Advanced Wastewater Treatment Workshop

Rohan Recreation Center
January 14, 2019

Savannah Center
January 17, 2019

Presenters:
Richard Baier, District Manager
Rock Raiford, Program Director Jacobs
Joshua Rushing, Project Manager Jacobs
Workshop Topics

AGENDA

- Introducing the District Partner Team
- The Drivers of Wastewater Treatment
- Advanced Wastewater Treatment Process
- What Happens to the Treated Wastewater
- Breakout Session Questions and Answers
January 14th & 17th 2019
Drivers of Wastewater Treatment

- Cuyahoga River 1969
- The Clean Water Act of 1972
  - Passed in 1972, amended in 1977 and in 1987 Sanitary issues
  - Promote a healthier population
- Global water supply
- Beneficial reuse / recharge
  - What is reuse
- Why Advanced Wastewater Treatment
# Wastewater Treatment Plants Ownership

<table>
<thead>
<tr>
<th>CDD</th>
<th>Utility Provider</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,6,7,8</td>
<td>NSU</td>
<td>NSCUDD</td>
</tr>
<tr>
<td>LL/LC 1</td>
<td>VCSA</td>
<td>VCCDD</td>
</tr>
<tr>
<td>2,3,4</td>
<td>LSSA</td>
<td>VCCDD</td>
</tr>
<tr>
<td>9,10,11</td>
<td>Central Sumter Utility (CSU)</td>
<td>Private</td>
</tr>
<tr>
<td>12.1</td>
<td>City of Wildwood</td>
<td>Private</td>
</tr>
<tr>
<td>12.2</td>
<td>South Sumter Utility</td>
<td>Private</td>
</tr>
</tbody>
</table>

[Map of The Villages community development districts]
The Villages Community Development Districts 2017-2018 Budgetary Amounts

<table>
<thead>
<tr>
<th>Utility</th>
<th>O&amp;M</th>
<th>Capital Improvement Program (CIP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Sumter Utility (NSU)</td>
<td>$1.3MM</td>
<td>$2.435MM</td>
</tr>
<tr>
<td>Village Center Service Area (VCSA)</td>
<td>$1.2MM</td>
<td>$0.529MM</td>
</tr>
<tr>
<td>Little Sumter Service Area (LSSA)</td>
<td>$1.3MM</td>
<td>$0.507MM</td>
</tr>
</tbody>
</table>
Wastewater Operations Include:

- Service area population of **125,000** over **55** square miles.
- Providing operations and maintenance services (O&M) on District assets valued at more than 1 Billion Dollars.
  - Wastewater treatment takes place at **three District and one Private** WWTPs.
    - WWTPs are strategically located in areas to minimize their presence, plant lighting and odor control.
  - Maintaining **525 miles** of wastewater collection lines.
  - **128** lift stations.
Wastewater Treatment Plants

- Treat **2.1 Billion** gallons of wastewater each year.
- **98 percent** of treated wastewater (reuse) is used for irrigation.
- Generate **9,612 tons** of biosolids each year that is used as a soil amendment.

Bacall Executive Golf Course
Wastewater Collection System
What Happens After You Flush?

Lift Station:
A wastewater pumping station that pumps raw wastewater from the gravity collection system directly to the treatment plant or to another part of the collection system.
NSU Wastewater Treatment Process

1. Headworks
   Removal of Undesirables

2. Surge Tank

Headworks Odor Control

Surge Tank Odor Control
Wastewater Treatment Process (continued)

Stage 1
Biological Treatment (Anoxic – Oxygen Limited)

Sand Filtration an extra step to remove small particles (advanced)

Stage 2
Biological Treatment (Aerobic – with Oxygen)

Clarifier separation of solids and liquids
Microorganisms in a Healthy Wastewater Treatment Plant
Wastewater – Dewatering and Sludge Disposal
Turning Biosolids to Beneficial Product

- Sludge processing takes place at an off-site facility. Solar greenhouse drying and a belt dryer takes the sludge and transform it into a Class AA product.
“The Big Picture”
Reclaimed Wastewater System Process

1. Effluent Chlorine Contact Chamber
   2.5 Billion Gallons

2. Storage Pond at WWTP

3. Treated Effluent Pump Station

4. Storage at Golf Course
Rapid Infiltration Basins (RIB)
Reclaimed Wastewater
Application Areas

CURRENT:
Golf Course – approximately 3,620 acres
Roads/Urban – approximately 150 acres

Reuse application areas are highlighted in blue.
Environmental Stewardship

- Designed with the future in mind.
  - Developed in a rural area, but has the infrastructure of a large city.
  - No septic tanks.
  - All waste is treated and disposed of per the Department of Environmental Protection.

- In partnership with the District, Arnett Environmental and others, Jacobs takes great pride in providing O&M services to the residents of The Villages.
Thank you for your interest and attendance!
Break-out Sessions

- Three stations, staffed by environmental specialists and District personnel, are available for questions.
- Sign up sheet for wastewater plant tours at each station.

For Additional Information:

This presentation, as well as the questions and answers from the break out sessions will be available on [www.DistrictGov.org](http://www.DistrictGov.org).
Acronyms

- **BOD** – Biological Oxygen Demand
- **CDD** – Community Development District
- **CIP** – Capital Improvement Program
- **CSU** – Central Sumter Utility
- **LSSA** – Little Sumter Service Area
- **MGD** – Million Gallons Per Day
- **NSCUDD** – North Sumter County Utility Dependent District
- **NSU** – North Sumter Utility
- **O&M** – Operations and Maintenance
- **RIBS** – Rapid Infiltration Basins
- **SCADA** – Supervisory Control and Data Acquisition
- **SSU** – South Sumter Utility
- **TSS** – Total Suspended Solids
- **VCCDD** – Village Center Community Development District
- **VCSA** – Village Center Service Area
- **WWTP** – Wastewater Treatment Plant