THE BIGGEST LITTLE PLANT IN AUSTIN: The Expansion of the Wild Horse Ranch WWTP

TACWA MEETING – AUSTIN, TX // MARCH 25, 2022

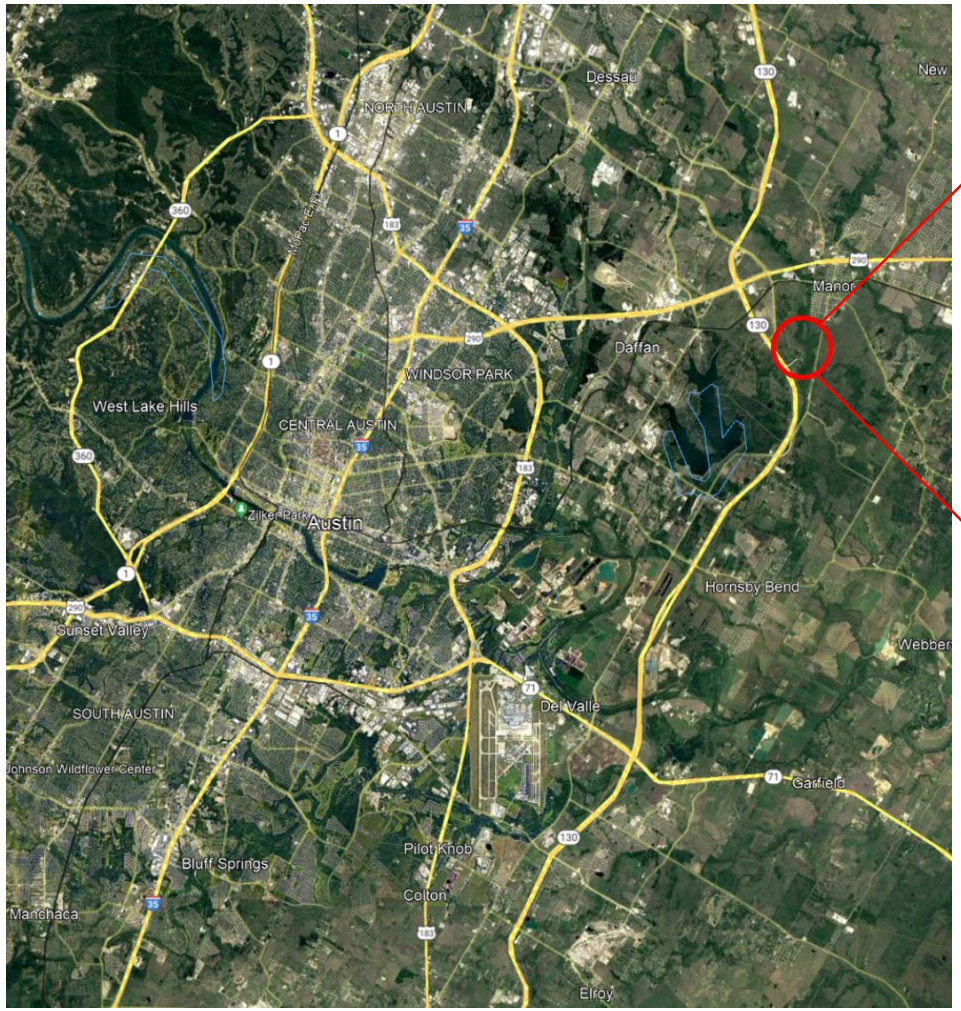
// Outline

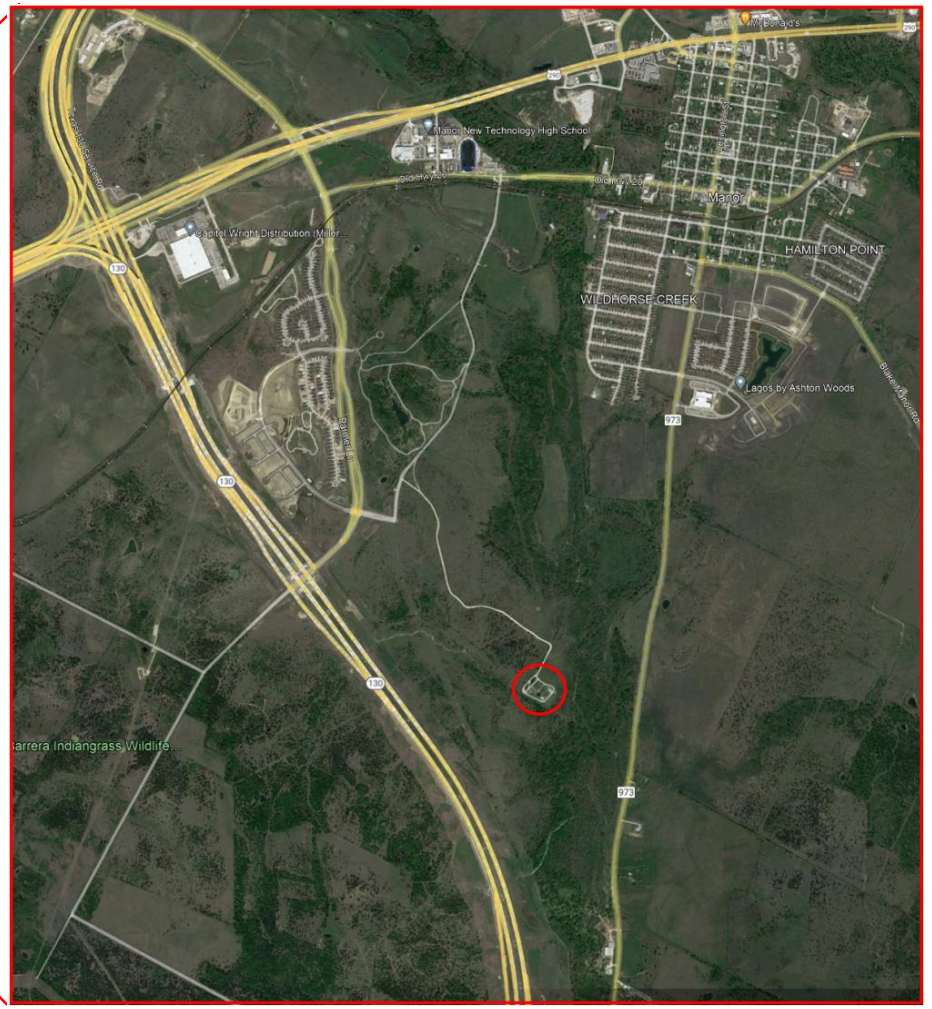
- History / Background
- Overview of Expansion
- BNR Upgrades
- Solids Handling
- Filters and UV Disinfection
- Predictive Maintenance
- Questions

// History

- Started up in 2004 with design capacity of 0.75 mgd.
- Originally designed as an interim plant with maximum buildout capacity of 1.5 mgd
- First Austin WWTP with a Total Phosphorus limit (1.0 mg/L)
- Expansion to 2.25 mgd - major growth expected in the northeast of Austin
- Will be first plant to operate with a 0.5 mg/L TP limit and to incorporate Enhanced biological phosphorus removal (EBPR)
- First and only Austin WWTP using UV disinfection

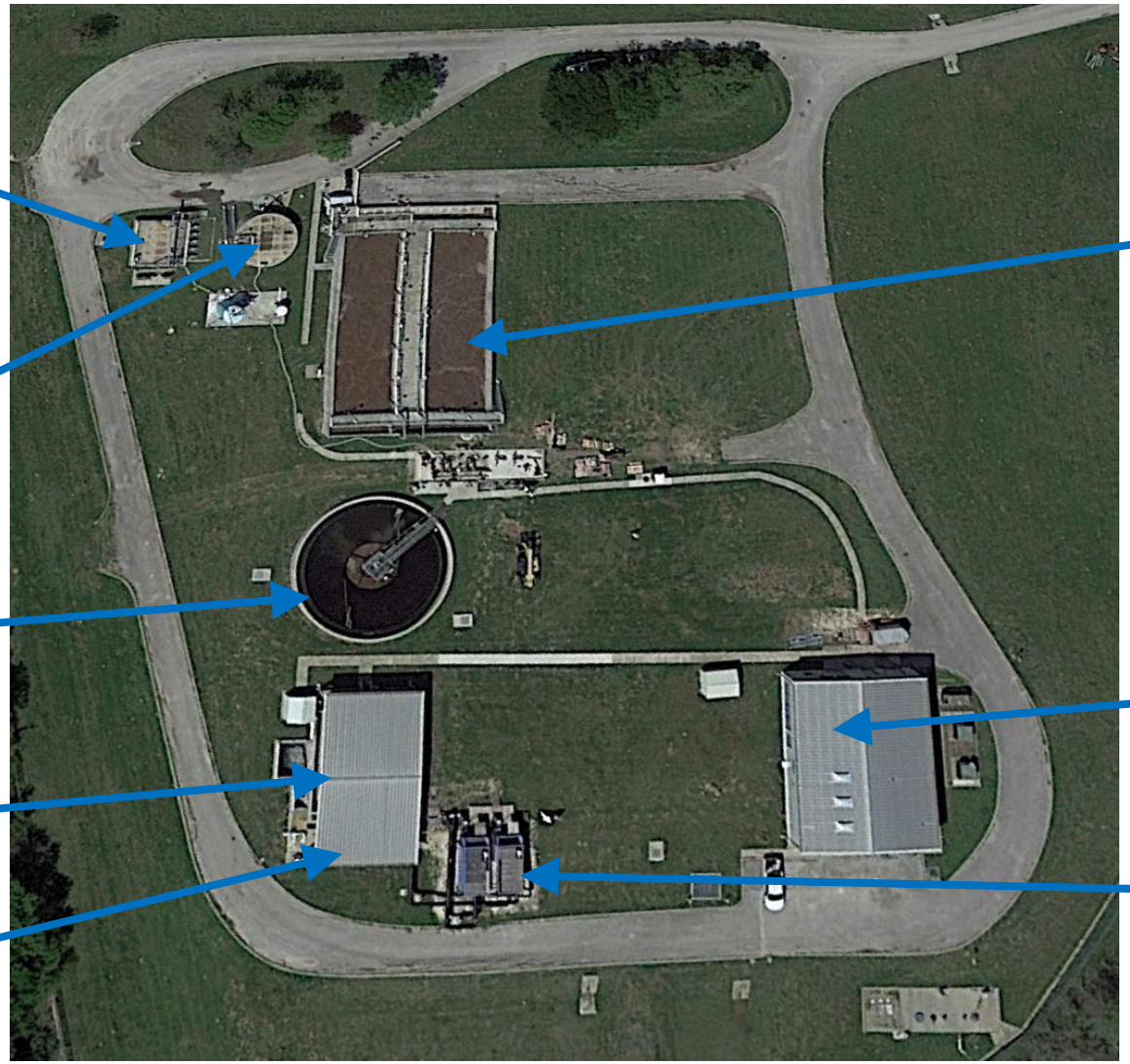
// Background



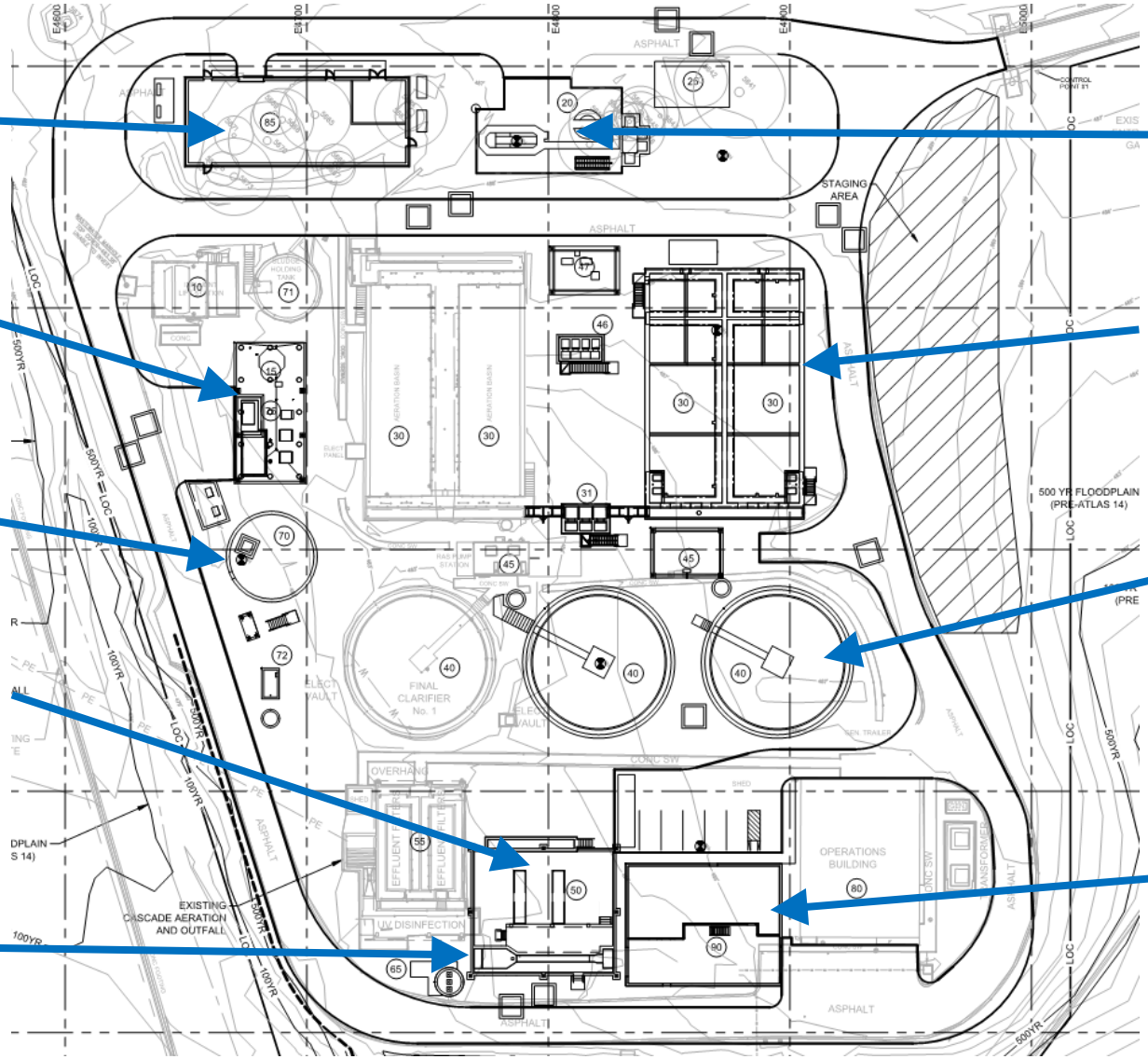


- Gravel Entrance Road
- Rainwater Collection System

// Overview


INFLUENT LIFT STATION
SLUDGE HOLDING TANK
SECONDARY CLARIFIER
TRAVELING BRIDGE FILTERS
UV DISINFECTION
AERATION BASINS
BLOWER ROOM
DISK FILTERS

// Overview

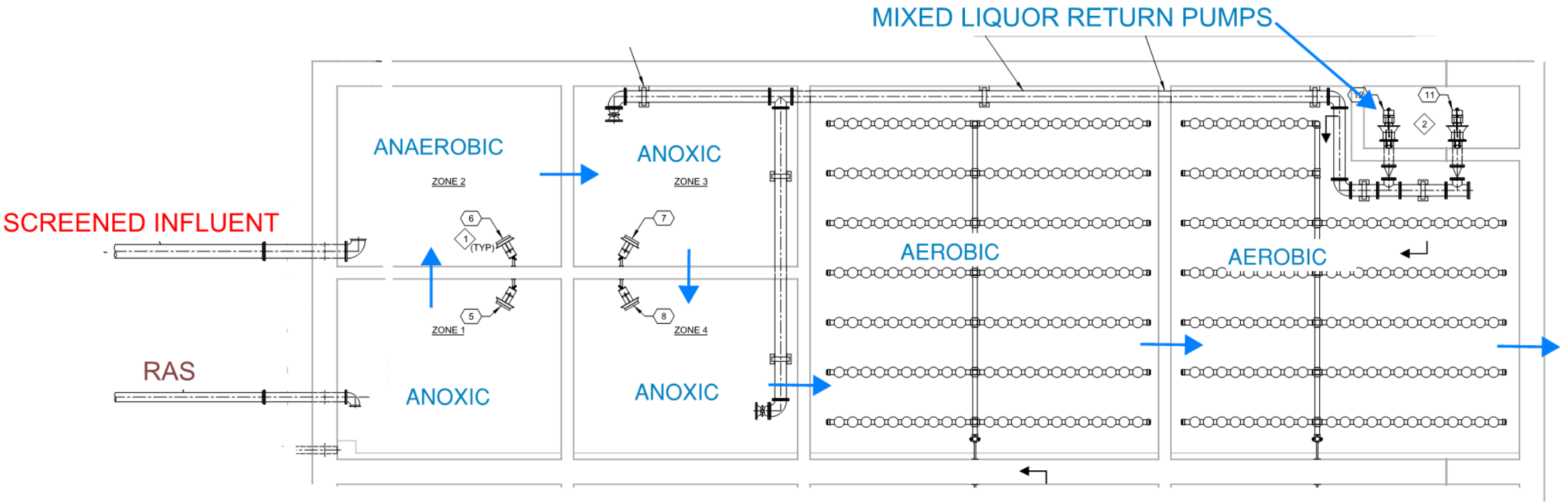

ELECTRICAL BUILDING
HEADWORKS
THICKENING FACILITY
AERATION BASINS
WAS HOLDING TANK
SECONDARY CLARIFIERS
DISK FILTERS
NEW ADMINISTRATION BUILDING
UV DISINFECTION
ASPHALT
STAGING AREA
500 YR FLOODPLAIN (PRE-ATLAS 14)
FINAL CLARIFIER No. 1
OPERATIONS BUILDING
UV DISINFECTION
EXISTING CASCADE AERATION AND OUTFALL
OVERHANG

// Permit Effluent Limits

	Flow or Concentration
Flow	2.25 mgd
BOD_5	5 mg/l
TSS	5 mg/l
NH_3-N	2 mg/l
TP	0.5 mg/l

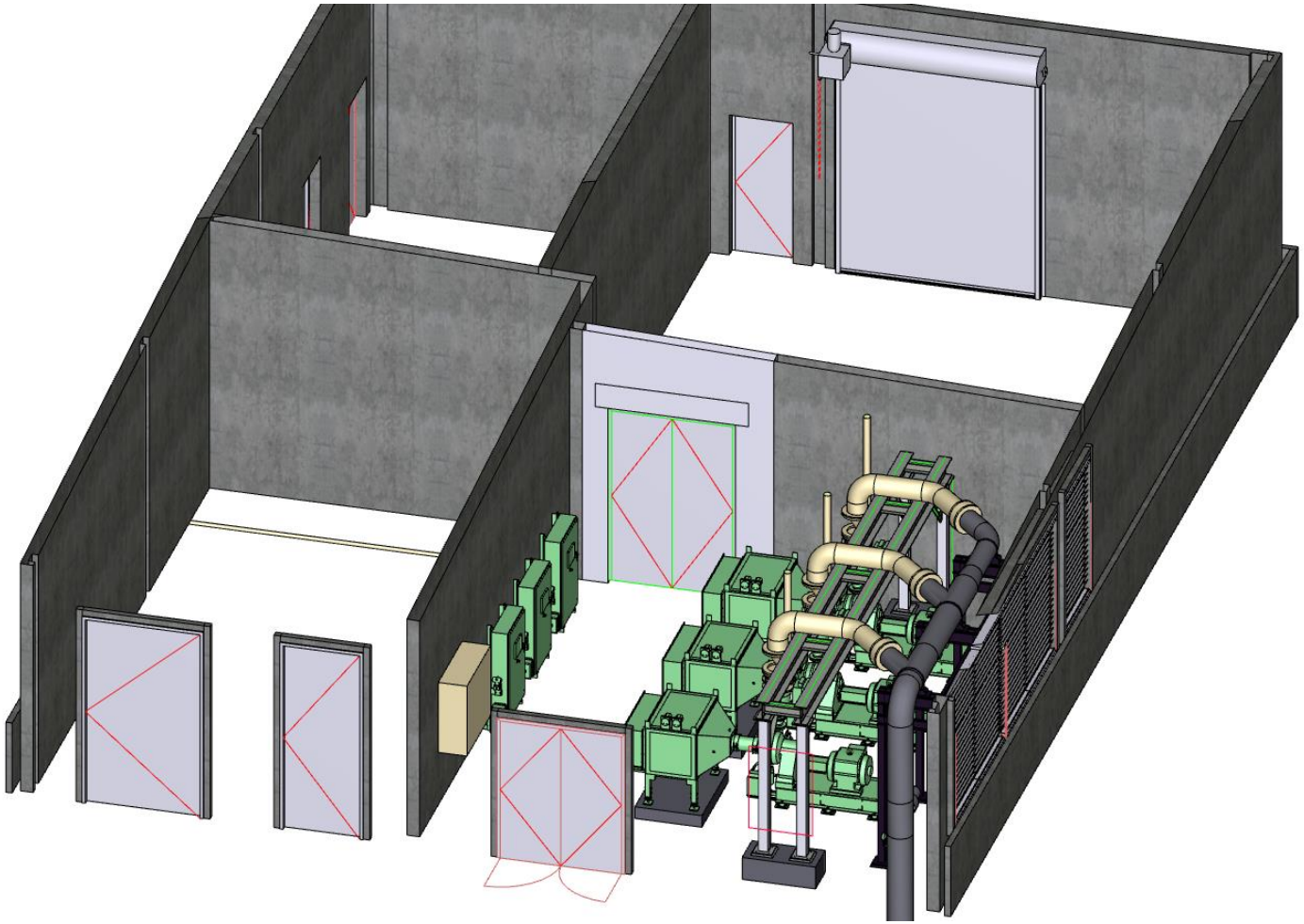
- Permitted 2-hr Peak Flow = 9.0mgd

// Upgrade to BNR – Johannesburg Process



- Process selected to reduce alum requirements
- System can be modified to operate in different BNR configurations

// Variable Output Blowers and D.O. Control

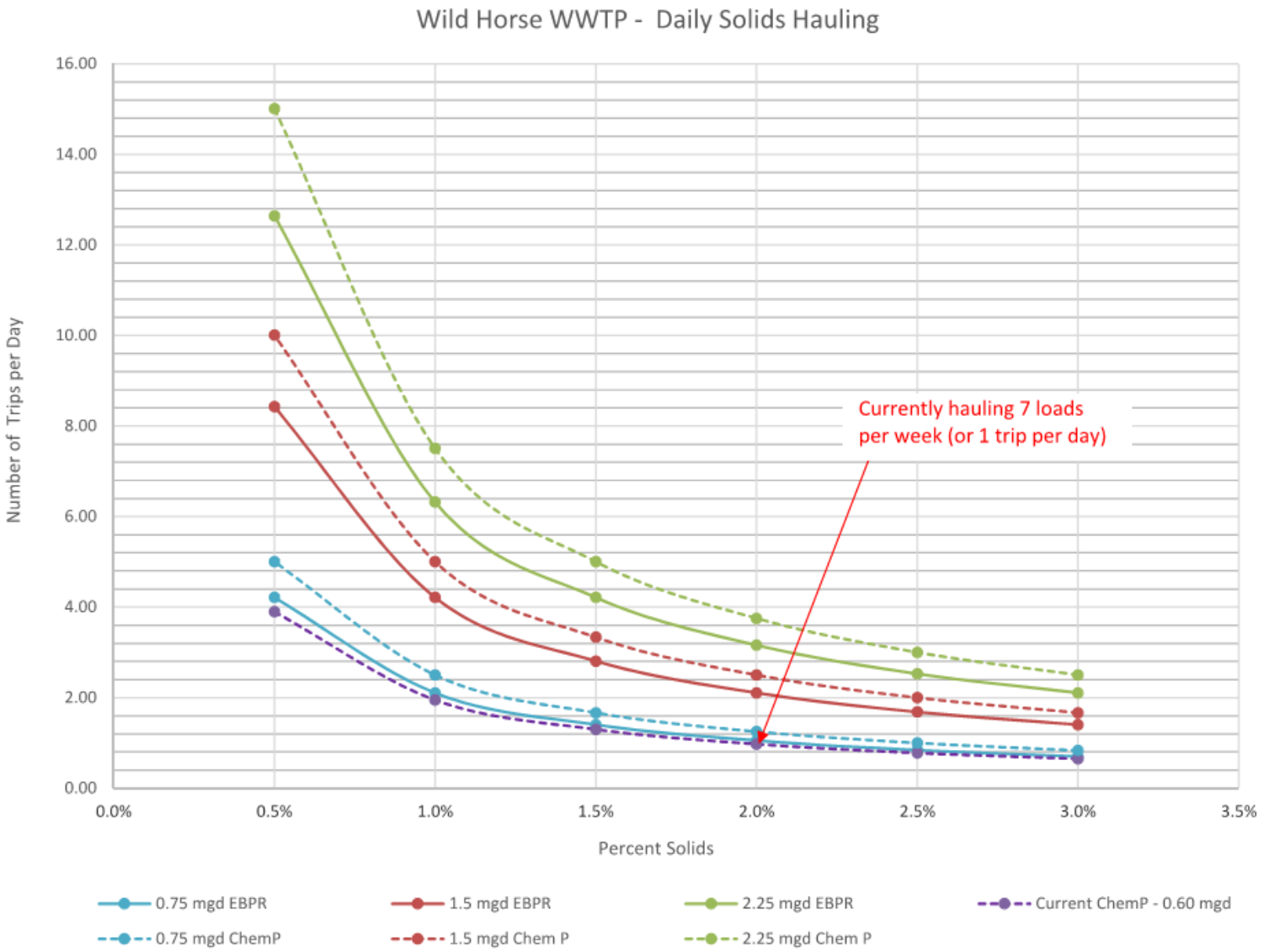


// Solids Handling

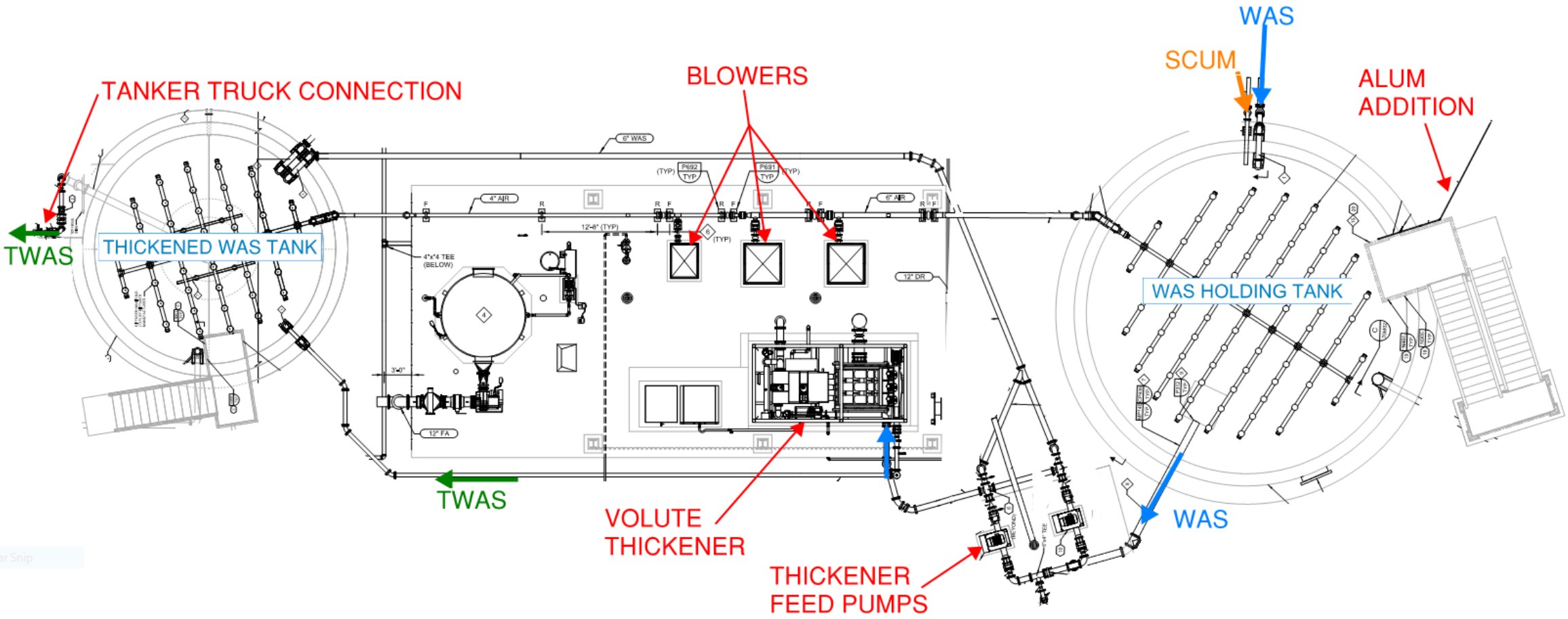
// Solids Handling Design Considerations

- Dewatered solids not desired unless Class B is achievable
- Operations staff requires more WAS storage volume
- Minimize possibility for P return to head of plant
- Experience in other TX plants indicates that over-aeration can significantly reduce pH in tank
- Make use of volute thickener being used temporarily at the Walnut Creek WWTP
- Set design thickened WAS concentration for ease of operation while minimizing truck trips.

// Waste Solids Volume

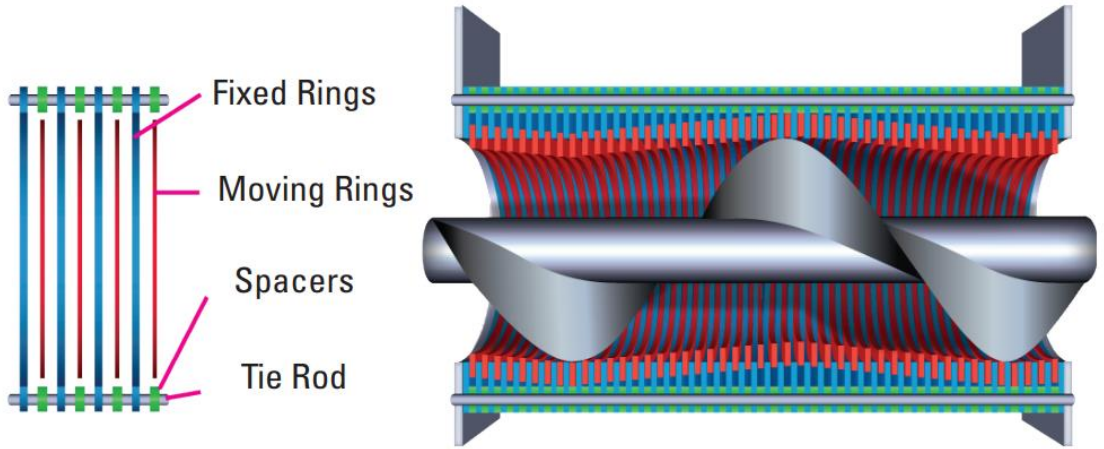


// Sludge Thickening and Storage



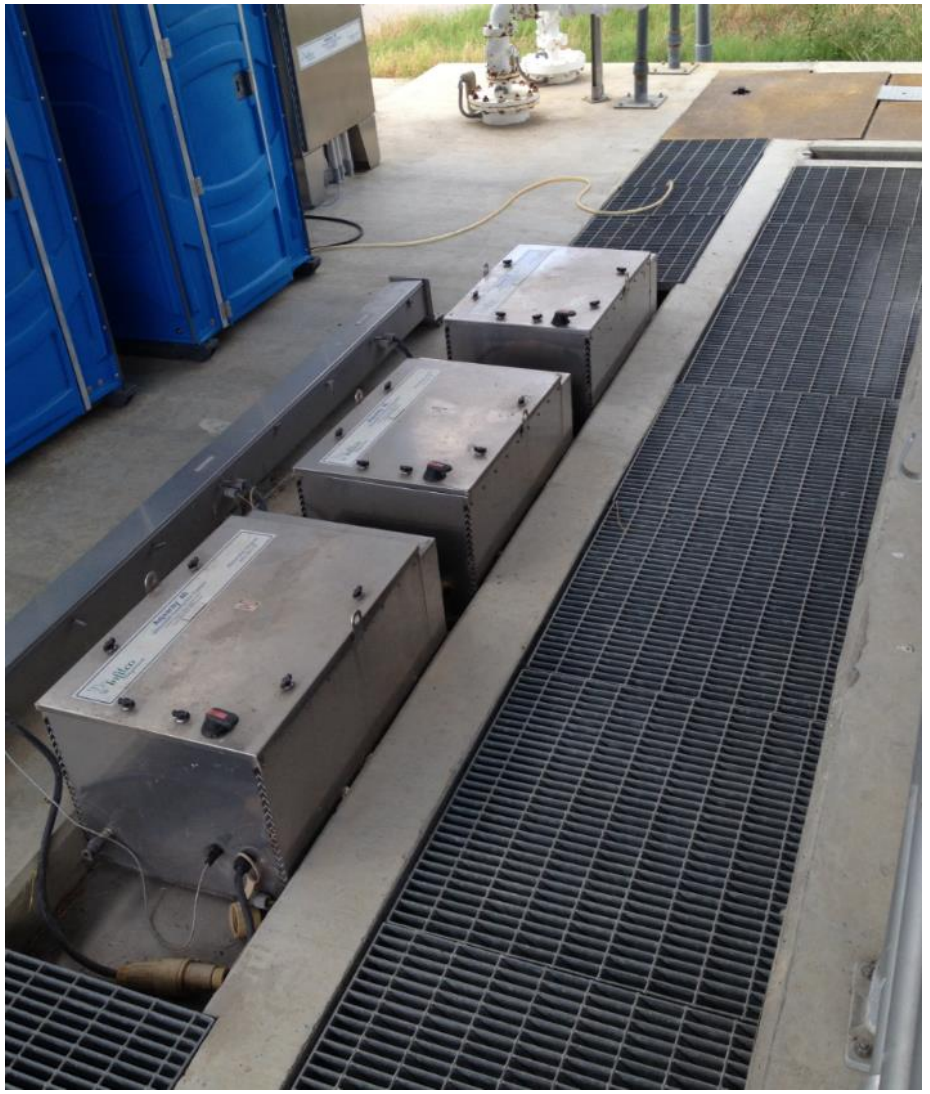
// Volute Thickener

Temp. Facility - Walnut Creek WWTP

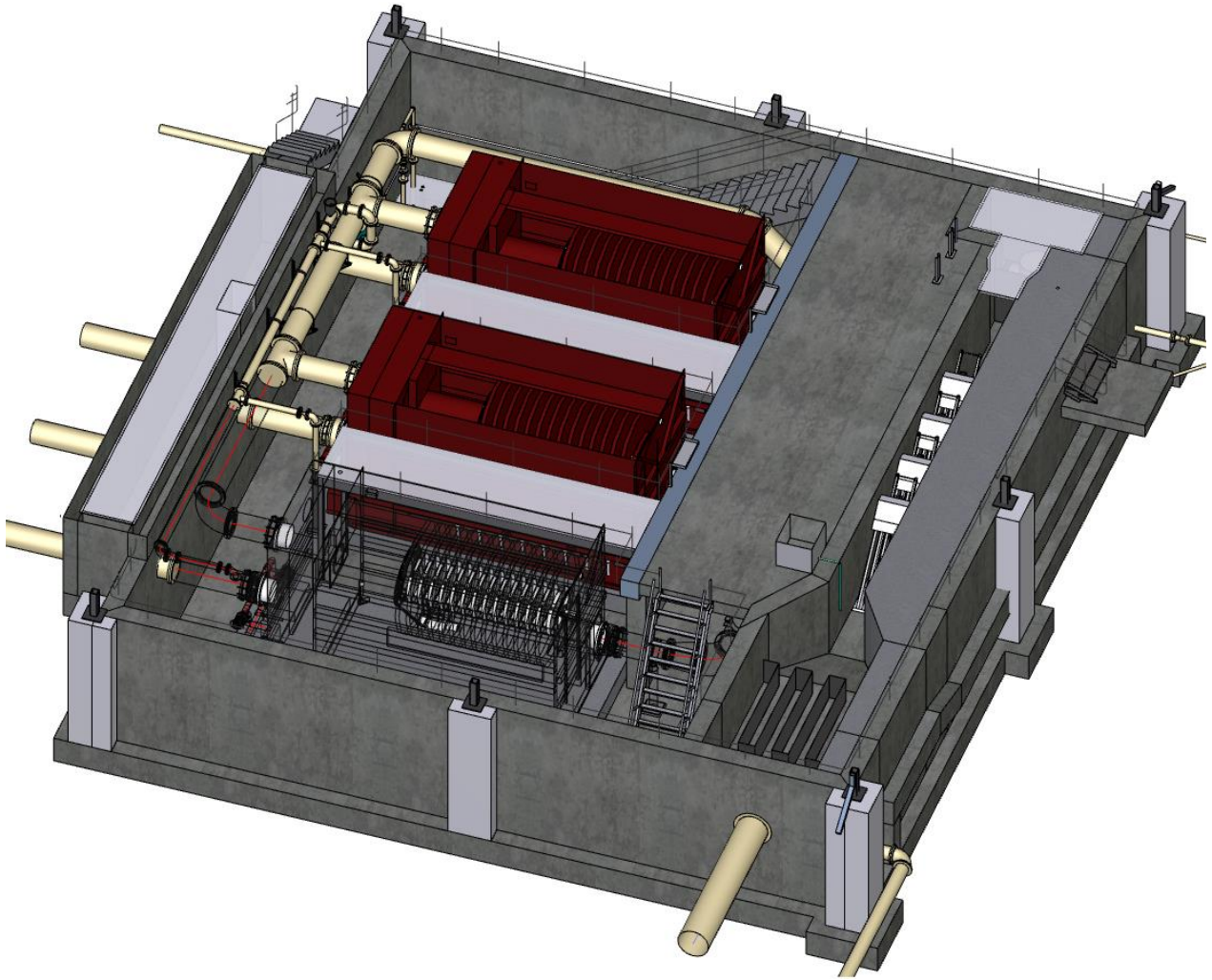


- Thickener can be run to achieve 3% Solids

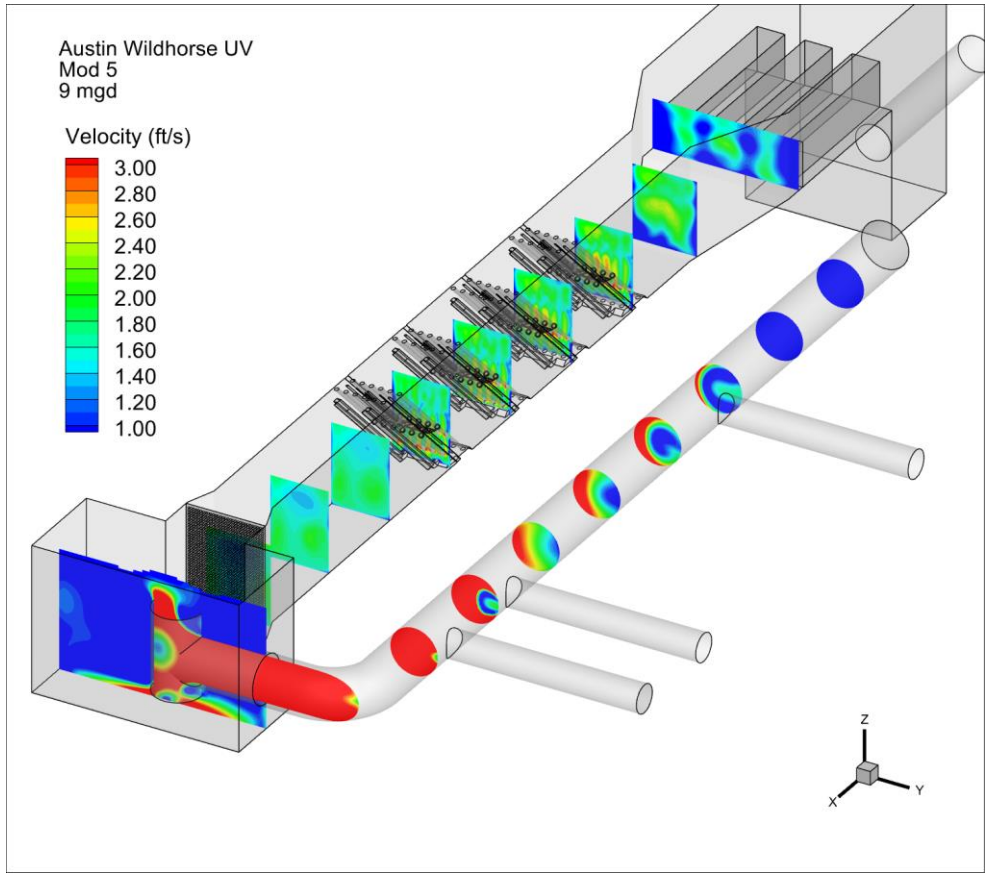
// Filters and UV

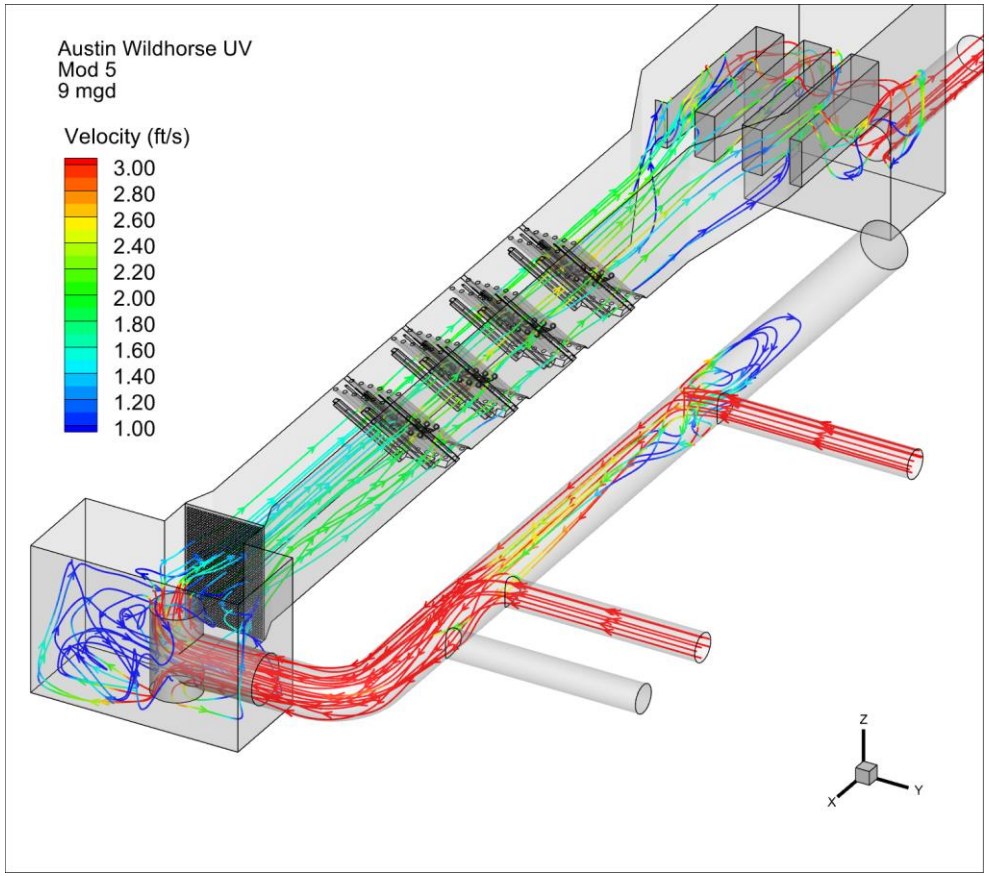


// New Filtration and UV Disinfection



// CFD Modeling





- Tight hydraulic gradeline and importance of steady flow through UV required CFD modeling

// Predictive Maintenance Pilot

Questions