

City of Waynesboro WWTP Upgrade

Background

- City of approximately 20,000 residents
- 124 miles of sewer main
- 8 pump stations

Background

- Majority of our sewer lines were constructed with clay pipe
- Plagued with significant I & I issues
- Consent order 1999, 2004, 2010

Background- 1999 Consent Order

- select a pilot project area
- check wet and dry weather flows
- determined major I & I contributors within project area

Background-2004 Consent Order

- identify areas within the city that are major contributors to infiltration
- Projects 1, 2, 3, 4, 5, 6 and projects 14 and 15 were accomplished (original implementation plan)
- Upgraded capacity of 2 major pump stations
- WWTP now able to treat both nitrogen and phosphorous to new state limits

Background-2010 Consent Order

- 17 new projects area were identified
- Permanently seal all siphon discharges that cause unauthorized discharges
- I/I corrective actions: complete 10 projects from new implementation plan

Original Sewage Treatment Plant



Original STP

- Constructed in the 1950's – discharges to the South River within the Shenandoah-Potomac River Basin
- 4 MGD Capacity with wet weather flows ranging from 10-14 MGD

Original STP

- Treatment Process: Trickling Filters, Rotating Biological Contractors, Sand Filters, Chlorine Disinfection and Anaerobic Digestion

Original STP- Treatment Capabilities

- TSS
- BOD
- PH
- Disinfection

Moving Forward

- Construction for \$43 mil. Upgrade began in May 2008
- Result of Chesapeake Bay Initiative and continuous overflows due to significant I&I
- 3 mg/l Nitrogen and 0.3 mg/l Phosphorus Limits

Moving Forward

- Upgrade to 6MGD activated sludge facility with :
 - (2) 5 stage BNR tanks
 - (2) Final Clarifiers
 - Denitrification
 - UV Disinfection

2008 - 2010

Getting There

Arial



BNR # 1 Construction



BNR #1 Construction



BNR Construction



Clarifier #1 Construction



Denitrification Filter Media



Filter Media



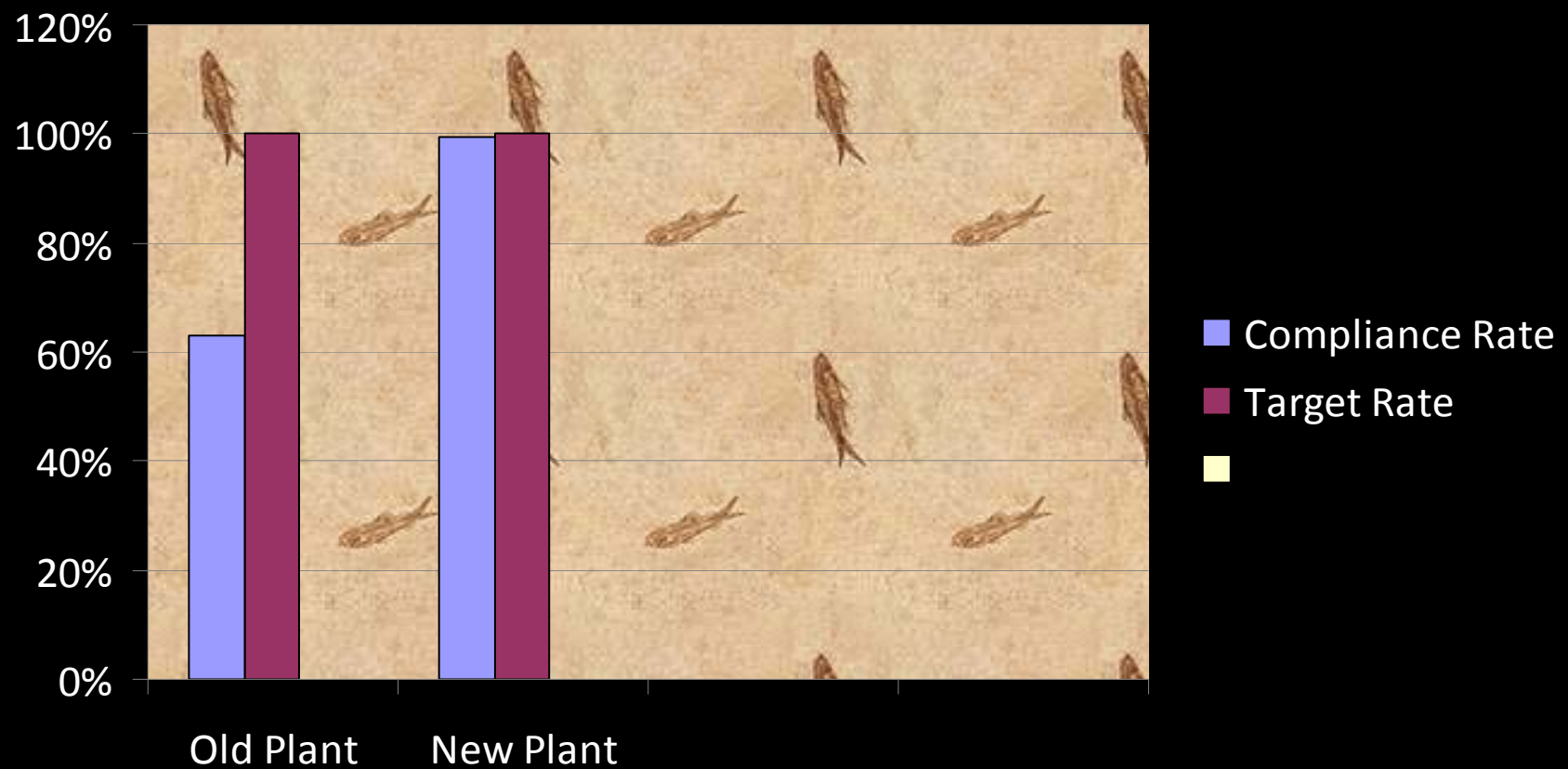
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A Determination of Performance

Measuring Up

Compliance Rate- Then and Now



Measuring Up – Wet Weather

- Old Plant- wet weather capacity approximately 10 MGD before bypass-continuous basement flooding due to hydraulic capacity
- New Plant- to date has handled and efficiently treated wet weather flows at 21 MGD- NO BYPASS

Measuring Up

Parameter	Original STP	Upgraded STP
BOD	6 mg/L	0 mg/L (<QL of 5 mg/L)
TSS	13 mg/L	0 mg/L (<QL of 1 mg/L)
Total Nitrogen	14 mg/L	1.78 mg/L
Total Phosphorus	3 mg/L	.15 mg/L

In Summary

- Numerous transitions over the past few years
- Actively meeting regulatory requirements
- Struggle will be to secure budgetary funding to maintain our investment and meet additional mandates