



**CHICKEN RANCH
CASINO**

CHICKEN RANCH CASINO RESORT

MEMPAC-M300-200, EQPAC, DRYPAC, and UV
125,000 GPD • Jamestown, CA



PROJECT TEAM

**CLIENT
REP**
KEN SHUEY

PROVOST &
PRITCHARD
CONSULTING GROUP

**MBR
MANUFACTURER**
SHANNON JESSICA



**DESIGN
ENGINEER**
CURTIS LAM

HydroScience

CONTRACTOR
KEITH JOHNSON
FRM



PROJECT OVERVIEW

The Chicken Ranch Casino's expansion project entails the addition of a new casino facility and a 190+ room resort, complete with luxury amenities such as a day spa, fitness center, rooftop pool, and event space. Due to the existing on-site wastewater treatment plant nearing the end of its life and struggling to meet current demands, a replacement was imperative. Moreover, the Tribe sought to elevate their treatment system to tertiary levels to support sustainable water usage for landscape irrigation and enhance environmental stewardship of their Tribal lands.

DESIGN PARAMETERS

INFLUENT PARAMETERS

PHASE	LOW-FLOW	PHASE 1 DESIGN	PHASE 2 DESIGN
AVERAGE DAILY FLOW	15,000 GPD	103,000 GPD	165,000 GPD
MAX DESIGN FLOW	18,000 MG/L	125,000 MG/L	204,000 MG/L
BIOCHEMICAL OXYGEN DEMAND	803 MG/L	818 MG/L	715 MG/L
TOTAL SUSPENDED SOLIDS	179 MG/L	265 MG/L	232 MG/L
TOTAL KJELDAHL NITROGEN	167 MG/L	219 MG/L	199 MG/L

EFFLUENT QUALITY

BIOCHEMICAL OXYGEN DEMAND	< 10 MG/L	< 10 MG/L	< 10 MG/L
TOTAL SUSPENDED SOLIDS	< 10 MG/L	< 10 MG/L	< 10 MG/L
TOTAL NITROGEN	< 10 MG/L	< 10 MG/L	< 10 MG/L



CLOACINA SUPPLIED THE FOLLOWING FOR THIS PROJECT:

- EQUIPMENT:** MEMPAC-M300-200 with EQPAC
- HEADWORKS:** Duplex fine screens (2 mm)
- SECONDARY/TERTIARY TREATMENT:** Membrane bioreactor w/ hollow fiber membranes and UV disinfection
- ODOR CONTROL:** Activated carbon odor scrubber on headworks and EQ
- CONTROLS:** Fully integrated SCADA system
- SLUDGE HANDLING:** Aerated sludge storage with volute dewatering press
- BUILDING:** NFPA-820 compliant building installation, with electrical room, operator and staff room, and ADA restroom
- LIFT STATION:** Duplex pumping with independent control panel and backup diesel pump



WATER TREATMENT SOLUTION

The Tribe enlisted Fluid Resource Management (FRM) to install a state-of-the-art Cloacina Membrane Bioreactor (MBR) and UV Disinfection system. This solution not only addresses the immediate need for wastewater treatment but also facilitates water reuse for landscape irrigation, offering a sustainable water source amidst California's drought challenges.

DESIGN AND CONSTRUCTION

Utilizing a Design-Build delivery method, the project team navigated swiftly through the design phase despite potential setbacks and supply chain issues due to the COVID-19 pandemic. The treatment plant's design caters to three distinct phases, including a low-flow phase for the existing plant, while maintaining flexibility to scale up with the resort's development.

MBR FEATURES

The project incorporates unique features, notably constructing the entire treatment system within a steel building conforming to NFPA-820 guidelines. The MBR employs a bardenpho treatment process to handle the casino's high-strength and variable wastewater effectively, ensuring compliance with strict nutrient removal requirements. Additionally, the system is designed with scalability in mind to accommodate the resort's phased expansion.

PERMITTING AND REGULATORY COORDINATION

Given the unique circumstances of the treatment plant's location on Tribal land and its effluent discharge onto fee land during an interim period, the design team collaborated closely with the Tribe and state regulatory agencies to address complex permitting requirements. This coordination ensured compliance with regulations while facilitating the project's successful implementation.

Through collaborative efforts and innovative solutions, the Chicken Ranch Casino project exemplifies resilience, environmental consciousness, and forward-leaning stewardship in water management, setting a benchmark for sustainable practices in California's Gold Country region.

