OVU-ACE
Alternative Clean Energy

Jeff Dimick

OVU-ACE Project

- **Development of a fully commercial scale coal to liquids facility in Parkersburg/Vienna, WV owned by the OVU-ACE Foundation**
- **Establish a training center and expansion of the curriculum to include operation and maintenance of a clean energy production facility**

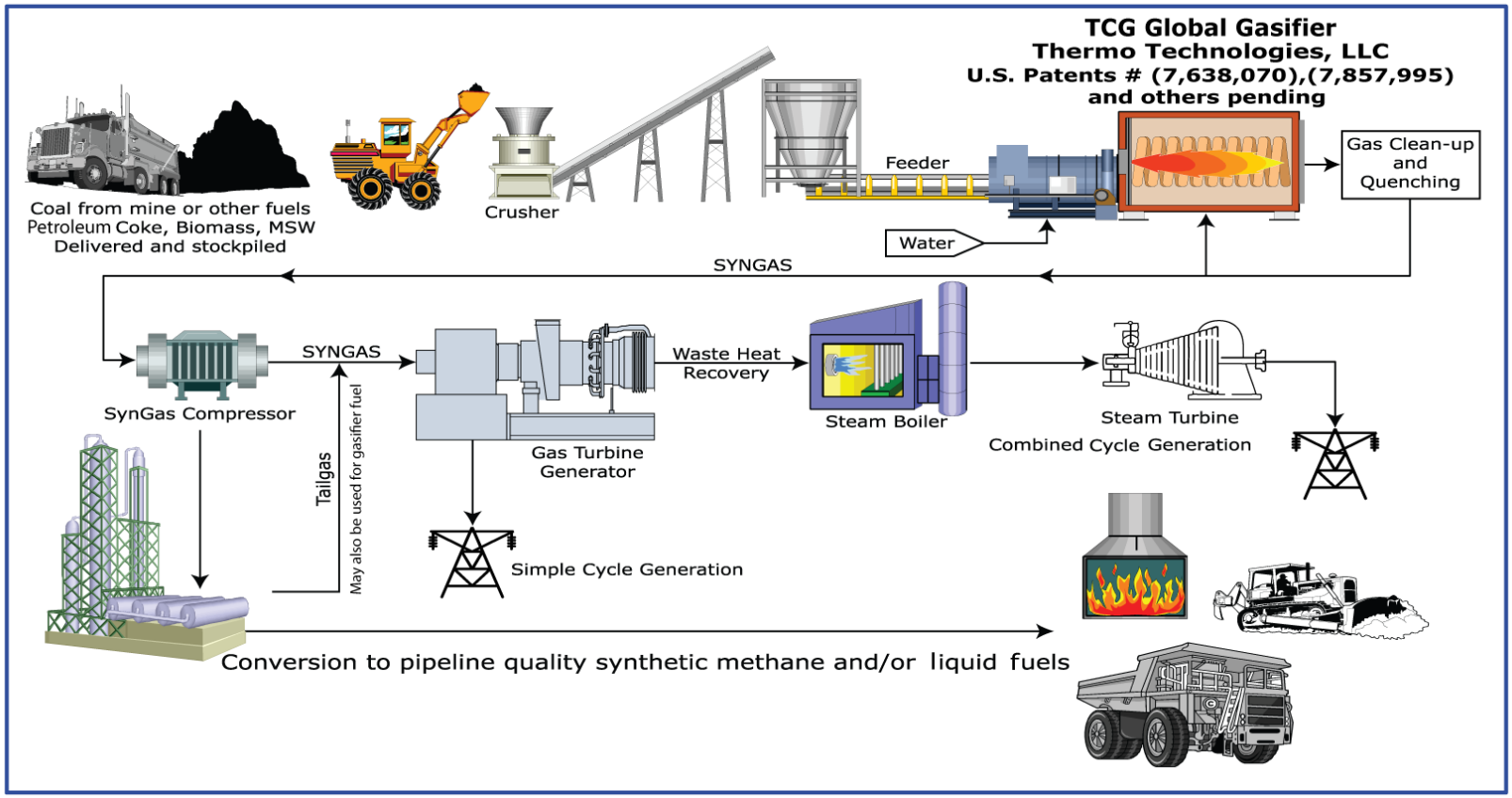
OVU-ACE Project

- **Revenue from operations net of debt service would be used to fund OVU general expenses**
  - **Ultimate goal is to have OVU students graduate debt-free**
- **Shared opportunities with local colleges:**
  - **Technical Trades**
  - **Agriculture (greenhouses utilizing CO_2)**
  - **Engineering**
  - **Business**

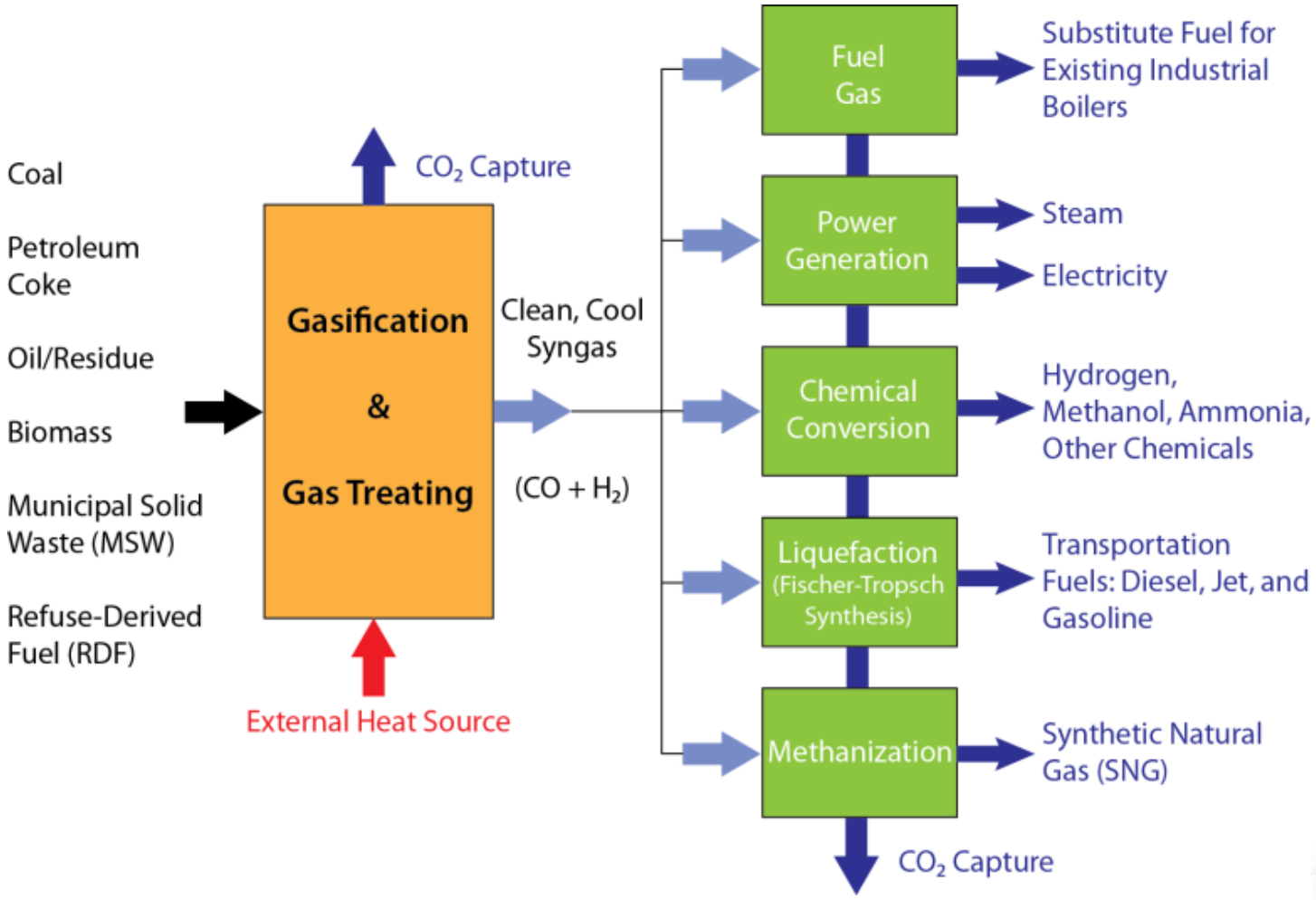
OVU-ACE Project Objectives

- Demonstrate conversion of coal into clean energy products such as transportation fuel or chemicals
- Demonstration of CO_2 capture and utilization
- Support OVU operating budget and act as a model for other educational institutions
- Serve as an educational resource for OVU's Energy Management and Production Engineering degree program
- Host site for other clean energy technology demonstrations
- Research site for other coal related by-products such as recovery of rare earth elements from coal ash

Technology Platform



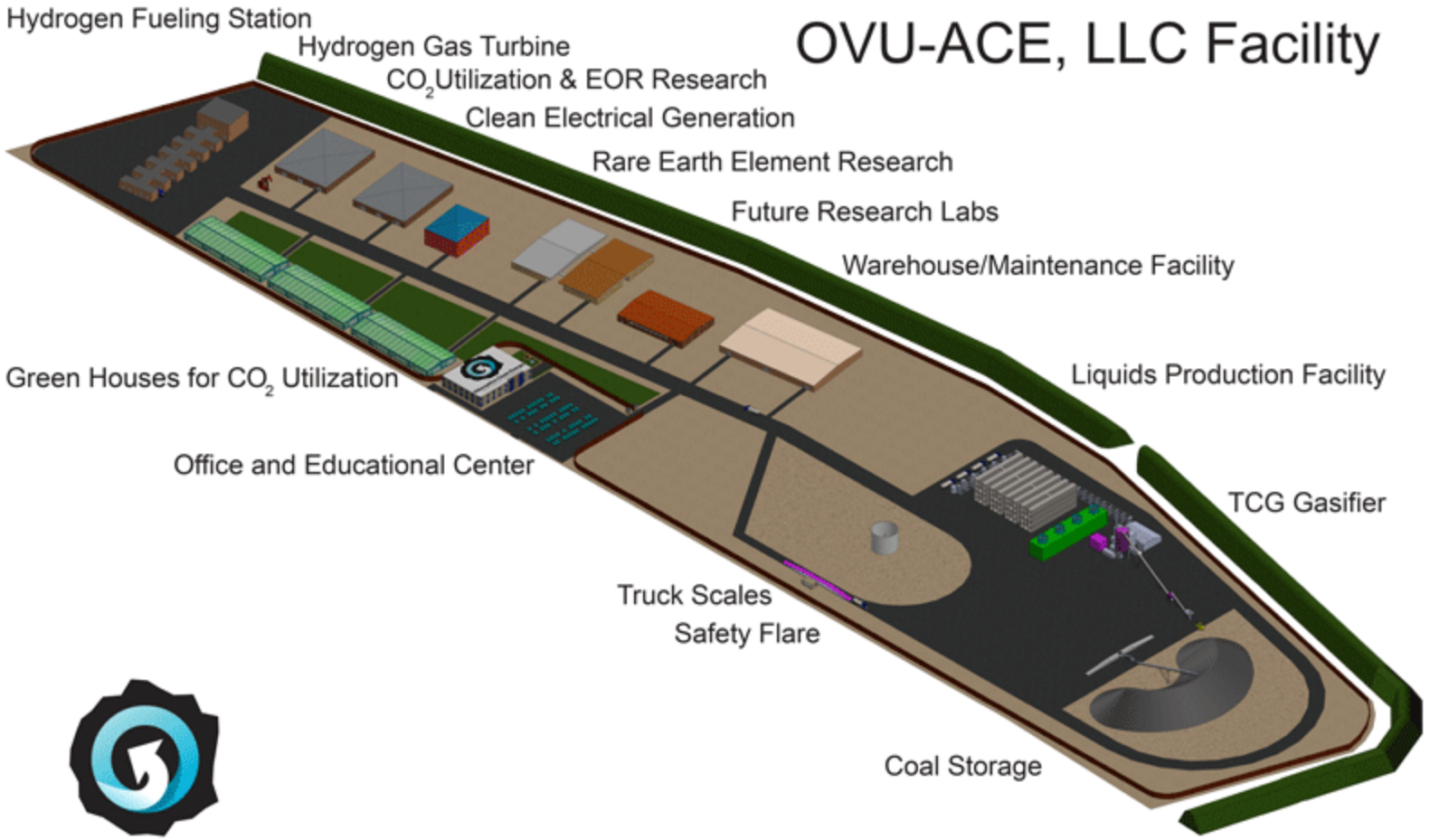
Product Options



Proposed ACE Site Location

Wood County, near Parkersburg, WV

OVU-ACE, LLC Facility

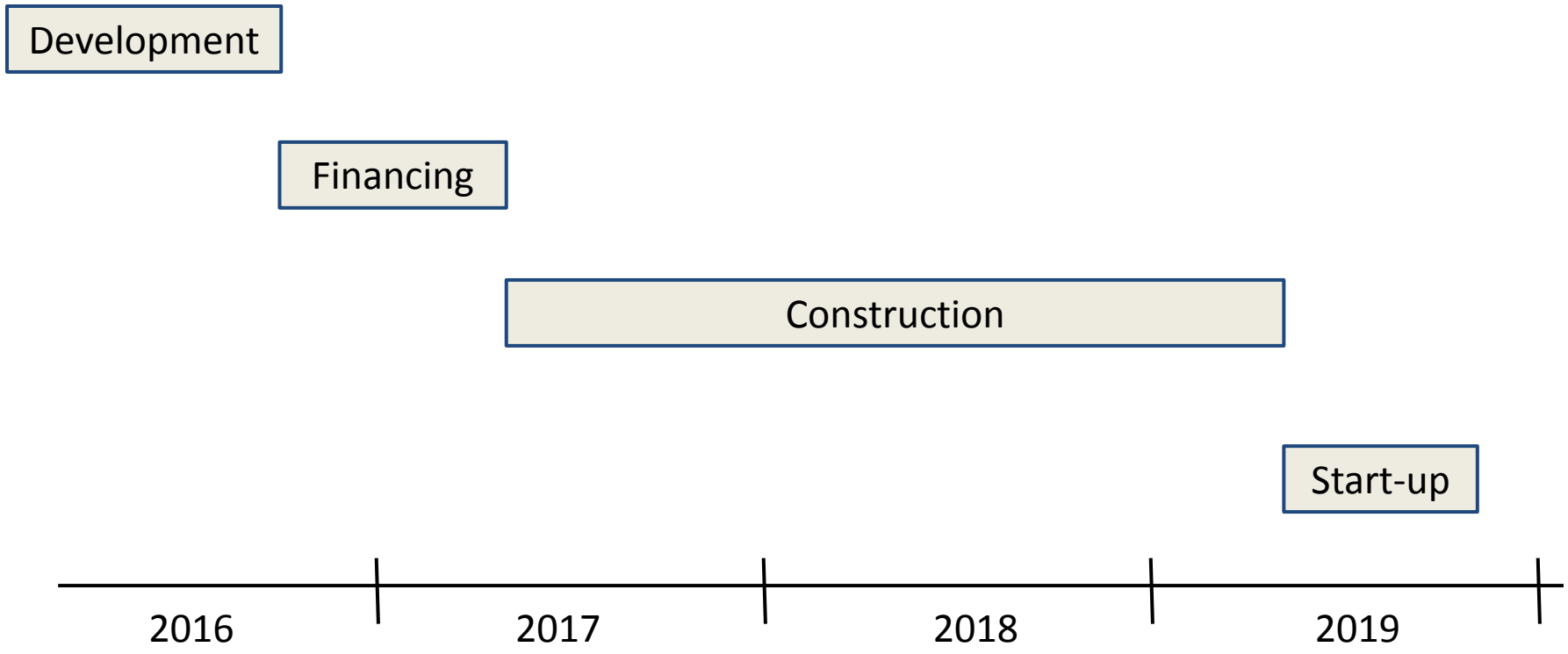


Alternative Clean Energy
OHIO VALLEY UNIVERSITY

OVU-ACE Status

- ✓ Secure development funding
- ✓ Receive diesel & mixed-alcohols studies from Fluor
- ✓ Retain capital advisors for project financing
- ➢ Acquire site
  - ✓ Site selected (rail, river & road access plus utilities)
- ➢ Engineering and budgeting
  - ✓ Preliminary financial model developed
- ➢ Feedstock agreement
  - ✓ Preliminary coal supply agreement coordinated
- ➢ Offtake agreement
  - ➢ Verbal agreement in place with draft contract pending
- Next Steps
  - Finalize business plan and secure financing
  - Permitting
  - Construction

OVU-ACE Project Timeline

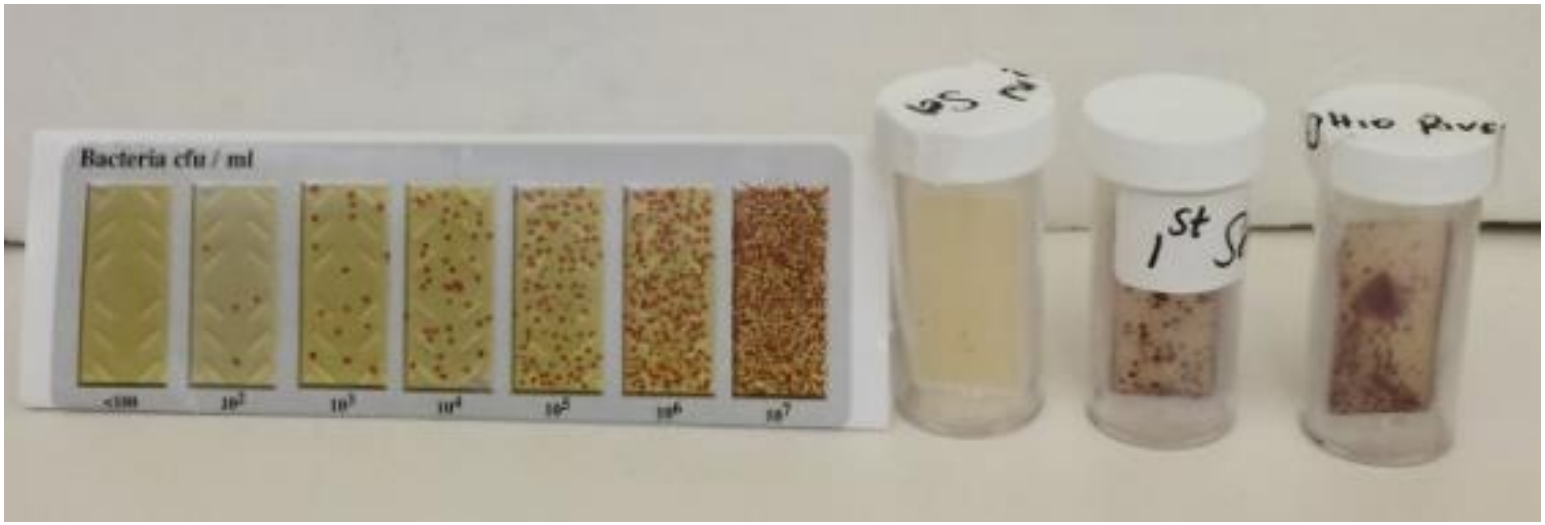


Clean Water Technology

Energy–Water Nexus

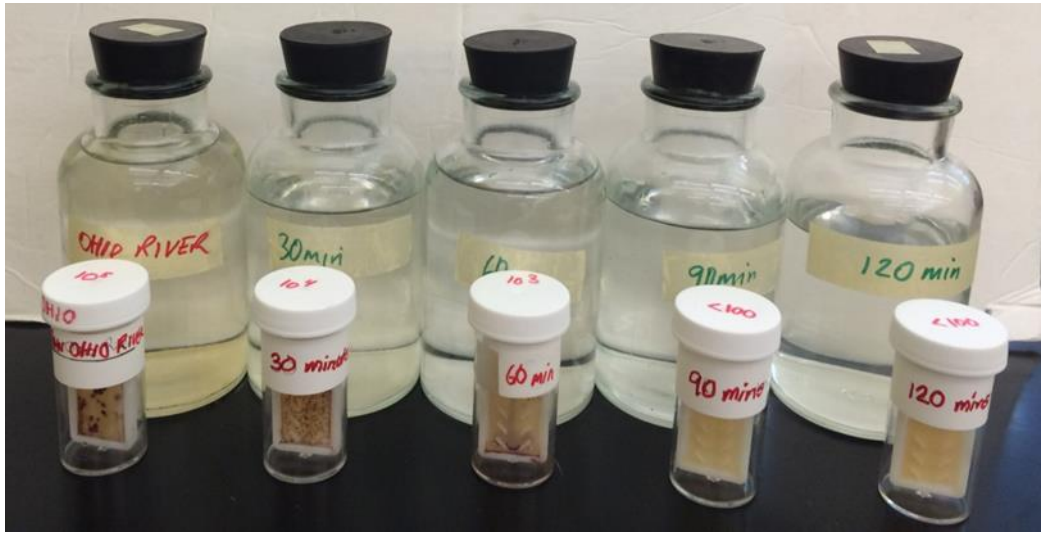
Clean Water – Humanitarian

Humanitarian Unit Results – Batch



- Vials from Right to Left
  - Untreated Ohio River Water
  - After 30 minutes with ion generator
  - After 60 additional minutes with SED unit

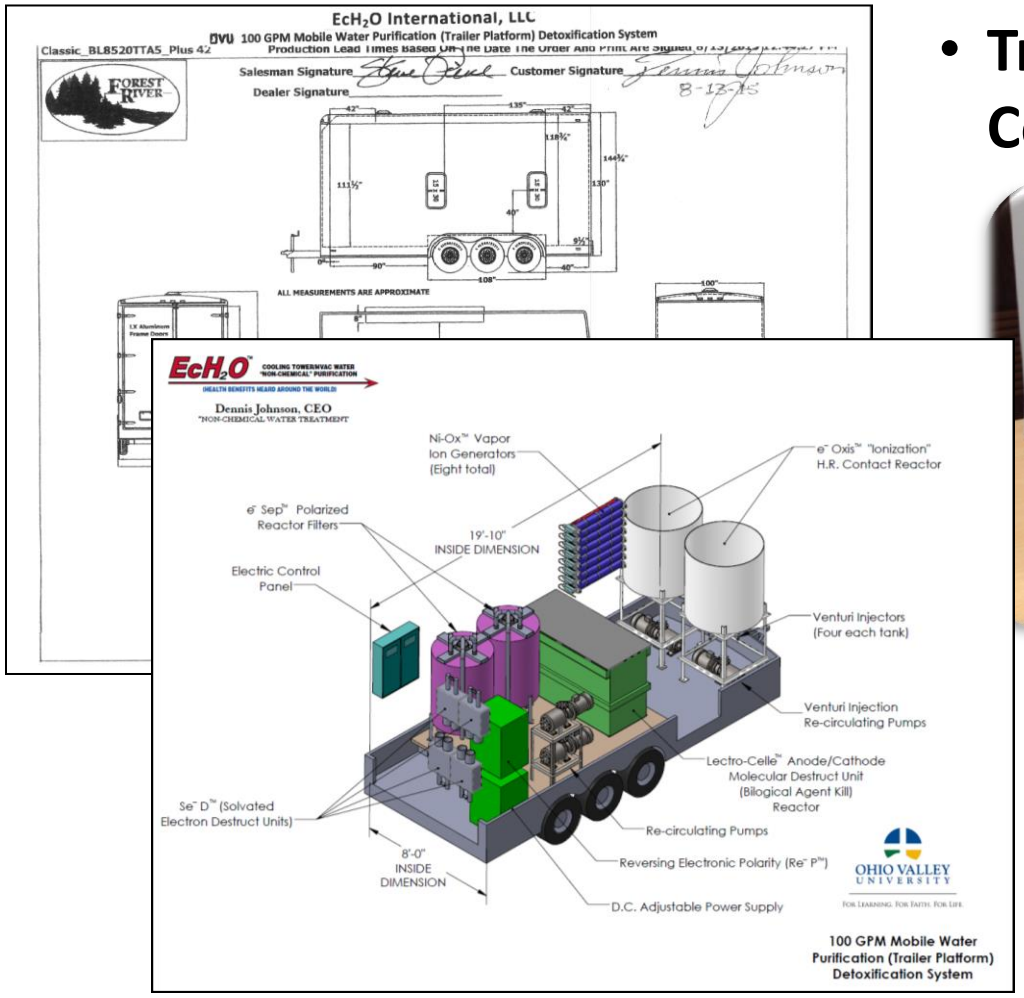
Humanitarian Unit Results



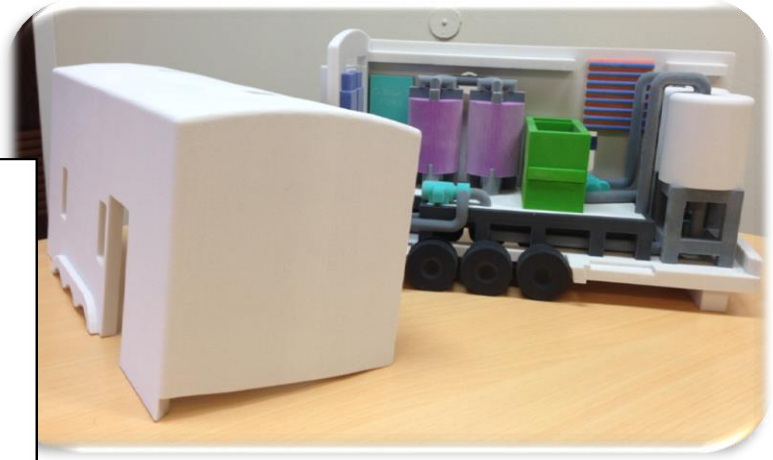
Water Quality Parameters	Ohio River	Humanitarian Unit	EPA/WV MCL
pH (-)	8.0-8.7	7.5-8.2	6.0-8.5
Turbidity (NTU)	13.4	<1.0*	<1.0
Chloride (salinity) mg/L	246.2	174.5	250.0
Conductivity (mg/L)	421.6	386.9	500mg/L
Total dissolved solids (mg/L)	405.8	284.3	500mg/L
Total coliform (fecal & E. coli) (<100 colonies per mL)	Present	<100 (after 90 min)	<100.0

*Water was first filtered before checking turbidity

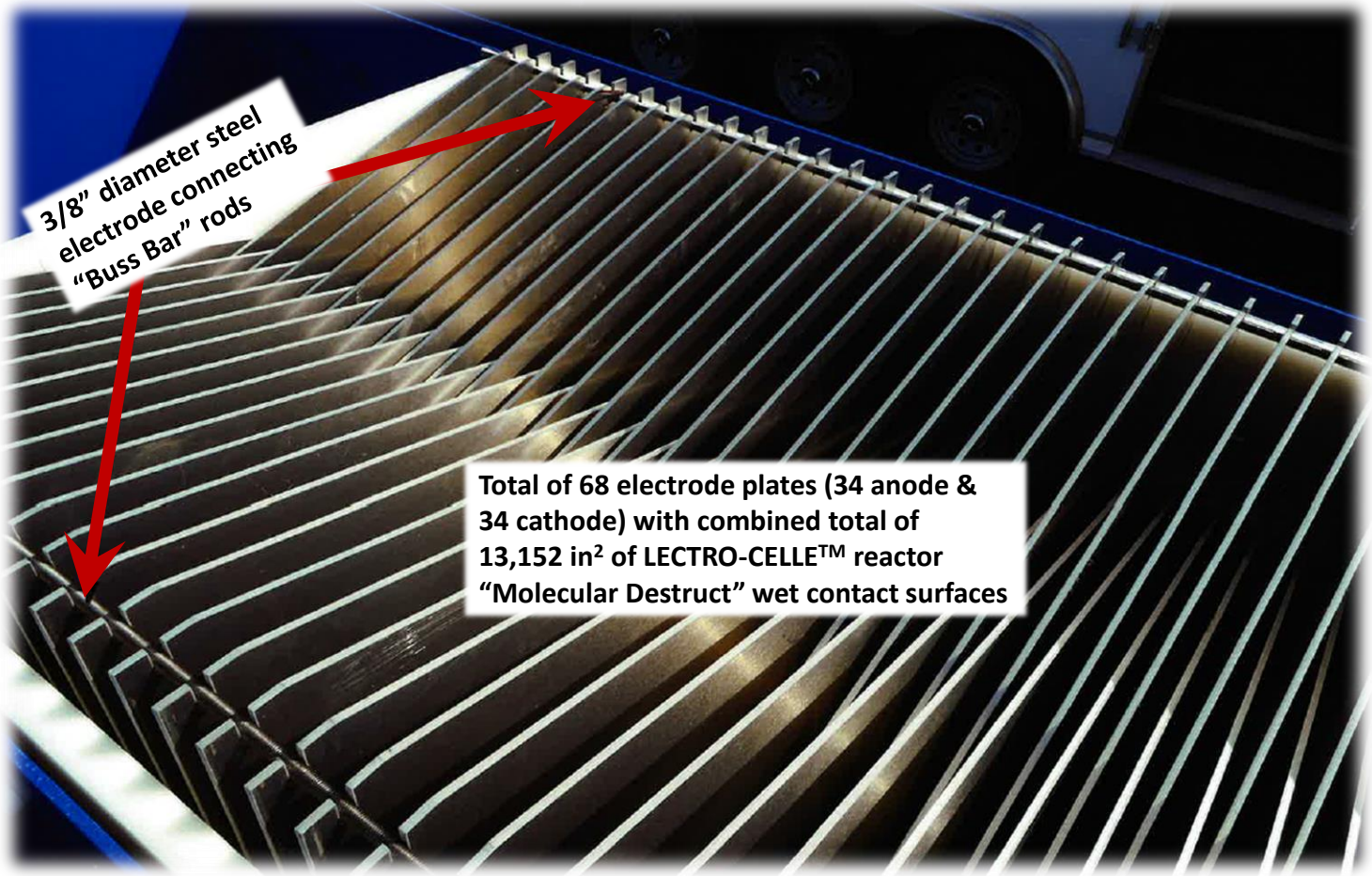
Clean Water – Industrial



- **Trailer being assembled in Colorado Springs, CO**



LECTRO-CELLE™



LECTRO-CELLE™


Tested June 23, 2016
Littleton, CO
Treated
Frack Water
Pre-treated
Frack Water

Vienna City Water Lectro-Celle Test

	0 min	5 min	10 min	40 min
C8 (PFOA)	0.126	0.0862	0.0766	0.0554
EPA Limit	0.07	0.07	0.07	0.07

Thank You!

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