Salitrillo Wastewater Treatment Plant
Progressive Design-Build Upgrades

January 24, 2020
Salitrillo Wastewater Treatment Plant

• Northeast Bexar County
• Converse City Limits
Salitrillo Wastewater Treatment Plant

- Judson MS
- Judson HS
- Randolph AFB
Salitrillo Wastewater Treatment Plant

- Originally Built in 1974
- Last Expanded in 1998
- 5.83 MGD ADQ
- Site is ~38 Acres
Salitrillo Wastewater Treatment Plant

Upper Plant

Lower Plant

Outfall
Owner’s Representative
Scope – CP&Y

Preliminary Engineering Services
• Facility Planning
• Design Criteria Manual
• On-going Pilot Studies

Project Management Services
• Project Completion Schedule & Budget Development
• Submittal Reviews
• Document Control

Construction Management Services
• Inspection Observations Services
• Facility Start-Up and Commissioning Oversight
Design-Builder Services

- Engineering Design Services
- Guaranteed Maximum Price (GMP) at 60% Design
- Signed and Sealed Designs
- Construction Management Services
- Construction
- Construction Start-Up & Testing
- Permits and Agency Coordination
Alternate Procurement Method

Progressive Design-Build

- Design Criteria (Owner’s Rep.)
- Two Phase Procurement
- Design-Builder Selected
- Detailed Design
- Construction
Project Timeline

Procurement
- RFQ – Feb 2020
- RFP – Mar 2020
- Award – May 2020

Design
- NTP – May 2020
- 60% GMP – Dec 2020
- 100% - March 2021

Construction
- Completion – Feb 2022
Background

Facility Planning Report Completed in September 2018

• Conducted a Service Area Analysis
• Assessed Existing Operational Challenges
• Developed a Hydraulic Model
• Updated Hydromantis Process Model
• Documented Expansion Improvements
Service Area Analysis

Land Use Analysis

Population Projections

Projected Plant Flows

2029 Buildout
Population: 103,843
EDU’s: 40,883

2029 Flow Projections
AAQ: 5.72 MGD
MMQ: 7.15 MGD
PDQ: 17.17 MGD
Service Area Analysis

Land Use Analysis → Population Projections → Projected Plant Flows

2029 Buildout
Population: 103,843
EDU’s: 40,883

UPDATED:
2029 Flow Projections
AAQ: 5.91 MGD
MMQ: 7.33 MGD
PDQ: 17.72 MGD

Potential Future
PDQ: 24 MGD

Committed to Safe, Clean, Enjoyable Creeks and Rivers.
Existing Operational Challenges

Identified operational issues at Salitrillo:

• Upper Plant:
  • Effluent quality issues due to distance from Upper Plant UV and the point where the Upper and Lower Plant Effluent is combined.

• Lower Plant:
  • Equipment replacements necessary.
  • Hydraulic challenges during peak flow events.
Hydraulic Model

Hydraulic Model was developed in Microsoft Excel for engineer’s and operator’s ease of use.

- Water Surface Elevations, Freeboard, and TCEQ parameters for each hydraulic segment.
- Verified with survey.
Process Model

Process model was created in 2014 and updated with recent operations data. A pilot is ongoing to provide supplemental information on process capacity for a potential TCEQ design criteria variance.
Expansion Improvements

Design Parameters

• Design Flows:

<table>
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<th></th>
<th>ADQ</th>
<th>PDQ</th>
<th>Future PDQ</th>
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</thead>
<tbody>
<tr>
<td>Design Flows</td>
<td></td>
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• Influent Data:

<table>
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<tr>
<th>Wastewater Characteristics</th>
<th>Historical Influent Data (mg/L)</th>
<th>Influent Design Parameters (mg/L)</th>
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<tr>
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• Effluent Data based on TCEQ Discharge Permit limits.
Expansion Improvements

Design Criteria:

• TCEQ Title 30 TAC Chapter 217
• Additional SARA Criteria: Secondary Clarifier surface overflow rate = 600 gpd/sf

Note:

• Aeration Basin organic loading is currently being piloted for TCEQ requirement variance
Design Criteria Package

Included in RFQ
• General Project Description
• Plant Site Information
• Plant Expansion Design Parameters

Included in RFP
• Current Site Conditions and Equipment
• Owner Design Criteria Requirements
Scope of Work – Lower Plant

- Replace existing 4,889 gpm influent screw pump
- Expand screenings with a new mechanical barscreen, including a 2 x 4 ft channel
- Provide supplemental diffused aeration to secondary treatment process
- Construct two (2) new 90-foot diameter secondary clarifiers dedicated to aerations basins resulting in a flow configuration with two secondary treatment trains
- Replace the existing grit removal system and replace portions of the headworks
- Replace the existing gates following the grit system
- Replace the existing bar screen compactor and add noise abatement
- Replace or upgrade the existing 8” sludge pump
- Mechanical rehabilitation is required for both clarifiers
- Replace aerators for both carousel aeration basins
- Structural improvements to oxidation ditches may be required following the completion of an on-going structural assessment
Scope of Work - Upper Plant

- Replace existing 1,100 gpm Influent Pump with 1,600 gpm influent pump to increase the Influent Pump Station firm capacity to 4.75 MGD
- Provide supplemental diffused aeration to secondary treatment process
- Construct one (1) new 90-foot diameter secondary clarifier to match existing
- Replace the existing screen with a bar/step screen
- Add grit removal mechanicals and associated structures
- Replace aerators for carousel aeration basin
Scope of Work - Combined Plant

• Install one (1) new combined post-aeration and UV disinfection system and abandon existing post-aeration and UV disinfection systems.

• Install a new Intermittent Low Lift Pump Station designed with a firm capacity of P2HRQ to pump plant effluent during high receiving stream water elevations.

• Install a new effluent flow meter Parshall flume and abandon existing flow measurement vault and Parshall flume.

• Design a new lab and office building.

• Upgrade or Replace existing Electrical and Motor Control Center (MCC).

• Raising or relocating existing interior roads out of 100-year floodplain.

• Install new fencing and gates around the property including the addition of a SARA designed monument.

• Upgrade and replace SCADA equipment.
Scope of Work - Additional Considerations

• Mitigate impacts from the 100-year floodplain and new ATLAS 14 designations
• Improved odor control for the facility
• Examine facility lighting to reduce the impact on surrounding properties
• Evaluate noise abatement strategies for equipment exceeding 80 dB
• Chlorine Building
• Determine long-term solids handling capacity needs are met
• Submetering
• Evaluate the use of solar panels
• Perform analysis to determine I&I mitigation strategies
• Evaluate the use of tertiary filters
• Site will be designed to in accordance with SARA’s Low Impact Development
• SARA will not be seeking an Envision Rating