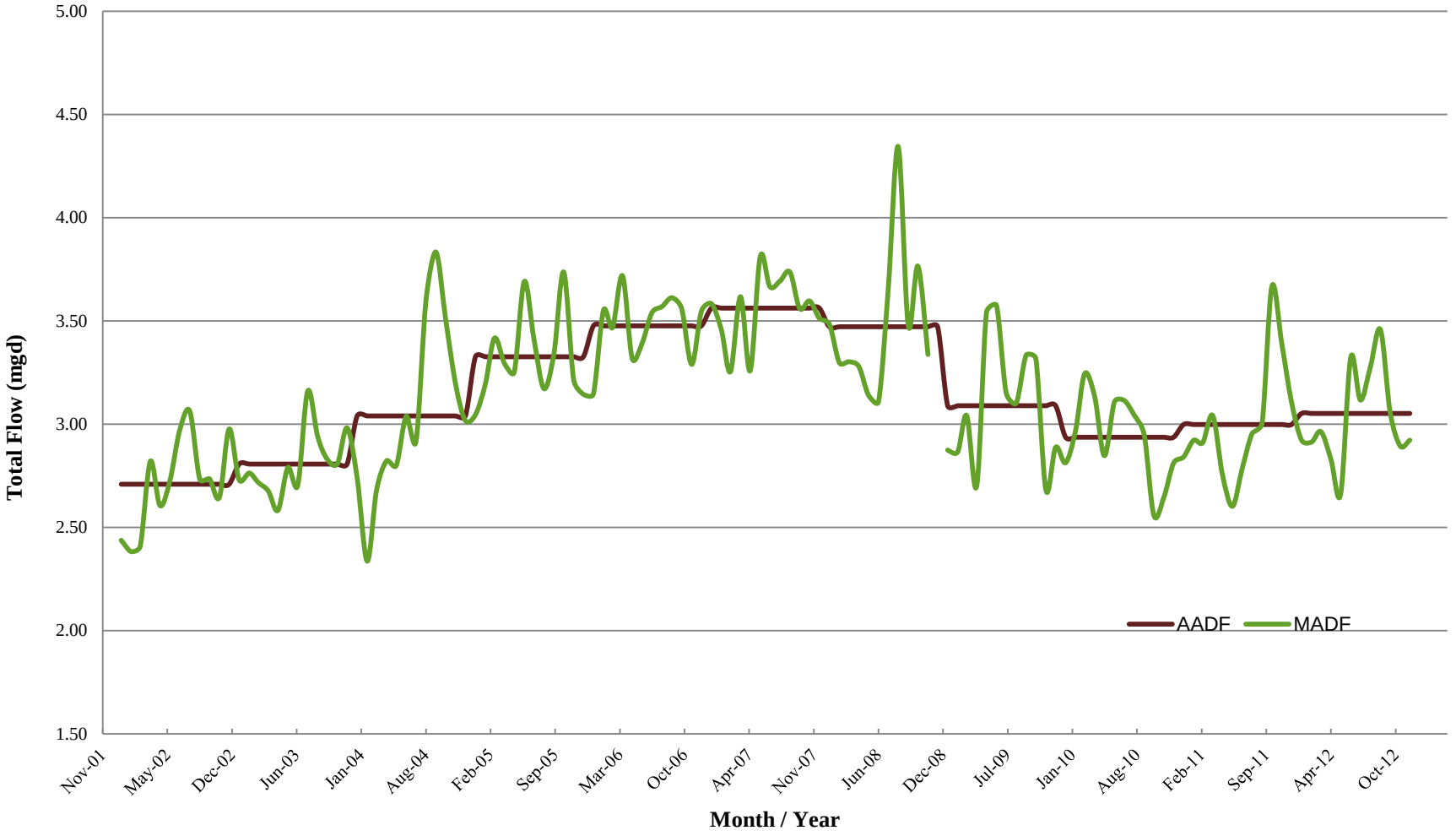
- Filter Surface Area – 2 disks provide 646 $ft^2$
- Design Capacity = 1.5 MGD (ADF); 3.0 MGD (PHF)
- Hydraulic loading rate = 3.25 $gpm/ft^2$ (ADF); 6.5 $gpm/ft^2$ (PHF)

# Project Timeline

2013
2012
2011
2010
2009
2008
2007
2006

- Planning – 2006
- Design – 2007
- Permit Issued – Jan. 2008
- Owner Purchase – Spring 2008
- Construction – Spring 2009
- Commissioning – Nov. 2009

# Influent Flow Data – AADF & 3MADF

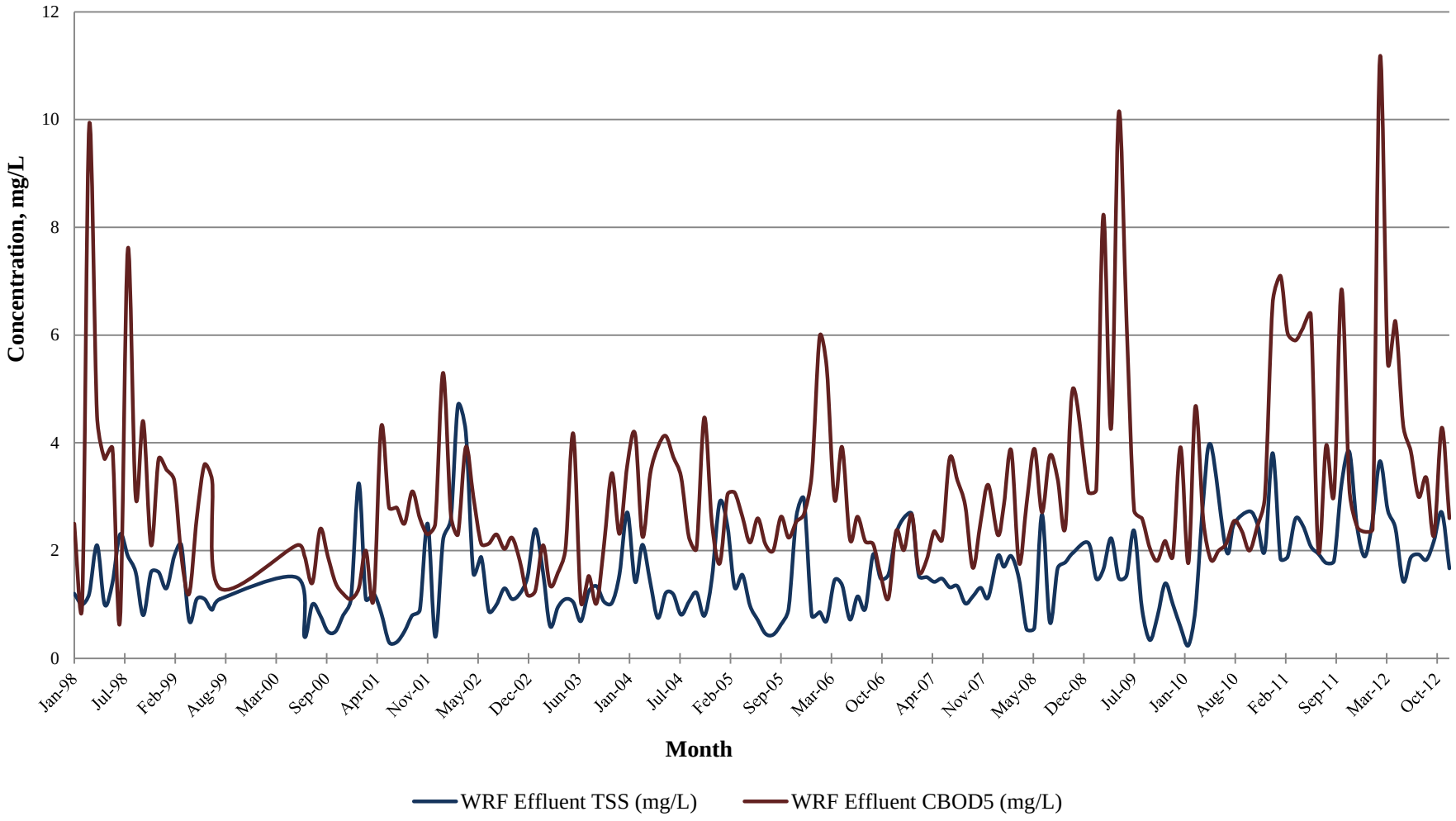


# Influent Water Quality – $CBOD_5$ & TSS

Troutman Water Reclamation Facility

- 10-yr period of record: 2002 – 2012
- Annual Average Influent $CBOD_5$
  - Concentration range: 110 – 190 mg/L
  - Loading range: 854 – 1,471 lbs/day
- Annual Average Influent TSS
  - Concentration range: 88 – 187 mg/L
  - Loading range: 590 – 1,230 lbs/day

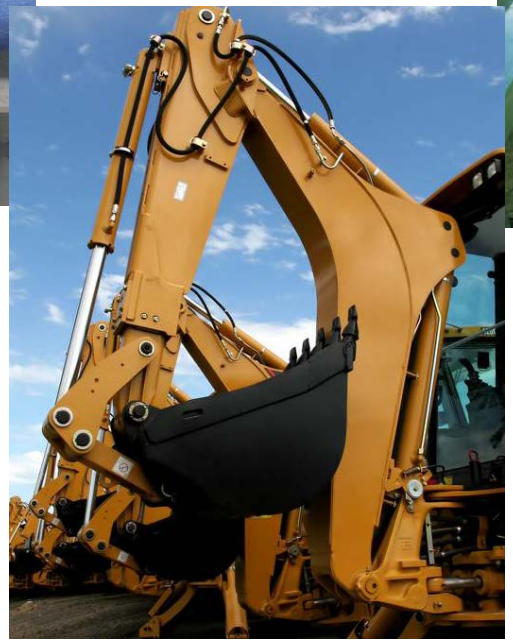
# $CBOD_5$ & TSS Effluent Monitoring Data

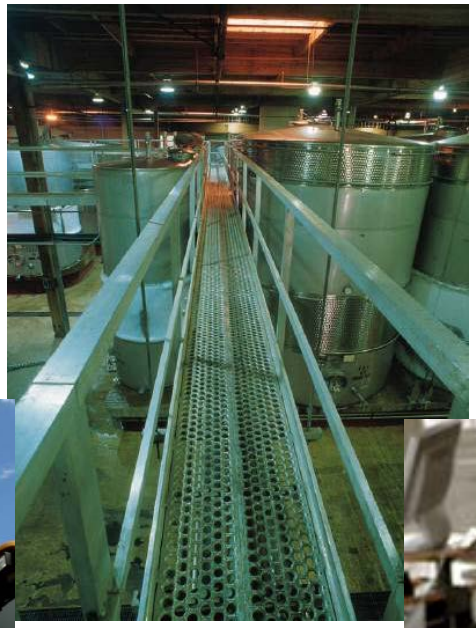


# Filter Rehabilitation Project Costs ($526K)

Owner Purchased Equipment $362K

Construction $85K





Misc. Fabrication $10K

Engineering $69K

# Conclusions/Summary

- An economical solution for the City's future filtration needs
- Increased reclaimed water production
- Low capital costs
  - Utilized existing structural components
  - Maintain existing hydraulic profile
- Provided a phased approach for future filtration demands

# Questions?