



# City of Muscatine

## Water & Resource Recovery Facility (WRRF)

- History of wastewater treatment
- Our Philosophy
- MARRVE movement
- Conclusion
- Stop Mowing! Prairie Resource Recovery

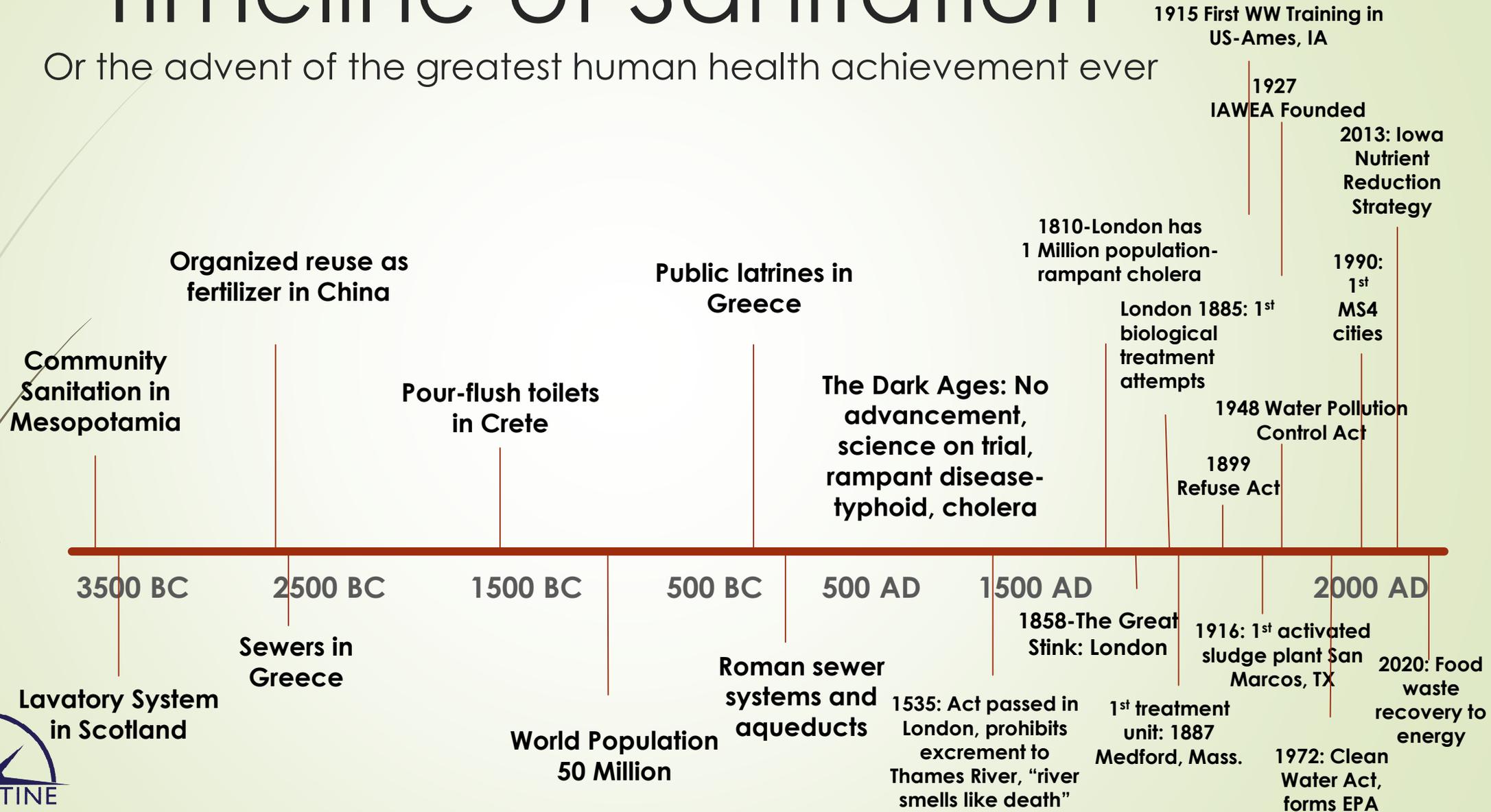


Muscatine City Council In-Depth MARRVE Update  
January 09, 2020 City Hall

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# Timeline of Sanitation

Or the advent of the greatest human health achievement ever



**Muscatine  
Area  
Resource  
Recovery for  
Vehicles &  
Energy  
Movement**

Building a food recovery community





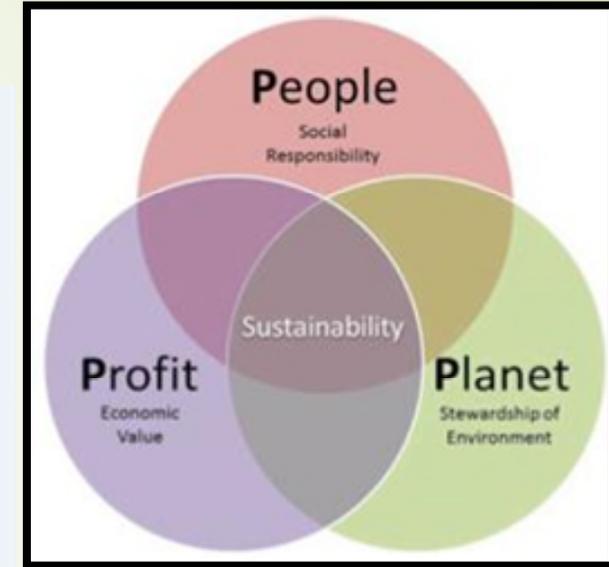
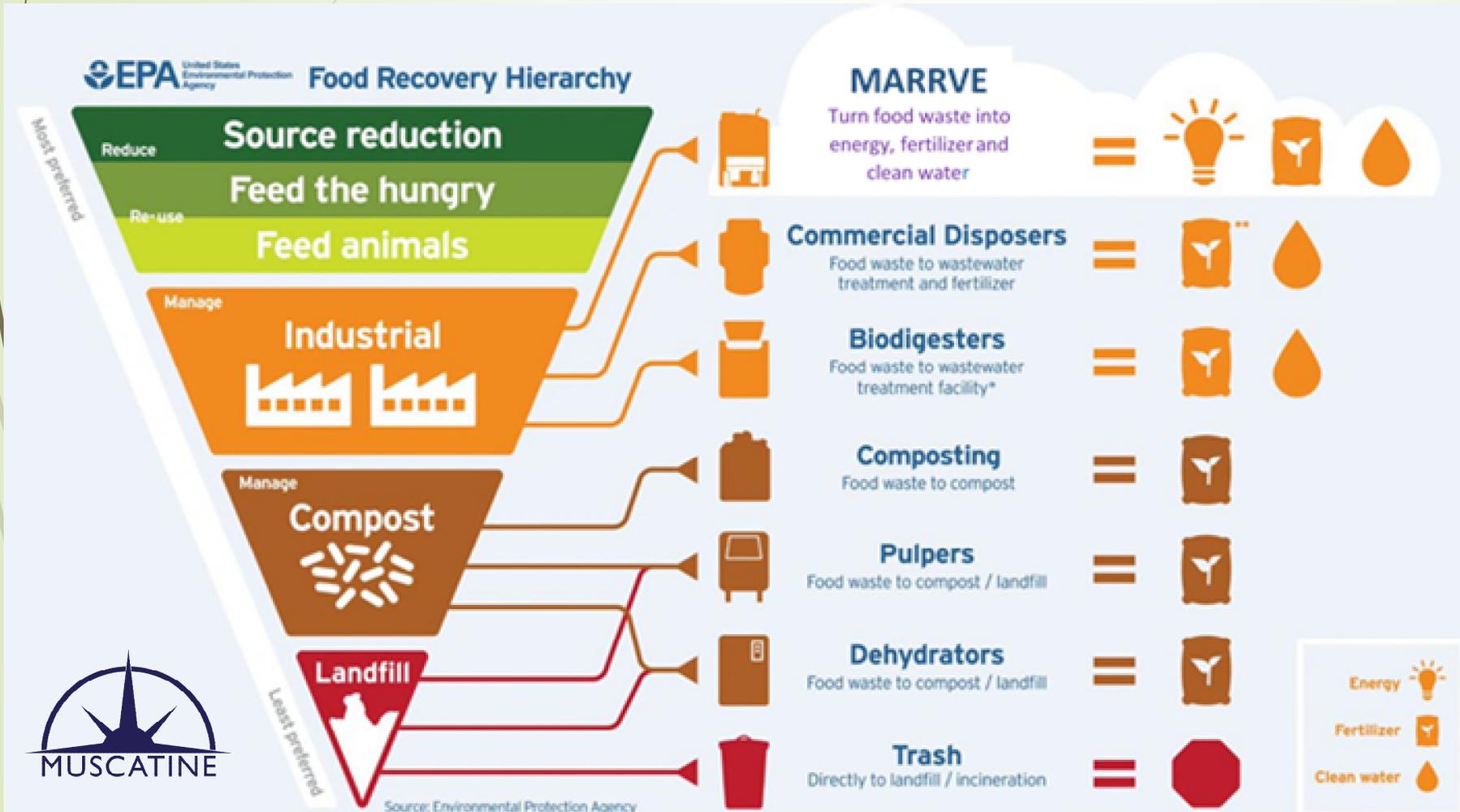
# Why MARRVE is a Movement and not just a construction project

- **A Movement is defined as a group of people with a defined purpose who create change together**
- **MARRVE follows the EPA Food Recovery Hierarchy**

# Our Philosophy

Or, why is it worth it?

**30%-40% of all food produced is not eaten!**





**30%-40%**  
**of all food produced**  
**is not eaten!**

- 133 Billion Pounds (2010)
- \$162 Billion Worth (2010)
- 219 Pounds Per Person in US to Landfills/yr
- USDA/EPA Food Recovery Challenge
- 50% Reduction by 2030 Target





# MARRVE: The Movement

## Community Food Waste Reduction Strategies

### ➤ #1 Source Reduction

- **City blog/email blasts**
- **Daily video-cast at grocery store for smart shopping**
- **Ugly food tables**
- **Encourage shopping lists**
- **Go tray-less in cafeterias**
- **FoodKeeper App-USDA**
- **In school rallies**
- **Plant tours-WRRF**

### ➤ #2 Feed People

- **Food Bank E-blast**
- **Free Pantry locations (like Little Libraries)**
- **Emmaus Café-free meal sites**
- **Salvation Army, MCSA, etc.**
- **School fruit collection**
- **Freezin' for Food-winter food bank stock-up event**
- **Grocery store food donations**

# MARRVE: The Movement

## Community Food Waste Reduction Strategies

### ➤ #3 Feed Animals

- **Salvation Army and Food Bank surplus goes to hog operations**
- **Local hog farms take “safe” packaged waste**
- **Local hog farms take spoiled produce**

### ➤ #4 Industrial management

- **High Strength Waste Receiving Station Project**
- **Packaged and loose solid waste receiving**
- **Depackaging machine**
- **Liquid/FOG receiving**
- **Transfer to anaerobic digesters**
- **Methane to CNG conversion**

# Why did we want to work this hard?



Watching energy waste off into the air



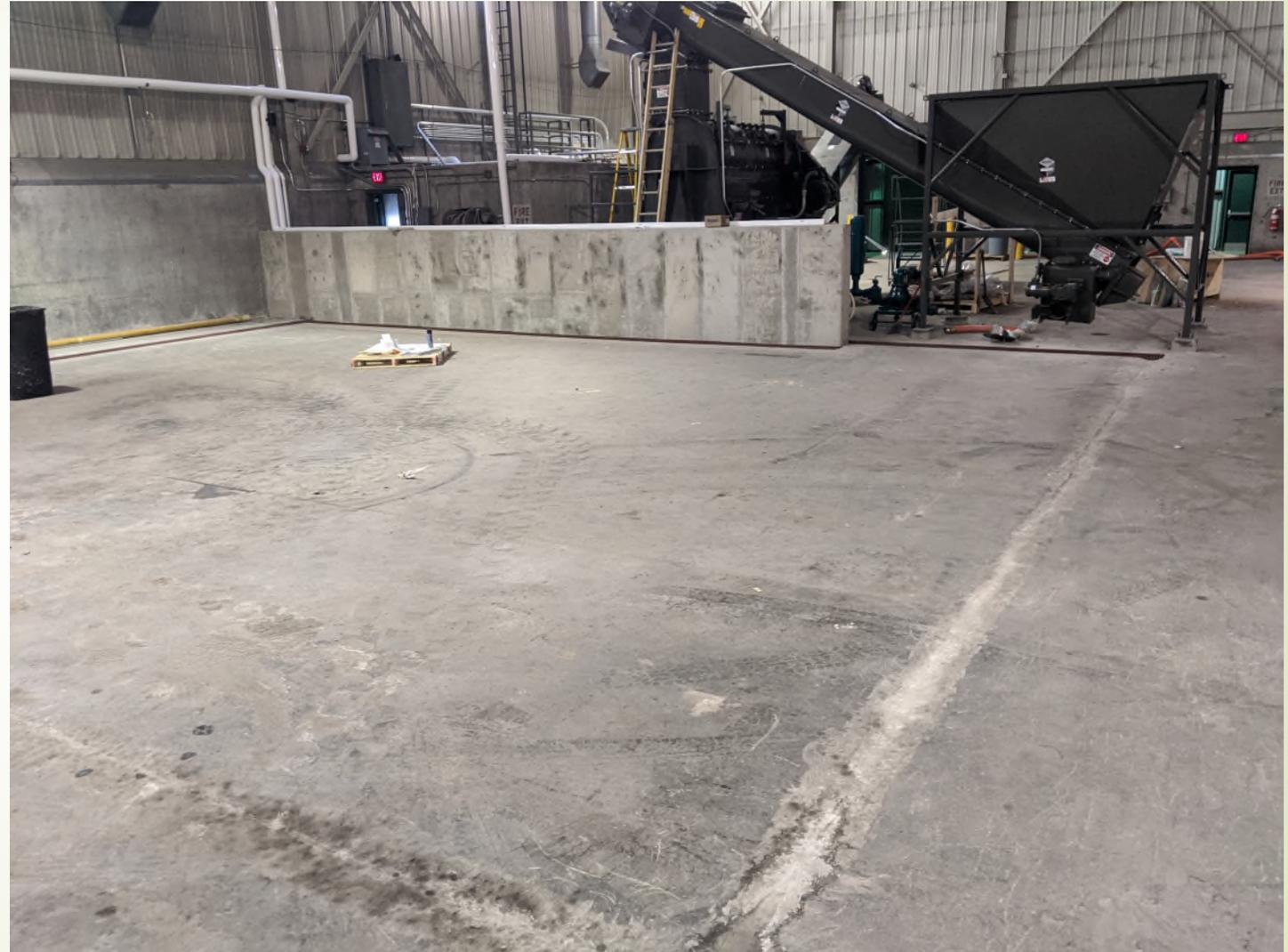
Multiple tons/day to landfill from multiple industries.  
How many in 100 mile radius with the same issue?



# Project Update

❖ Push wall installed

❖ T42 Installed



# Scott T42 Turbo Separator Depackaging System New Prague, MN



**T42 will load to 5000 gallon tanker for delivery to the WRRF**



# Project Update

❖ Tank Rehabilitation and Jet Mixing



❖ Pumps installed



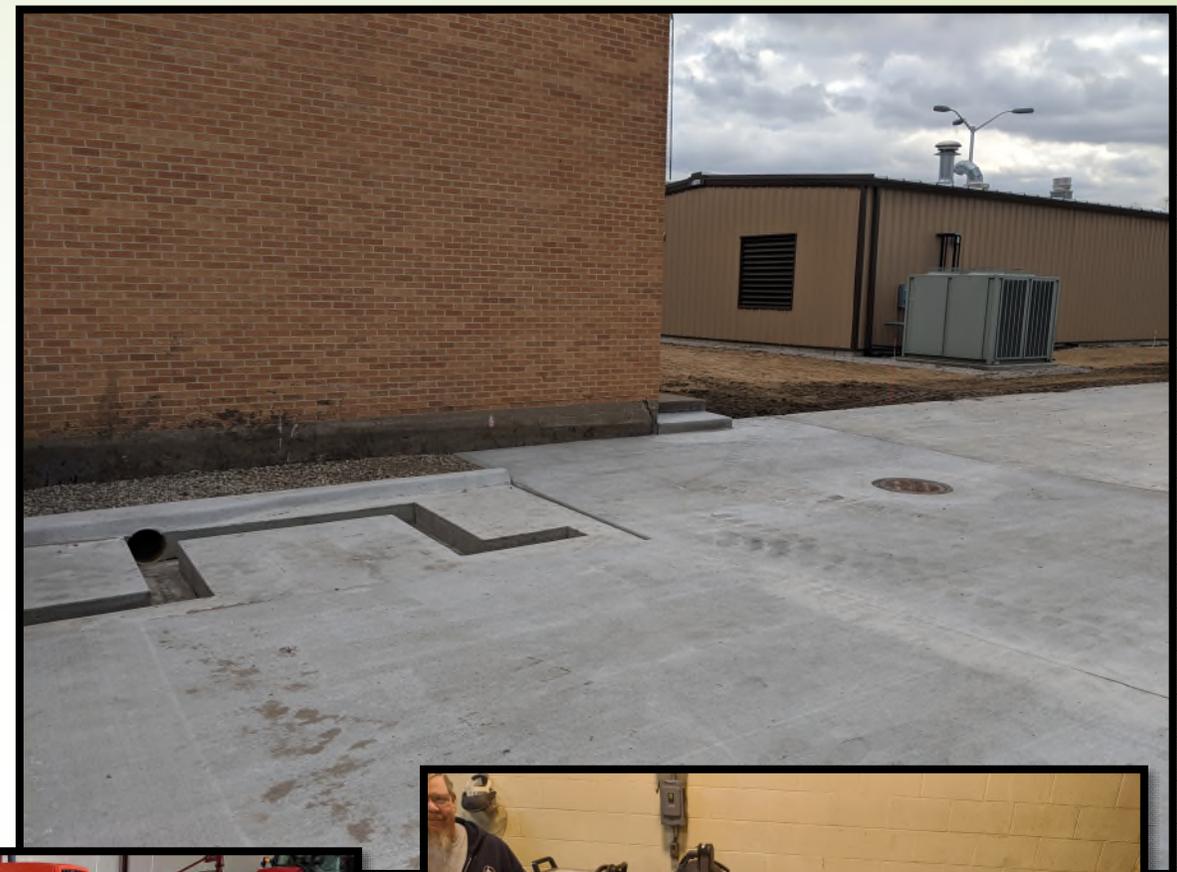
# Project Update

- ❖ Vac Truck Dumping Pad



# Project Update

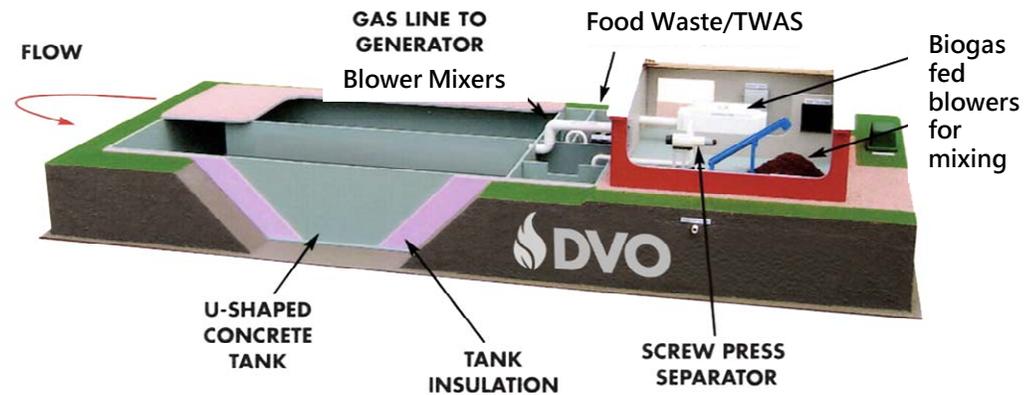
- ❖ Liquid Waste Tanker  
Off-Loading Area Paving



# Phase II: More Anaerobic Digesters

➤ Abandoned but available

Existing Digesters

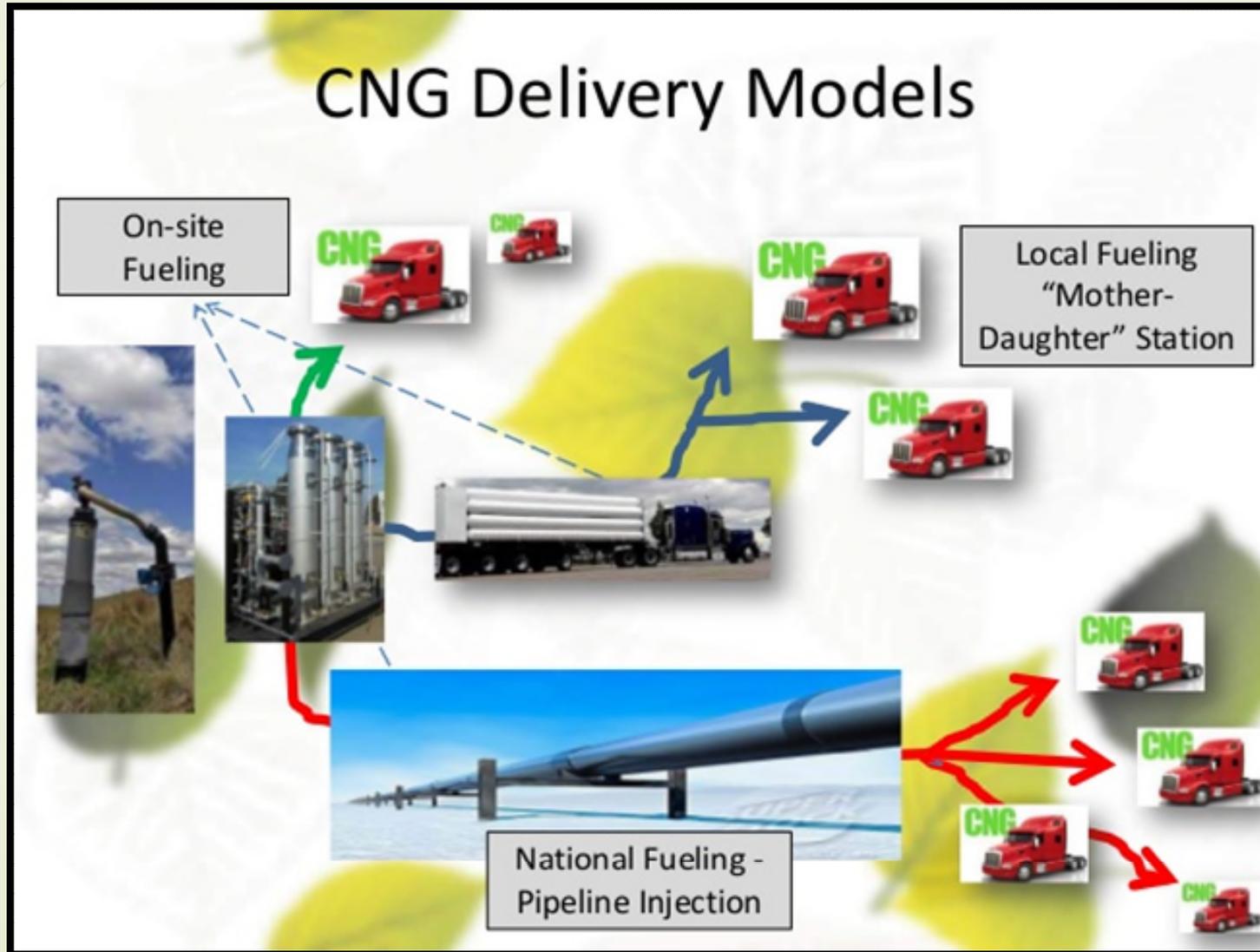


- ❖ \$800,000 bonded to complete
- ❖ Engineering agreement next week
- ❖ Needed for large quantities expected



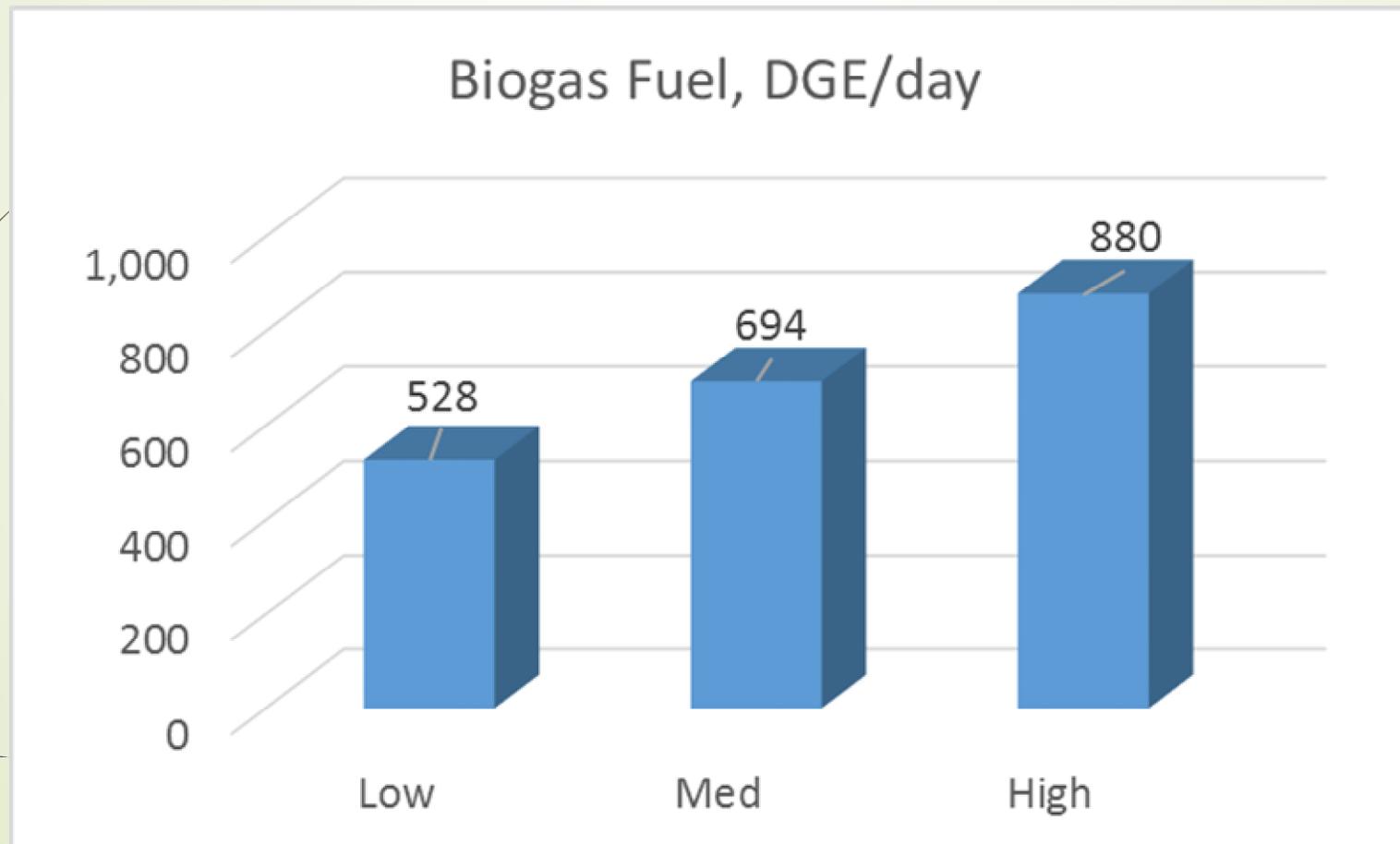
# MARR for Vehicles and Energy

## CNG Delivery Models



# Free Fuel!!

- ▶ How many gallons would you add?



# Regional Organics Recovery

- **30-80** tons/day packaged and loose food waste expected
- 5 industrial customers anticipated initially
- 20+ grocery stores targeted
- High school cafeteria, others to follow
- Residential drop-off initially, private curbside pick up potential
- Expect 900+ dge/day fuel production
- Direct gas line injection or transport to larger line
- \$3.5 million receiving station investment
- \$3-\$4 million gas cleaning and compressing anticipated-  
Private/Public partnership being explored



# QUESTIONS?



WRRF Laboratory Building



Cannon Street Lift Station

**STOP MOWING,  
PLANT NATIVES!**

