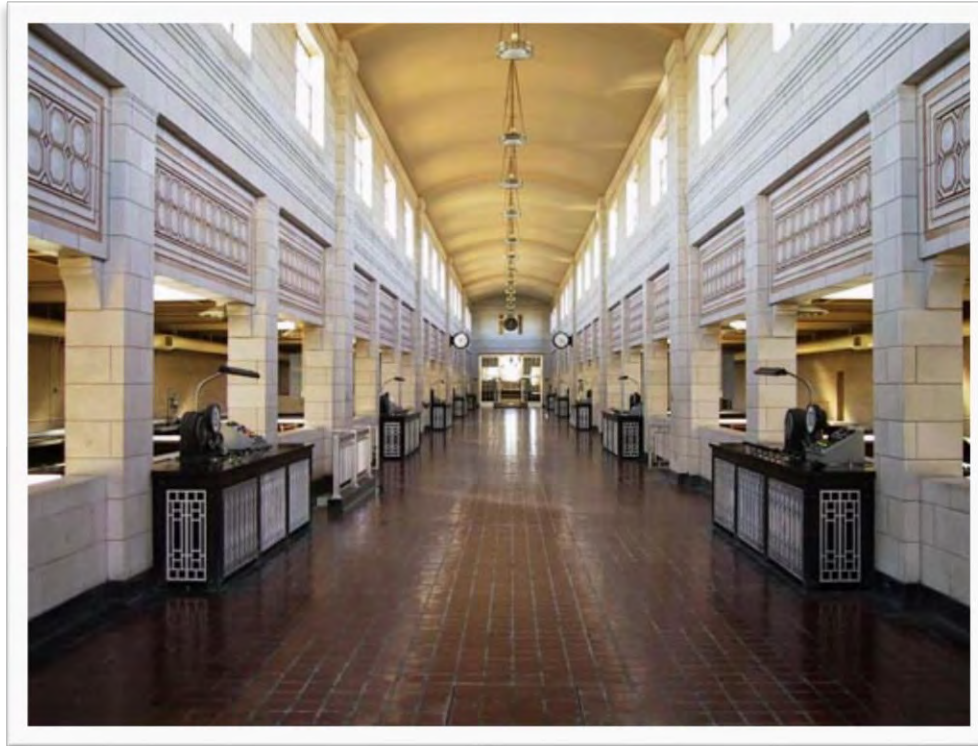


MOFFAT WTP - SUCCESS STORIES FROM THE PHASE III SELF-ASSESSMENT



Jason Fast

Outline

- About Denver Water
- Why Phase III Now?
- Phase III Implementation
- Findings So Far
- Next Steps



ABOUT DENVER WATER

Denver Water

Denver Water proudly serves high-quality water and promotes its efficient use to 1.3 million people in the city of Denver and many surrounding suburbs. Established in 1918, the utility is a public agency funded by water rates and new tap fees, not taxes. It is Colorado's oldest and largest water utility.



Denver Water

- Mission Statement - Denver Water will be a responsible steward of the resources, assets and natural environments entrusted to us in order to provide a high-quality water supply, a resilient and reliable system, and excellent customer service.
- DW aspires to be the best water utility in the nation.



Four Water Treatment Plants

- 3 Potable plants, 1 Recycling Plant
 - Moffat 185 MGD
 - Marston 250 MGD
 - Foothills 280 MGD
 - Recycling 30 MGD



Moffat WTP

- **Moffat WTP –
185 MGD**

- Original Plant – 1937
- Clear Water Reservoirs – 1949/1962
- Settling Basins – 1953/1962
- Filter Plant No. 2 Addition – 1955
- Filter Plant No. 3 Addition – 1974
- Plant Upgraded (Headworks) – 1994
- Disinfection Contact Basins – 1998
- Conduit No. 16 (raw water) Replacement – 2017
- WTP Upgrade – 2023



Moffat WTP Through the Years



Moffat's Major Construction Projects:

1937: Filter plant #1+ floc/sed 1-3 + reservoirs 1 & 2 + backwash tank + cistern.

1950-1955: Filter plant #2 + floc/sed 4-7 + reservoir 3.

1961: Floc/sed 8-10 + reservoir 4.

1974: Filter plant #3

1994: Headworks building + sludge handling + admin. building.

1998: Upgrade chlorine system + diesel generators + mixing water pump station + disinfection basin.

Denver's Source Water



New Plant at Ralston



WHY PHASE III NOW?

DW's History with the PSW

- DW became a PSW subscriber in 1996
- Denver Water has been submitting baseline data and meeting Phase II since 1998
 - Informally reaching Phase III PSW water quality goals
- Strategic Plan (Adopted March, 2011)
 - Lays foundation for DW's work and is strategy to fulfill our vision and mission
- Showed Executive Staff how goals of Partnership matched with goals of DW's Strategic Plan
- Culture change allowed DW to formalize internal water quality standards and seek PSW Phase III

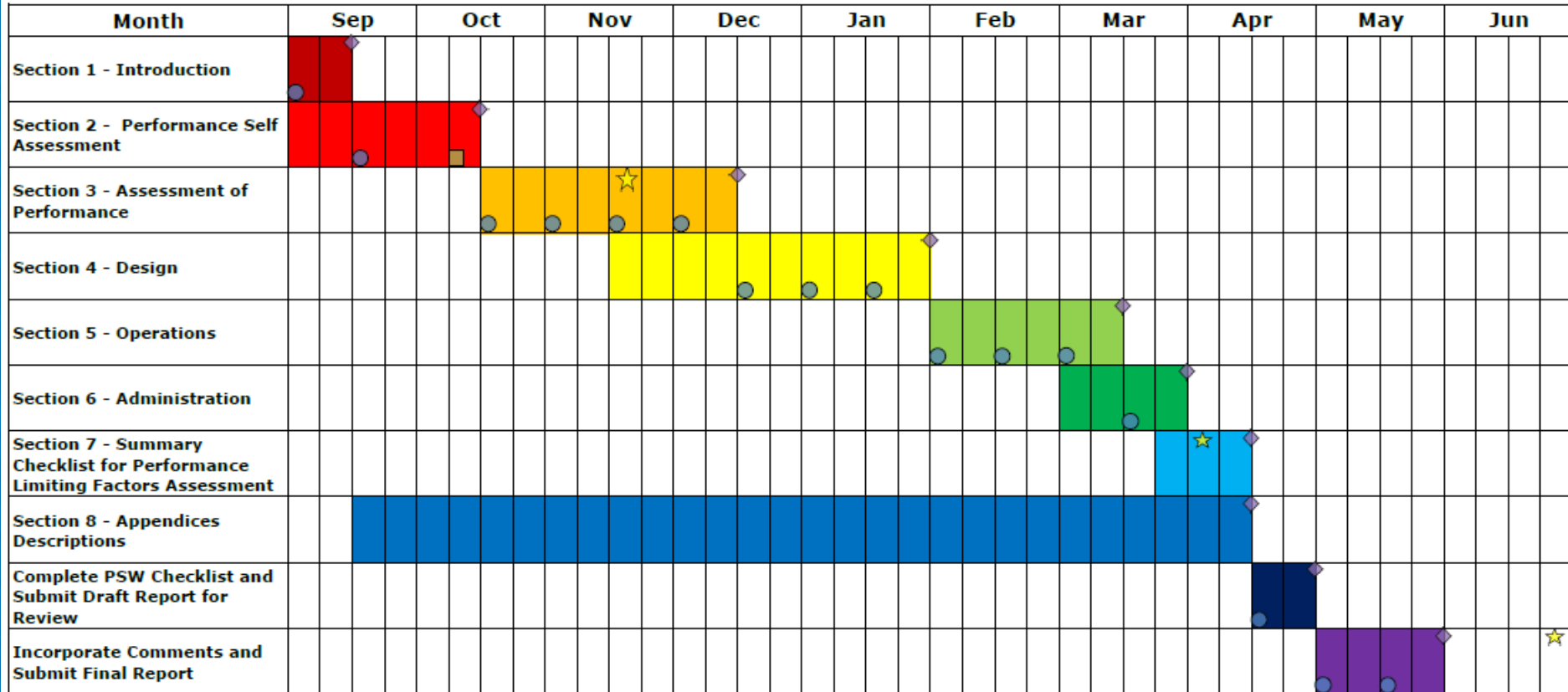
PHASE III IMPLEMENTATION

Phase III

- 2008, Top down approach, report was almost ready but never submitted
- Dec 2013, with change in approach, the decision was made to involve entire staff on report
- June 2014, project was formalized
 - A work plan was developed, (with notable achievement benchmarks, with a submission goal of Summer 2015) verbal comment
- Started bi-weekly meetings with core leadership group
- Broke report into smaller bits and set deadlines for completion
 - Used AWWA PSW Phase III template to assist in completion of report

Phase III

Moffat WTP - Schedule to Complete AWWA Partnership for Safe Water - Phase III Self Assessment Report



★	Stakeholder Meeting
◆	Submittal
●	Biweekly Meeting
■	Presentation to Operations Staff

Phase III – Staff Involvement

- Problem: how to involve staff, most of whom work a rotating shift?
 - Had kick-off meeting with presentation
 - Divided up questions from Phase III template and emailed to staff, and set deadlines for responses
 - Directly incorporated responses from staff into report
- Incorporated condition assessment from the Moffat rebuild project
- Operations worked cross divisionally with Engineering staff
 - The more staff members involved, the better the self-assessment

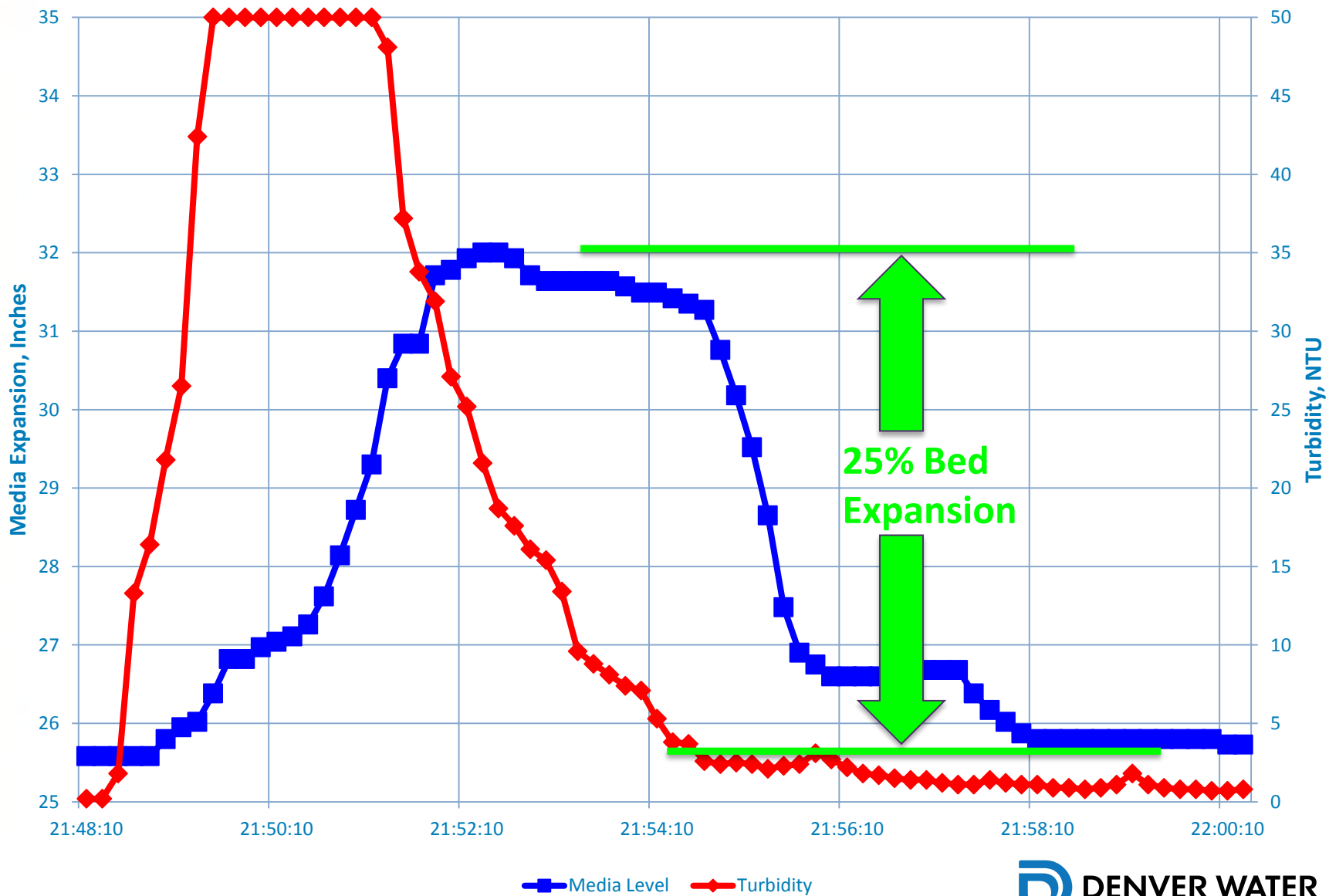
NEXT STEPS

Phase IV

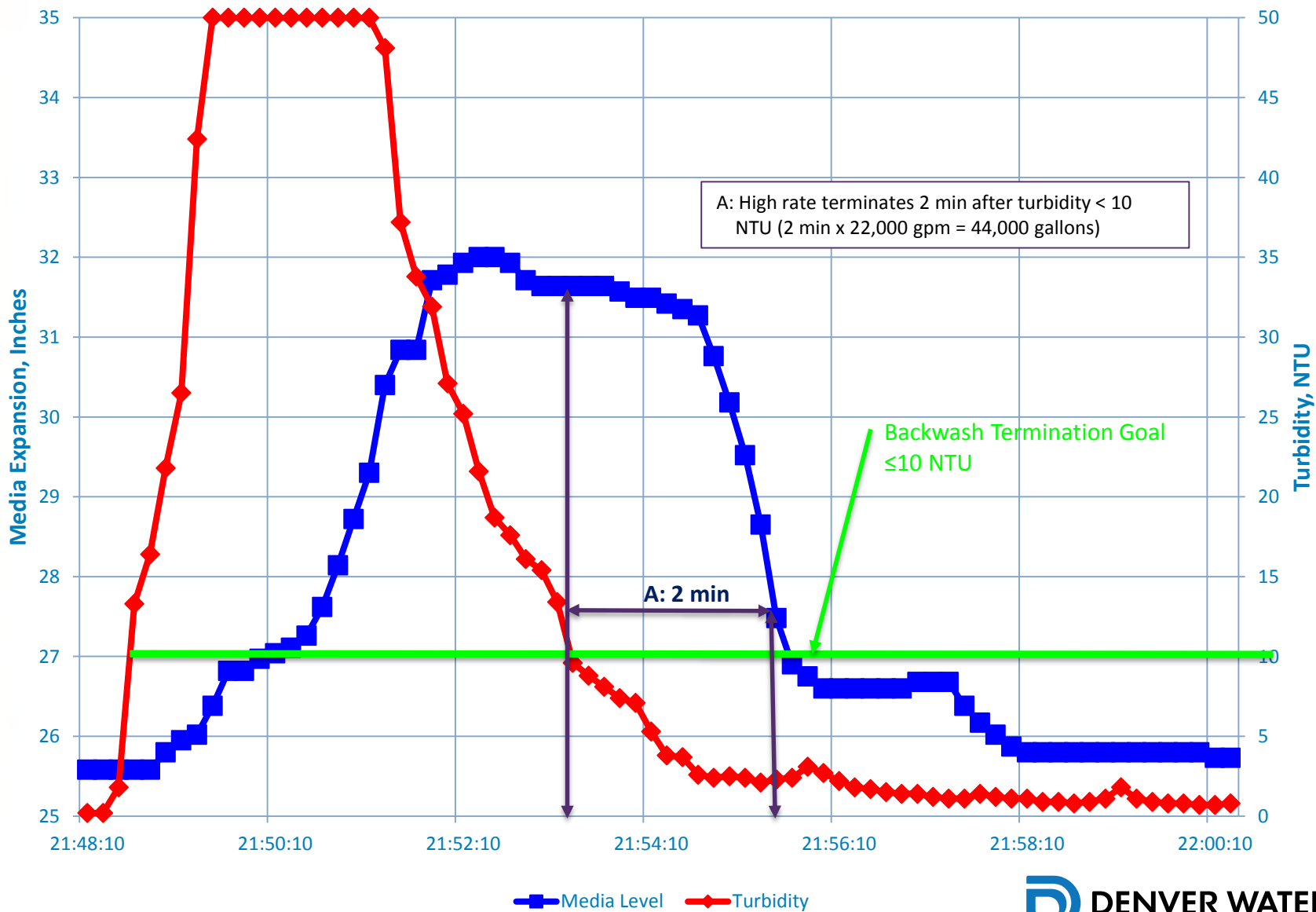
- Submitted Phase III report in Summer of 2015
- DW is not done with Phase III, final goal is demonstrated optimization of Moffat, Foothills, and Marston TP
 - Will also include Recycling TP
- How will DW achieve Phase IV?
 - Daunting task considering size of plant 28 filters, 11 floc/sed basins
 - Identified 37 Action Implementation Plans
 - Moffat is not in a vacuum, there is great opportunity to work across DW plants and other utilities
 - Determined new position was needed to help achieve Phase IV
 - New position of Assistant TP supervisor to work as a “Process Analyst”

FINDINGS SO FAR

Media Expansion and Turbidity Moffat Water Treatment Plant Filter 11 Backwash Aug 15, 2015

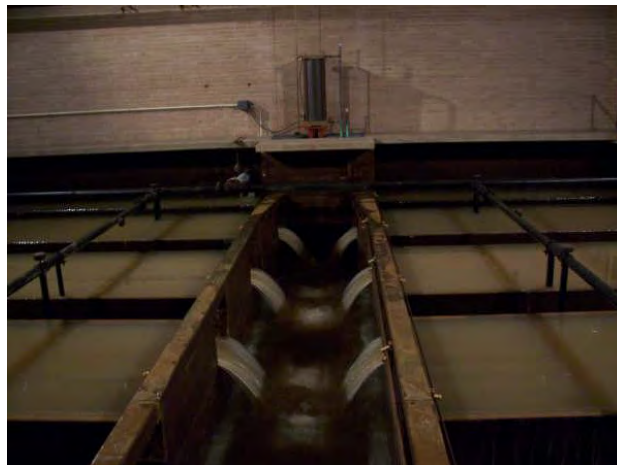


Media Expansion and Turbidity Moffat Water Treatment Plant Filter 11 Backwash Aug 15, 2015



Data at the Moffat WTP Indicates...

- Media is expanding adequately
- Filters are getting too clean, backwash duration should be evaluated
- Moffat does not have filter-to-water and this can produce higher NTU spikes at filter startup
- Making changes to backwash procedures
 - Termination point of backwash is critical

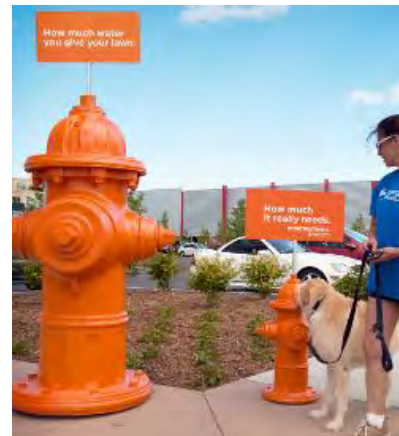


Conclusions

- Get buy-in at all levels
 - Incorporation of all staff is critical
 - Consider internal and external review before submitting
- Self paced, get it done correctly
- Not just evaluate the treatment plant but the organization as a whole
- We are not done if we achieve Phase IV, optimization is on-going. By having a truly optimized plant the water we produce is of the highest quality and can ensure the health and safety of our customers

Acknowledgements

- Kevin Linder of Aurora Water
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- Staff of Moffat Water Treatment Plant



QUESTIONS?