



Reuse, Recycle and Recharge “Clean” Water



CSEAO ANNUAL SUMMER CONFERENCE
JUNE 17-18, 2025 - COLUMBUS, OHIO

NSF/ANSI Standard 40-2020
NSF/ANSI Standard 245-2020
CERTIFICATE NO. 2,922,436

IMET Wastewater Treatment and Reuse Technology

June 18, 2025
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Aerobic biological technology
mimicking nature's way to treat
wastewaters and restore surface
waters.



Expected Results of Mimicking Nature in Wastewater Treatment

Elimination of H₂S odor

Elimination of bio-sludge accumulation

Sustained healthy balance of BOD, TSS, and TN

Sustained diverse microbial system

Independent of hydraulic load

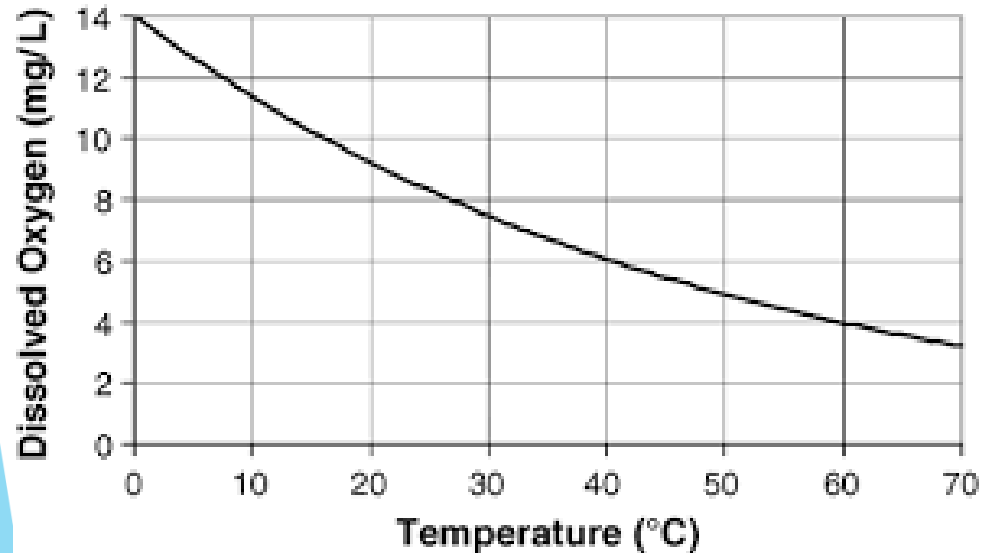


Nature is Sustainable
and Successful

Wastewater Treatment System Mimicking Nature

Sustain aerobic environment, with dissolved oxygen (DO) levels of 2ppm or greater

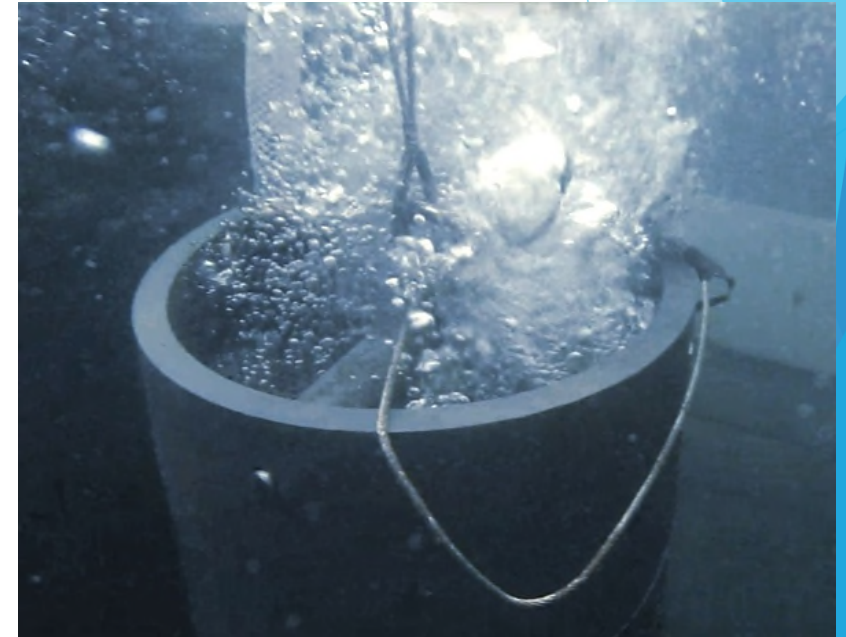
Nature - Air to water interface enables 3 to 10 ppm DO in waterways (depending on ambient temperature)



Wastewater Treatment System Mimicking Nature

Sustain nutrients (BOD) and dissolved oxygen (DO) availability for Microbial growth

Nature - Currents, Eddies, Wind, Storms, Waves, Waterfalls, Rain



Wastewater Treatment System Mimicking Nature

Sustain high population of diverse aerobic microorganisms

Nature – Large variety of substrates in riverbeds, lakes, ponds, ocean reefs with different surface characteristics

- Rocks, Stones, Sands, Corals, Tree Roots, Logs, etc.



IMET Wastewater Treatment System Mimicking Nature

Treatment Module

- Proprietary natural and synthetic media with specific pore structures
- Proprietary design enabling
 - continuous aeration
 - continuous circulating of wastewater through IMET module

Aeration Pump

- Aerating the packed bed to sustain aerobic environment
 - low energy – grid, solar, wind



Installation of IMET Wastewater Treatment Modules

Simple, Practical, Easy

Dropped into the wastewater tank

Each Treatment Module secured at bottom of wastewater tank in upright position

Air compressor housed in weather-proof enclosure



Deliverables

Lift Stations and Grease Interceptors/Traps

- Eliminate H₂S odors
- Significantly minimize FOG and biosolids build up
- Reduce BOD and TSS
- Continuously seed waterbody in tank and downstream



Black and Grey wastewater Treatment

- Meet or exceed discharge BOD, TSS and TN requirements
- Eliminate H₂S odors
- Significantly minimize/eliminate bio-sludge accumulation
- Independent to hydraulic loading – No Washout
- Reduce footprint



Key Results for Deliverables

**Eliminate H₂S odors
And
Reduce Wastewater
BOD, and TSS**

Pump Station #12 Catawba, Ottawa County, Ohio

- No H2S odor
- FOG minimized
- Significant reduction in CBOD5

PS #12 IMET installed 2/27/25	
<u>Date</u>	<u>CBOD5 Result(mg/L)</u>
11/5/24	841.00
12/18/24	330.60
2/25/25	228.0
4/01/25	838.80
4/22/25	506.40
5/27/25	293.40



Pump Station #50 Catawba, Ottawa County, Ohio

- No H₂S odor
- Minimal solids buildup
- Significant reduction in CBOD₅

PS #50 IMET installed 2/27/25	
<u>Date</u>	<u>CBOD₅ Result(mg/L)</u>
2/25/25	1284.00
3/12/25	88.90
4/1/25	43.80
4/22/25	107
5/27/25	239.40



Before IMET Installation - Feb 25th 2025



After IMET Installation - June 11th 2025

A Large Pump Station, Solon, Ohio

- No H₂S odor
- FOG minimized
- Significant reduction of pump outs



Grease Interceptor Pre-Treatment: Hilton, Aruba

- No H₂S odor
- FOG minimized
- Significant reduction of pump outs
- Significant reduction in maintenance

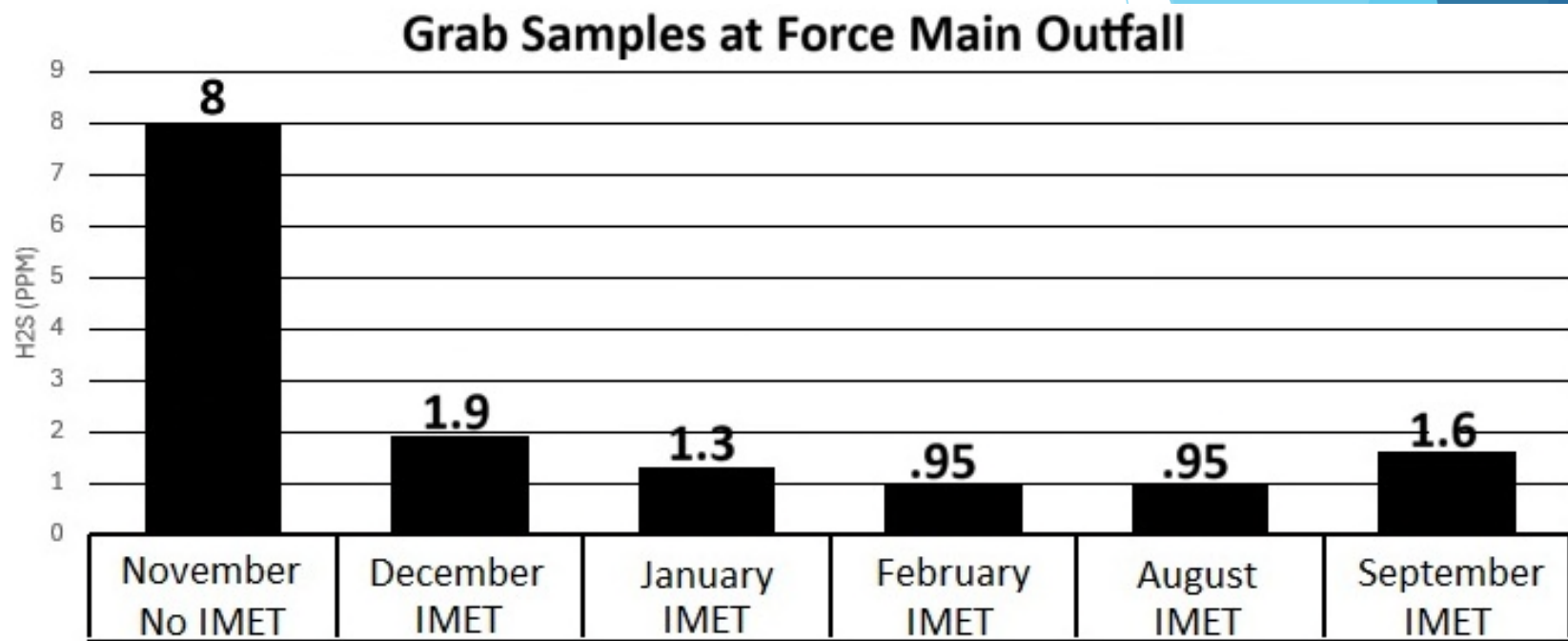


Key Results for Deliverables

Significant Reduction of
H₂S in wet wells and
forcemain outfalls

A Large Pump Station, Broadview Heights, Ohio

Hydrogen Sulfide (H₂S) production significantly minimized and sustained



Pump Station Pre-Treatment: Broadview Heights, Ohio

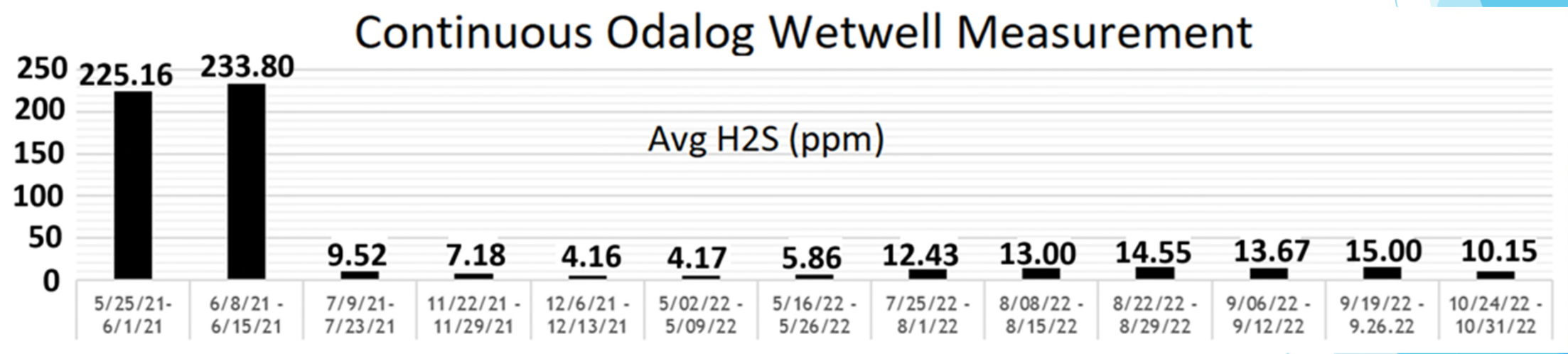
5-year Application

- No H₂S odor
- FOG minimized
- Significant reduction of pump outs
- Significant reduction in maintenance



Pump Station in Indiana

Hydrogen Sulfide (H2S)
production significantly
minimized and sustained



Pump Station Pre-Treatment: Indiana

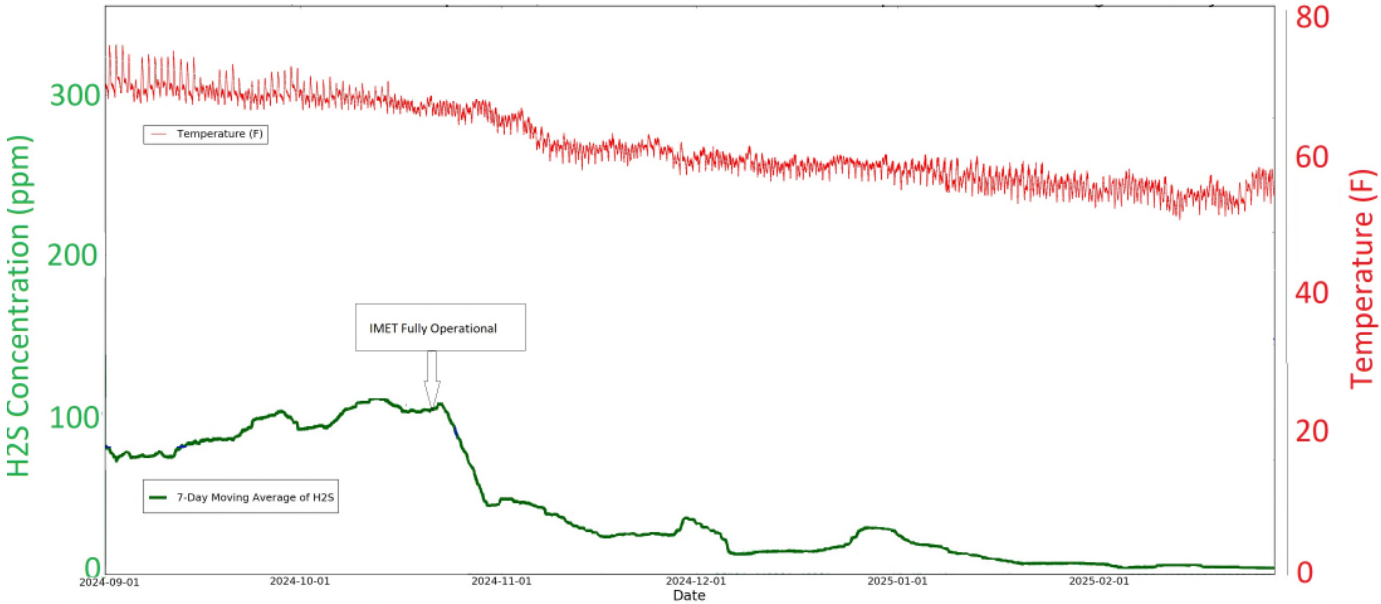
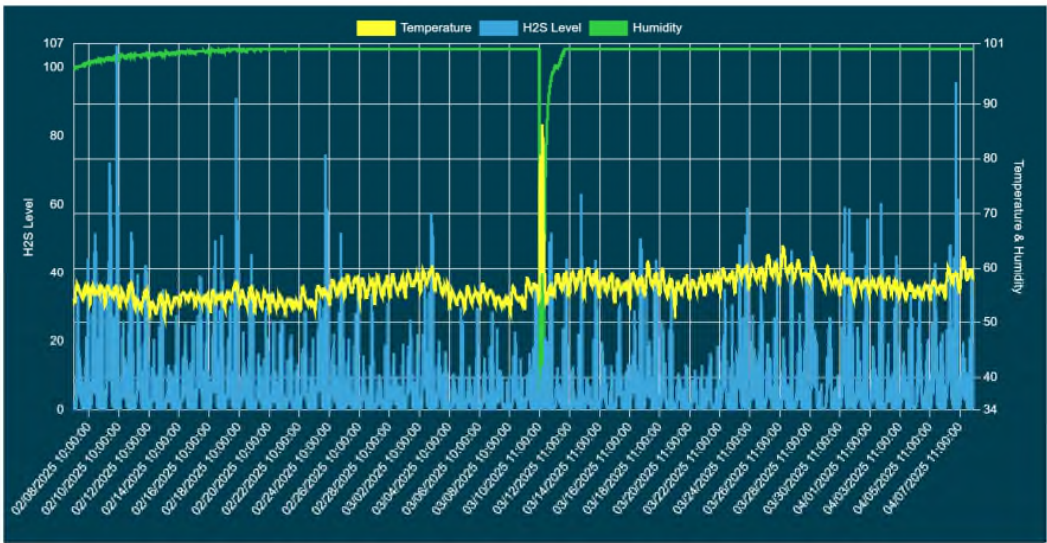
No H₂S odor



A Large Pump Station in Colorado

Hydrogen Sulfide (H2S)
production significantly
minimized and sustained

2-year ongoing Pilot Study in Two Lift Stations
Continuous Odalog measurements - CO



Average H2S Concentration and Ambient Temperature in Manhole where Force Main Discharges
September 2024 - February 2025

Minimum	Maximum	Average
H2S Levels 0 [PPM]	H2S Levels 106.4 [PPM]	H2S Levels 4.6 [PPM]
Temperature 50.7 [F]	Temperature 86.3 [F]	Temperature 56.4 [F]
Humidity 34.8 [%]	Humidity 100 [%]	Humidity 99.4 [%]

Pump Station Pre-Treatment: Colorado

No H₂S odor



Key Results for Deliverables

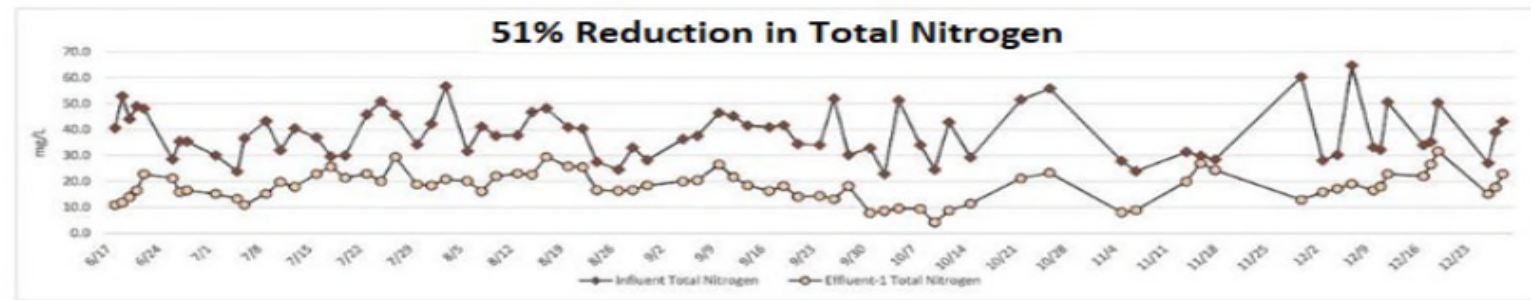
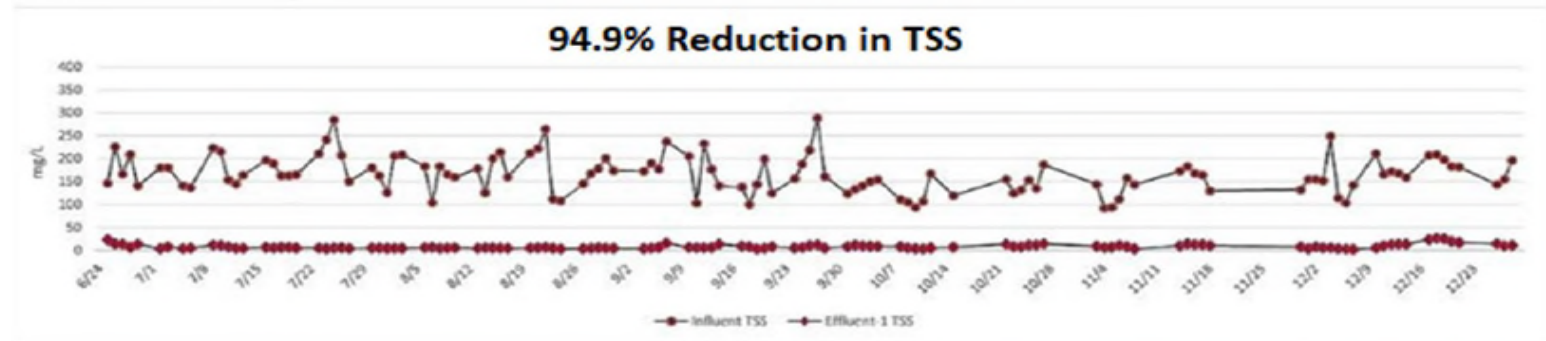
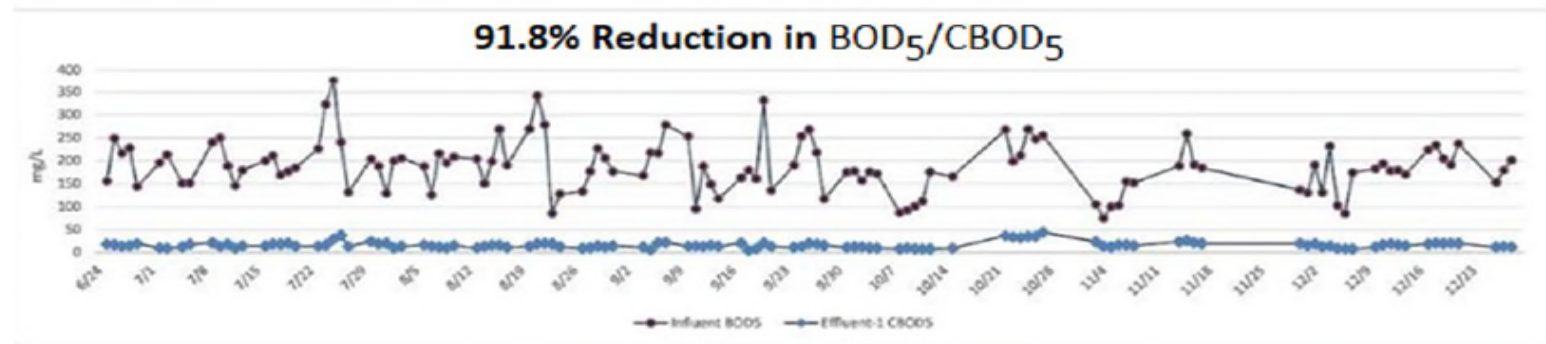
Meet or exceed discharge BOD,
TSS and TN requirements

Significantly
minimize/eliminate bio-sludge
accumulation

IMET NSF/ANSI 40 - 245 Certification - 6-month Study

BOD, TSS and TN discharge levels meet requirements

- Sustained BOD and TSS reduction
- Simultaneous Nitrification and Denitrification



Total Nitrogen Reduction in an IMET aerobic module

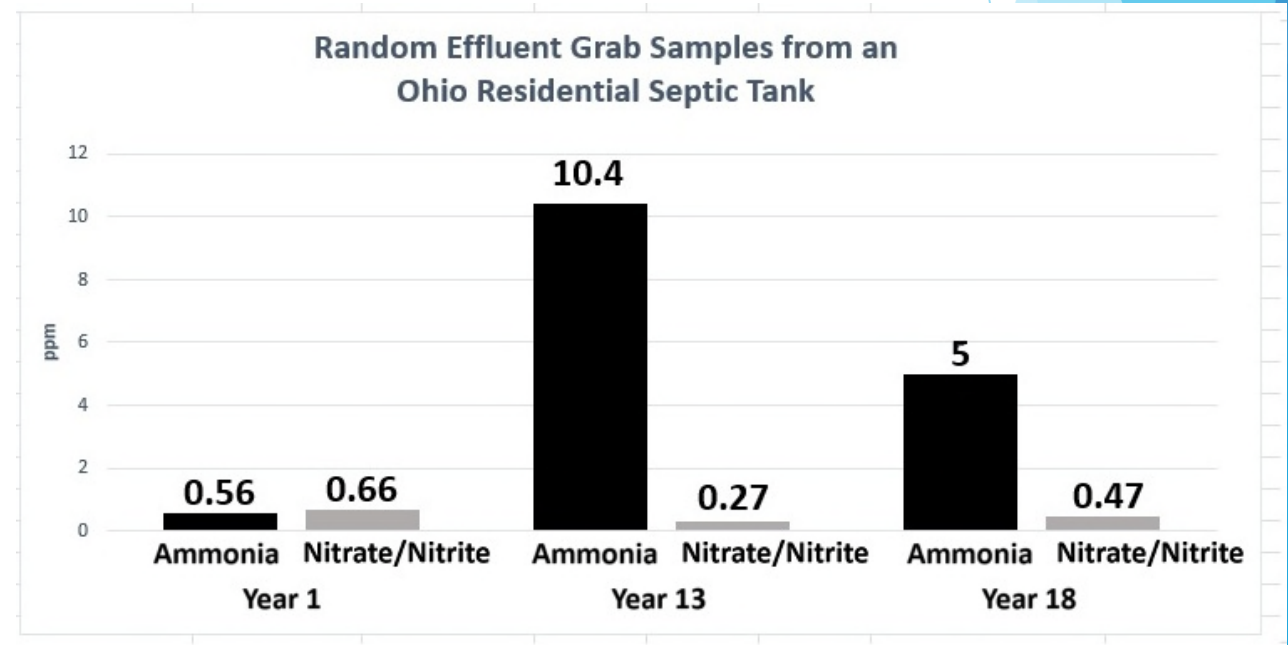
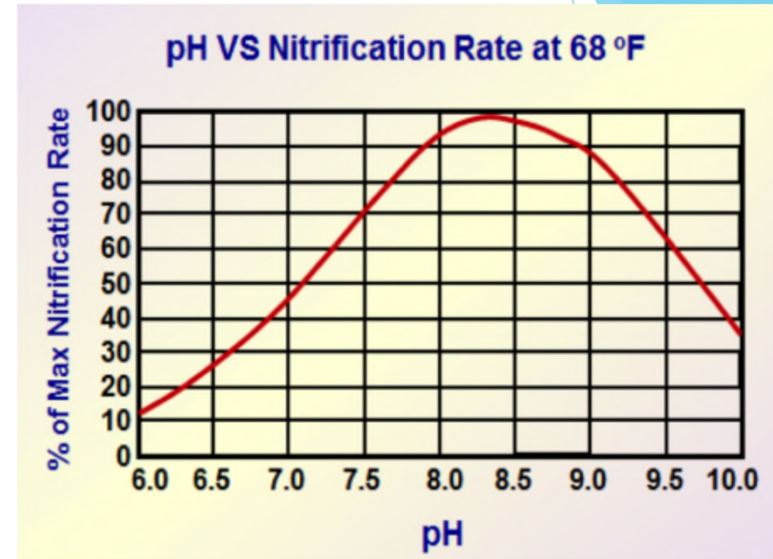
Nitrification is the controlling step

Maintain Alkalinity of 7 to 8 ppm per 1 ppm Ammonia

Maintain wastewater pH of 7 to 8.5

Denitrification takes place simultaneously with Nitrification

Carbon Source (BOD) is required



Park System Vault Toilet: Cleveland Metroparks

- H₂S odor eliminated
- No bio-solids buildup
- Minimal pump outs, trash only



Grab Sample:

CBOD₅ = 20 mg/L
TSS = 12.4 mg/L
NH₃-N = 100 mg/L



Residential Wastewater Treatment: Ohio Residence

- H₂S odor eliminated
- No bio-solids pump outs since installation
- Reclaimed healthy leachfield



EPA Permitted Wastewater Pre-Treatment: Ohio Camp (320 Occupants)

3 Tank IMET Aerobic Wastewater Pre-Treatment System

Treated wastewater is discharged to nearby creek

- BOD reduced to 5ppm
- Ammonia discharge requirements are met
- H₂S odors eliminated
- Bio-solids pump outs eliminated



SBR Wastewater Treatment Plant: Resort, Bermuda

Converted to a 5 Tank IMET Aerobic Wastewater Treatment System

- H₂S odor eliminated
- Effluent BOD meeting discharge requirements
- Minimal to no Bio sludge
- Healthy water discharged to ocean through deep well



EPA Permitted IMET System: Andover, Ohio (280 RV Camp Site)

3 Tank IMET Aerobic Wastewater Treatment System

- H₂S odor eliminated
- Effluent BOD meeting discharge requirements
- Minimal to no Bio sludge
- Healthy water to drip soil absorption field



IMET Modules Installed in Three Tanks



High Strength
Wastewater
Treatment



Primary
Treatment
Tank 1



Primary
Treatment
Tank 2

Large Septic Tank Wastewater Treatment Plant Kosedere, Izmir Turkiye (1,000 population)

Converted to a 3 Tank IMET Aerobic Wastewater Treatment System

Healthy treated wastewater is discharged to nearby creek

- H₂S odors eliminated
- BOD and TSS meeting discharge requirements
- Minimal to no Bio sludge



Activated Sludge Wastewater Treatment Plant: Karaburun, Izmir Turkiye (3,500 population with up to 15,000 during tourist season)

Converted to a 4 Tank IMET Aerobic Wastewater Treatment System

Healthy treated wastewater is re-used to irrigate olive grove

- H₂S odors eliminated
- BOD reduced to less than 30 ppm at all times
 - No need for increased footprint during peak tourist season
- BOD and TSS meeting discharge requirements
- Minimal to no Bio sludge
- Blue flag restored for the beach



The microbiological parameters to be monitored are given below:

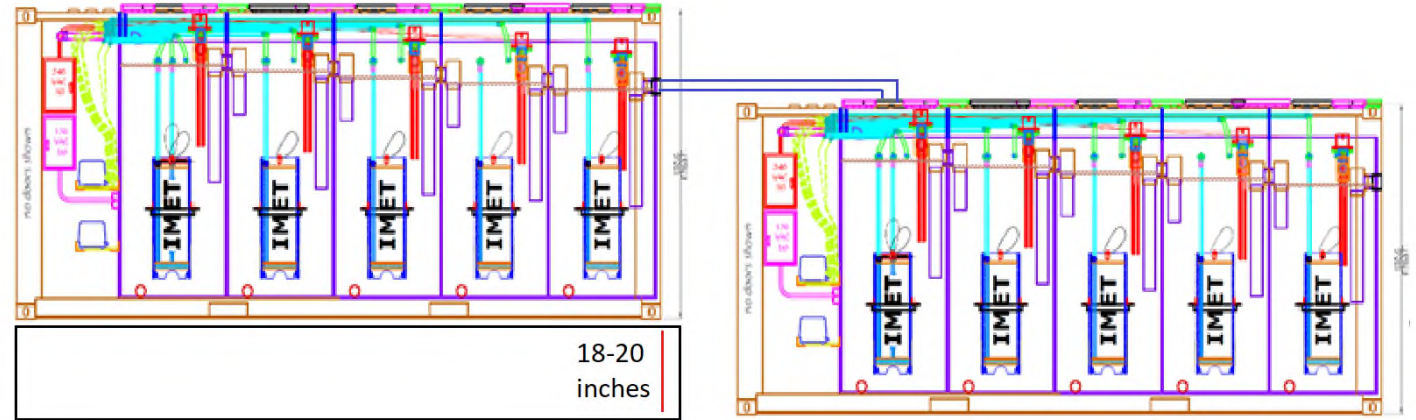
Parameter	Coastal and transitional waters Limit values	Inland waters Limit values
Escherichia coli (Faecal Colibacteria)	250 cfu/100 ml	500 cfu/100 ml
Intestinal Enterococci (streptococci)	100 cfu/100 ml	200 cfu/100 ml



IMET Wastewater Package Treatment Plant

Deployable and Modular Treatment Plant

- Meeting land or surface water discharge requirements
 - Small communities
 - Military
 - Parks
 - Commercial/Industrial Parks
- Enabling decentralized wastewater treatment and **Total Water Reuse®**



Ponds and Small Lakes Recovery: Cleveland Metroparks Zoo's Australian Pond

- Recovered pond back to its natural eco-balance; clear, healthy water
- Recovery of plants and fish population
- Natural healthy algae growth



Results Achieved by IMET Mimicking Nature in Wastewater Treatment in all Applications

Lift Stations and Grease Interceptors/Traps

- H₂S odor Eliminated
- FOG and Biosolids build up significantly minimized
- BOD and TSS in wastewater substantially reduced
- Waterbody in tank and downstream continuously seeded

Black and Grey wastewater Treatment

- BOD, TSS and TN discharge requirements met and exceeded
- H₂S odors eliminated
- Bio-sludge buildup substantially reduced
- Independent of hydraulic loading -No washout
- Footprint reduced for complete treatment

Recovering Ponds and Small Lakes

- Total nitrogen and carbon sources reduced to natural levels
- Aerobic condition of waterbody sustained

IMET Certification



NSF/ANSI Standard 40-2020
Residential Wastewater Treatment Systems

NSF/ANSI Standard 245-2020
Wastewater Treatment Systems - Nitrogen Reduction

Reuse, Recycle and Recharge “Clean” Water

