



**Onsite Industrial Solutions for the  
Stormwater Headache  
(and others...)**



# OriginClear's Development



- OriginClear Inc. founded in 2007: a pure technology company.
- Went public in 2008 on OTC Bulletin Board.
- Developed and proved a breakthrough high-speed water cleanup technology, **Electro Water Separation™ with Advanced Oxidation (EWS:AOx™)**.
- In 2015, began to...
  - Commercialize the technology: **OriginClear Technologies**
  - Consolidate water services companies: **OriginClear Group**

# What is EWS:AOx™



- EWS:AOx™ is a proven system for cleaning polluted water.
  - Originally designed for extracting algae from water
  - Then applied to recovering oil from produced water and
- 2016: Advanced Oxidation (AOx) added as a final stage, addresses complex pollutants.
- EWS is modular: It can be incorporated into an existing waste treatment system or designed as a stand alone equipment.

# Two patented hardware components

## In-line reactors



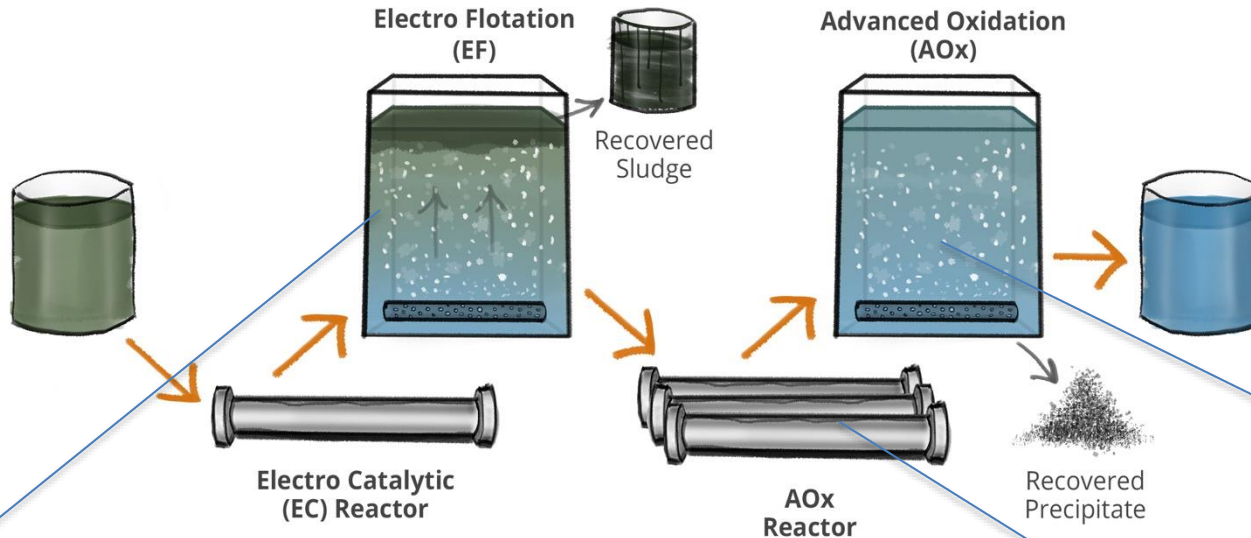
**Coagulation**  
**High-contact mixing**

## Contact tanks



**Electro Flotation**  
**Oxidant generation**

# System diagram



## Gas Flotation removal of:

- Suspended organics
- TPH

## Aeration

1<sup>st</sup> stage ROS generation

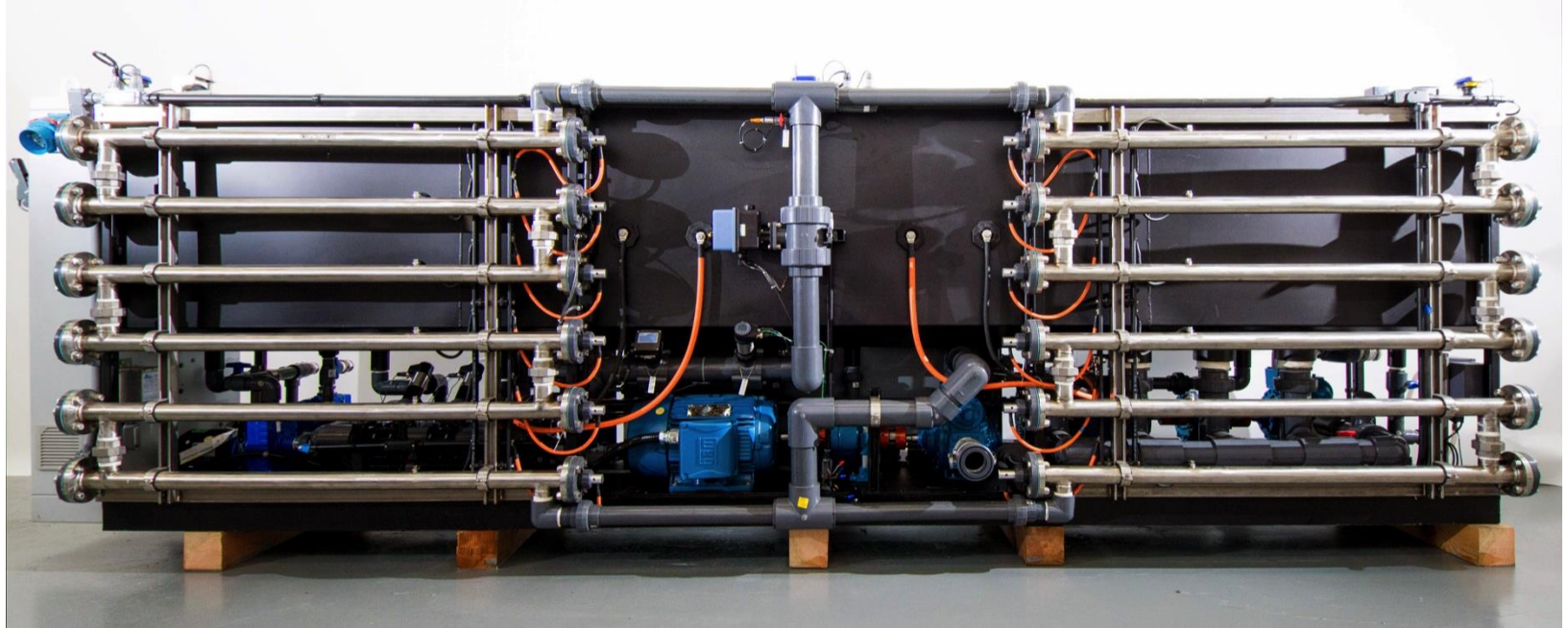
## 2<sup>nd</sup> stage ROS generation:

- Heavy metals precipitation
- Small-chain organics

## MOS generation addresses:

- Ammonia
- Bacterial contamination
- Color

# A standard implementation



400 tons per day nominal treatment capacity – Two units fit in a 20' container

# EWS:AOx™ Applications

- Effective on:
  - Suspended Solids
  - Oil and Grease (petroleum hydrocarbons)
  - Ammonia
  - Dissolved Organics
- Scalable technology: from table-top lab units to existing large infrastructure retrofits.



# Prime Conduit – Oklahoma City

- Electrical parts manufacturing site





# Prime Conduit – Oklahoma City

- Water from the flood inside the manufacturing site

Water quality components	Load (ppm)
Oil & Grease	173
TSS	155
COD	1750
BOD	437
Heavy metals such as <u>Copper</u>	2.43



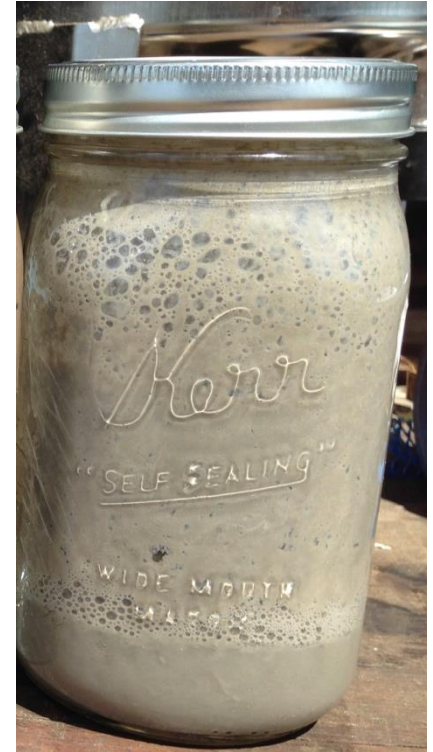
# Prime Conduit – Oklahoma City

- Mobile demo unit
  - EWS W25 Separator/Oxidizer
  - Media filter for polishing
  - 6 gallons per minute treatment



# Prime Conduit – Oklahoma City

- TSS, Oils and most COD removal



# Prime Conduit – Oklahoma City

- Results after media polishing

Water quality components	Load (ppm)
Oil & Grease	ND
TSS	ND
COD	81
BOD	45
Heavy metals such as <u>Copper</u>	0.013



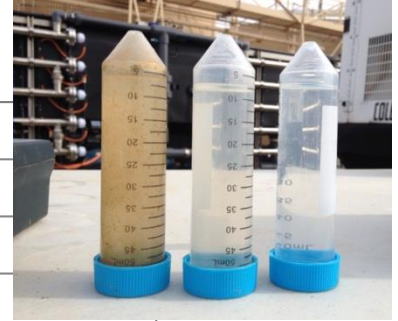
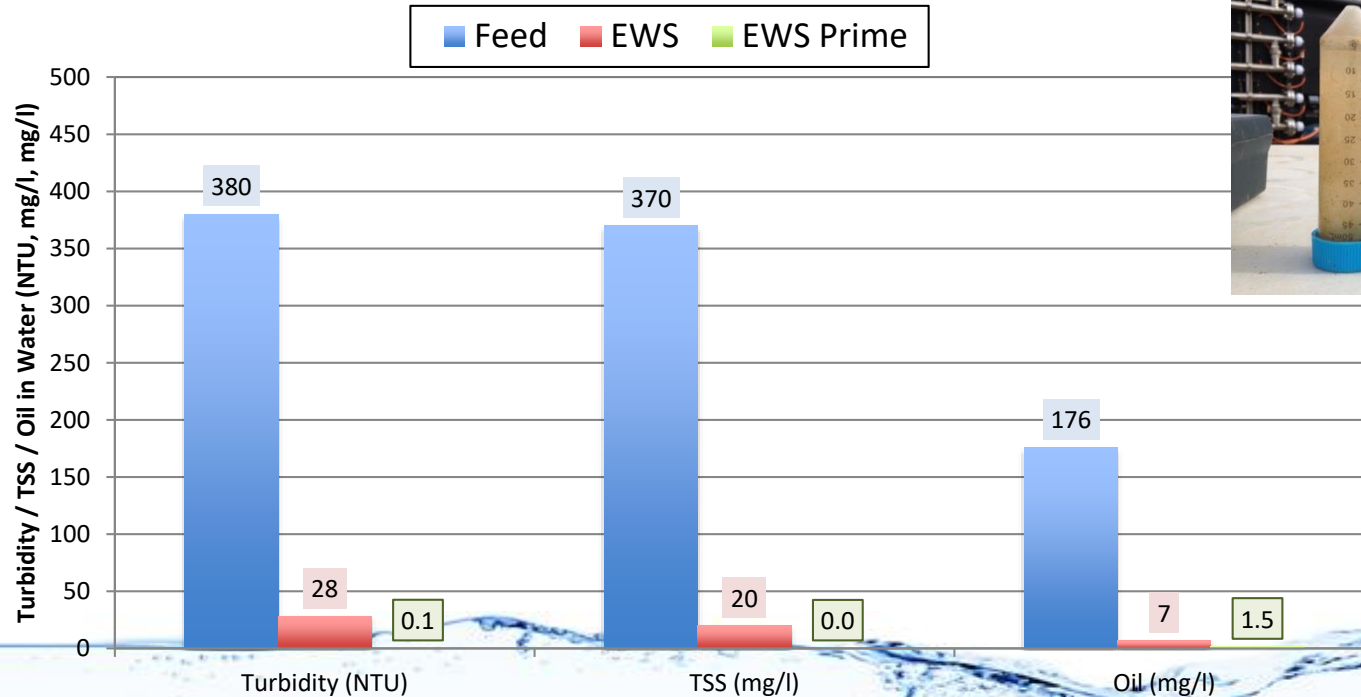
# Prime Conduit – Oklahoma City

- As measured by 3<sup>d</sup> party lab.
- Removal rates between 90% and 100% except for two elements.

Water Quality Components	Flow Waste Water (ppm)	Day One Treated (ppm)	Day Two Treated (ppm)	% Removal
Oil & Grease	173	ND	ND	100%
Total Suspended Solids	155	ND	ND	100%
Chemical Oxygen Demand	1750	81	83	95%
Biological Oxygen Demand	437	45	44	90%
Arsenic	0.017	ND	ND	100%
Barium	0.302	0.029	0.012	96%
Cadmium	0.014	ND	ND	100%
Cobalt	0.011	ND	ND	100%
Chromium	0.073	ND	ND	100%
Copper	2.43	0.012	0.013	99%
Molybdenum	0.05	0.037	0.036	28%
Nickel	0.187	ND	ND	100%
Lead	0.31	ND	ND	100%
Antimony	0.092	0.013	ND	100%
Selenium	0.024	ND	ND	100%
Vanadium	0.017	0.027	0.042	NA
Zinc	4.06	0.122	0.204	95%
Mercury	0.001	ND	ND	100%

# EWS:AOx as part of a system

- Example on produced water from oil drilling



# Scalability

- Currently in operation on the Edison oil field (CA), treating produced water up to drinking water level.
- EWS:AOx
- Media
- RO
- 40 GPM



# Contact Information



**THANK YOU !**

[www.originclear.com/tech/contact](http://www.originclear.com/tech/contact)