

Convenience Store (and Truck Stop) Wastewater Characteristics

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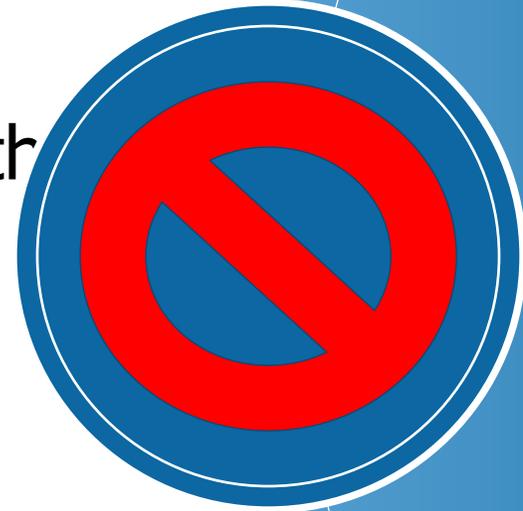




Materials presented represent the opinion of the presenting individual and do not reflect the opinions of NOWRA

Septic Systems

1. C- Store wastewater is high strength
2. Most soils cannot take this wastewater over the long term
3. Aerobic treatment with a proven system for high strength is needed



Outline

01. The Market

02. Wastewater

- Flows/Location
- Strength
- “Trash”
- Cleaners and Sanitizers



Outline

03. Design Layouts

04. Approvals

05. Collaboration

The Players



01



The Market

RANK	CHAIN NAME	NO. STORES
1	7-Eleven	9519
2	Circle K	7142
3	Spedway	3854
4	Casey's	2230
5	Cumberland Farms TravelCenters of America's, Fastracs Etc.	1704
6	Murphy USA	1650
7	FasMart, Shore Stop, Scotchman, Etc.	1330
8	AMPM	1026
9	ExtraMile	980
10	Wawa	917

Per CstoreDecisions.com

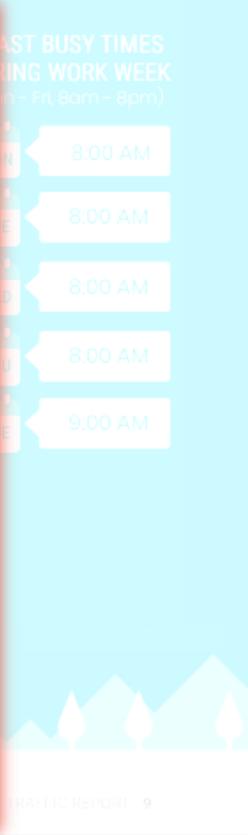
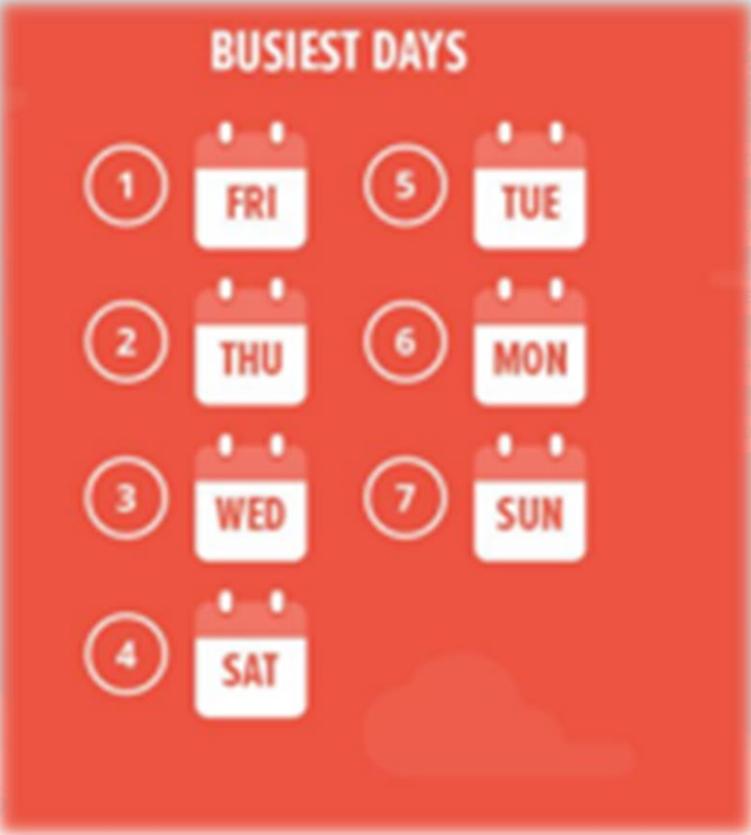
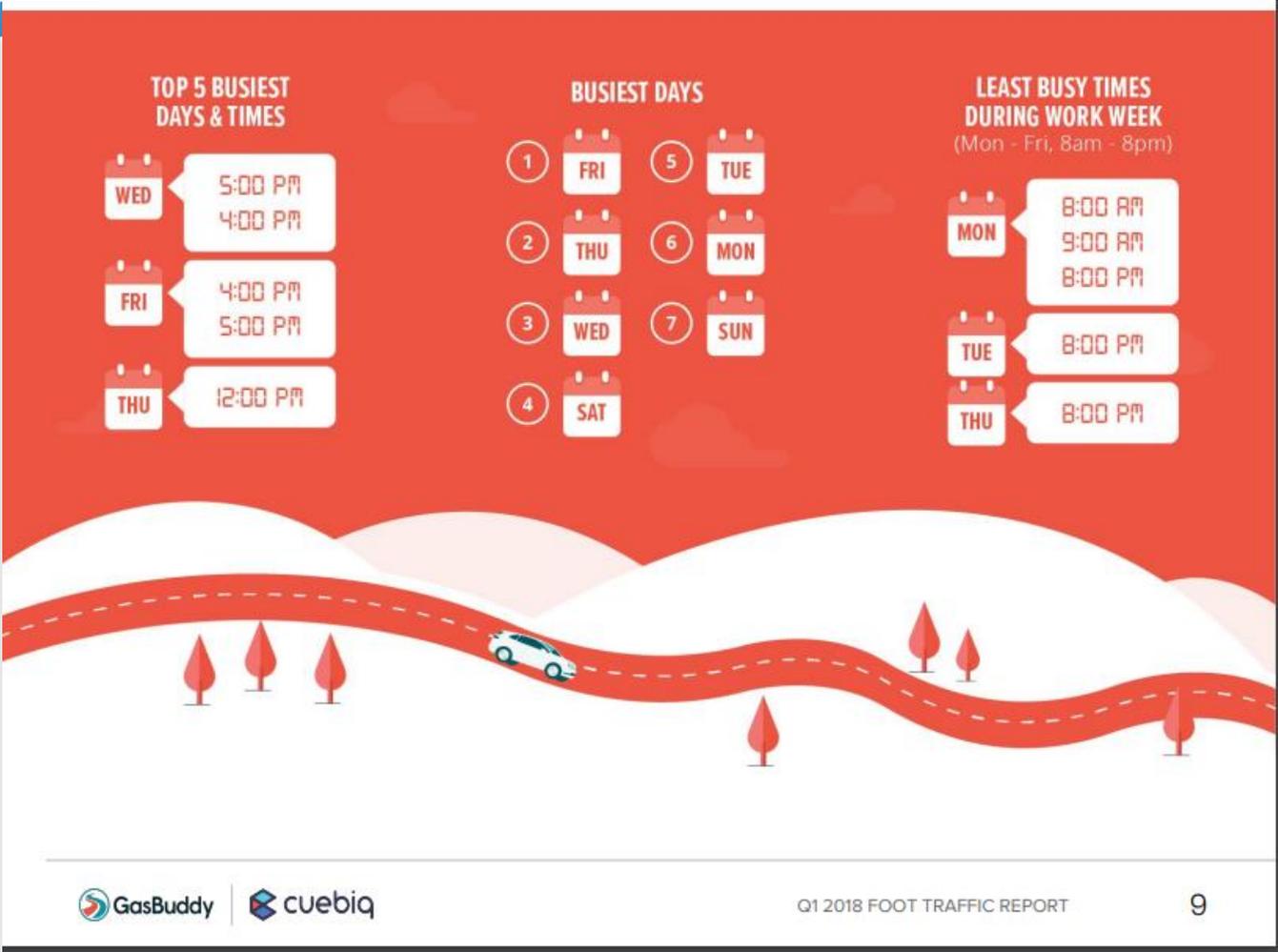
A dynamic background image showing a splash of clear water falling from the top, creating a trail of bubbles and droplets against a light blue gradient. The water is captured in mid-air, with sharp highlights and shadows on the droplets.

Wastewater Flows The Only Constant=Change

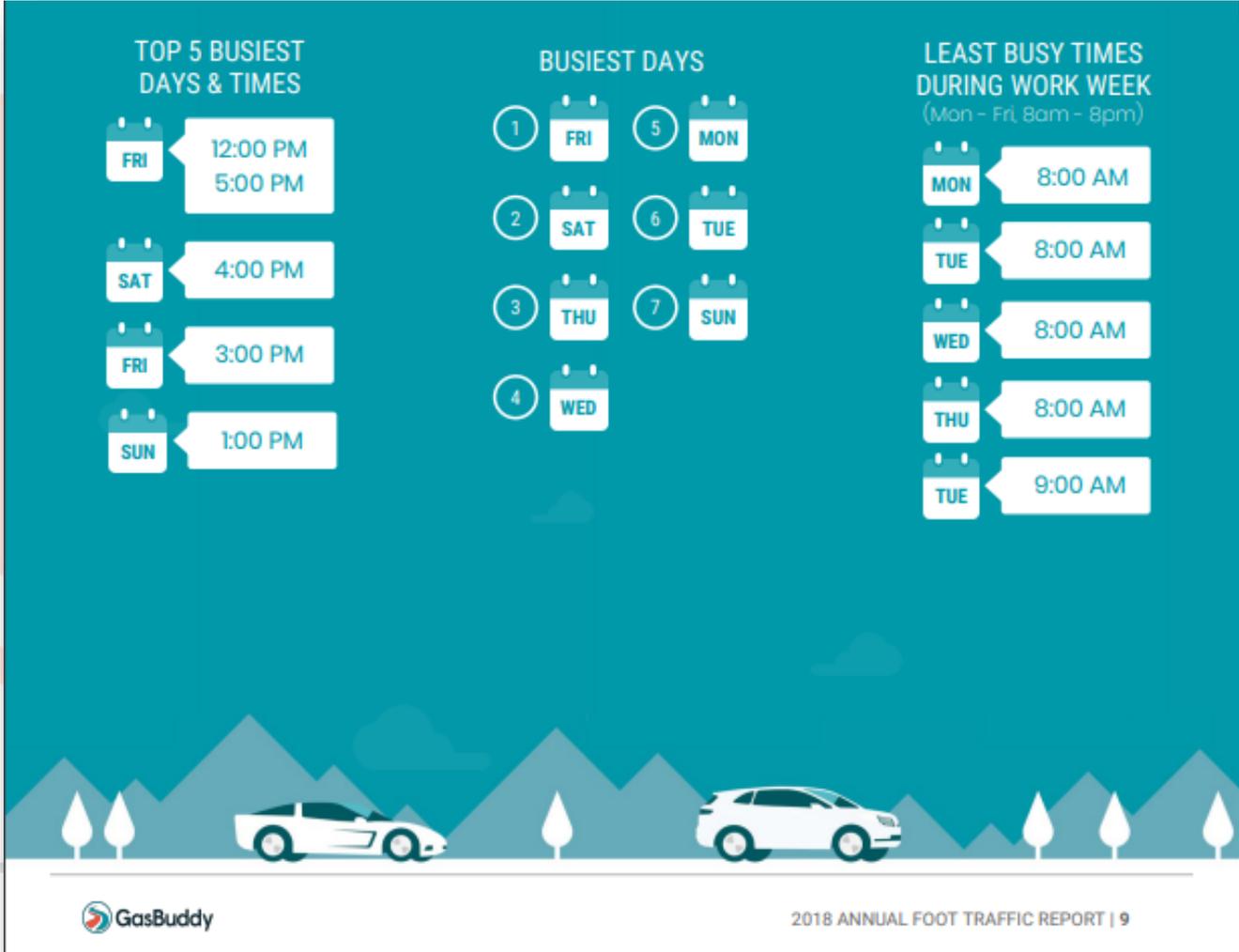
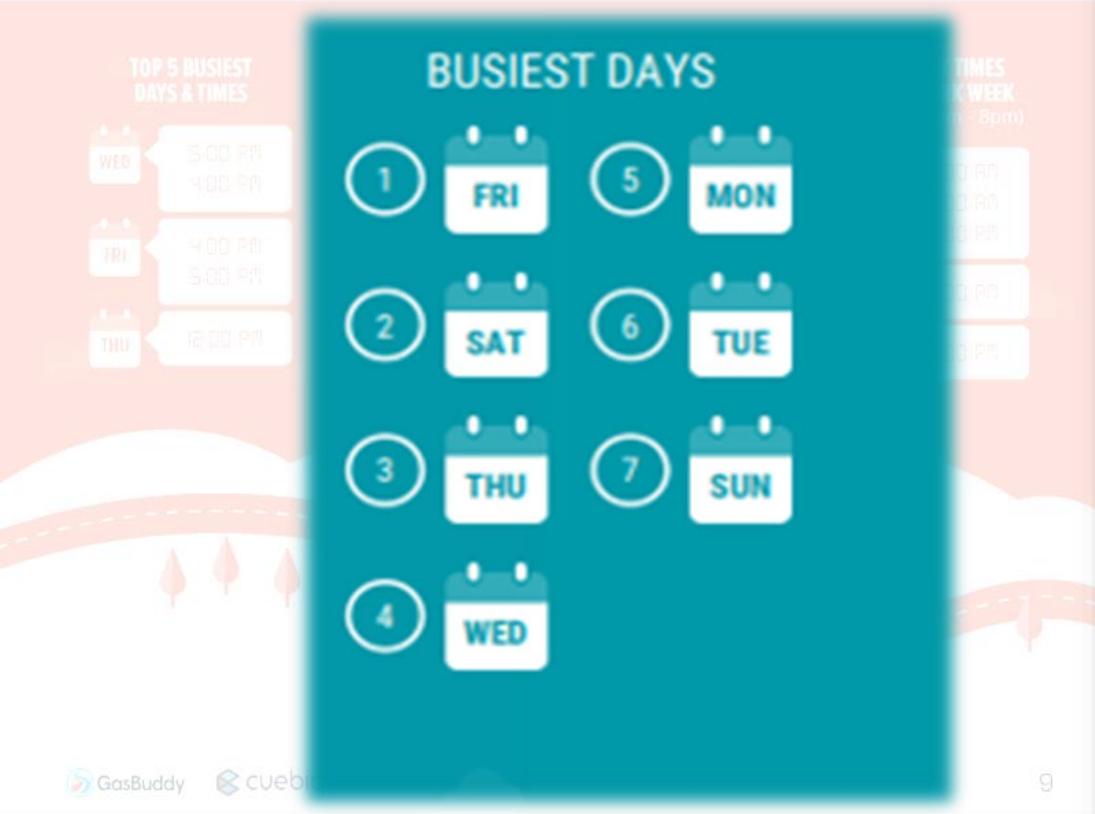
02.a



The Busy Times



The Busy Times

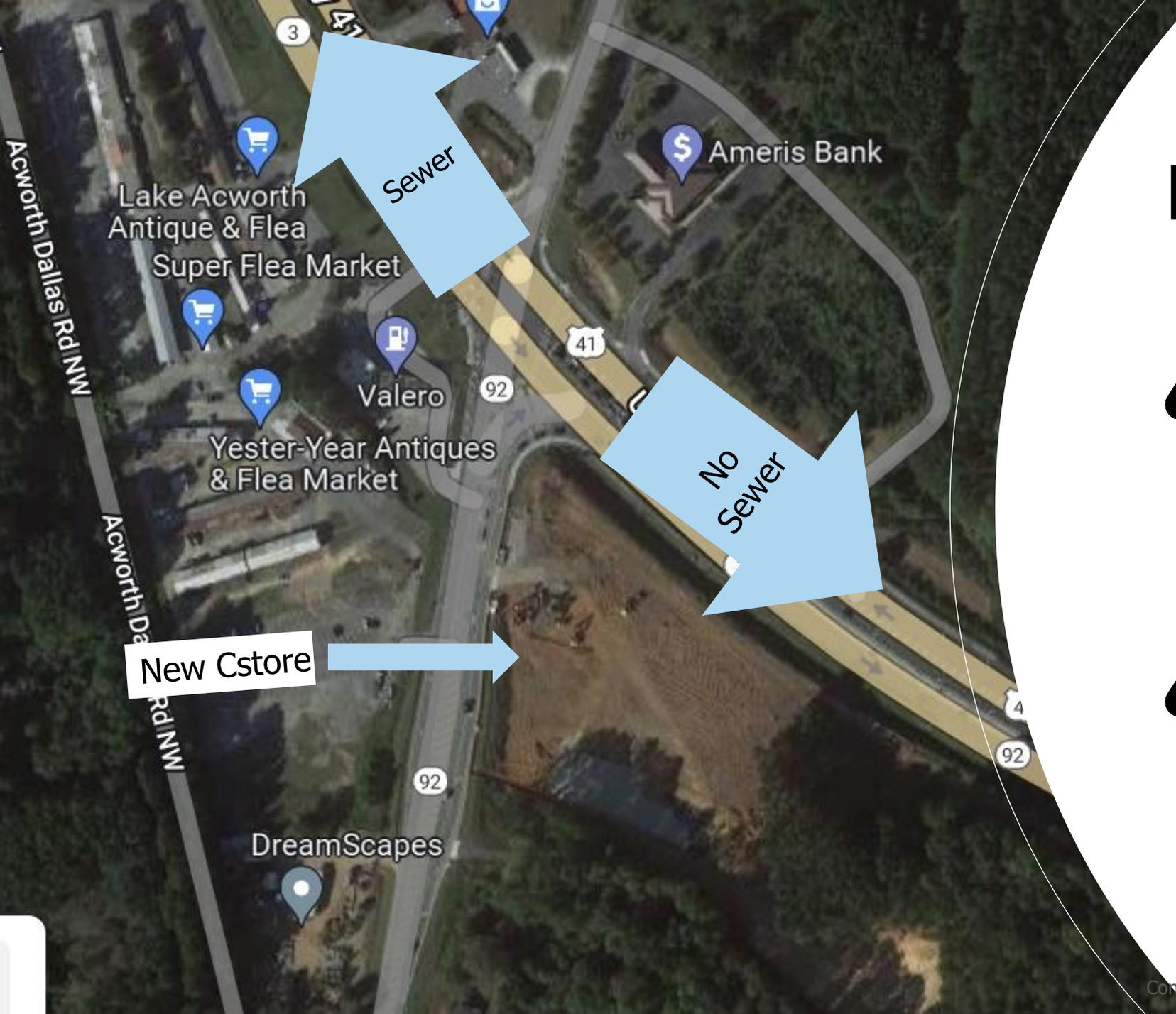


A dynamic splash of clear water against a light blue background, with a large blue circle on the left containing text.

Wastewater

Consider Location

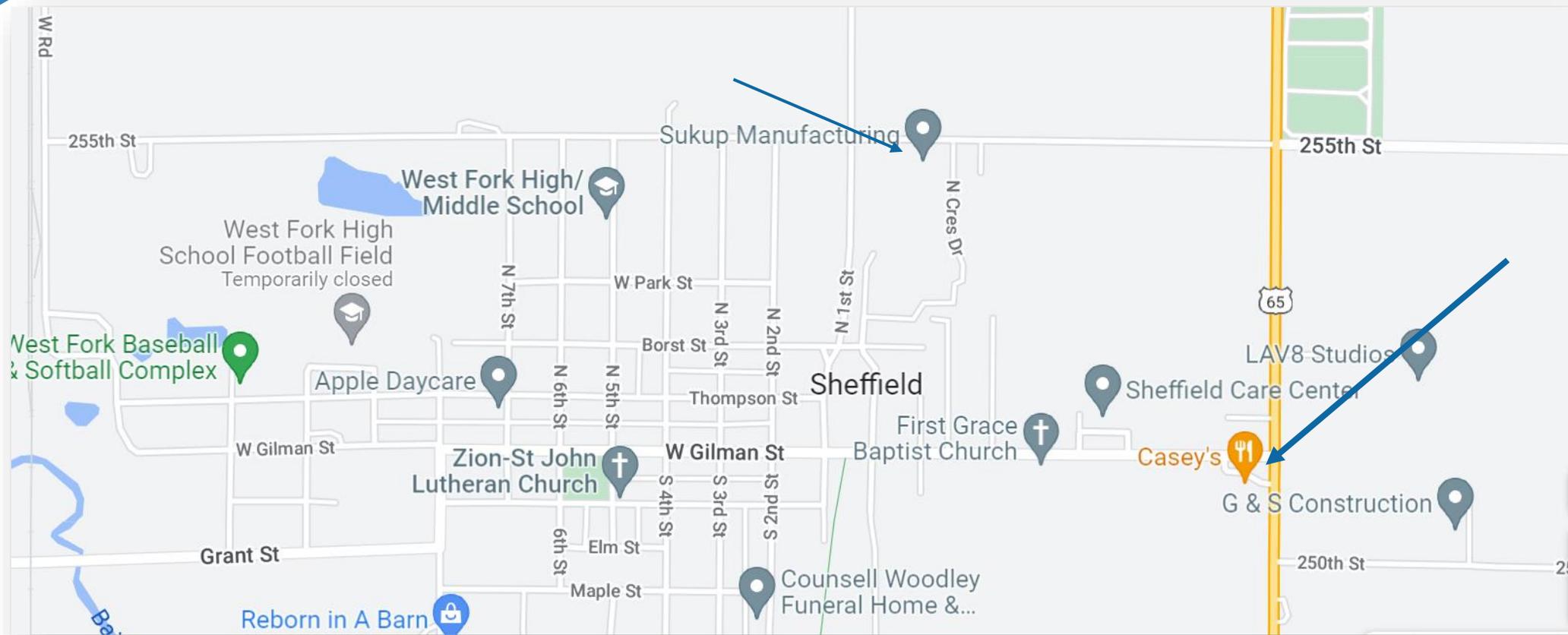
02.b



Location

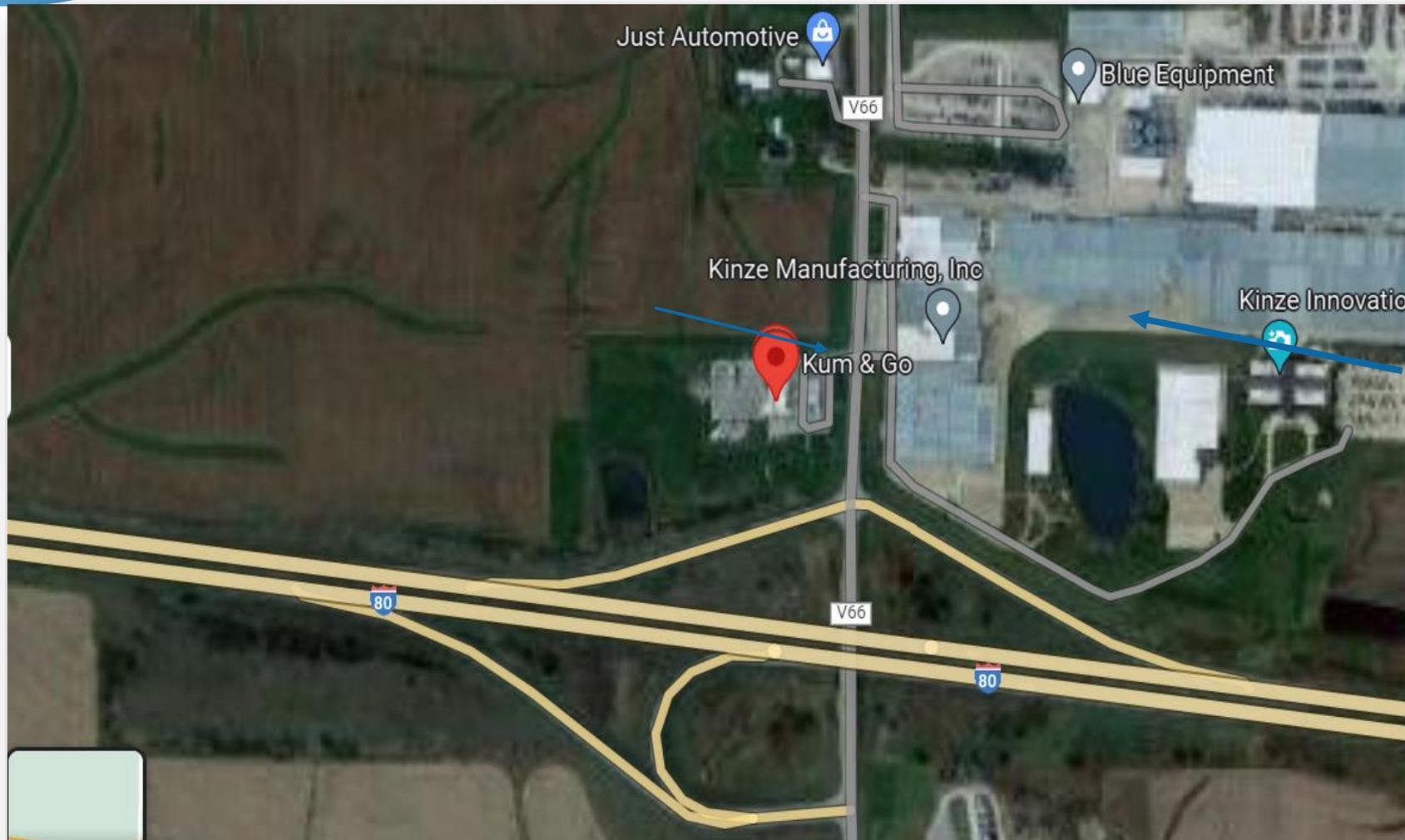
- What's nearby will drive C-Store customer usage
- On the edge of a sewer area

Location



Manufacturing close by.
Cafeteria in the plants?

Location



- Manufacturing plant nearby
- At an interstate exit

Wastewater Strength

A dynamic background image showing a splash of clear water falling from the top, creating a large, textured plume that tapers into a stream of bubbles as it descends. The water is set against a light blue gradient background.A small, stylized icon consisting of three overlapping water droplets, positioned to the right of the word "Strength".

02.c

Food Service



Per CstoreDecisions.com and CSPDailynews.com

- C-stores sell 80% of the gas in the US = lots of traffic
- Separate from the gas, 6 in 10 people looking for fast food, consider a c-store
- Catering too!!

Kiosk Ordering, ok. But now Buffets?



Fast Food Restaurants or Full-Service Restaurants



Coffee and Soda – Still the Core Business



Effect on the Wastewater Stream

Table 4. Wastewater Concentrations in a 1000-gal tank, one day of use (mg/L)

Wastewater Concentrations in a 1000-gal tank, one day of use (mg/L)		
	Black Coffee (12 gallons into the tank per day)	Soda- Regular Coke (2 gallons into the tank per day)
Biochemical Oxygen Demand (BOD)	67	1,688
Chemical Oxygen Demand (COD)	1,524	220
Total Suspended Solids (TSS)	3	<1
Chloride	2	<1
Total Phosphorus	<1	<1
Total Kjeldahl Nitrogen (TKN)	4	<1

Data Collected and Presented by Sara Heger and Sondra Larson - Onsite Sewage Treatment Program – U of MN

Influent - Pilot Gas Stations – TX



	Monahans	Peyote
	Results in mg/L	
BOD ₅	549	524
TKN	210	87
BOD ₅	642	624
TKN	113	73

Influent – Casey's - IA



	Results in mg/L
BOD ₅	1840
TKN	109
cBOD ₅	1482
TKN	95

Corporate Cleaning and Sanitizing

- ◆ Quaternary Ammonia
- ◆ Soap
- ◆ Settings on Auto Feeds



Trash

“It is amazing what people can get down a toilet!”

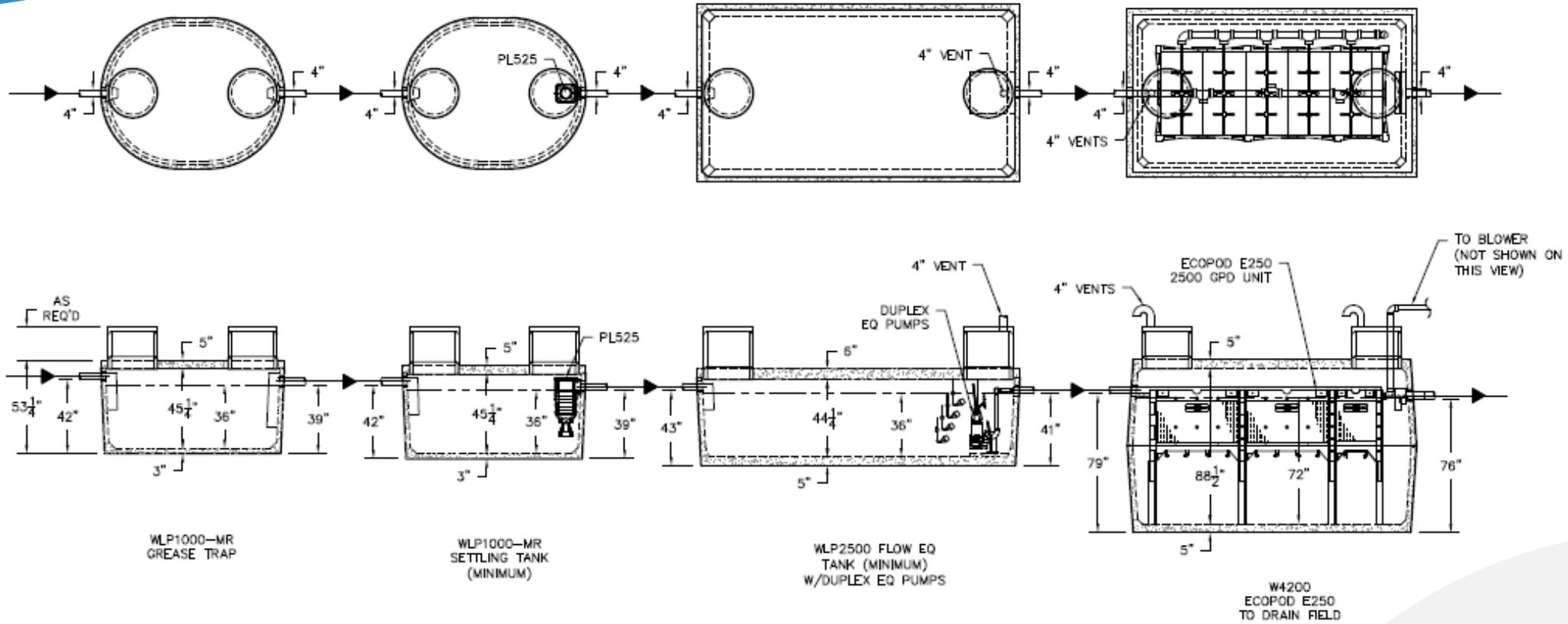
- **Baby wipes**
- **Cleaning wipes**
- **Feminine hygiene products**
- **Paper towels**
- **Tissues**
- **Trash of any kind**



Design Layouts

03

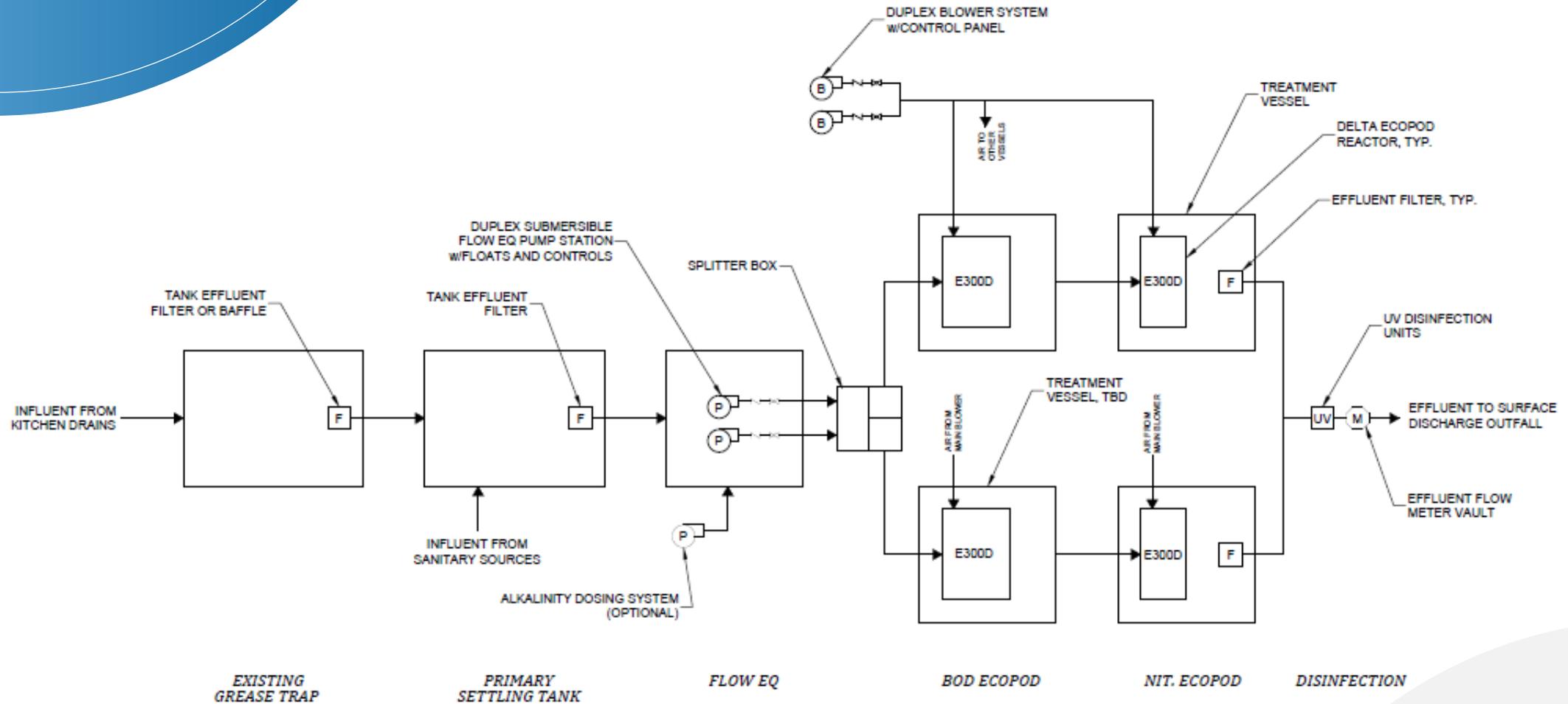
Layout 1



ELEVATION VIEW

- ◆ Casey's
- ◆ Design – 700 gpd, 950 BOD₅

Layout 2



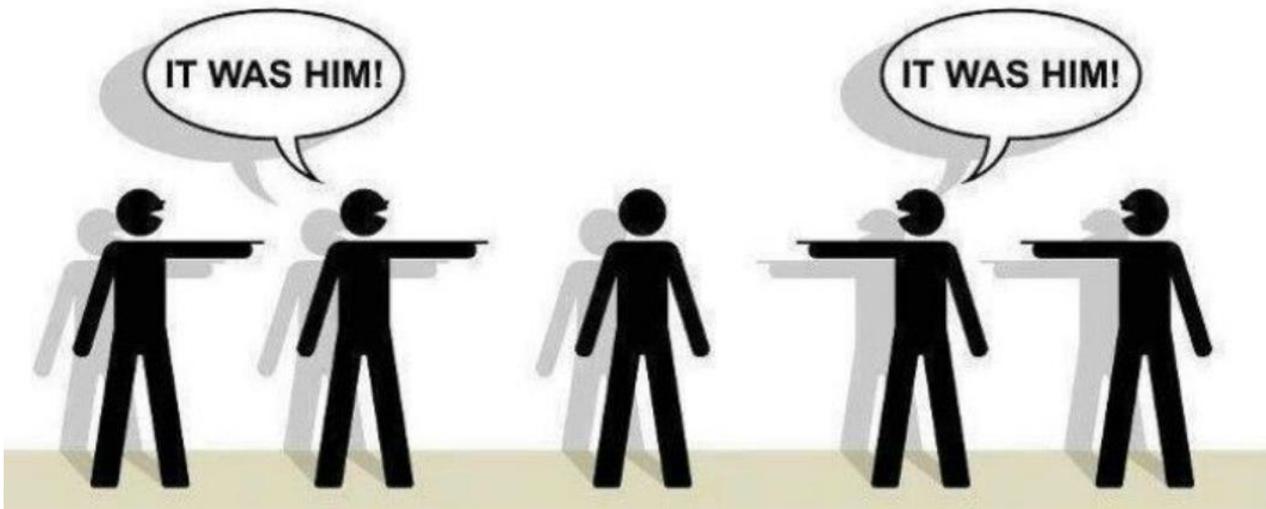
- ◆ Kum & Go
- ◆ Design – 2,500 gpd, 650 BOD₅, TKN 45 mg/L

Chain Stores = General Contractors

And Subs....



03



General Contractors and Subs

- 💧 Electricians
- 💧 Excavators
- 💧 Pipe fitters

Partnering

04



Educating the C-Store Owner

- ◆ Research the location
- ◆ Understand the menu
- ◆ Institute a strategy to deal with the goodies
 - ◆ Extra trash cans
 - ◆ Signage
- ◆ Help them use the right amount and the right cleaners/sanitizers





Questions

