TREATMENT PLANT PATHWAY TO ENERGY NEUTRALITY

Logan Olds
VVWRA General Manager
VVWRA covers 446 acres

Victorville, CA
2008

• Planning to address nutrient and capacity issues
• Initial idea to use existing assets to move to energy neutrality
May, 2012

• Partnership with local electric utility
Would you throw away your used car?
2012

• Develop RFP for:
  a. Biogas Optimization
  b. Energy Production
  c. Power Purchase Agreement (PPA)
No such thing as luck!

Success is where opportunity and preparation meet!
June, 2013

- Construction of Omnivore digester improvements begins
- Public Private Partnership (PPP) $2.6 million
Omnivore

Innovative technology
Recuperative Thickener
August, 2013

- **COMPLETED:** Phase IIIA Regulatory Upgrade Project
  - UV
  - Gas conditioning system
  - Helical grease skimmer
  - Ferric chloride station
  - Convert CL2 contact tank to recycled water storage
- **Initiated UV system RetroCommission Project with Edison**
April 2014

- Construction of Biogas to Energy project begins
December 2013

• Coordination with Edison electrical utility regarding On Bill Financing for Aquarius Diffusers
Savings and Incentives

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
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<tbody>
<tr>
<td>1-8 Aeration Savings/Year</td>
<td>$228,110.40</td>
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<tr>
<td>9-12 Aeration Savings/Year</td>
<td>$63,072.00</td>
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<td>Turbo Blower vs-ICE Blower/Year</td>
<td>$98,340.00</td>
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<tr>
<td>1-8 Incentive</td>
<td>$35,397.00</td>
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<td>9-12 Incentive</td>
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<td>Turbo Blower Incentive</td>
<td>$47,304.00</td>
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<td>Elimination of Magnesium Hydroxide</td>
<td>$151,935.00</td>
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<tr>
<td>Total</td>
<td>$638,360.61</td>
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June 2014

• Began experimenting with receiving imported waste
ADM/FOG/Septage Potential Revenue

* Net Revenue after full time septage attendant is factored in.
ADM/FOG

262% Increase BIOGAS

ADM/Fog Received Gallons

9% ADM/FOG EXTERNAL

VVWRA SLUDGE

DIGESTATE
46% 1600 kW Plant Max Load

Potential for Septage Digestion or Addition External Loads

Export Power (Future)

Digester Solids Treatment Capacity

Excess Capacity

Biogas

Excess Capacity

Biogas

WW Solids

WW Solids

Cogen

Electrical Power to Plant
DOE Better Plants Program

Production Energy Intensity (MMBtu/unit production)  Annual Improvement in Energy Intensity (%)  Total Improvement in Energy Intensity (%)

Energy Intensity (MMBtu/unit)

Percent Improvement

Reporting Year

Energy Intensity (MMBtu/unit)

Percent Improvement
Energy Consumption & Production

VWWRA Monthly Power Generated and Consumed

- kWh Produced
- kWh Purchased
- % Generated
New Colleagues
What’s next?

- RFP
- CEC grant for Battery Storage System and Microgrid
Logan Olds

Victor Valley Wastewater Reclamation Authority

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