# Aclarity

## Electrochemical Water Treatment


**Julie Bliss Mullen, CEO**
julie.mullen@aclaritywater.com

**Clean. Safe. Water.**
aclaritywater.com

# Executive Summary

What we do:

- Aclarity's proprietary modular electrochemical water treatment systems cost-effectively destroy contaminants: PFAS, VOCs, nitrogen, etc. saving customers money, time, and liability

Founded 2017– University of Massachusetts, Amherst

Markets & Customers

- 1st Industrial: engineering firms, service providers, OEMs
- 2nd Small municipal: engineering firms, OEMs, large utilities
- 3rd POU/POE: OEMs

Current status:

- Contract manufacture systems
- Successful pilots, first installations
- Recommended for NSF SBIR Phase II $1M
- Raising Seed round $1.5M from impact VCs/strategics
- Previously raised ~$1M from grants and Pre-Seed VC

## Team Accolades

Forbes 30 UNDER 30 CLASS OF 2019

ISENBERG SCHOOL OF MANAGEMENT

LEMELSON-MIT
Celebrating invention, inspiring youth

Hazen

AMERICAN WATER

BainCapital

## Pilots & Partners

PowerTech WATER

UNTAPPED
Unlock the Potential of the Next Billion

WATTS® WATER TECHNOLOGIES

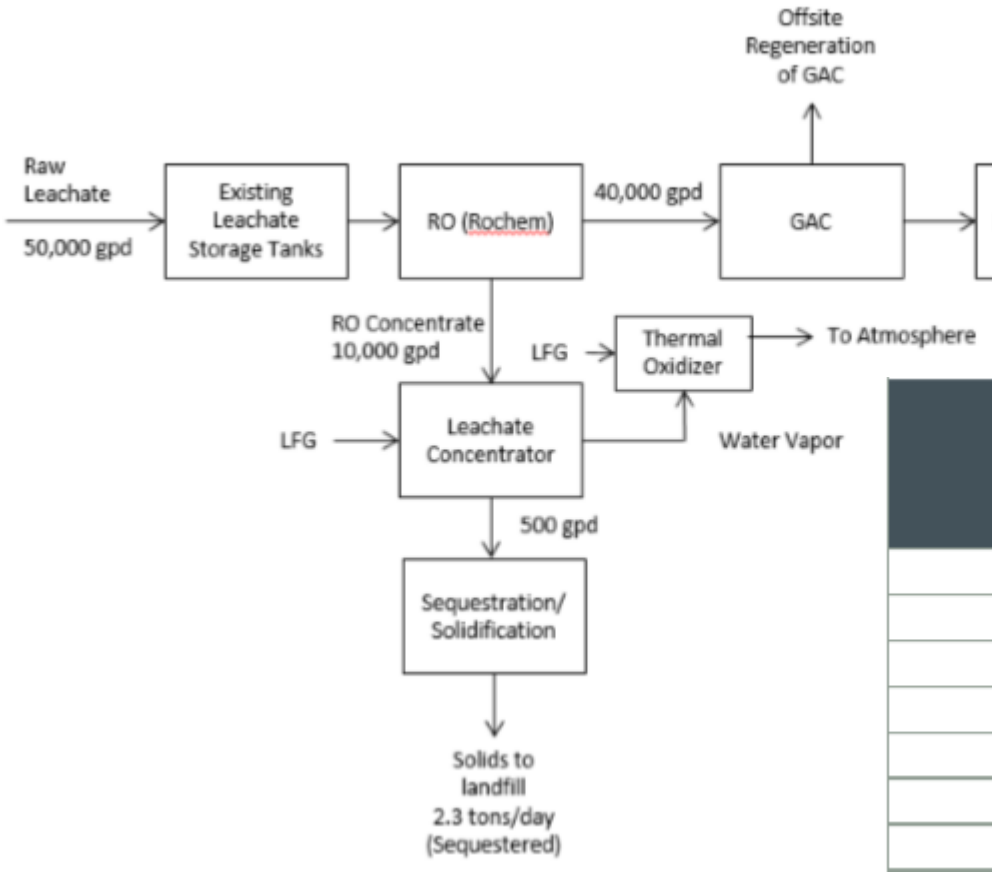
Brown AND Caldwell®

HEARTLAND WATER TECHNOLOGY

Aclarity


julie.mullen@aclaritywater.com

# Existing water treatment solutions are complex, costly and ineffective




| | Option 1a<br>Discharge to Surface Water<br>RO+GAC+Remin w/ Conc. + Emissions Control |
|---|---|
| **Estimated Total Installed Cost (CapEx)** | $ 17,100,000 |
| Estimated Total Installed Cost Range (CapEx) | $13,700,000-$34,200,000 |
| Annual OpEx ($/yr) | $ 871,000 |
| Annual OpEx Range ($/yr) | $700,000-$1,700,000 |
| Transportation and Disposal (T&D) ($/yr) | NA |
| Total Annual OpEx incl. T&D ($/yr) | $ 871,000 |
| Total Annual OpEx Range incl. T&D ($/yr) | $700,000-$1,700,000 |


julie.mullen@aclaritywater.com

# Aclarity brings electrochemistry to full-scale

- Decreases lifecycle costs
- High oxidation potential
- 90% cost of BDD
- Flow-through design
- Long lifetime (years)
- Modular, stackable
- Durable
- No chemical storage
- Fully automated

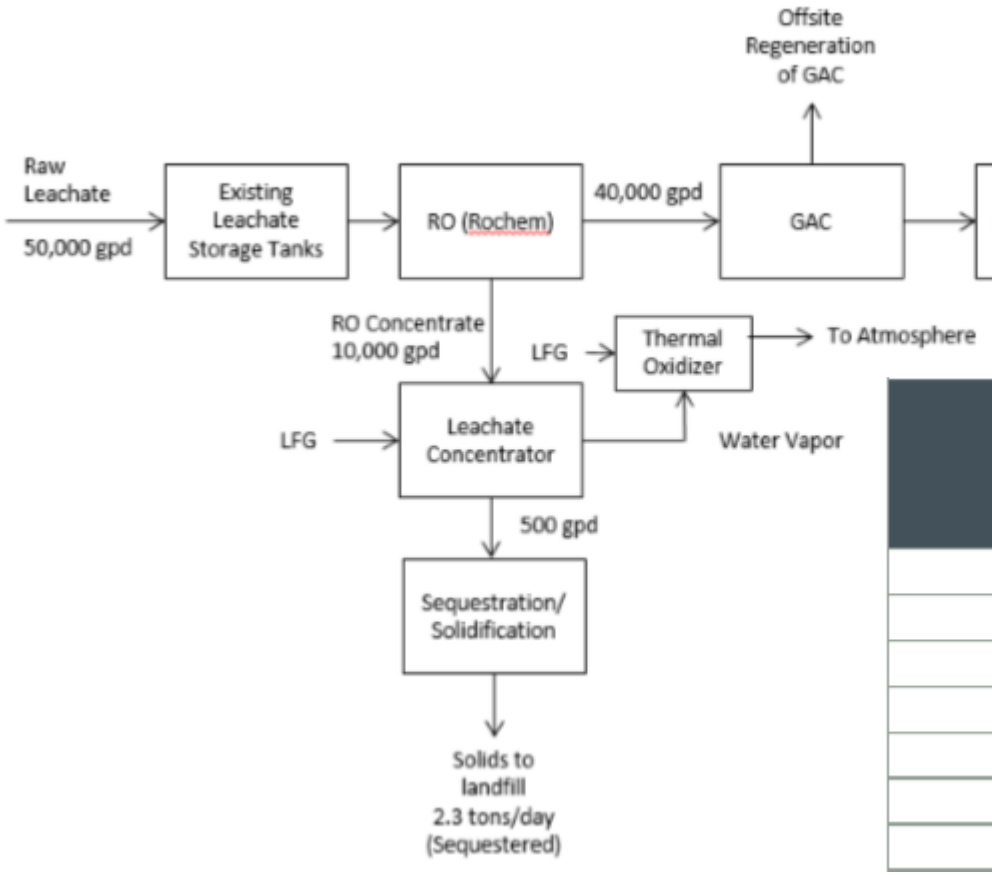
| Electrode Material | Over potential (V) versus SHE |
|---|---|
| Aclarity | 2.5+ |
| Boron-doped diamond | 2.2-2.6+ |
| $Ti/SnO_2$-$Sb_2O_5$ | 1.9-2.2 |
| Ti/Pt | 1.7-1.9 |
| $IrO_2/Ta_2O_5$ | 1.5-1.8 |
| $RuO_2/TiO_2$ | 1.4-1.7 |



Aclarity


julie.mullen@aclaritywater.com

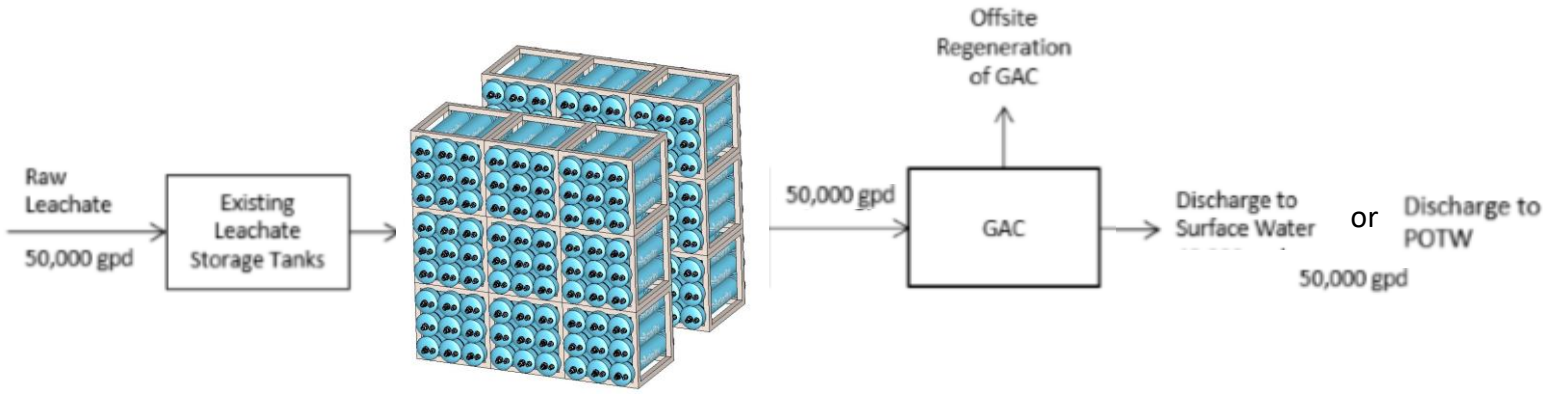
# Existing water treatment solutions are complex, costly and ineffective




| | Option 1a<br>Discharge to Surface Water<br>RO+GAC+Remin w/ Conc. + Emissions Control |
|---|---|
| **Estimated Total Installed Cost (CapEx)** | $ 17,100,000 |
| Estimated Total Installed Cost Range (CapEx) | $13,700,000-$34,200,000 |
| Annual OpEx ($/yr) | $ 871,000 |
| Annual OpEx Range ($/yr) | $700,000-$1,700,000 |
| Transportation and Disposal (T&D) ($/yr) | NA |
| Total Annual OpEx incl. T&D ($/yr) | $ 871,000 |
| Total Annual OpEx Range incl. T&D ($/yr) | $700,000-$1,700,000 |


julie.mullen@aclaritywater.com

# Aclarity's solution destroys contaminants, saves money, simplifies operations, and reduces liability

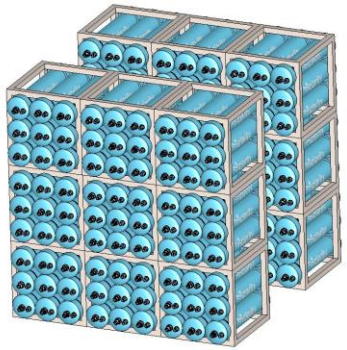



| | Existing Solution | Aclarity | Aclarity + GAC |
|---|---|---|---|
| CapEx | $17.1M | $660K | $1.04M |
| OpEx/yr | $871K | $225K | $325K |
| Destructive | No | Yes | Yes |
| No chemicals | No | Yes | Yes |
| No waste | No | Yes | No |
| Long lifetime | No | Yes | Yes |
| Sustainable | No | Yes | Yes |


julie.mullen@aclaritywater.com

# Scales up and down economically

## Large implementation



**PFAS + others**
- Industrial on-site destruction
- 600 GPM
- $11M

- High power capacity allows destruction of various compounds on site, rather than expensive capture and disposal

## Small implementation

**Disinfection**
- Int'l small municipal
- 10 GPM
- $3K

- Brings effectiveness of large municipal plant to household-scale application
- Unit has no moving parts, can operate remotely in field conditions with long life

Aclarity


julie.mullen@aclaritywater.com

# System is proven in a variety of difficult use cases

| | Examples | Status | Case Studies | Integrators |
|---|---|---|---|---|
| **Organics** | | | | |
| **Microbes** | Bacteria, virus, algae, cysts | ✓ Live in field | >6.4 log removal at 10 GPM NSF/ANSI P231 for bacteria and viruses | WATTS WATER TECHNOLOGIES |
| **Chemicals** | PFAS, VOCs, pesticides, PPCPs | ✓ Pilot tested | Sizing 2 full-scale systems for Tier 1 automotive plants | PowerTech WATER |
| | | | Groundwater VOC pilot for municipal wells | |
| | | | Storage tank remediation of phenols and hydrocarbons underway | HEARTLAND WATER TECHNOLOGY |
| **Inorganics** | | | Pending pilots for PFAS plume remediation and treatment of drinking water | Brown AND Caldwell |
| **Non-metals** | Ammonia, nitrates, cyanide | ✓ Lab tested | Successful in-house pilot test for nitrogen removal to solve pollution on LI sound | Stony Brook University |
| **Metals** | Lead, hardness, arsenic, iron | - In development | TBD | |
| **Salinity** | Sea water | - Future device | TBD | |

Aclarity


julie.mullen@aclaritywater.com

# Rockstar executive team

**Julie Bliss Mullen**
Co-founder & CEO

PhD ABD, CEE
Forbes 30 Under 30

Previous:
- Research Assistant, UMass EPA center
- Engineer & regulator, US EPA

**Barrett Mully**
Co-founder & COO

MBA
Professional Engineer

Previous:
- Control Room Supervisor, Entergy Nuclear
- Engineer, Merchant Marines

**Orren Schneider, PhD**
Director of R&D

PhD, CEE
Professional Engineer

Previous:
- Project and Research Manager, American Water
- Engineer, various consulting firms

**Christopher Sims**
Venture Capitalist

MBA
Partner, Alchemy Fund

Previous:
- VP Fundraising & BD, Yankee Candle
- Principal, Bain & Co.

Aclarity


julie.mullen@aclaritywater.com

# Raising $1.5M from impact investors


| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| **Revenue** | **First sale** | **$650K** | **$5M** | **$13M** | **$38M** |
| | Industrial | | | | |
| | | | Small municipal | | |
| | | | | Building POE / POU | |
| **Product** | Oxidation SKU | Reduction SKU | High flow SKU | POE/POU | TBD |
| **Milestones** | • Secure IP license<br>• Founding team<br>• First sale with working device | • Sell into channel, create case studies<br>• Expand IP portfolio<br>• Contract supply chain | • Scale up channel sales<br>• Expand supply chain capacity<br>• Compete new end market | • Continue B2B growth into other geographies<br>• Enter building POE / POU channels with partners | • Continue geographic expansion<br>• Launch consumer-facing business |
| **Key hires** | • R&D Director<br>• Lab analysts<br>• Business admin | • Channel sales<br>• Product engineering<br>• Finance | • Bus Dev<br>• Marketing<br>• CFO<br>• VP, Supply Chain | • Channel lead for construction, EU<br>• CMO<br>• Product Engineering | • Channel leads for APAC, EMEA |

Aclarity


julie.mullen@aclaritywater.com

# Thank you!

What we do:

- Aclarity's proprietary modular electrochemical water treatment systems cost-effectively destroy contaminants: PFAS, VOCs, nitrogen, etc. saving customers money, time, and liability

Founded 2017– University of Massachusetts, Amherst

Markets & Customers

- 1st Industrial: engineering firms, service providers, OEMs
- 2nd Small municipal: engineering firms, OEMs, large utilities
- 3rd POU/POE: OEMs

Current status:

- Contract manufacture systems
- Successful pilots, first installations
- Recommended for NSF SBIR Phase II $1M
- Raising Seed round $1.5M from impact VCs/strategics
- Previously raised ~$1M from grants and Pre-Seed VC

## Team Accolades

Forbes 30 UNDER 30 CLASS OF 2019

ISENBERG SCHOOL OF MANAGEMENT

LEMELSON-MIT
Celebrating invention, inspiring youth

Hazen

AMERICAN WATER

BainCapital

## Pilots & Partners

PowerTech WATER

UNTAPPED
Unlock the Potential of the Next Billion

WATTS® WATER TECHNOLOGIES

Brown AND Caldwell®

HEARTLAND WATER TECHNOLOGY

Aclarity


julie.mullen@aclaritywater.com