

Delivering a State-of-the-Art Biosolids Management System for NTMWD

Rudy E. Kilian, P.E.

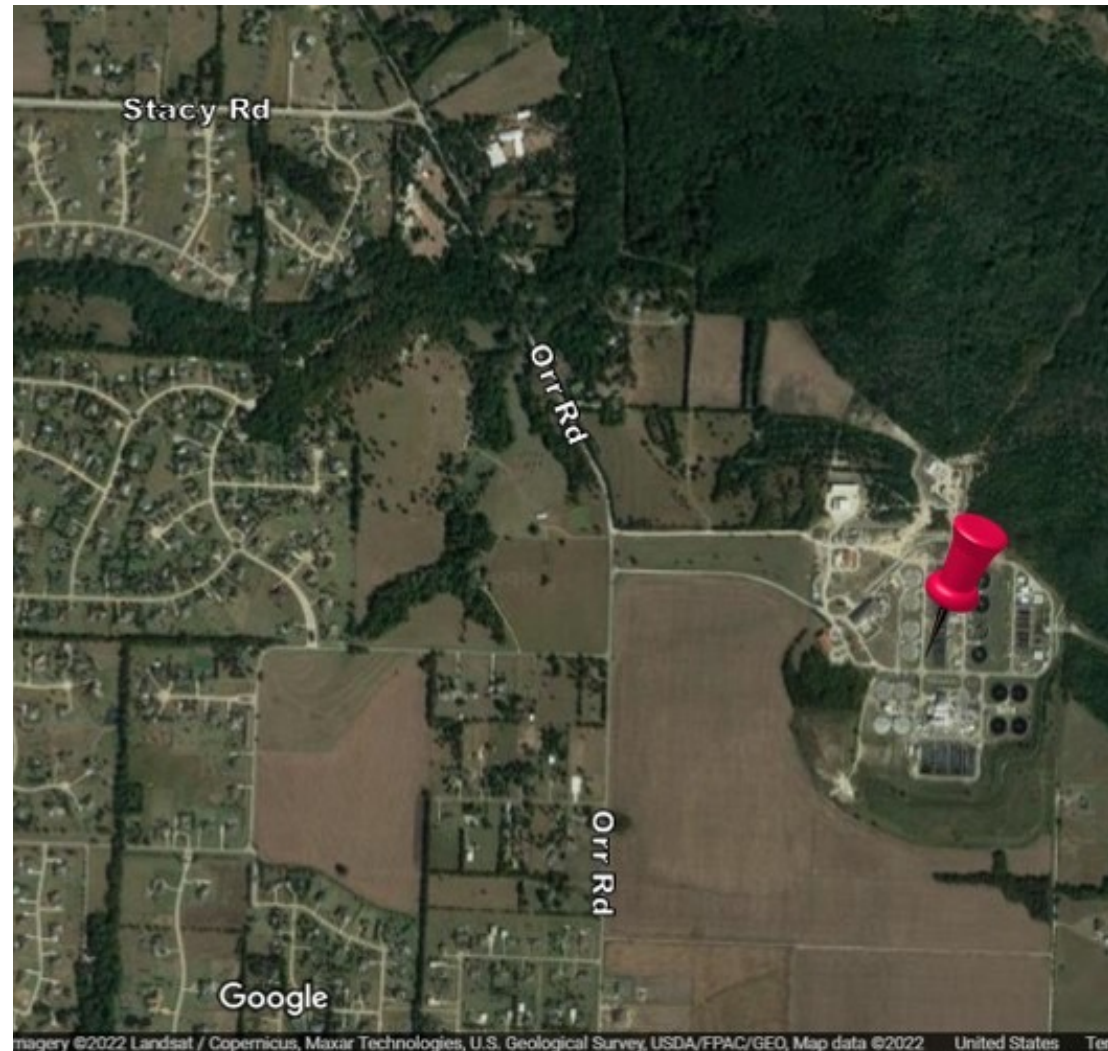


Houston, TX // July 2022



WILSON CREEK WASTEWATER TREATMENT PLANT

- The plant is located at: 3020 Orr Rd, Allen
- Serving cities of McKinney, Frisco, Allen, Plano, Princeton, Lucas, Prosper, Anna, Melissa, Fairview, Parker, and Richardson
- Treated plant effluent discharges to Lake Lavon
- Dewatered biosolids are disposed of at NTMWD landfill





WILSON CREEK WASTEWATER TREATMENT PLANT



1984 - 8 MGD Treatment Capacity

1988 - 24 MGD Treatment Capacity

1996 - 32 MGD Treatment Capacity

2005 - 48 MGD Treatment Capacity

2015 - 56 MGD Treatment Capacity plus 32 MGD Wet Weather Train Peak Flow Capacity

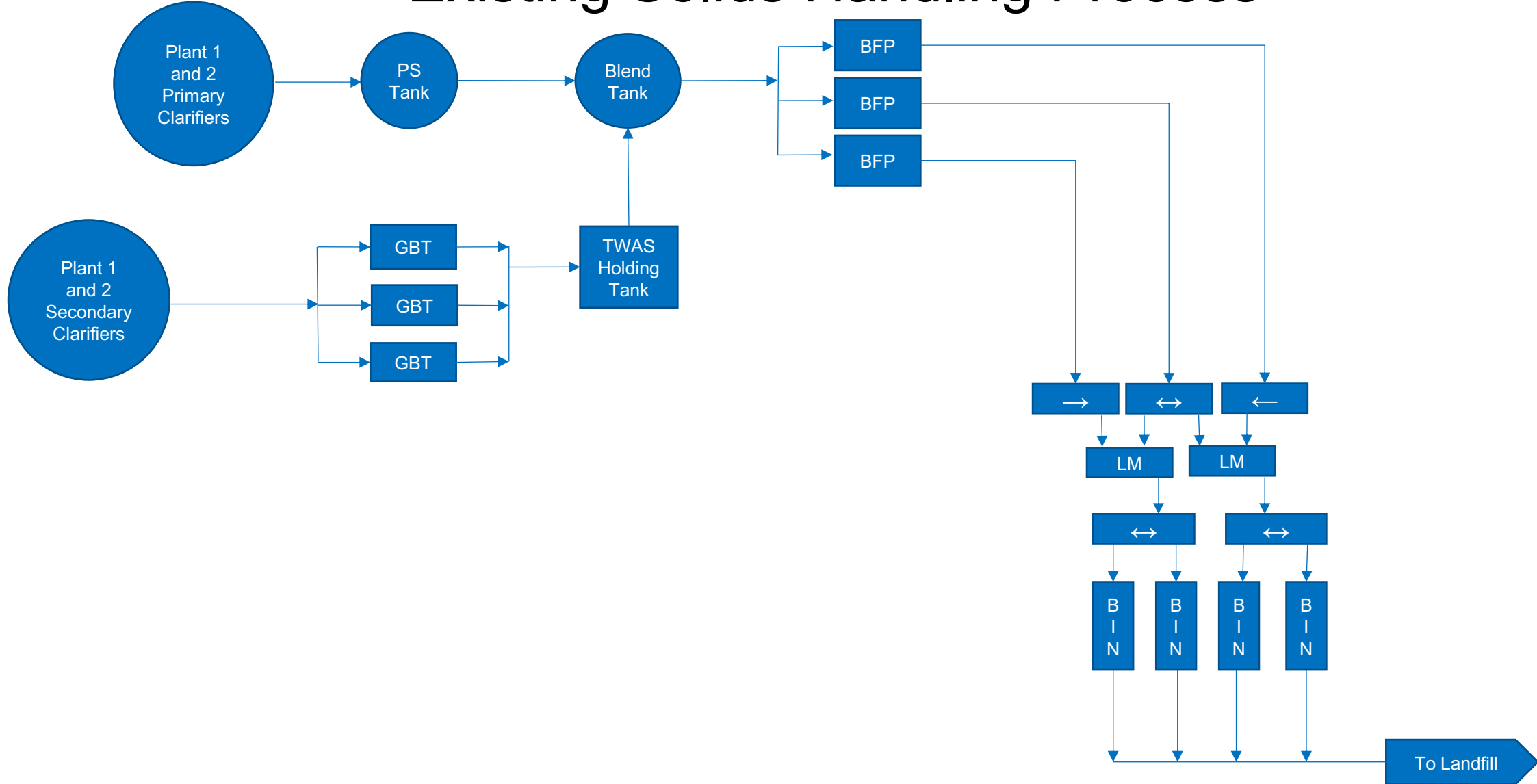
Now

64 MGD Average / 160 MGD Peak

Treatment Capacity (Plants 1 and 2) / 64 MGD Wet Weather Train Peak Flow Capacity



Existing Solids Handling Process



Existing Solids Handling Process

- Equipment
 - Thickening: Three GBTs (3 m)
 - Dewatering: Three BFPs (2 m)
- Dewatering schedule
 - 7 days a week
 - 2:00am to 9:00pm
- Truck loading
 - 4 dumpster bays
 - No capability to weigh trucks
- Solids Storage
 - Primary Sludge holding tank
 - TWAS holding tank





ASHBROOK CORPORATION
LONDON, VERMONT TEL. 802-241-1111



Existing Cake Loading Bays





District's Solids Handling Goals

- Optimize truck hauling operation
 - Prevent overweight trucks
 - Maximize hauling per truck
 - Online truck weighing
- Eliminate bin storage on site
- Allow flexibility to change to future process configurations

Basis of Evaluation

- Landfill schedule

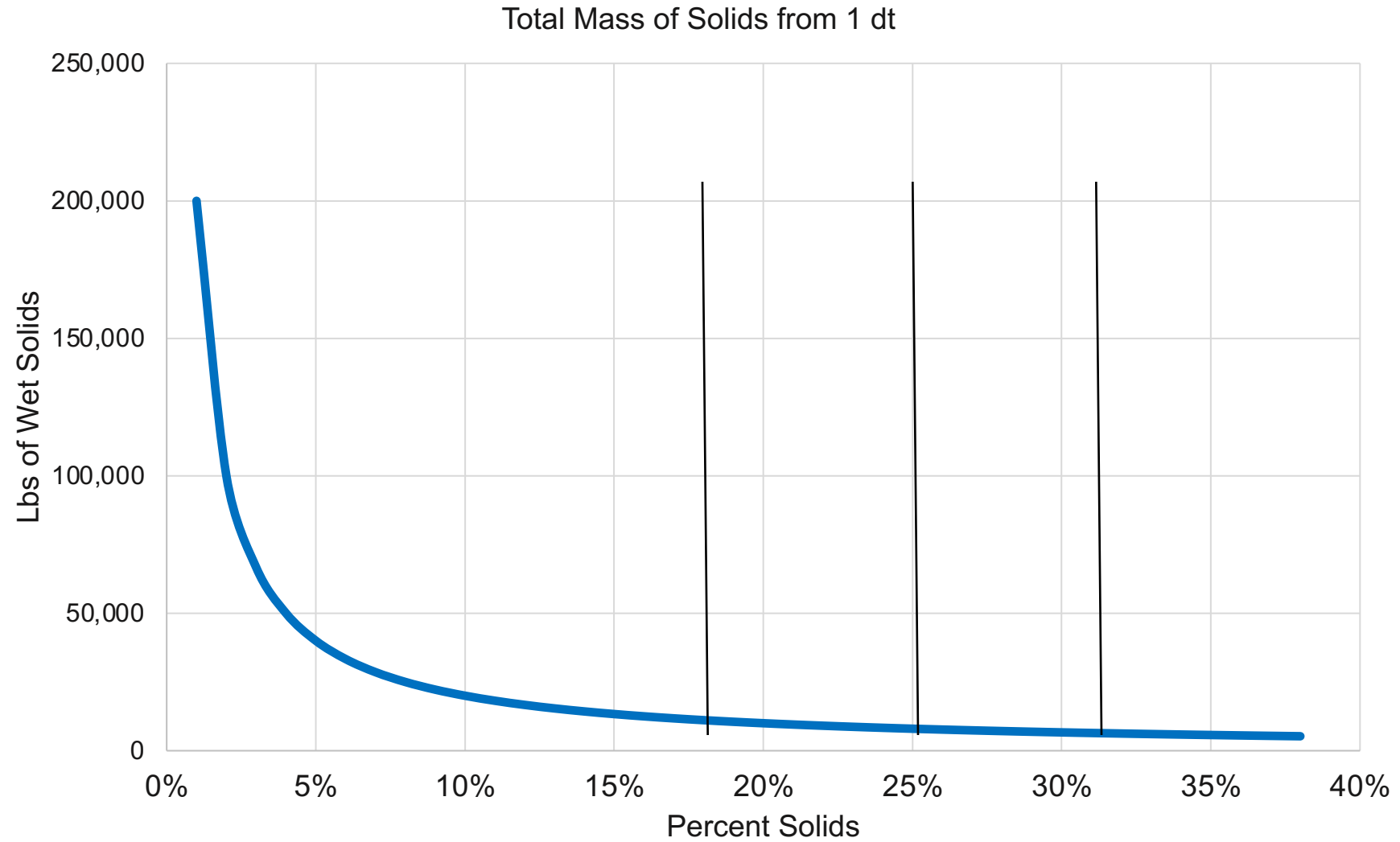
- Weekdays: 12 hrs per day
- Saturdays: 6 hrs per day
- Sundays: Closed
- Holidays: ?

- Amount of solids to be managed

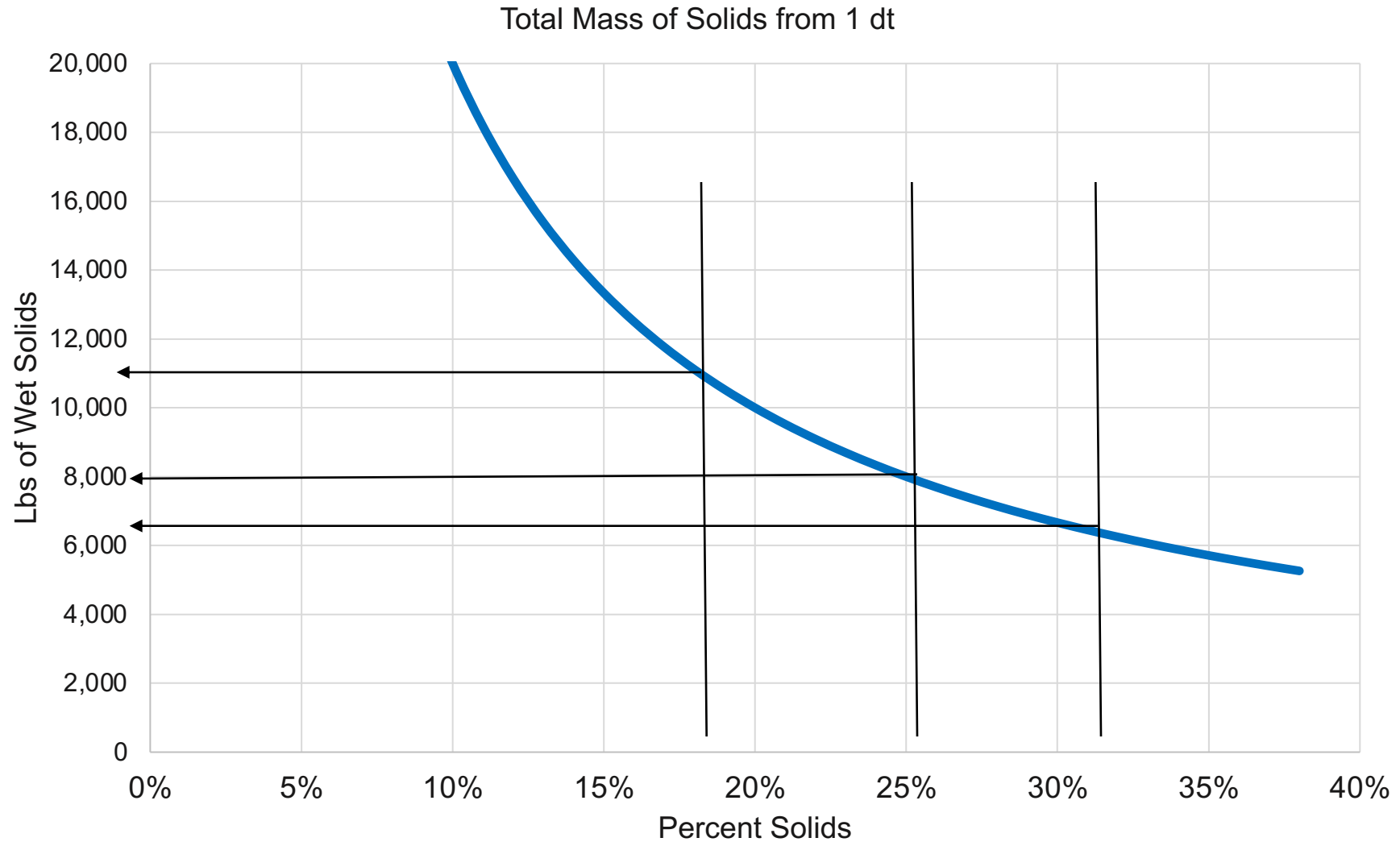
- Dewatering feed: 65 dtpd (Max month PF= 1.6)*
- Solids retention: 95%

*Biosolids Master Plan indicates a max month PF of 1.3.

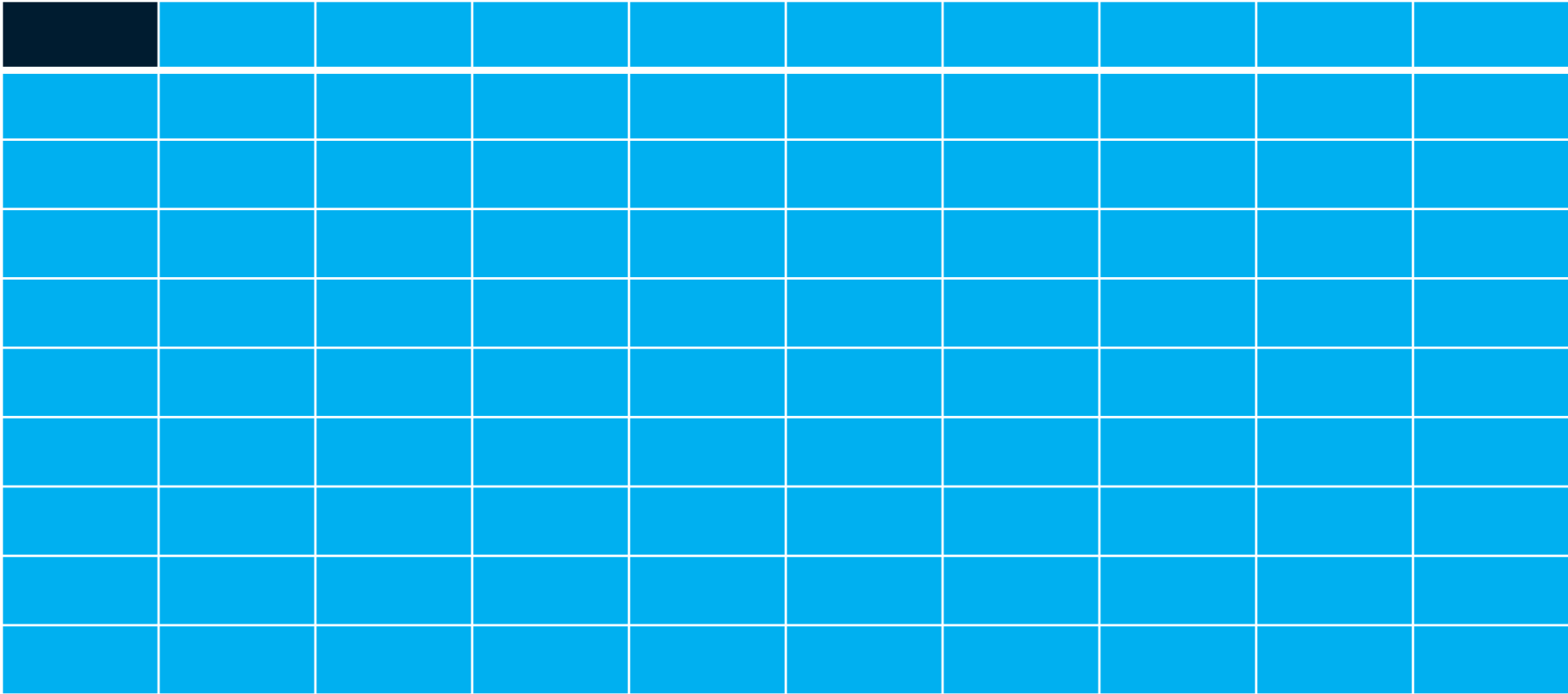
Why do we dewater?



Why do we dewater?

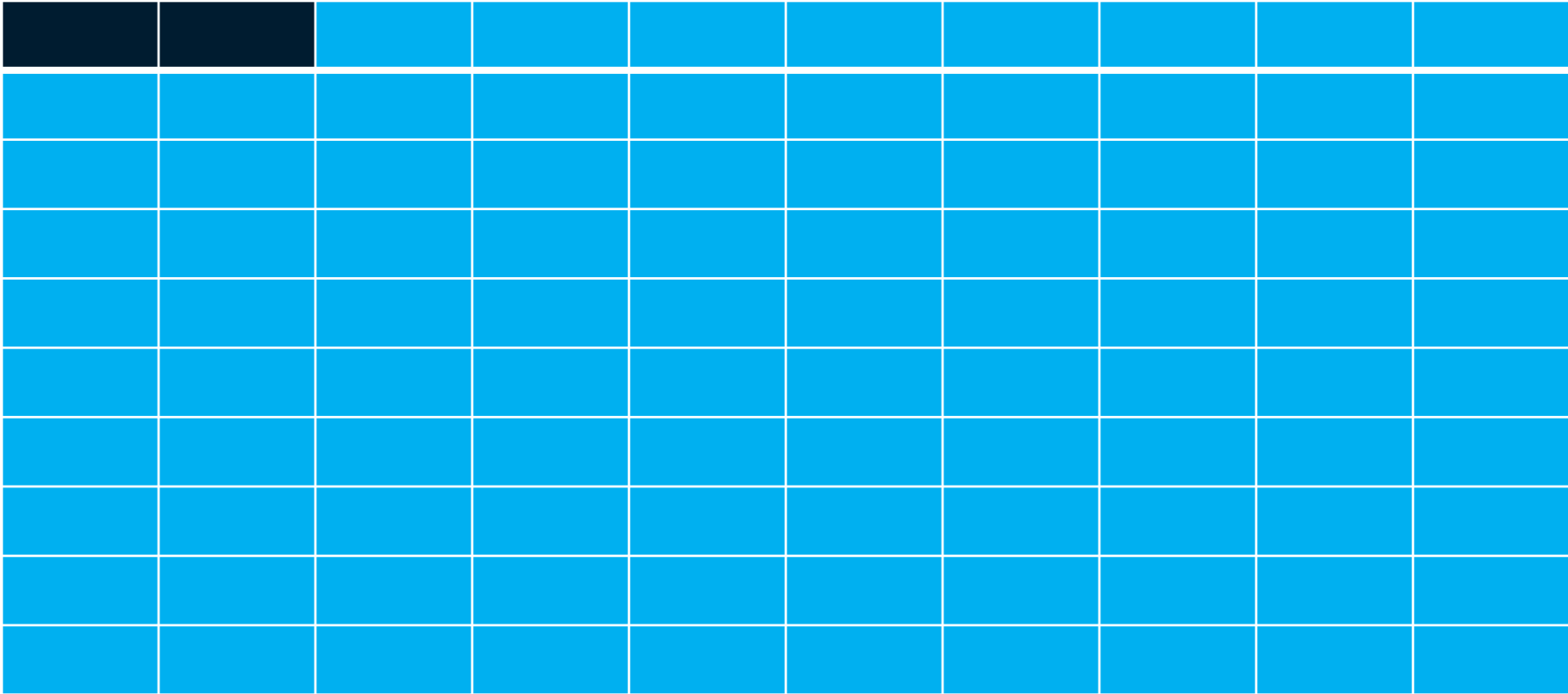


What is % solids



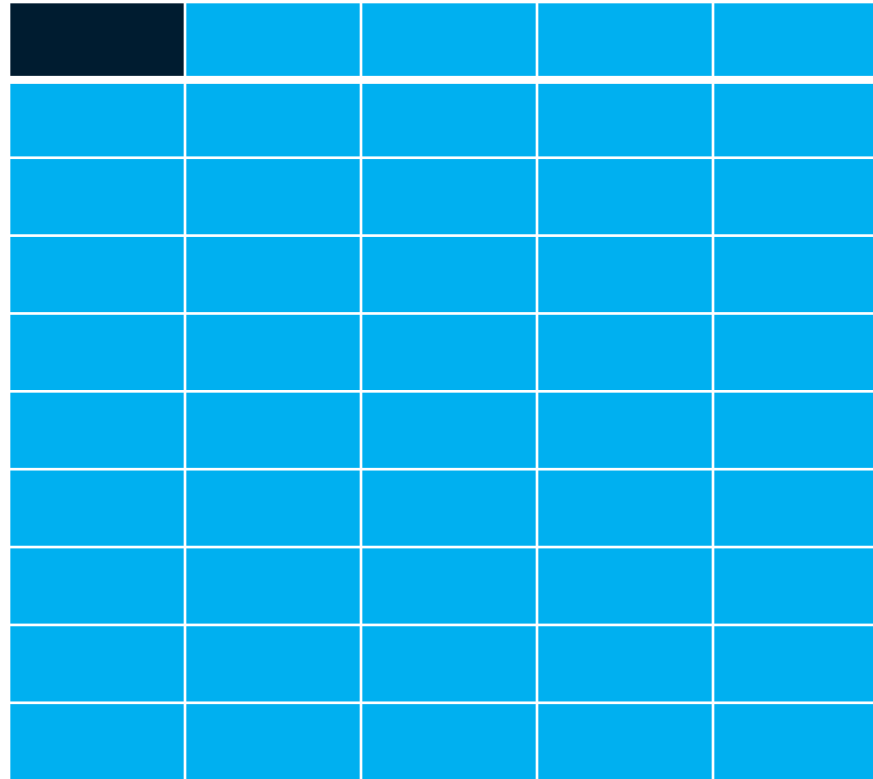
1% Solids

What is % solids



2% Solids

What is % solids



2% Solids

We removed 50% of the water

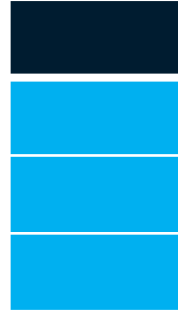
What is % solids



10% Solids

We removed 90% of the water

What is % solids



25% Solids

We removed 97% of the water

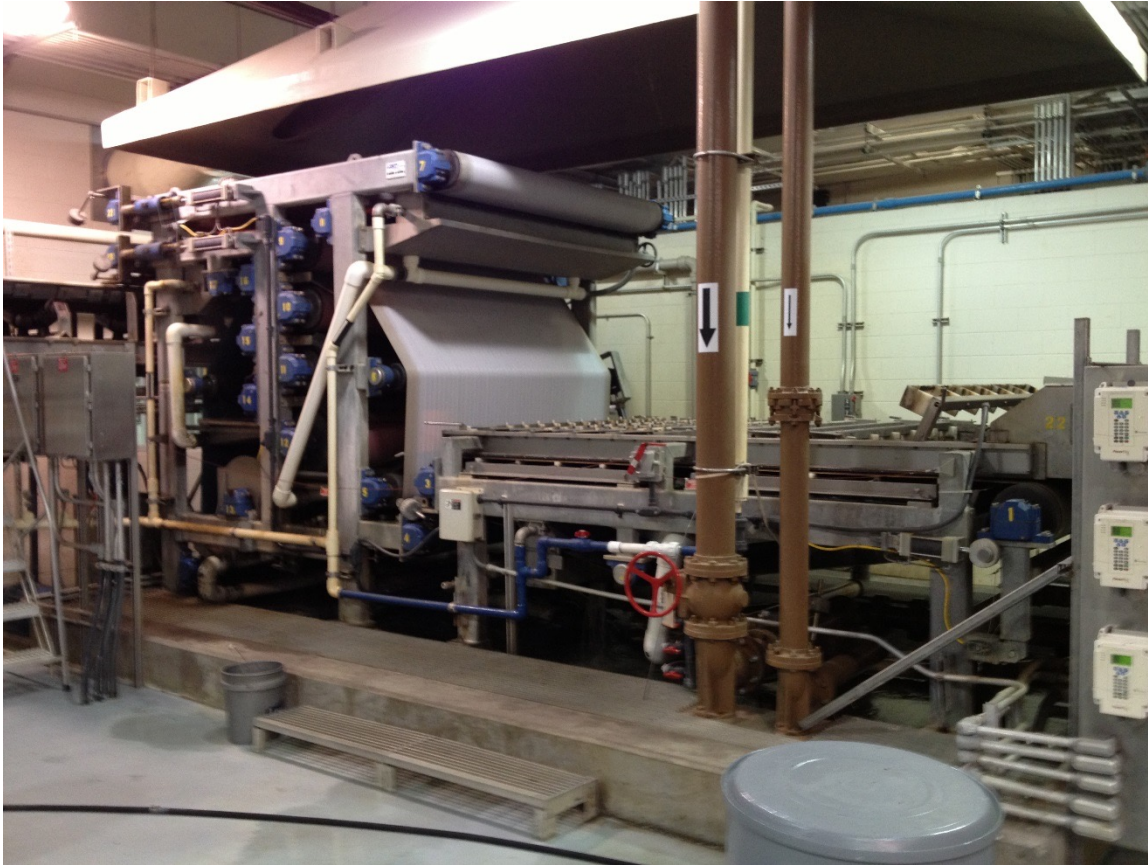
What is % solids



50% Solids

We removed 99% of the water

Basis of Evaluation

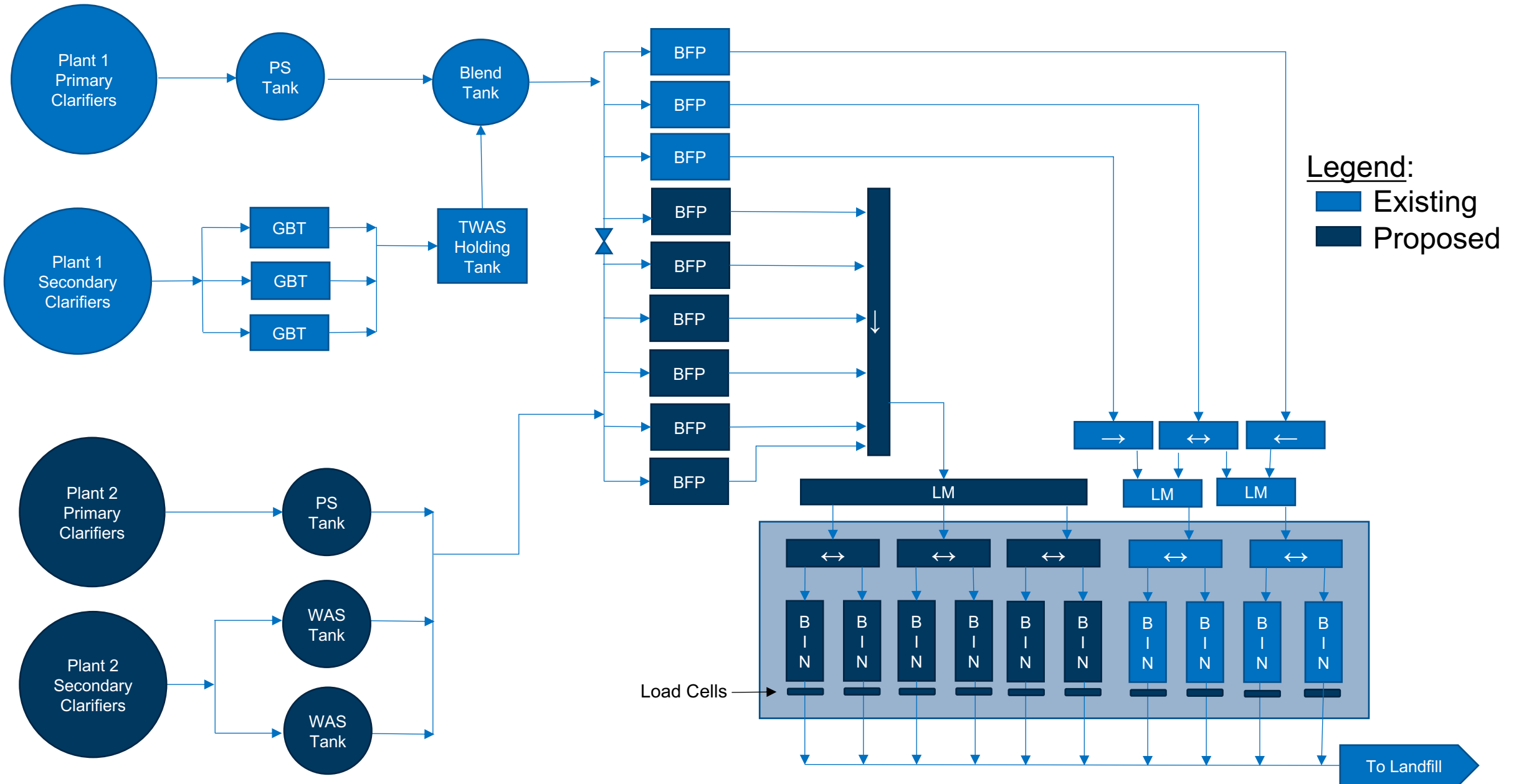


2-m 3 Belt BFP

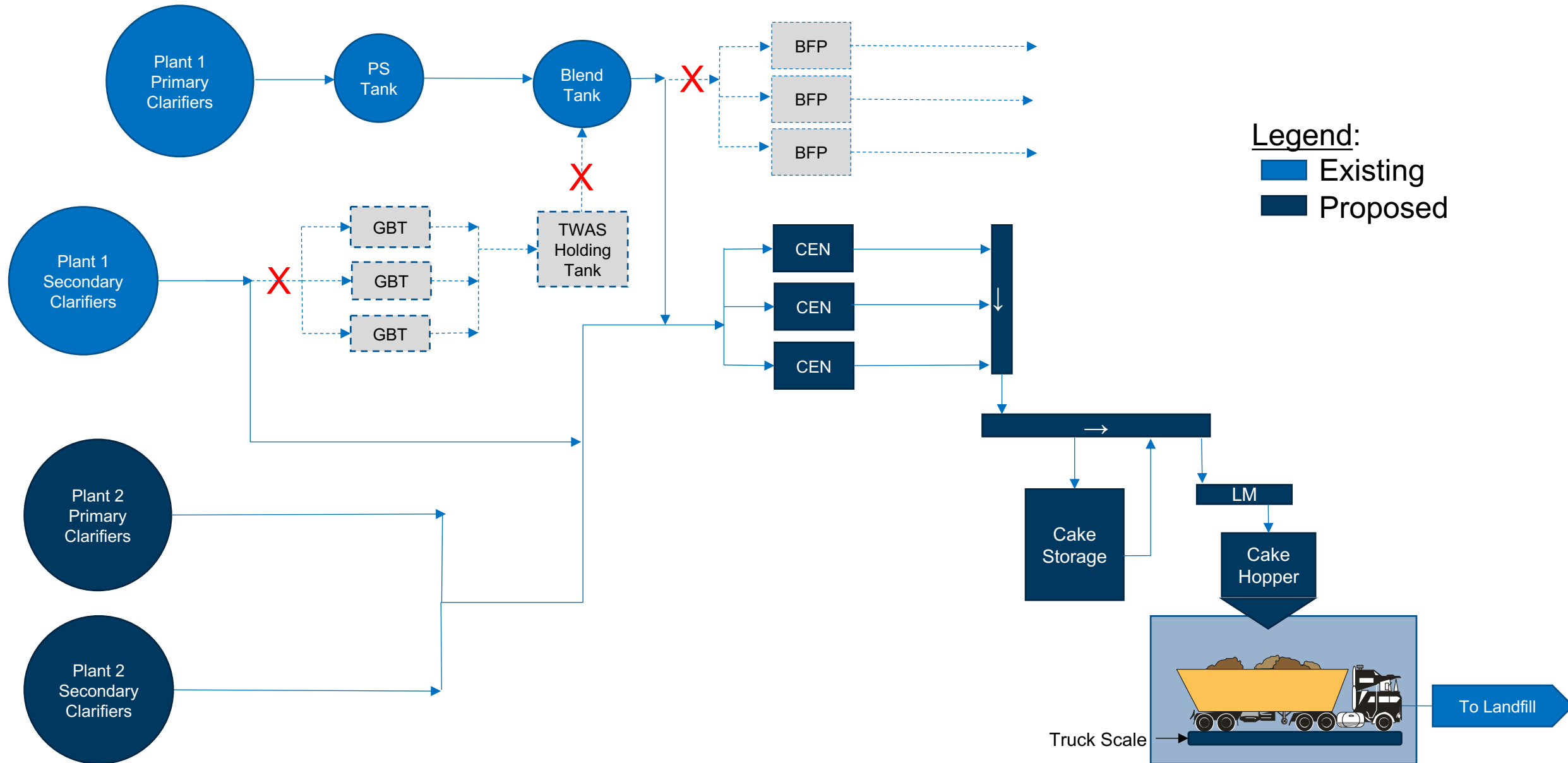


29-in Bowl Centrifuge

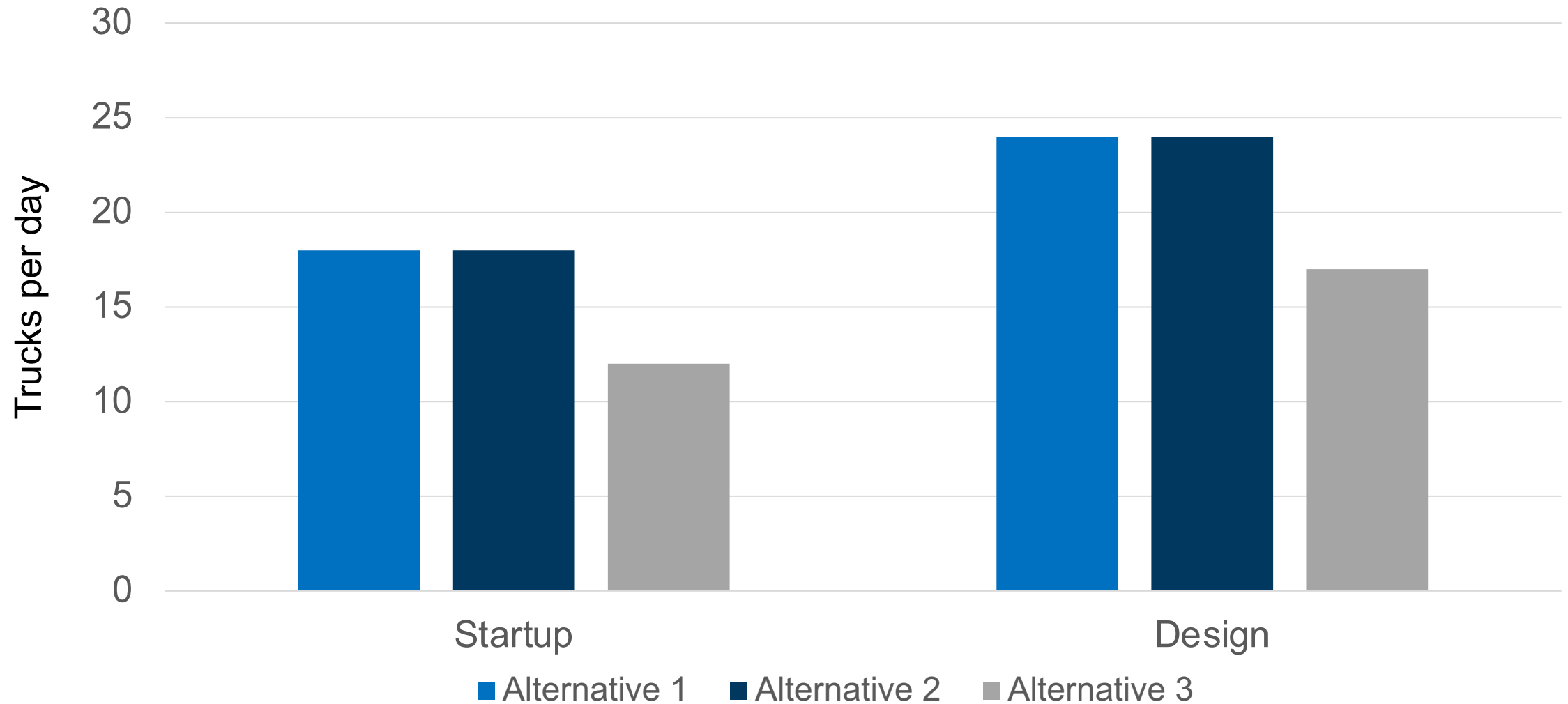
Alternative No. 1 – BFPs (Baseline)



Alternative No. 3C – Centrifuge w/ Cake Storage



Alternative 3 decreases truck traffic

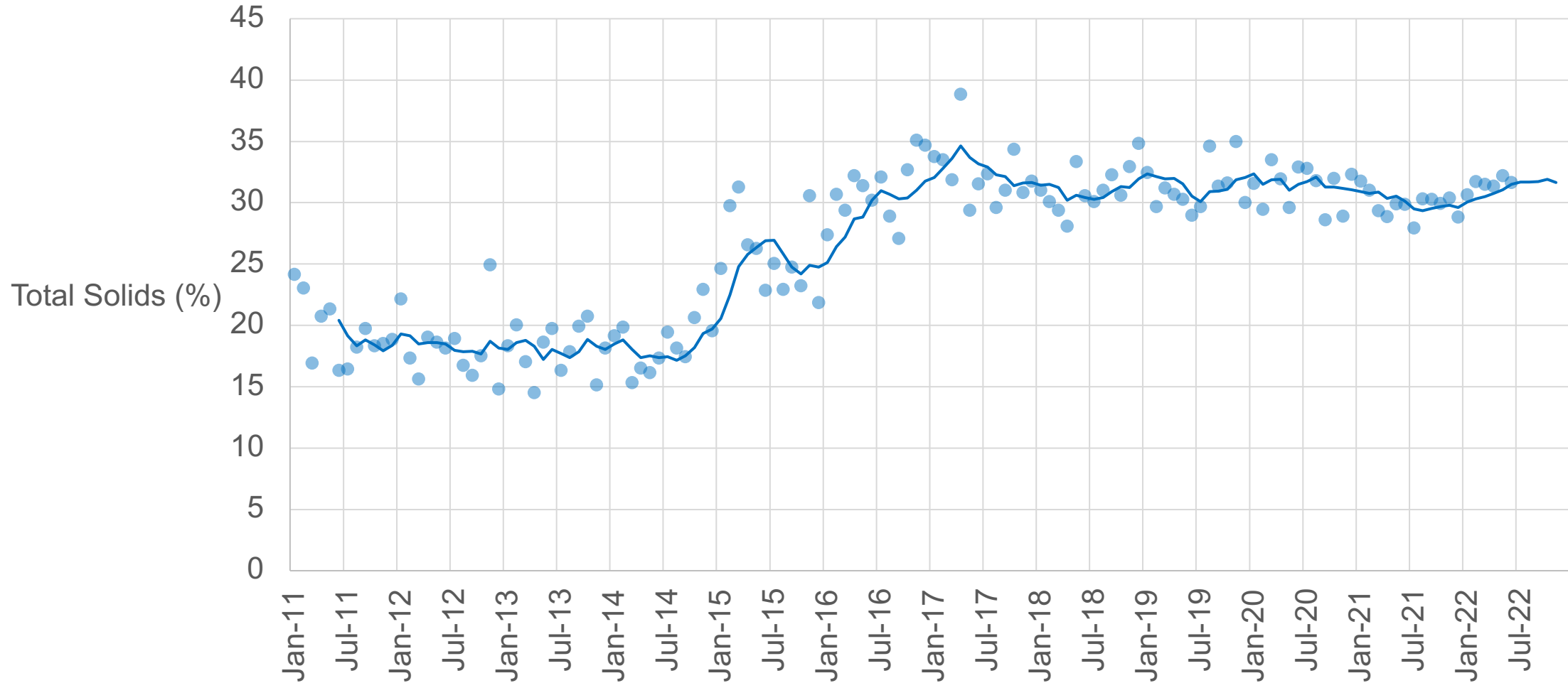


// Rowlett Creek WWTP Biosolids Upgrade won the ENR Texas & Louisiana Water/Environment Best Project Award



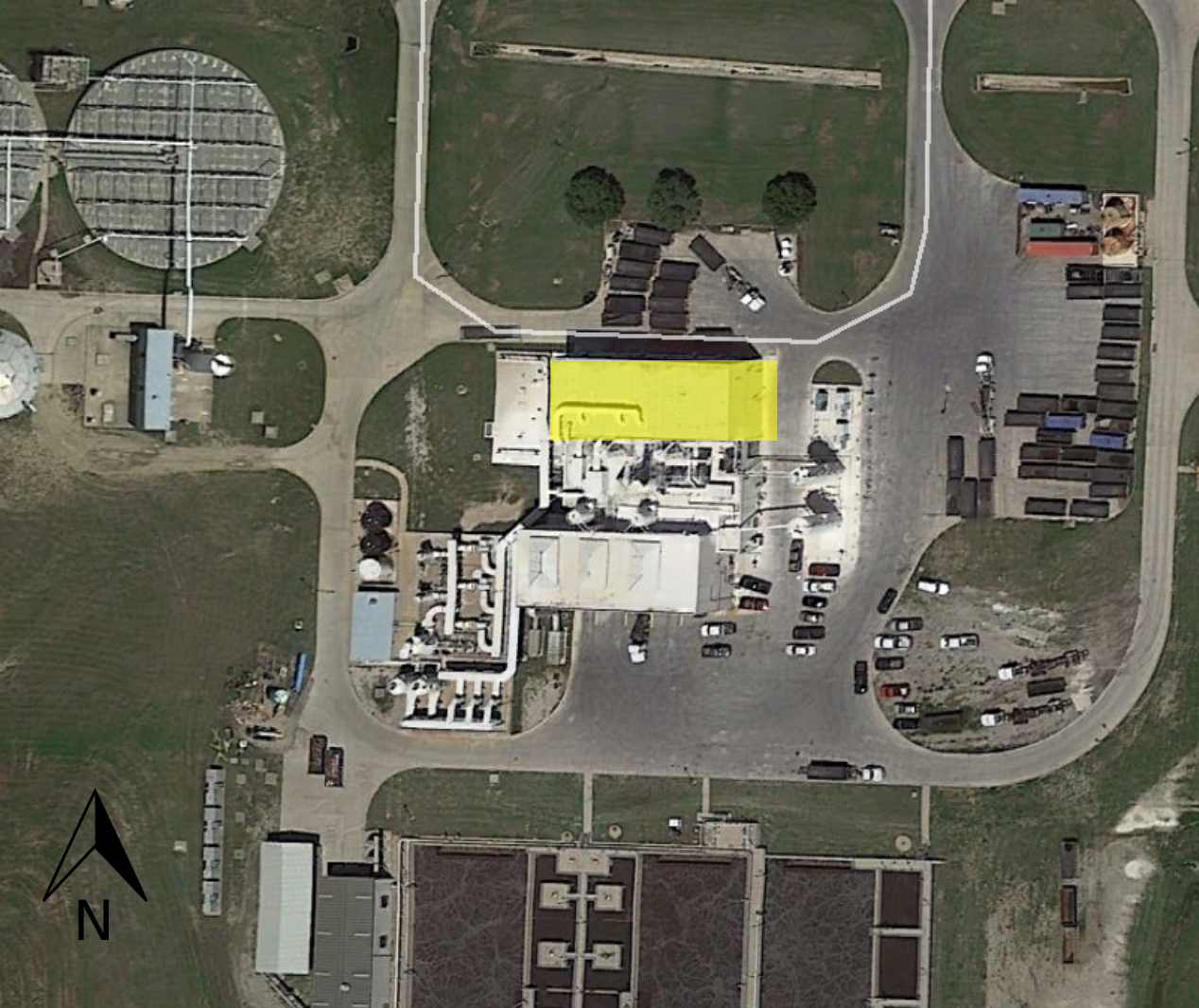
ENR Texas & Louisiana

// Dewatered cake solids concentration increased by 70%



So... How did the Centrifuges
work at Wilson Creek?

New Solids Building replaced abandoned dewatering facility



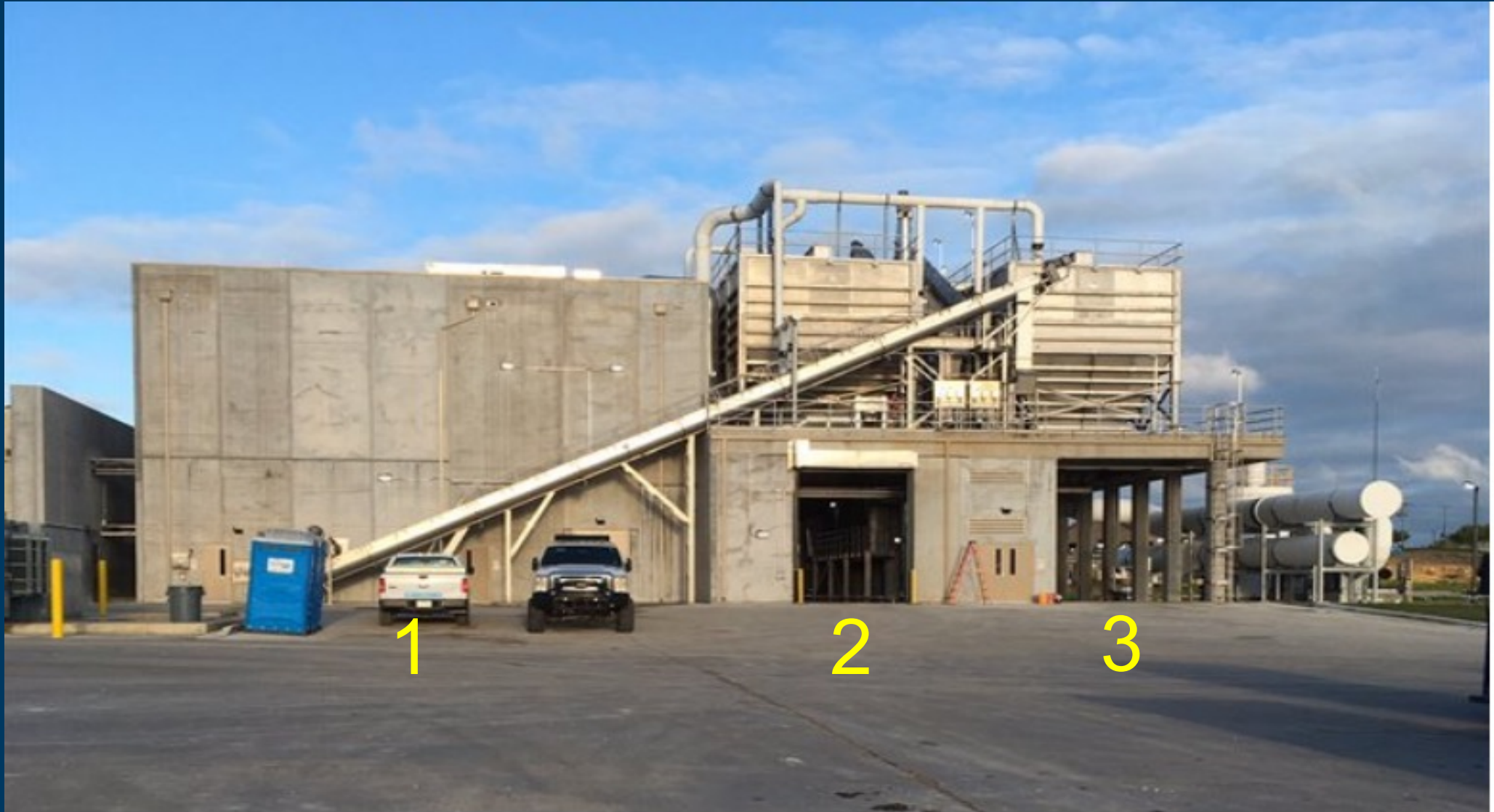
Lower Floor
Decommissioned Cake Loading Facility



Upper Floor
Decommissioned Belt Filter Press Facility



Wilson Creek Solids Facility has 3 Major Components



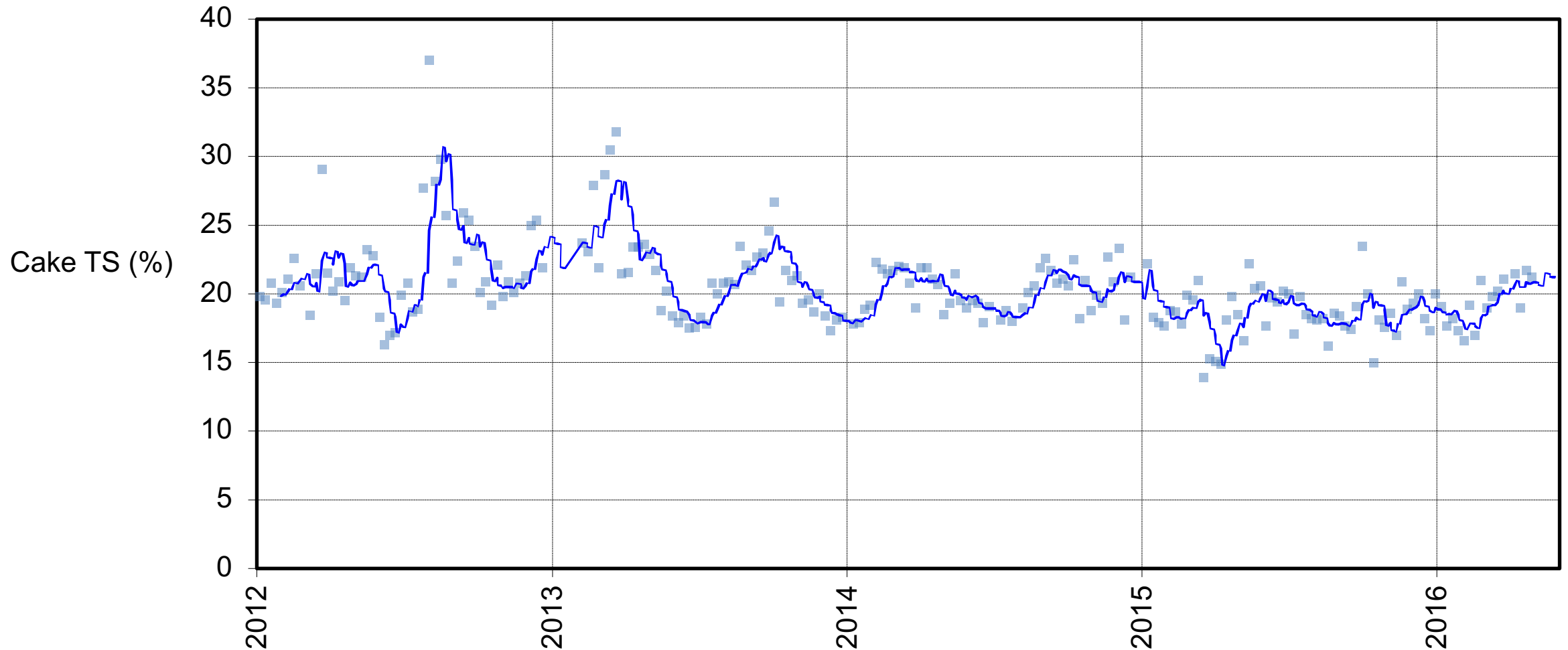
And a 4th very Important Odor Control



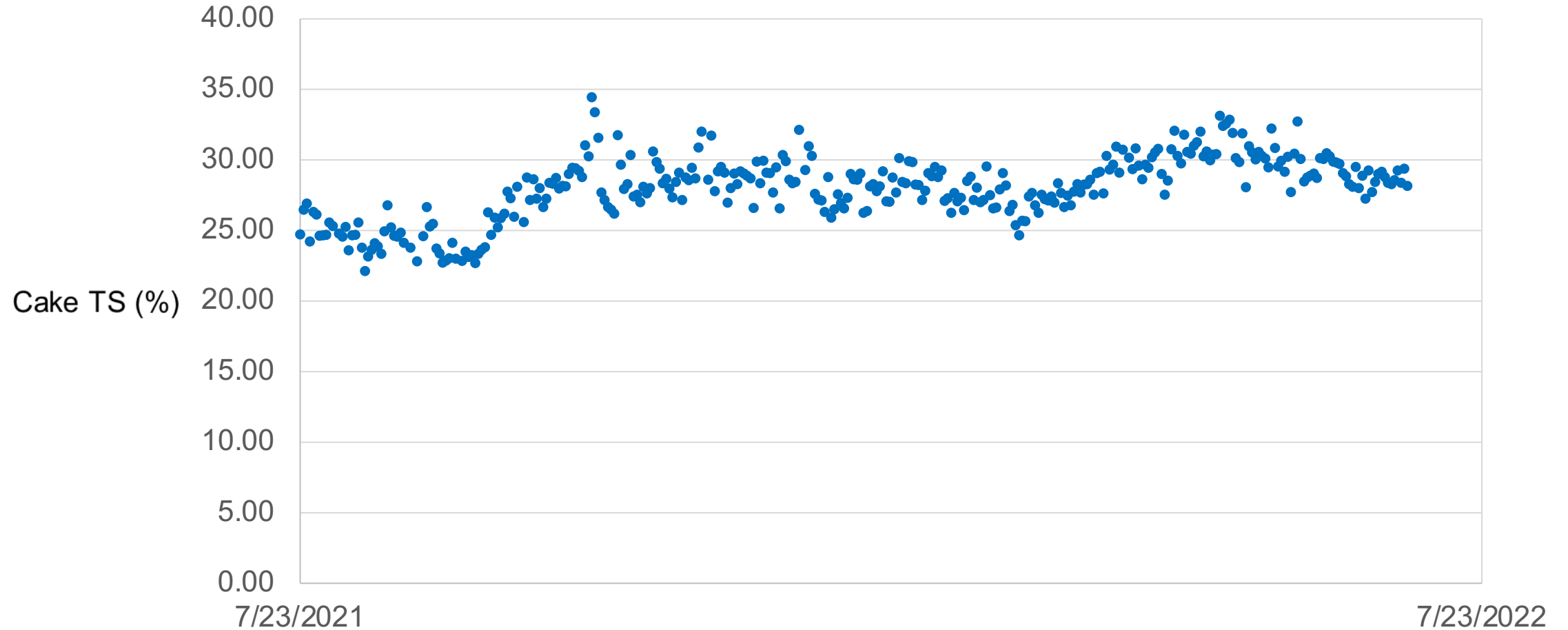


Centrifuge Installation

// Wilson Creek Cake Total Solids with BFPs





Wilson Creek Cake Total Solids with BFPs



Average Daily Biosolids Trucks from Wilson Creek



Did this project meet the District's Solids Handling Goals

- Optimize truck hauling operation 
 - Prevent overweight trucks
 - Maximize hauling per truck
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