Prepare, Plan & Execute Virtual Treatment System Inspections

Ct Section AWWA Water Treatment Plant Operations & Maintenance Committee

12/1/2020

11 am – 12 pm

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Background

Purpose and Outlook for Virtual/Remote Activity

Preparation/Execution – Lessons Learned

Example/Case Study – Norwich Public Utilities Deep River Water Treatment Plant

Recap and Group Discussion

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Reasons for Remote/Virtual Work

- Social Distancing! Reduce pathways for transmission to protect critical/essential employees.

- Allows us to engage with regulators, out-of-state experts.
  - Sanitary surveys
  - Certificate of completed treatment works – startup the new equipment you installed!
  - Vendor/consultant troubleshooting

- Need “eyes & ears” to get the job done without actually being on site due to travel restrictions, state mandates, agency/company policy, etc.

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2020 Sanitary Survey Status: 583 Sanitary Surveys Due this year!

143 conducted prior to shutdown in person

347 conducted remotely (~60%)

93 surveys still need to be scheduled/conducted

Remote Surveys Interesting – Some are seamless, others are way harder due to technology issues, please be patient.

300 of these systems are TNCs with no certified operator to assist

This would not have been possible without the help of our regulated community! Thank you!!!

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2021 Sanitary Survey Outlook:

Nearly 600 Sanitary Surveys Due again next year

DPH plans to begin the 2021 survey season conducting remote surveys and ease back into in-person as feasible based on pandemic rate of cases/field conditions.

With better preparation and some experience under our belts, hoping the 2021 remote surveys will flow better

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Challenges to Remote/Virtual Inspections

- Wi-Fi or Cellular Service Availability.
- Lights/Sound - hard to see/hear.
- Safety – fall protection, overhead structures.
- Staff resources, time requirements.
- Technology “glitches.”

- This presentation will provide some tips & tricks to help mitigate these challenges and make your next remote/virtual site visit more successful.

- Also will present a representative project where components of the project and the DPH inspection to put into service was done remotely – twice!

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Preparing/Executing a Remote/Virtual Site Visit

- Verify Data Access (Wi-Fi, Cellular “4G” signal)
- Plan out your site walk
  - Charge your battery!
  - Sound Check!
  - Plan around times when you may be able to de-energize equipment to reduce background noise. Don’t do during peak demand periods.
- Multiple Platforms for LIVE, interactive experience
  - FACETIME – iPhone/Apple products only
  - Microsoft TEAMS (CT DPH uses this application)
  - ZOOM Meeting (what we are using today)
  - Google Meetups
  - Others

- ADVANTAGES: They see/hear what you see/hear. Participants can respond and react as things occur. It is the next best thing to being there in-person

- DISADVANTAGES: technology issues, audio/visual interference, etc.

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Preparing for a Remote/Virtual Site Visit (continued)

- Expect the unexpected – this will take longer than an in-person site walk. Plan accordingly.
- Bring a friend – one person taking photos or holding the video camera helps.

- Bring the right equipment. Helpful items include:
  - Flashlight
  - Cell phone WITH headphones/microphone improves sound quality.
  - Bluetooth speaker.
  - Selfie stick, lanyard or tape to prevent dropping the phone/camera in water.
  - A friend – safer, easier to do in pairs.

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Preparing/Executing a Remote/Virtual Site Visit
What to do if LIVE options aren't feasible

- Maintain phone dialogue as the link between operator and vendor/regulator. Conversation is key. What do they need to see?
- Take photos/videos beforehand; send a photo log or video files and discuss. Operator on site to take additional photos/videos pursuant to discussion.
- Can be difficult to share LARGE video files.
    - Resources:
    - Hightail
    - Microsoft OneDrive
    - DropBox
    - Google Drive
    - DropSend
    - Others

IF ALL ELSE FAILS:

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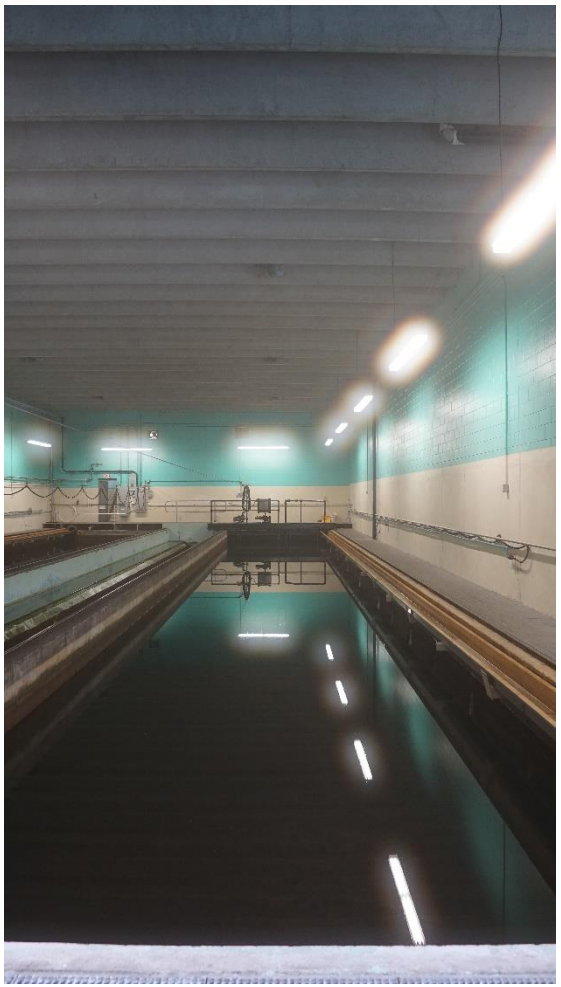
08/16/2018: Filter #1 – Prior to Construction



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07/31/2017: Filter #2 – Before Media and Underdrain Replacement

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09/10/2018: Filter 1 underdrain repair work

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10/05/2018: Filter 1 Porous plate installation (typ).

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10/05/2018: Filter 1 Porous plate installation (typ.)

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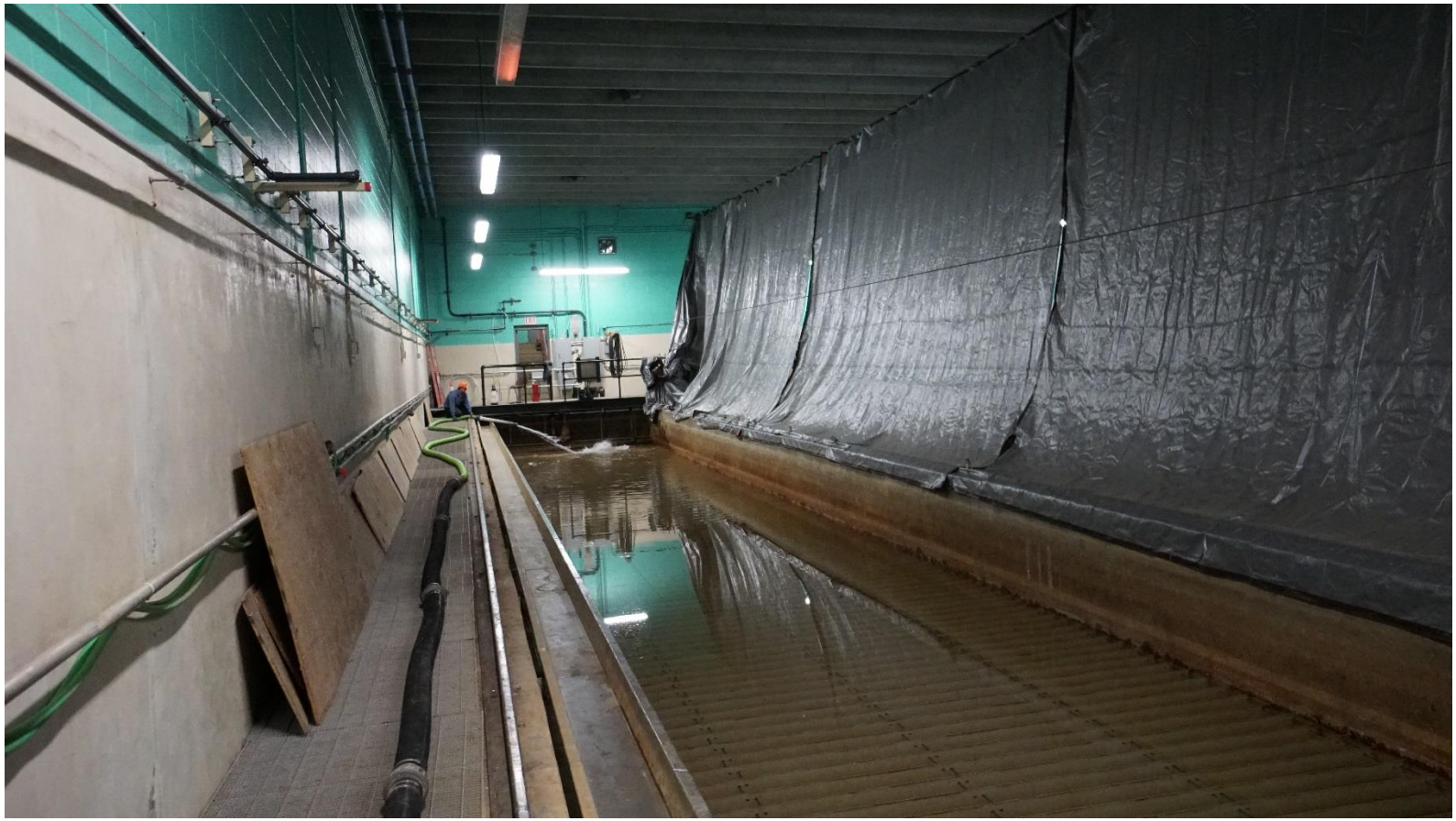
02/05/2019: Filter 1 New media installed (eductor)



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08/29/2018: Filter #1 – Prepped and ready for repair/replacement of filter underdrains and associated equipment

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02/05/2019: Filter 1 Media installation (supersacks and

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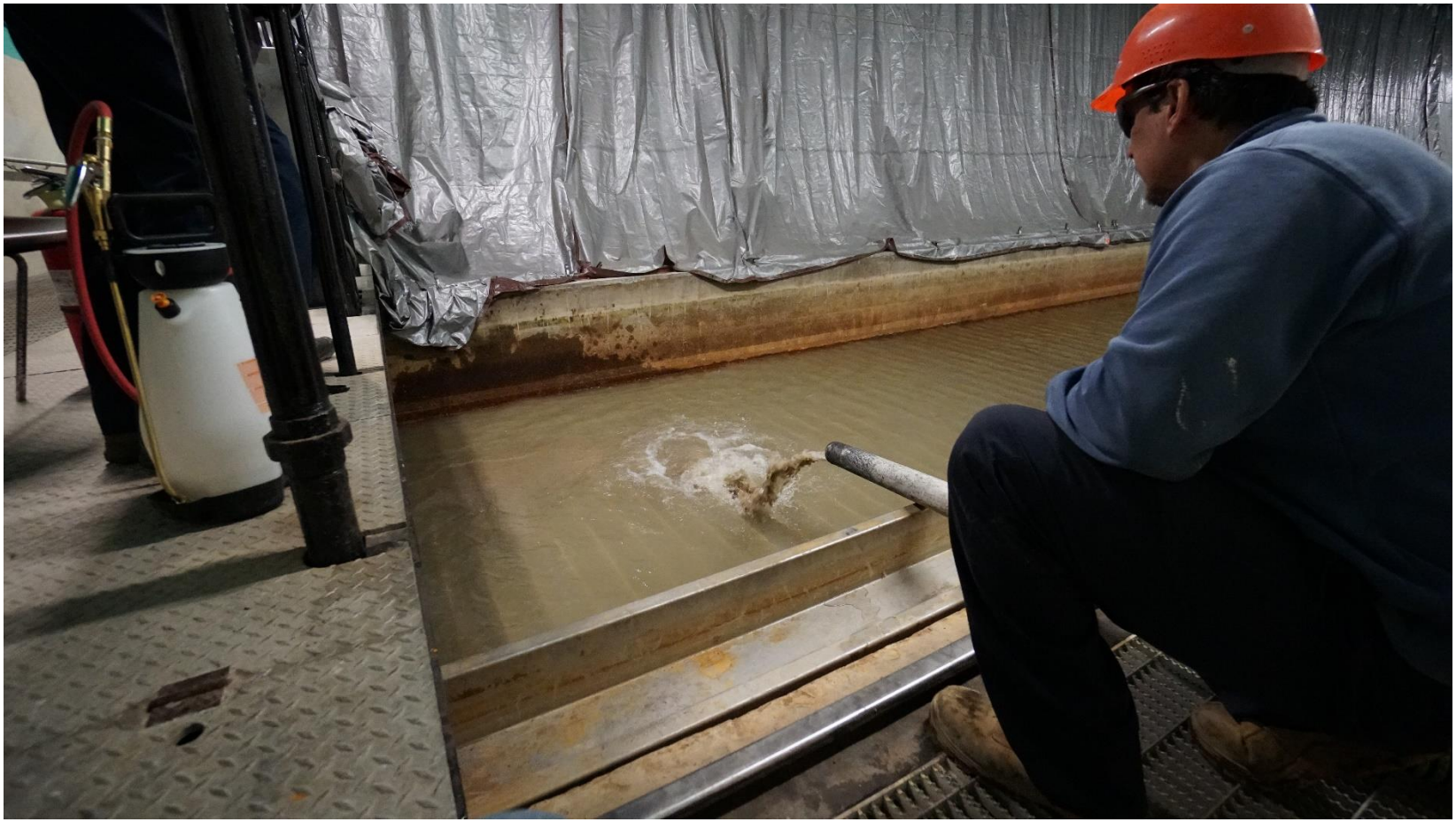
02/05/2019: Filter 1 New media installed (eductor)



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02/05/2019: Filter #2 - Completed Porous Plate New Media Installation

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06/02/2020: View of drain valve on “upstream” end of Filter 2 effluent trough (farthest away from clearwell entry)

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06/02/2020: Newly installed screen over clearwell entry port in common effluent channel with chlorination apparatus suspended above.

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10/29/2019: effluent channel bypass pumping to abate common effluent channel paint (DETAILS submitted May 2020 for Filter #2 Completion) eductor)

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10/25/2019: Bypass piping setup

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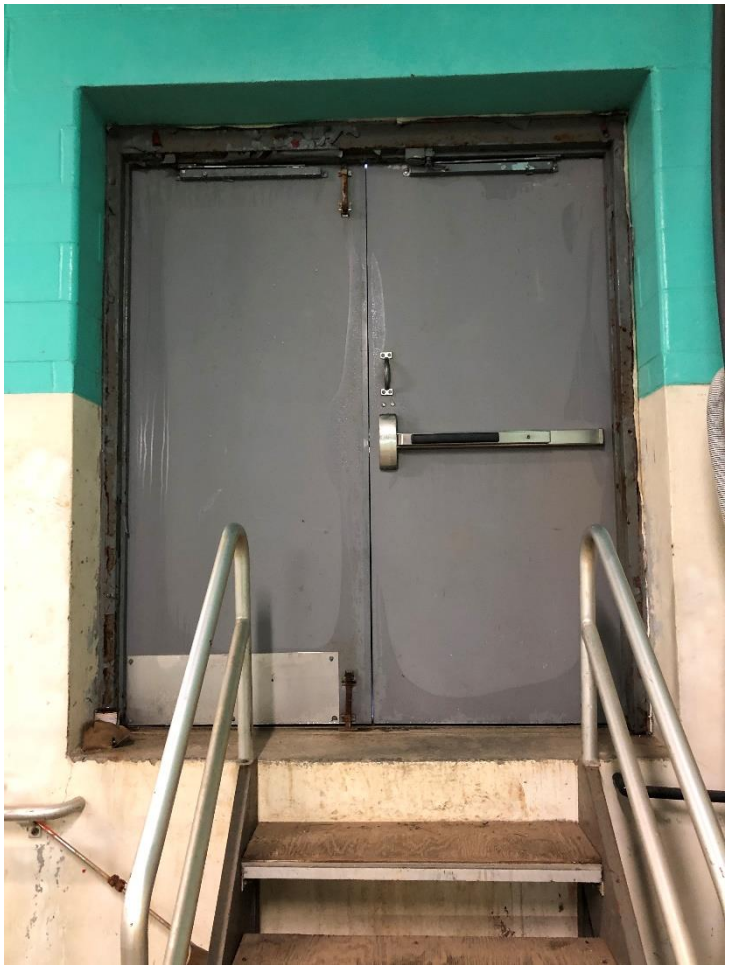
06/02/2020: Bypass piping removed, entryway restored



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06/02/2020: Clearwell
Hatch, Vent Restored

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06/02/2020: Clearwell hatch gasket

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06/02/2020: Clearwell hatch gasket, left side

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06/02/2020: Clearwell hatch gasket, right side

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06/02/2020: Clearwell
Vent screen

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12/13/2019: Isolation for repairs to common effluent channel

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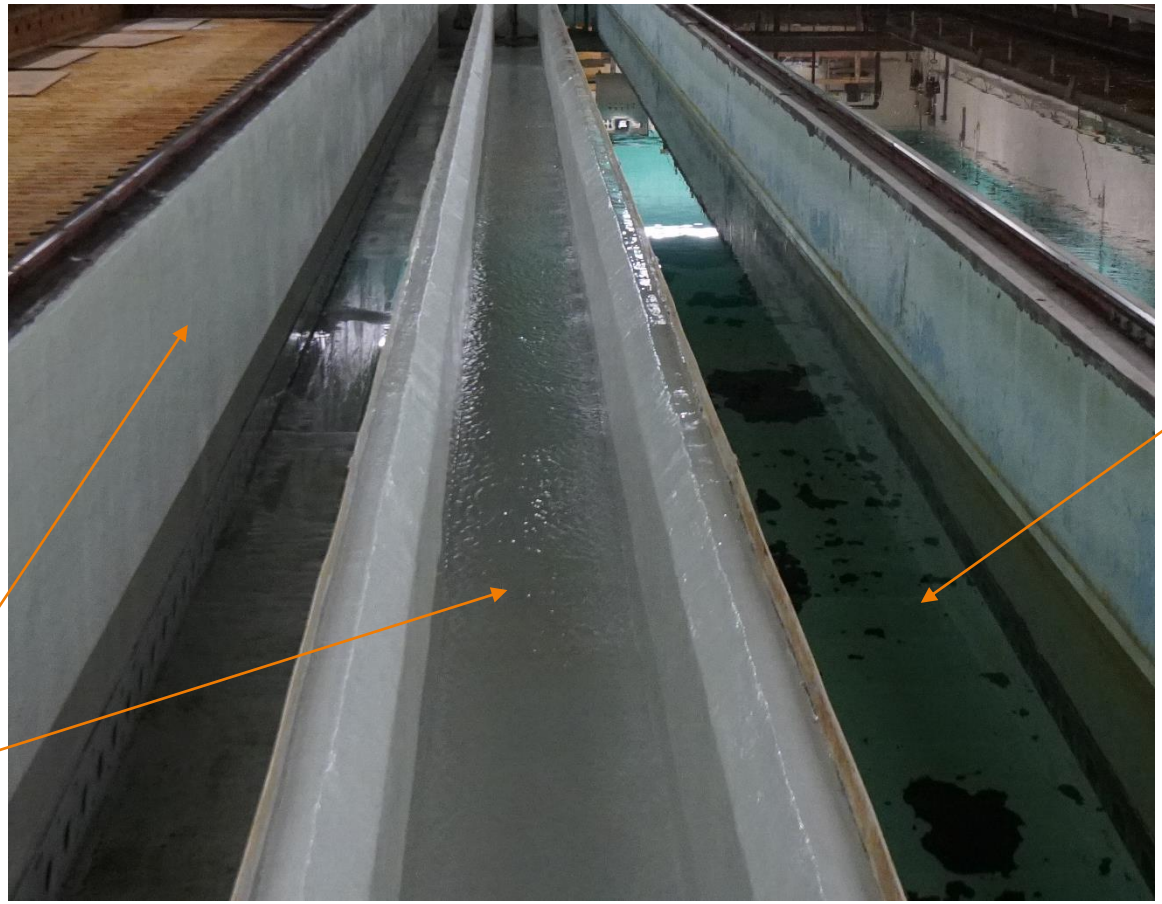
03/25/2020: Recoated common channel. Filter 1 channel (to right) prior to repair.



Filter #1 before recoating

Filter #2 and common effluent channel recoating complete

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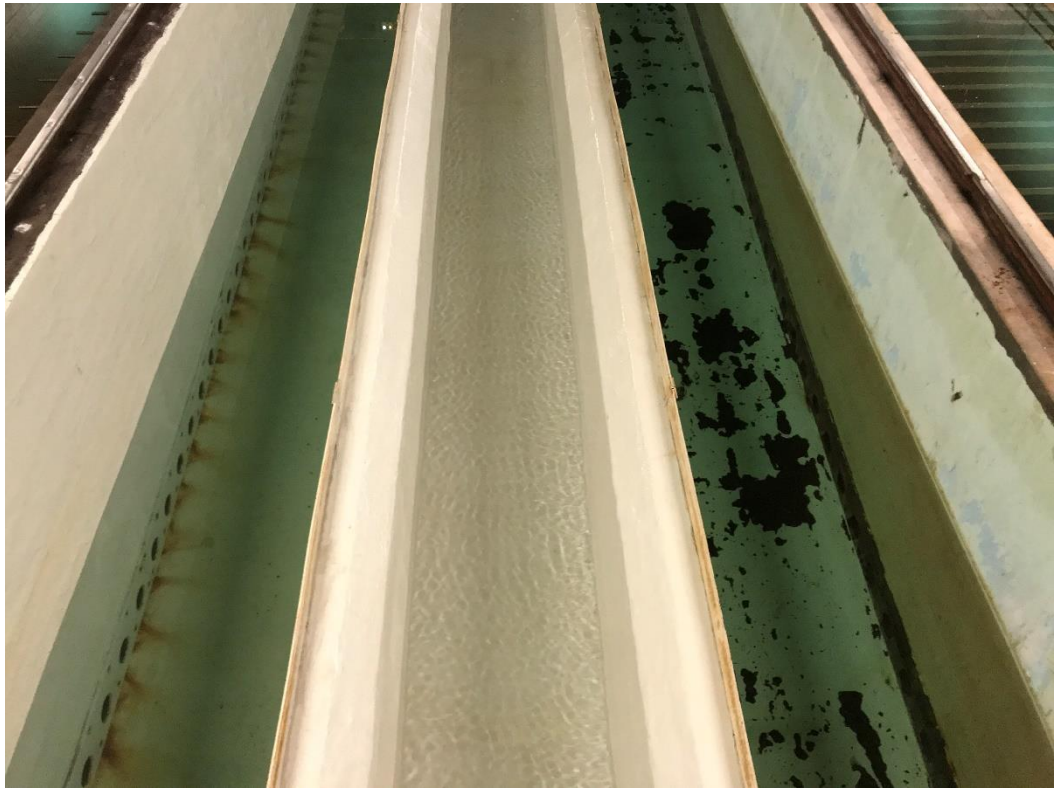
06/02/2020: Filter #2 Effluent Trough (left), Common Effluent Trough (center), Filter #1 Effluent Trough (right)



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03/03/2020: Finishing Re-Coating of Effluent Channel, Filter #2

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12/13/2019: Common effluent channel coating stripped, recoated

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09/17/2020: Filter #1 – stripping/recoating filtered water trough.

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02/20/2020: Recoated common effluent channel

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06/02/2020: New bridge installation completed – testing pumps, motors, carriage, etc.

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04/15/2020: Index pegs installed Completing installation of bridge components

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09/20/2020: Filter #1
Indexing pegs and
railcap replacement

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12/30/2019: Index pegs installed

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09/20/2020: Recoated
Filter 1 Effluent trough

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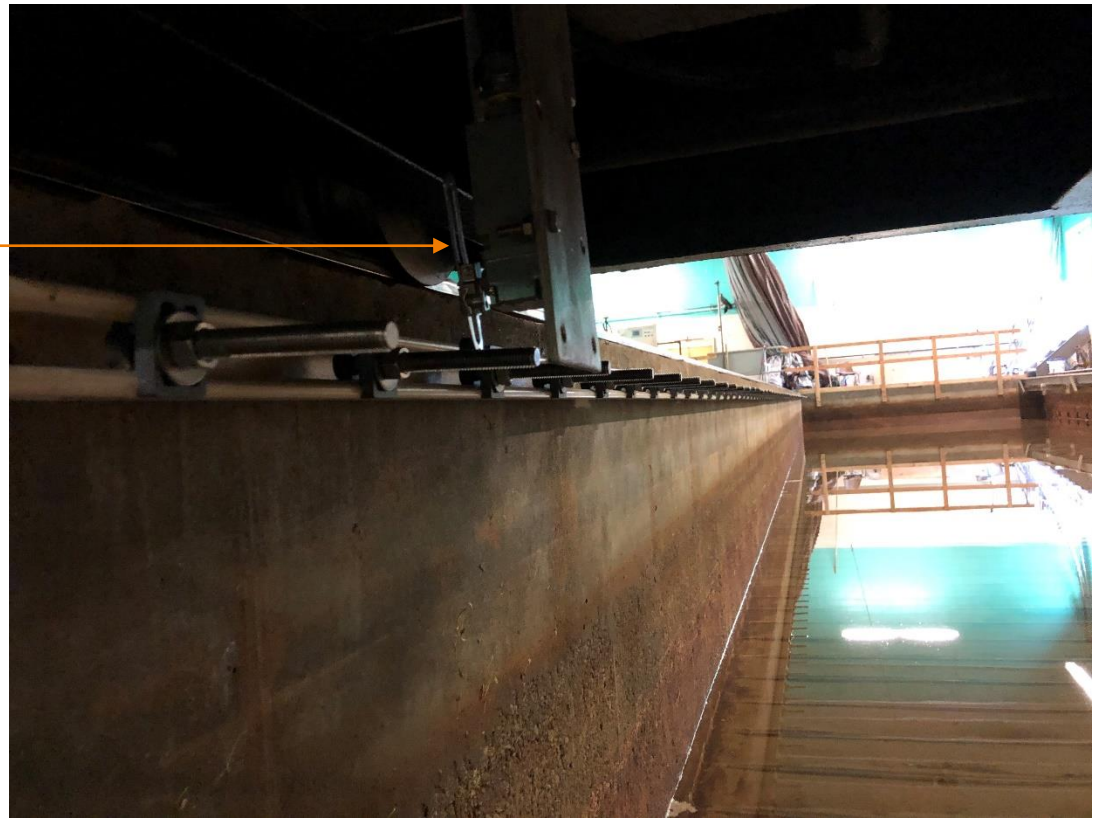
06/02/2020: Indexing pegs and “flipper” on underside of ABW carriage used to relay index count to control panel.

Reverse limit switch



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9/23/2020: New FTW pump installed on bridge, Filter 1

New filter to waste pump

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04/22/2020: Filter 2 Effluent Channel recoated with New Bridge Components installed

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05/21/2020: New
Filter Control Panel

BEFORE

AFTER

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05/21/2020: New analytical metering screens (turbidity, flow)

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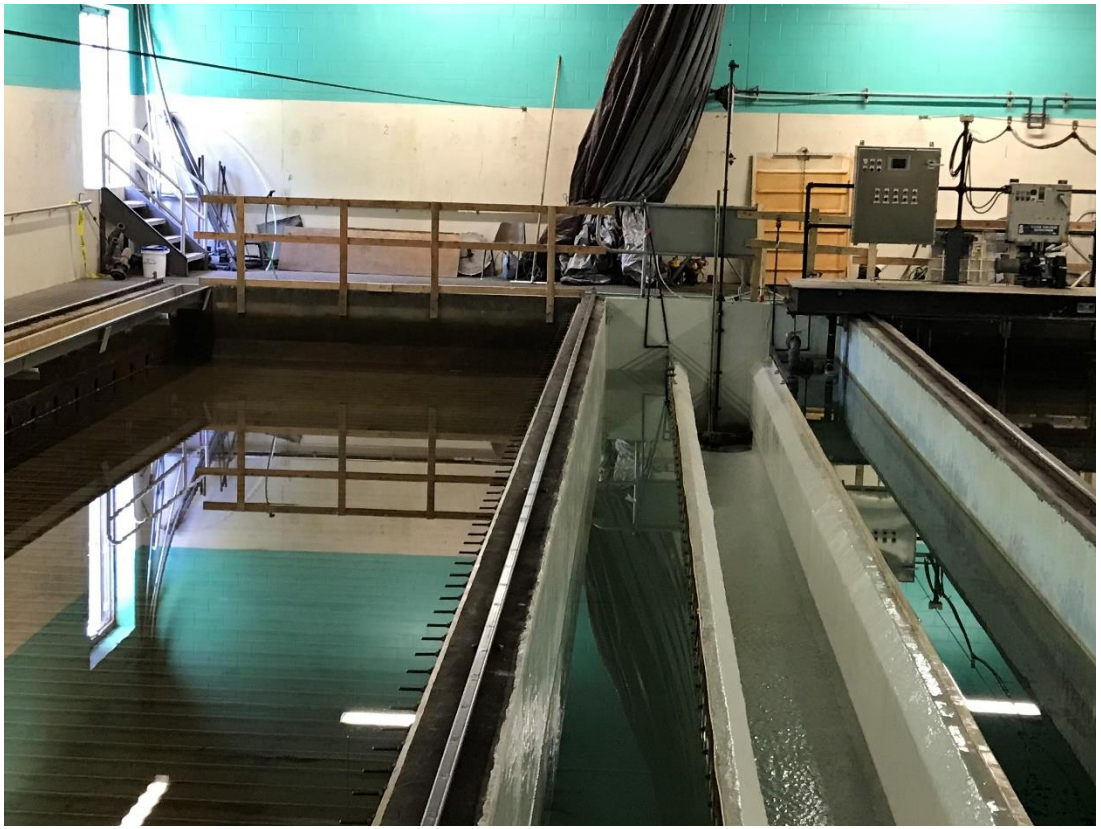
06/02/2020: View of the Filter #2 and common effluent trough facing the screen over the clearwell entry port.



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06/02/2020: Chlorination apparatus at clearwell entry from common effluent trough.

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Tom Cutler – project intro

Tom Cutler – project intro 2

Filter B/W (loud)

Filter B/W 2 (loud)

Filter B/W (with microphone)

Filter ABW Bridge Screens (with microphone, headphones fall off)

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Controls, Instruments 2

Effluent Channels

Probes

Screen on effluent channel replaced

- Remote access for SCADA/Controls – physical “dead man” switch to unplug cable and remove access. CYBERSECURITY!

- Team Effort – Great Adaptation and Cooperation as We all Learn How to Work during these Unprecedented Times

- Not everything is remote. Final testing and startup required vendor travel from Virginia. Difficult to coordinate. Required negative test, highway travel and daily certification of health.

- Keeping Staff Safe but Getting the Work Done. The restrictions affect Project Schedules, Workforce Availability, Workplace Protocols, etc.

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QUESTIONS?

SHARED EXPERIENCES?

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With thanks to

- Thomas Cutler, Norwich Public Utilities
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- Ray Baral, Metropolitan District Commission
- Romana Longo, CT AWWA Executive Director