Emerging Trends In Odor Control

Real World

Case Studies

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STAFFING
NEW TECHNOLOGIES
WATER USAGE
CAPITAL COST
NO GROWTH
PUBLIC EXPECTATIONS
O&M COST
GROWTH
ODOR INTENSITY
REGULATIONS
FLEXIBILITY
AGEING EQUIPMENT

Case Studies

- **Case Study #1:** Collier County Master Pump Station 302
- **Case Study #2:** New Natomas Pump Station
- **Case Study #3:** VSD WWTP Headworks Biofilter

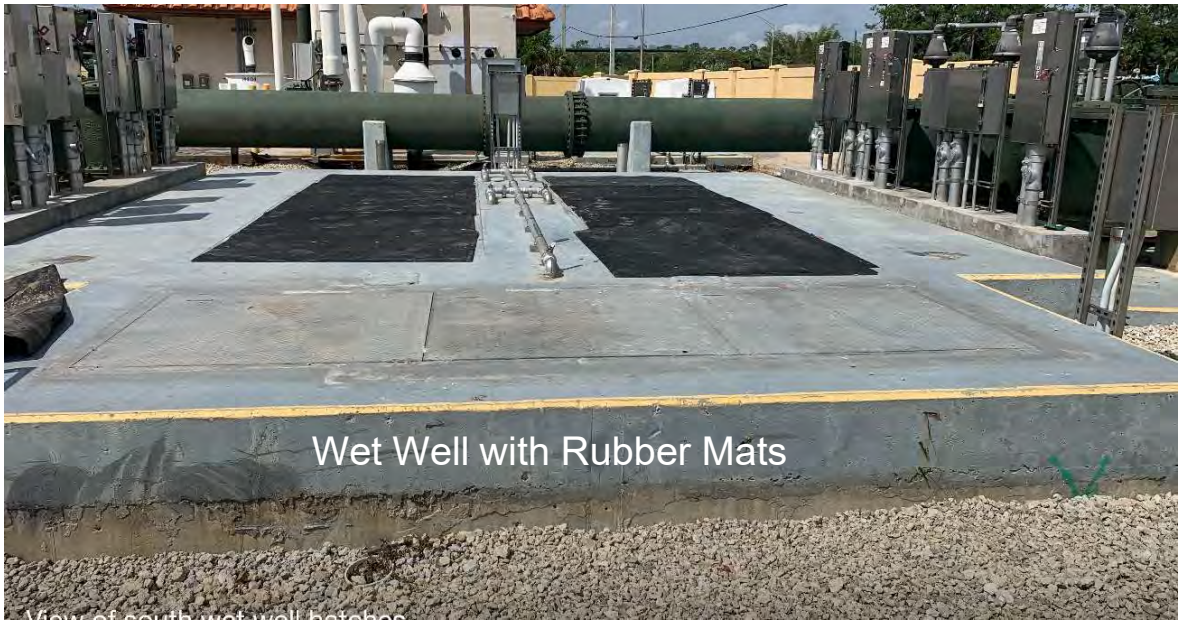
Case Study #1

Master Pump Station 302

Naples, Collier County, Florida

Master Pump Station 302

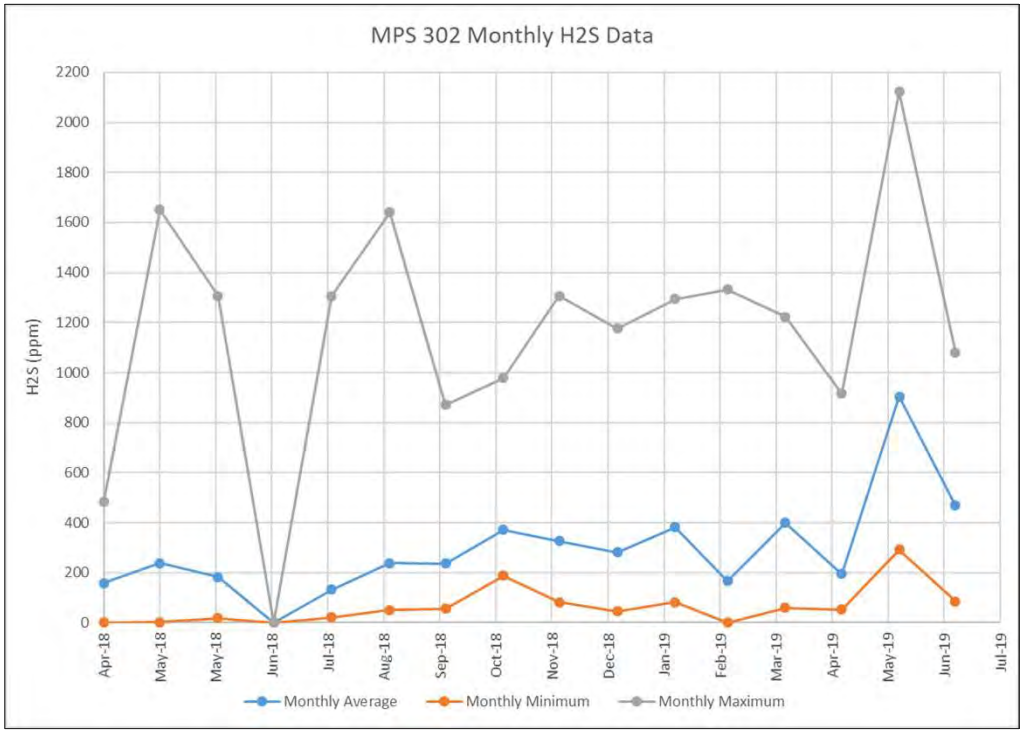
- 8 Submersible pumps
- All inflow from 3 other pump stations (no gravity)
- Diffused aeration in wet well
- Existing Odor Control
  - Two Xylem Zaboc 5000s in series
  - Bioglas media
  - ~600 cfm



Wet Well with Rubber Mats

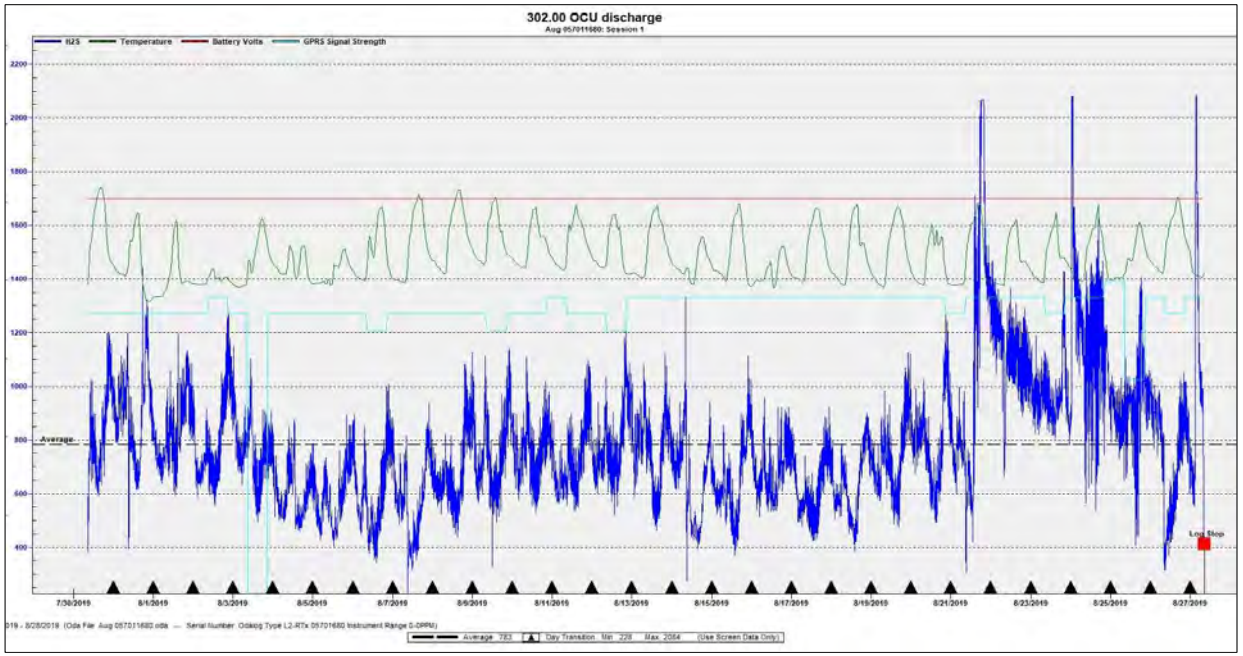
Master Pump Station 302

- Continuous inlet and outlet H_2S data
- 200 to 400 ppm H_2S
- Existing Zaboc 5000 units historically effective
- Site improvements required relocation of odor control system
- New odor control system to replace existing



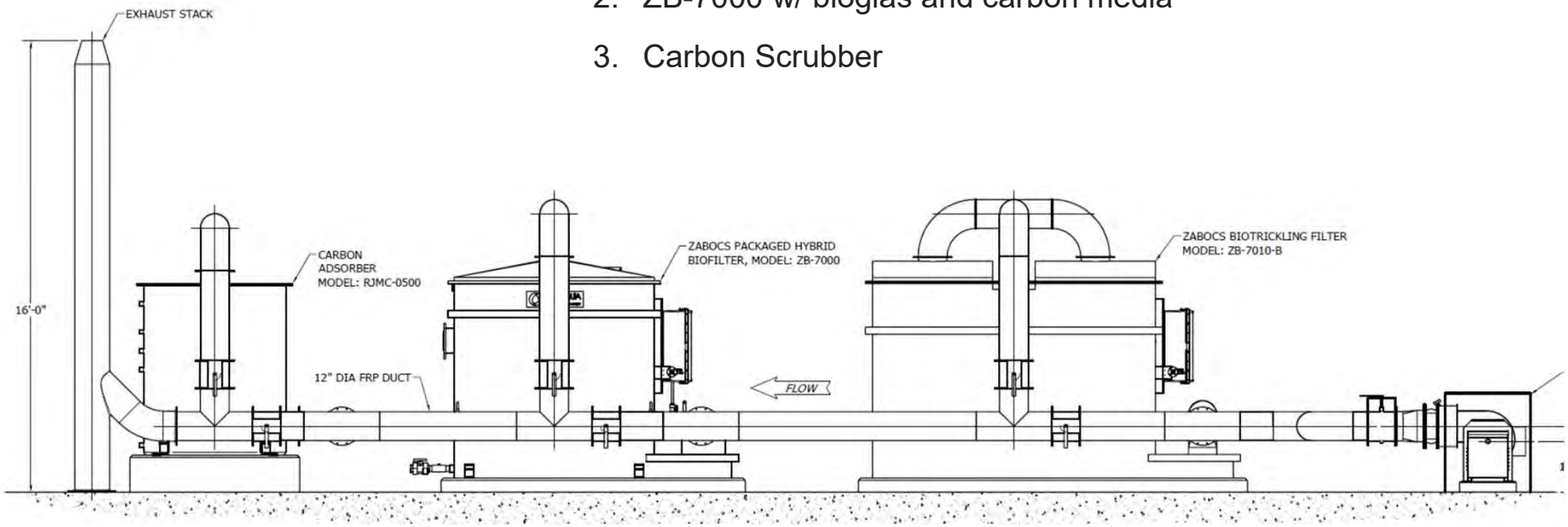
Master Pump Station 302

- Much higher H_2S in August 2019
- 800 ppm average H_2S
- Wet well cleaning interruption
- Carbon polishing scrubber added



Master Pump Station 302

- Double airflow from 600 to 1200 cfm
- 550 ppm avg. inlet H_2S
- 3-Stage Treatment System
  1. Zaboc ZB-7010 w/ bioglas media
  2. ZB-7000 w/ bioglas and carbon media
  3. Carbon Scrubber



Master Pump Station 302

- 3 Treatment Units
- Ability to operate with 1, 2 or 3 units
- Dual Fans (1+1)
- Duct and dampers for flexibility

Master Pump Station 302

Drone View of Completed Project

- Note old Zaboc units along left fence for size comparison
- Site area more than doubled
  - Expanded drives and parking
  - Expanded stormwater detention/treatment
  - Space for larger, multi-stage system
- Improved access to all areas including new odor control system

Master Pump Station 302

Interior View of Stage 2 Unit

Master Pump Station 302

- New odor control system still in commissioning and testing
- Inlet H_2S 250 ppm avg. (Jan 2025)
- Data indicates >99.5% H2S removal
- Moisture due to drain x-connect
- Drain issue corrected and commissioning and ongoing
- Wet well aeration now continuous to minimize H_2S spikes
- Performance testing pending

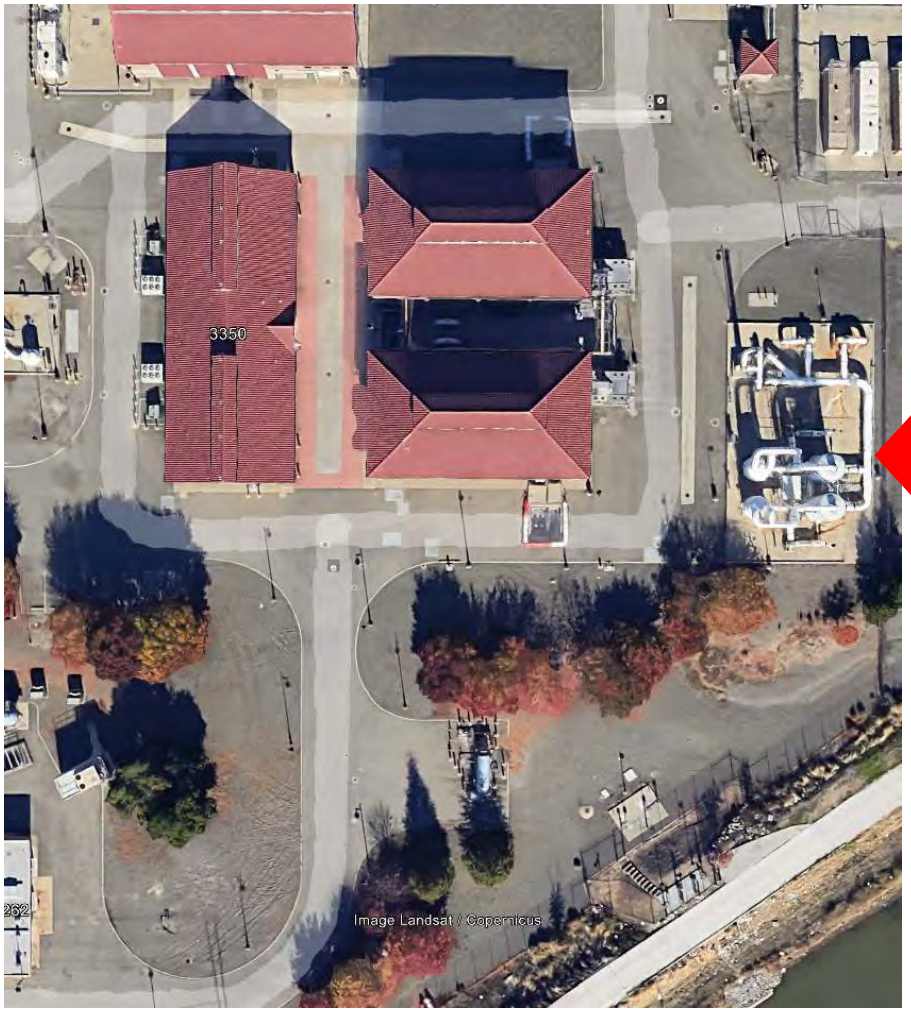
Master Pump Station 302

- Increased airflow
  - Contains odors without need for rubber mats
  - Provides more dilution air
- 24/7 wet well aeration
  - Strips more H_2S from wastewater
  - Controls FOG in wet well
- Multi-stage system capable of treating increased H_2S

Case Study #2

New Natomas Pump Station

Sacramento Area Sewer District, California



New Natomas Pump Station

Large Pump Station on Interceptor Sewer

- 16,000 cfm Odor Control System
- 2-Stage Treatment
  - Bioway BTFs
  - Dual-bed carbon scrubbers
- Two Parallel Trains
- Bioxide Feed in Wet Well
- Gravity inflow
- Operating since 2009

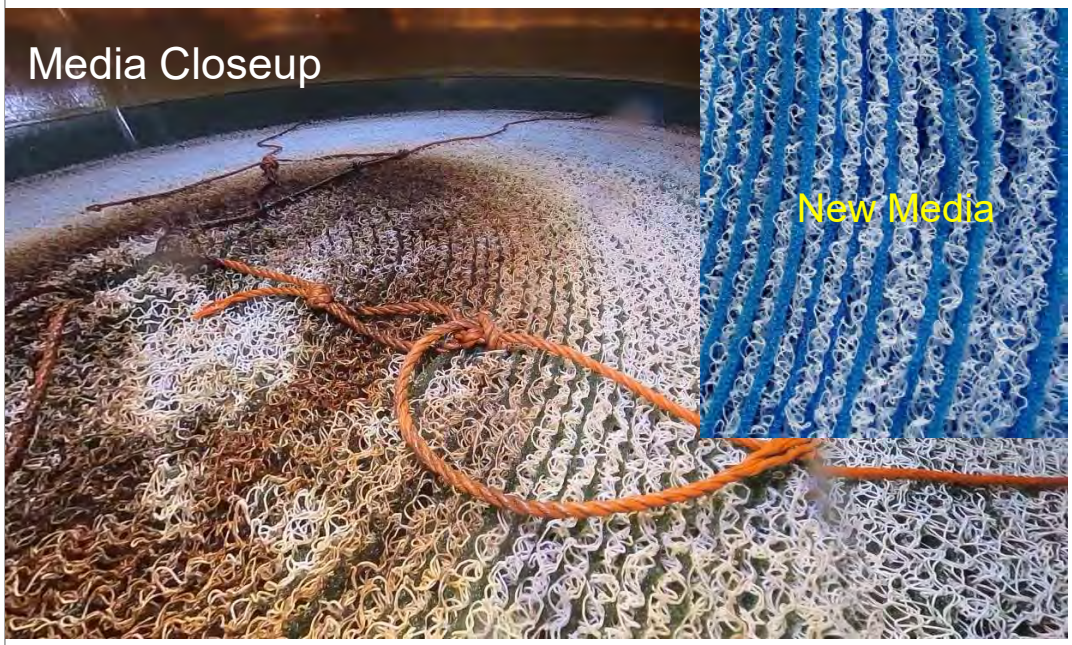
New Natomas Pump Station

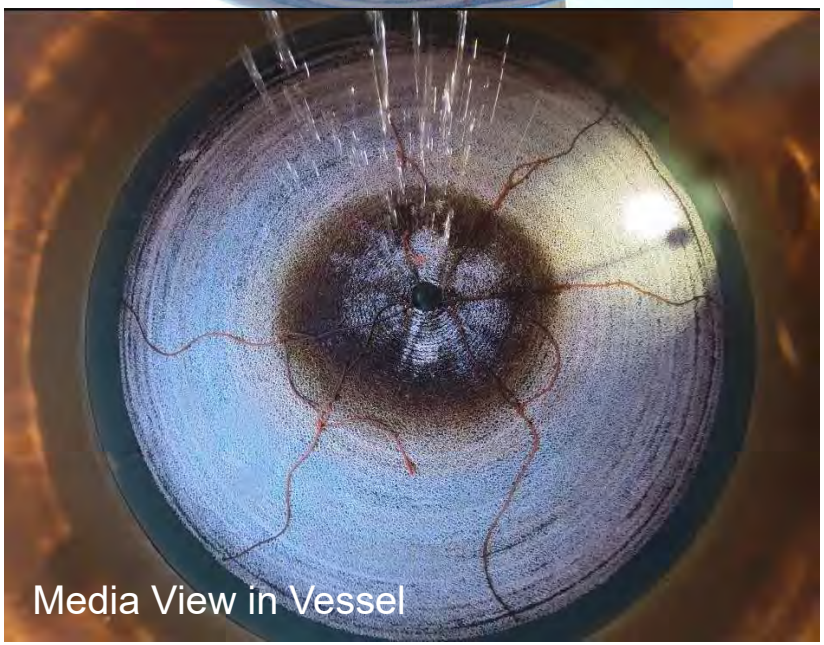
Operational Issues

- Odor Breakthrough Fall 2024
  - North Train Only
  - At Carbon Scrubber Stack
  - Trains not interconnected after BTF inlets
- 10 ppm inlet H_2S
- 50-75% H_2S removal in BTFs
- Train taken offline for inspection
- Inspection by camera insertion thru manway

New Natomas Pump Station

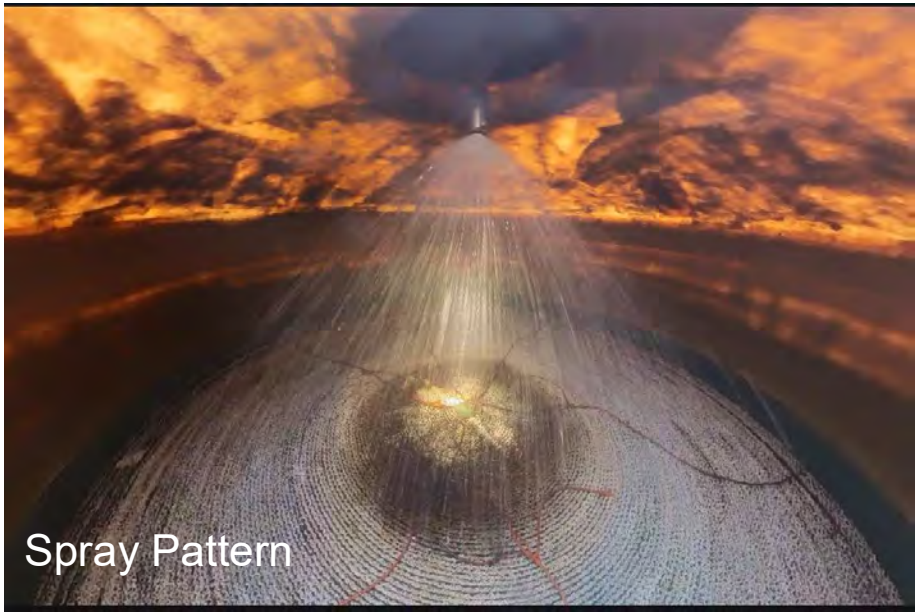
Media Condition

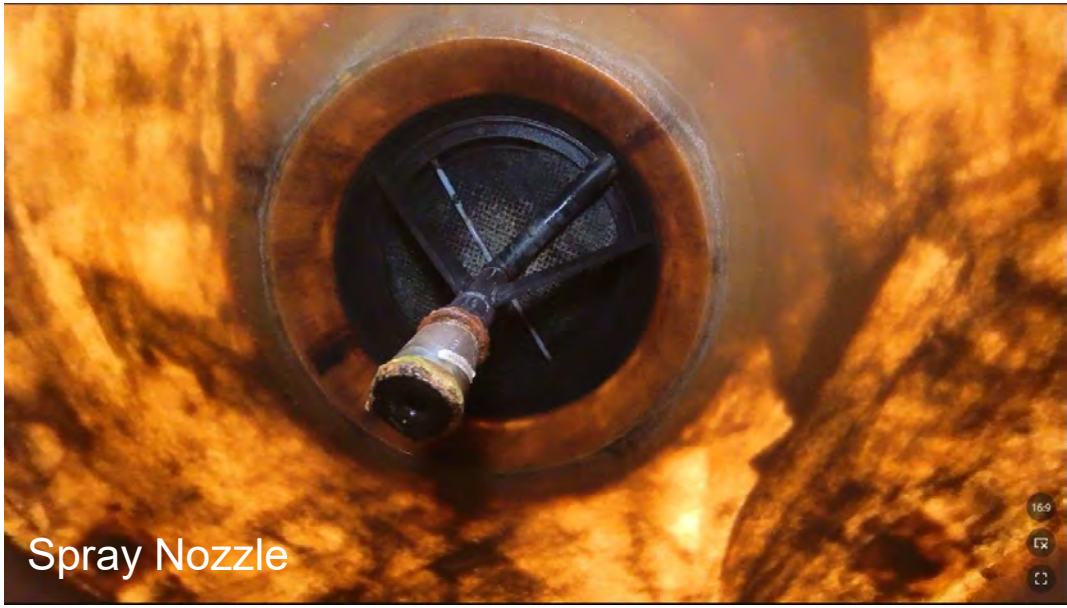




New Natomas Pump Station

Irrigation





New Natomas Pump Station

- Physical Inspection did not indicate any major issues with media
- Irrigation spray pattern good, but coverage near vessel wall may be less than needed
- Spray nozzle replacement recommended
- Carbon media replacement recommended
- Restart North train BTF
- Evaluate process control including pH and flow rates of irrigation water

Case Study #3

VSD WWTP Headworks Biofilter

Indio, California Valley Sanitary District

VSD Biofilter

Biofilter Treating WWTP Headworks

- Original 3,000 cfm mulch biofilter operating since early 2000s
- Capacity increased to 4,000 cfm for headworks expansion project
- Biofilter was sufficient for 4,000 cfm
- New 4,000 cfm FRP fan installed

VSD Biofilter

Biofilter Treating WWTP Headworks

- New fan was underperforming
- Fan testing confirmed static pressure much higher than specified
- Biofilter inspection recommended to identify possible causes
- Video camera insertion revealed that air distribution piping under biofilter nearly half full of sand
- Project to clean air piping and replace media underway

Acknowledgements

Anthony Milden
Lourdes Santiago
Johnny Arteaga
Jon Hood
Collier County, Florida

Fernando Escalante, PE
Justin Kwok
Sacramento Area Sewer District

Questions?

David Agee, PE

Project Technical Leader, Stantec

- 35+ years of experience in municipal wastewater conveyance and treatment
- 25+ years of experience in wastewater odor control project experience across the US

Takeaways

- Collect data
- Inspect existing systems