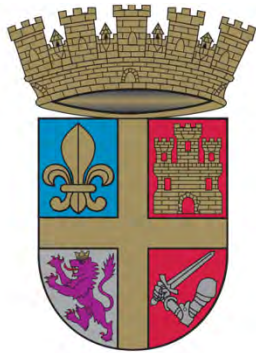


City of St. Augustine



CITY OF
ST. AUGUSTINE[™]
EST. 1565

Water

Wastewater

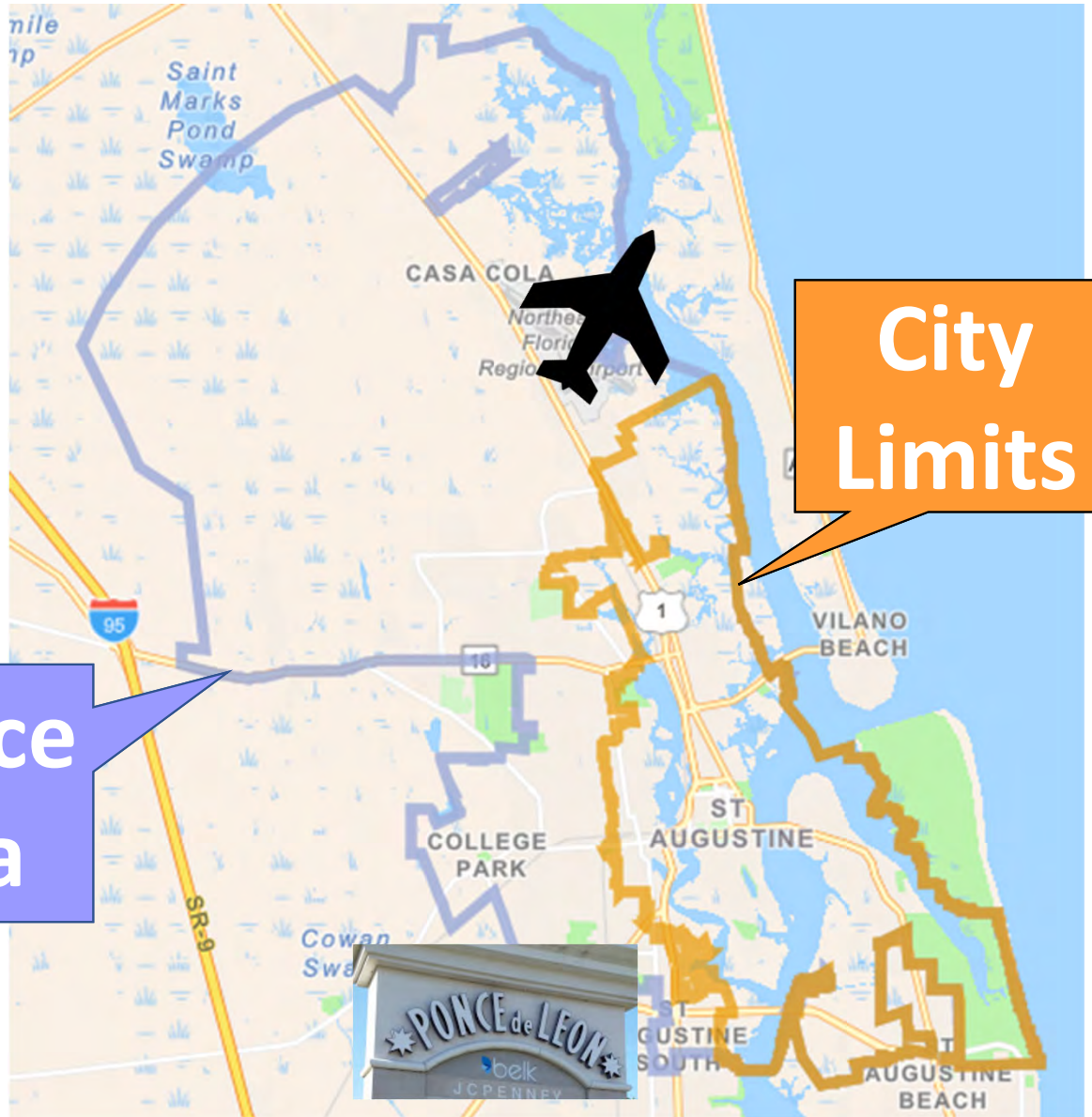
Stormwater

Utility Service Area

16,827
Water accounts
(as of 2/16/2022)

Service Area

City Limits



Drinking Water

- **Where does it come from?**
- **How do we treat it?**
- **How do we get it to our customers?**



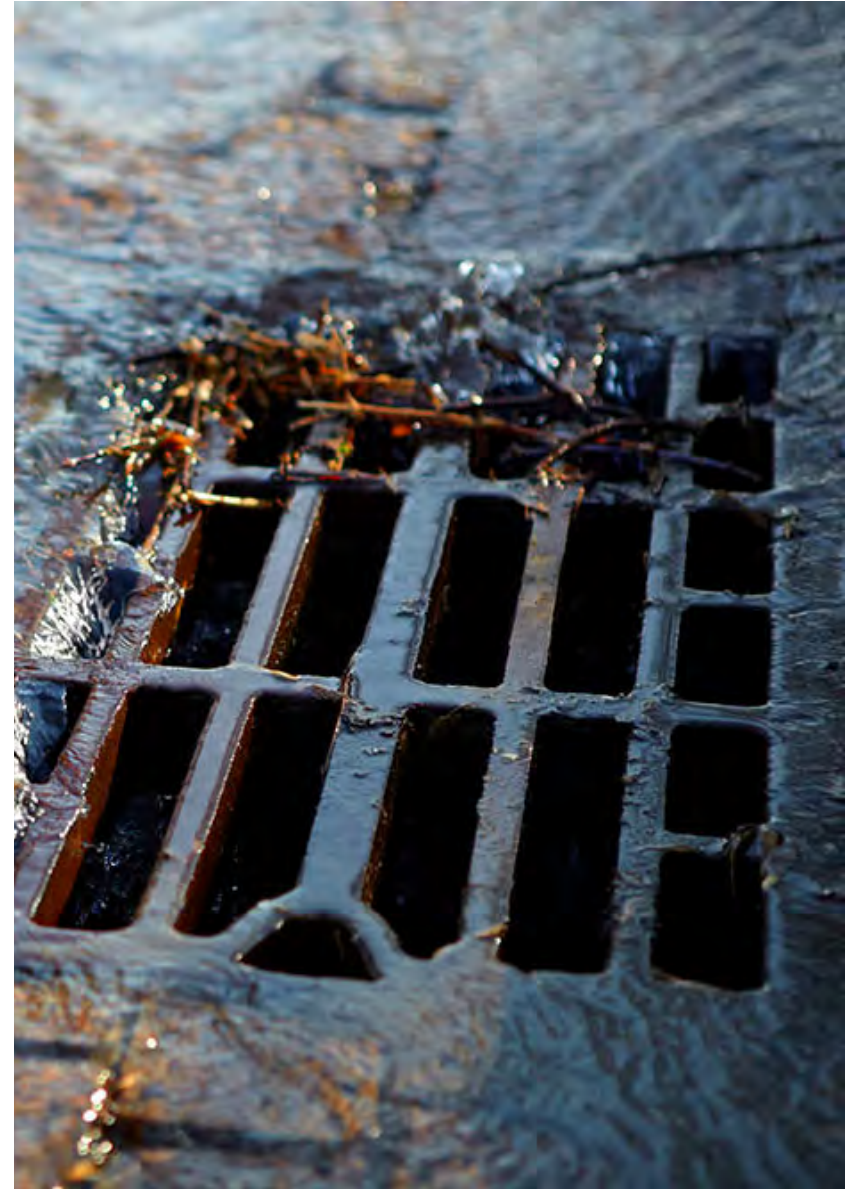
Wastewater Collection

- **Where does water go once down the drain?**
- **What causes clogs?**
- **How do you properly dispose of grease?**



Stormwater

- **Where does stormwater go?**
- **What discharges are prohibited?**
- **Why only rain down the storm drain?**



Wastewater Treatment

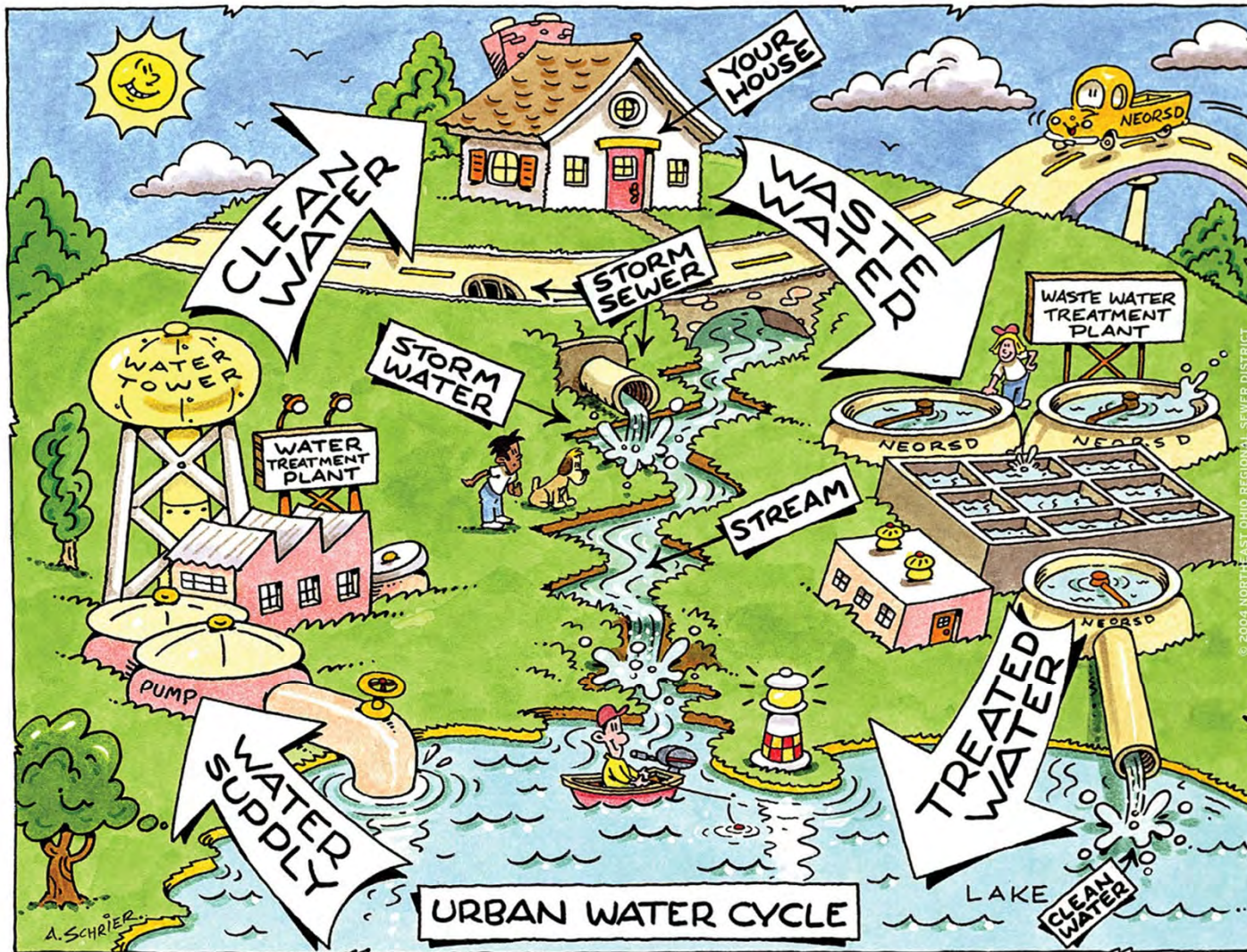
- How do we treat wastewater?
- Where is the final treated water discharged?



Sampling & Laboratory

- Why & when do we collect samples?
- What is our lab certified to analyze?

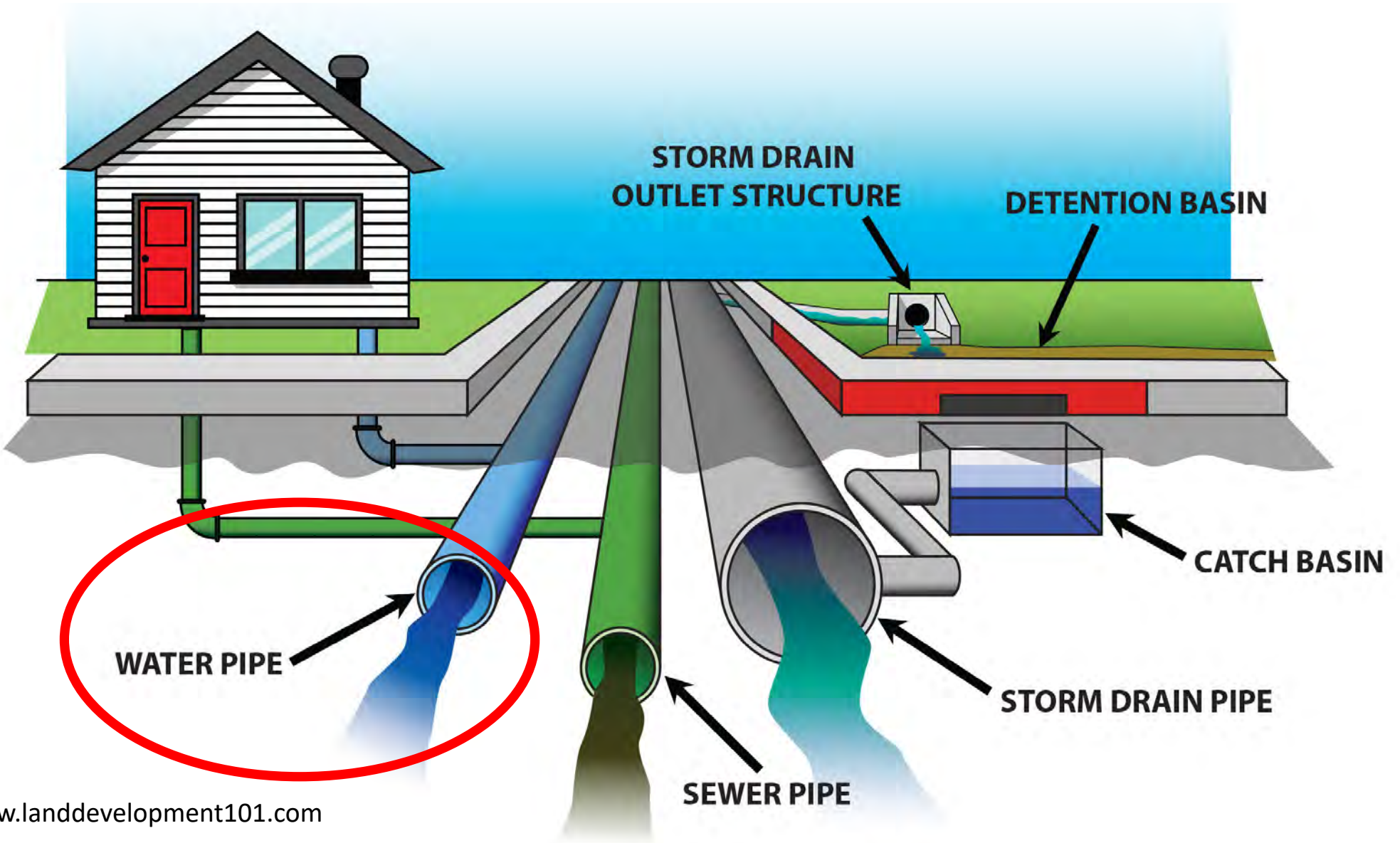


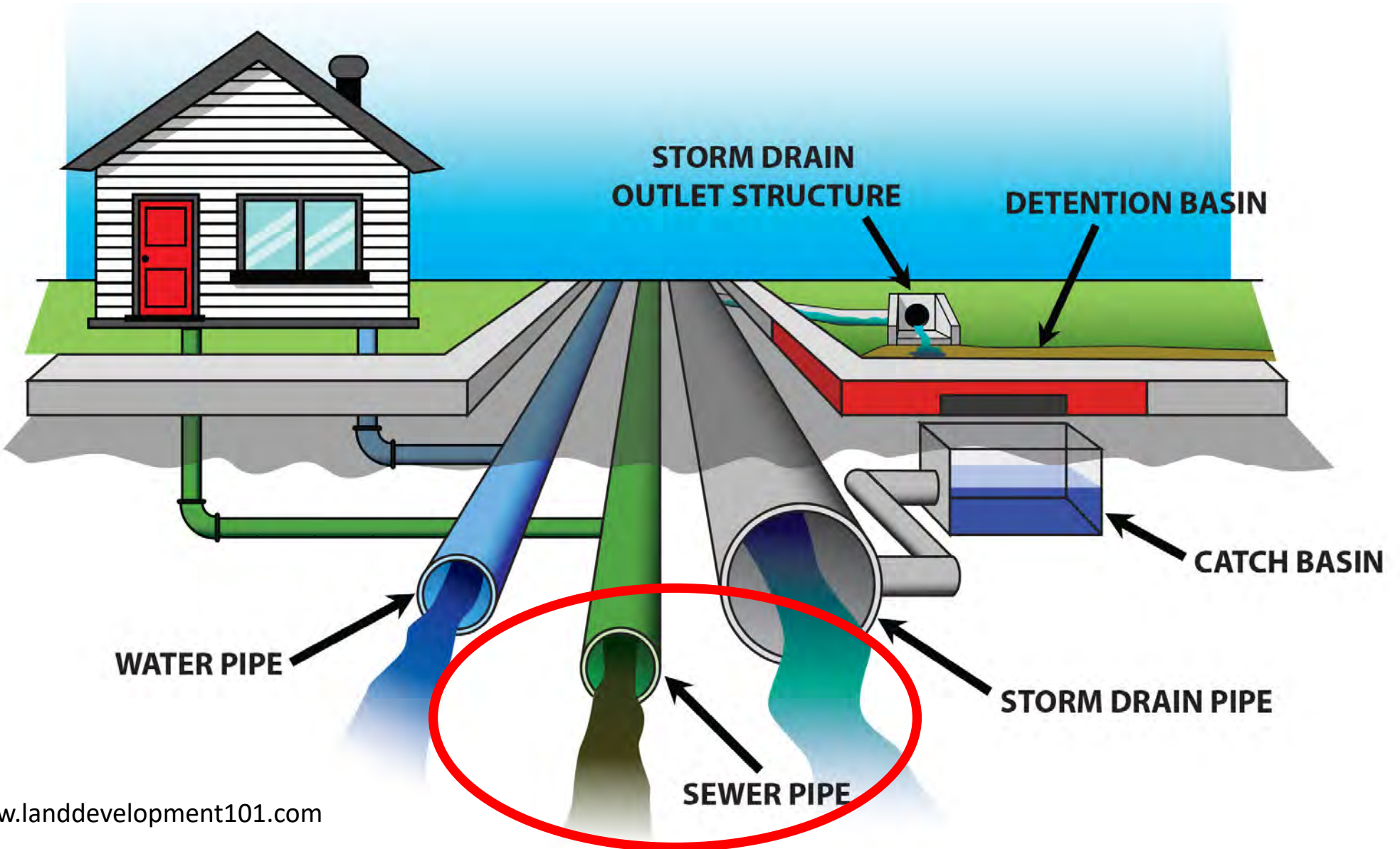


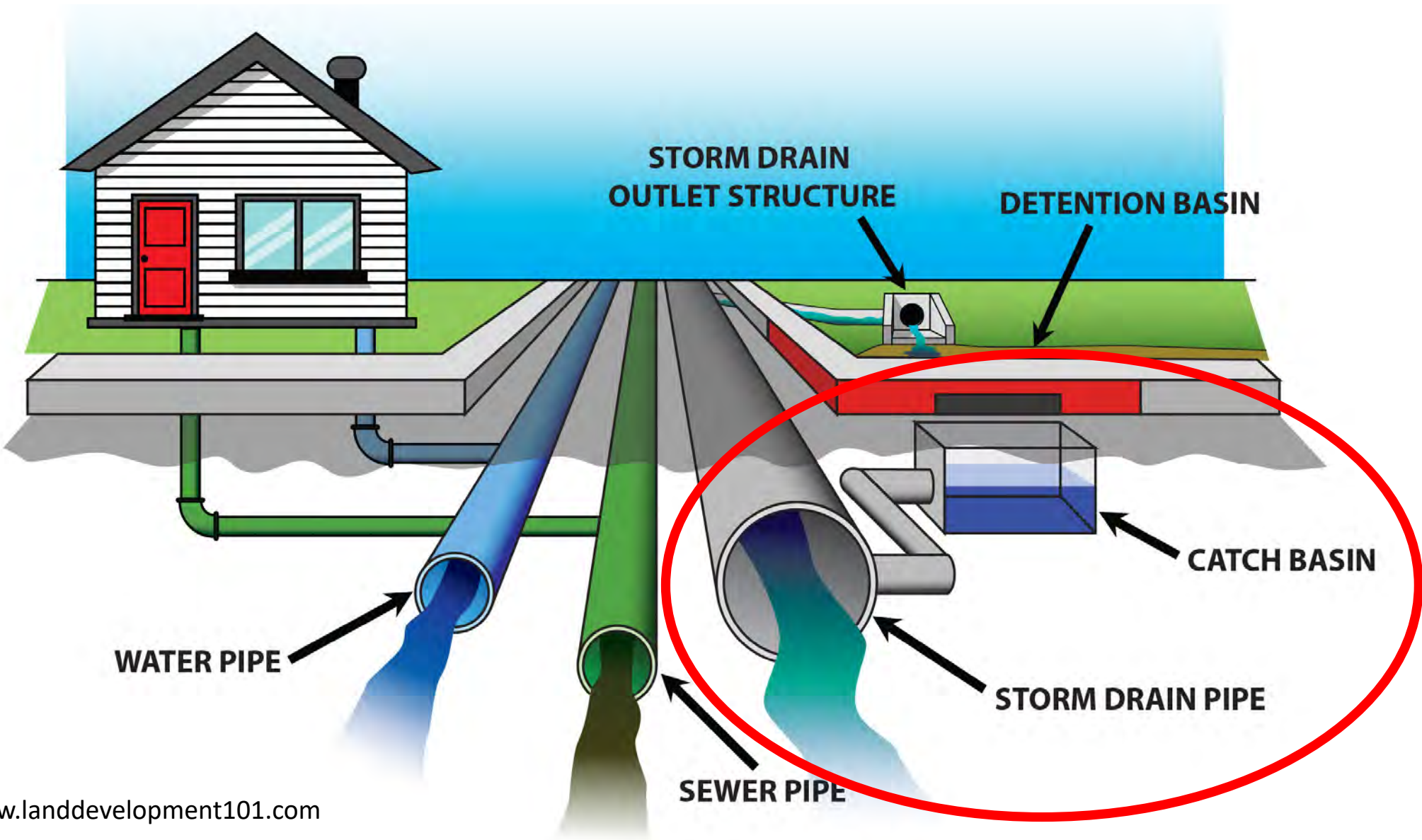
PRESENTED BY THE NORTHEAST OHIO REGIONAL SEWER DISTRICT

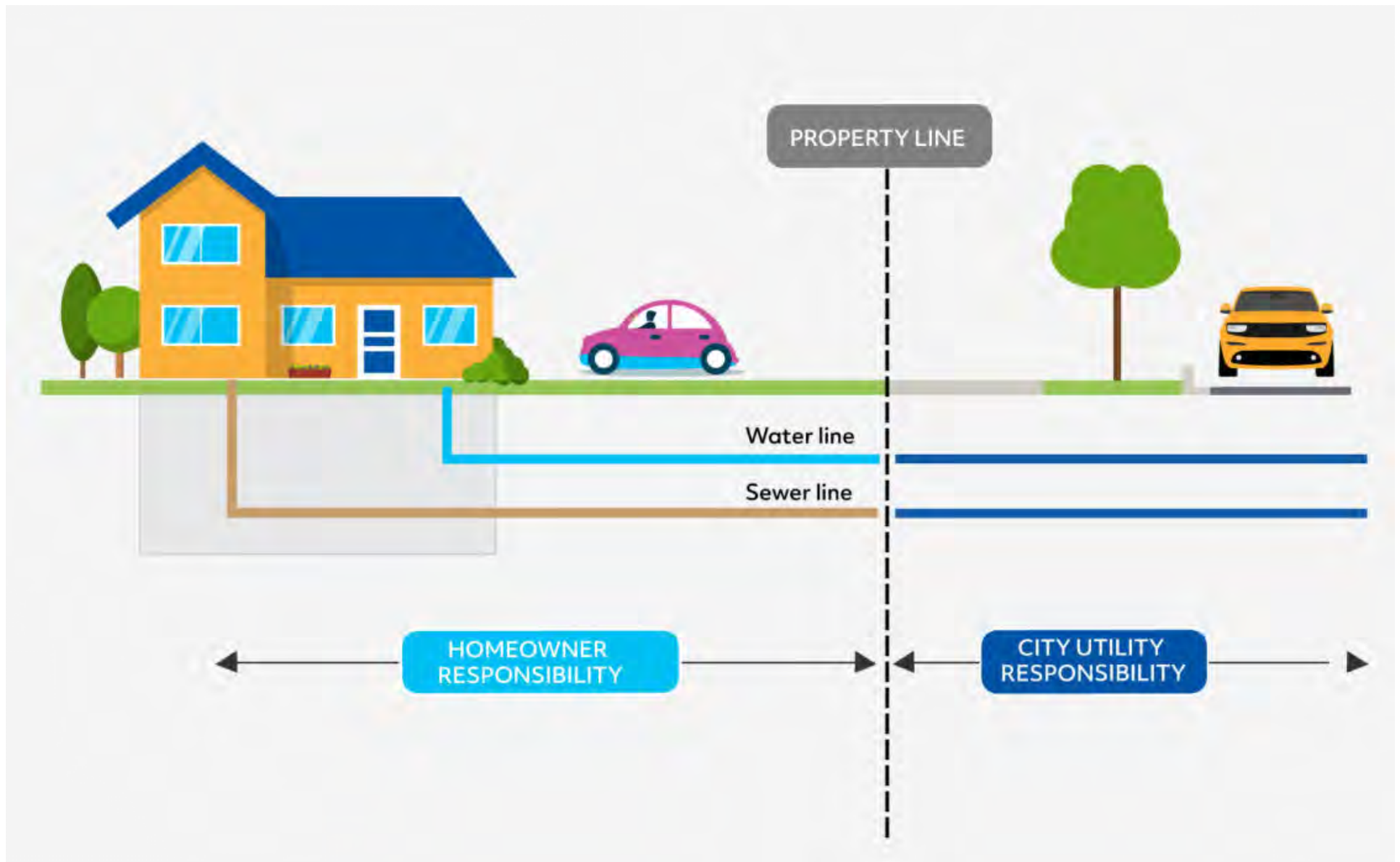
WWW.NEORS D.ORG

© 2004 NORTHEAST OHIO REGIONAL SEWER DISTRICT

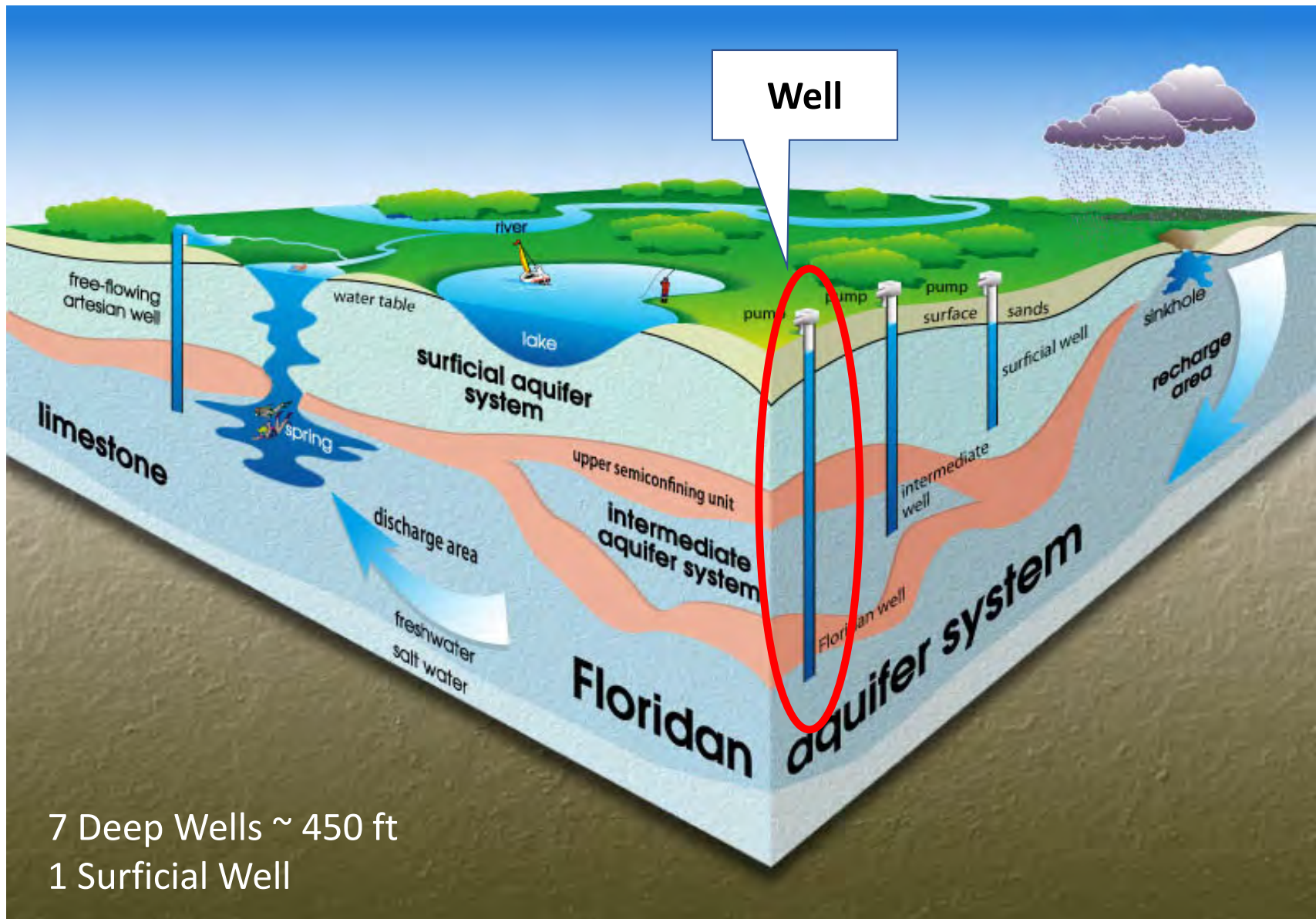








Water Treatment & Distribution

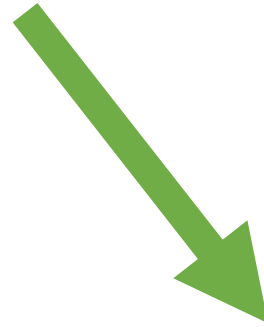
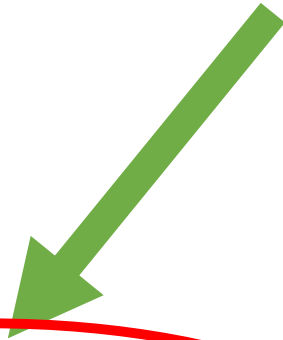


7 Deep Wells ~ 450 ft
 1 Surficial Well

Well Pump



Flow Splits



**1/2 Chlorination
& Filtration**

**1/2 Reverse
Osmosis**

Chlorine Contact Chamber



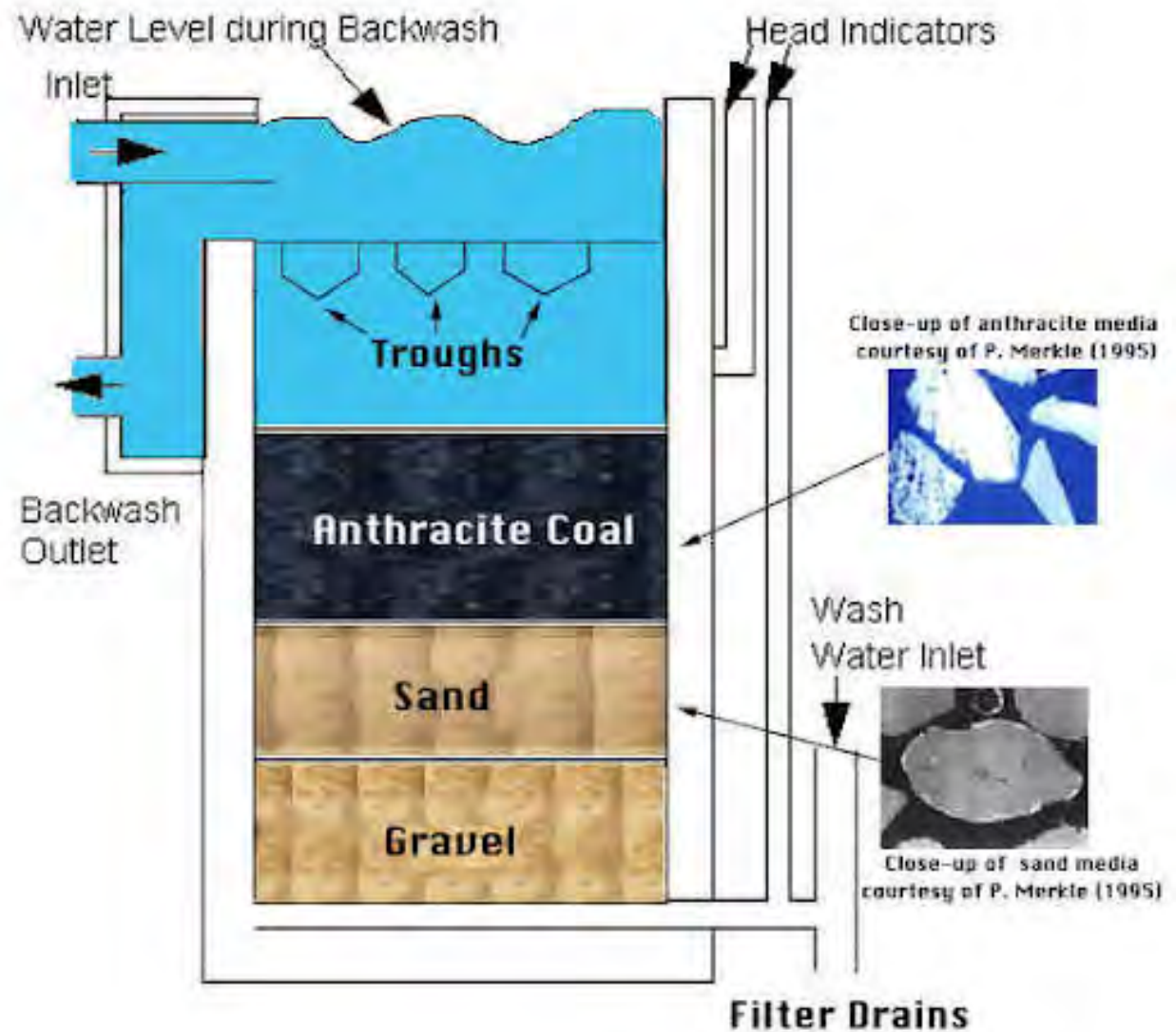
Step 1



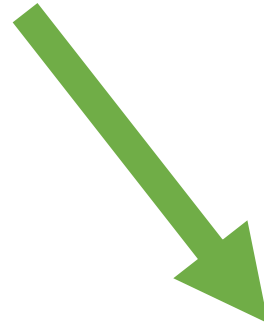
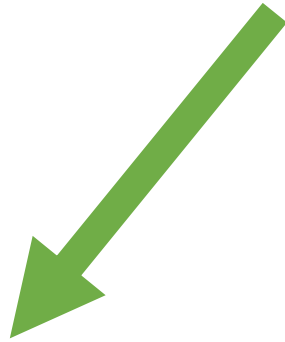
Sand Filter

Step 2

Sand Filter Profile



Flow Splits



**½ Chlorination
& Filtration**

**½ Reverse
Osmosis**



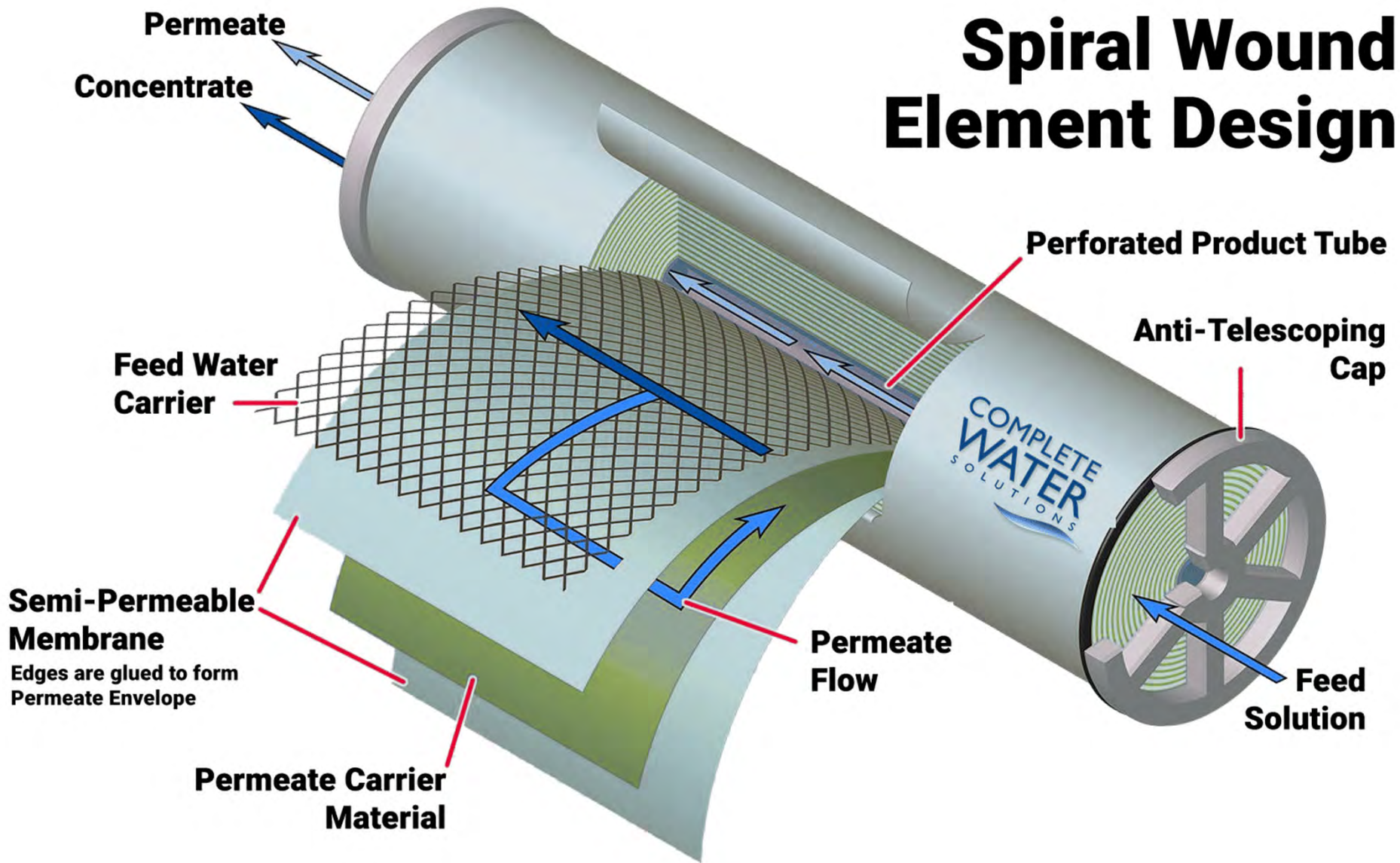
RO Skids

Step 1



RO Membranes

Spiral Wound Element Design



Degasifier



Uhp ryh#gruv#dxvhg#e|#k|#gurjhq#xoiqgh#K5V,1#Ghjdvlilthuv z run#e|#wuls slqj#
glvrcyhg#K5V#iurp #z dwhu#lqg#hgxfllqj#wk#ryhud#gru#i#wkh#z dwhu1

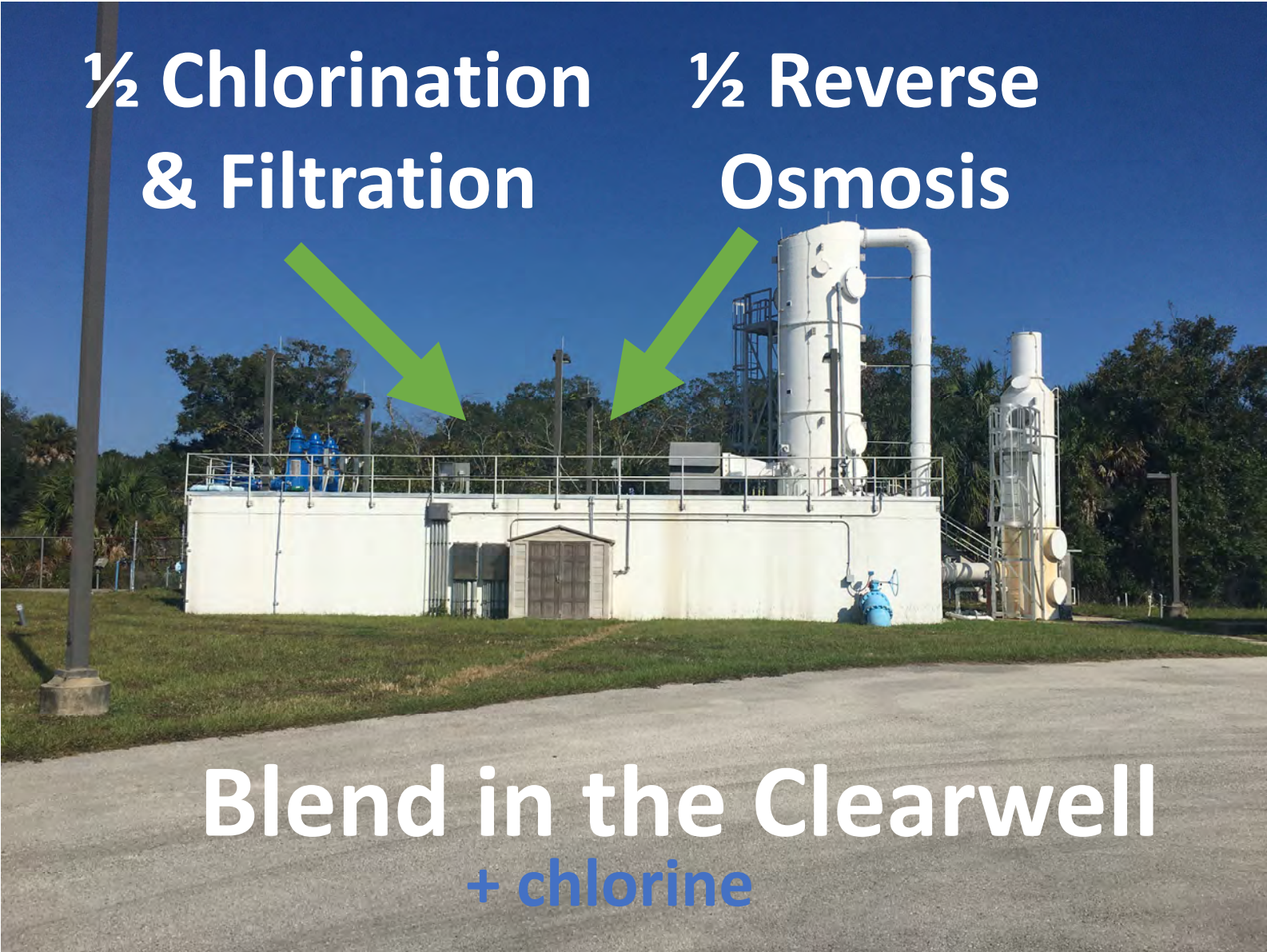
Step 2

**½ Chlorination
& Filtration**

**½ Reverse
Osmosis**



**Blend in the Clearwell
+ chlorine**



Chemical Feed



Ground Storage Tank

A large, white, cylindrical ground storage tank is the central focus of the image. It has a flat top and a slightly flared base. To the right of the tank, there is a complex network of yellow pipes and valves, some with blue handwheels. The tank is situated on a grassy area next to a paved road. In the background, there are trees and a cloudy sky. The overall scene is an industrial water treatment facility.

1.5 million gallons

+ North and South Tanks, 1 million gallons each

Process Control Lab

- pH
- Alkalinity
- Hardness
- Chlorine Residual



Last year, in 2022:

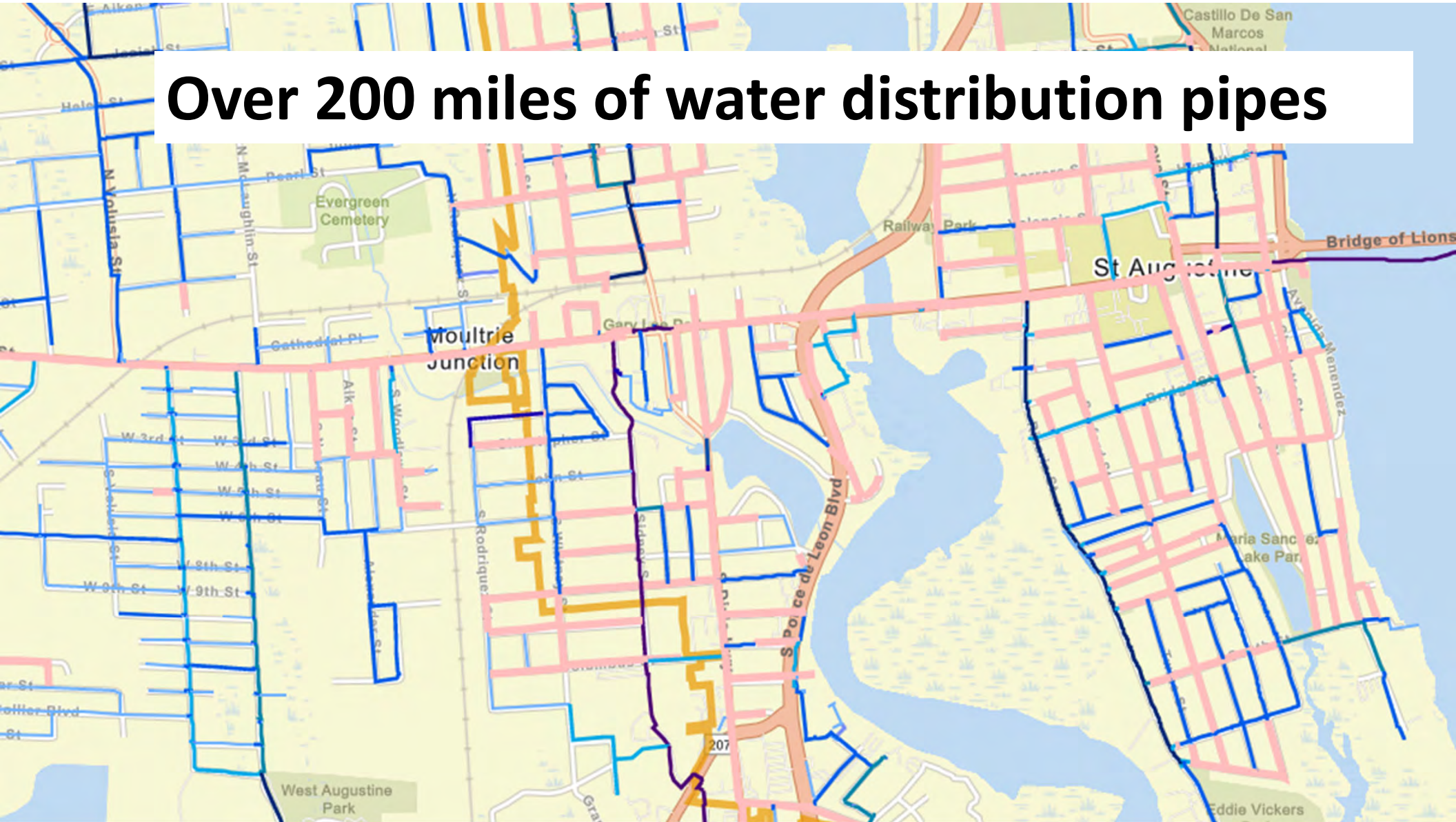
**Treated 3.5 million gallons of
water per day**

≈ 1.3 billion gallons per year



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ST AUGUSTINE
EST. 1665

Over 200 miles of water distribution pipes



**Once water goes
down the drain,
where does it go?**

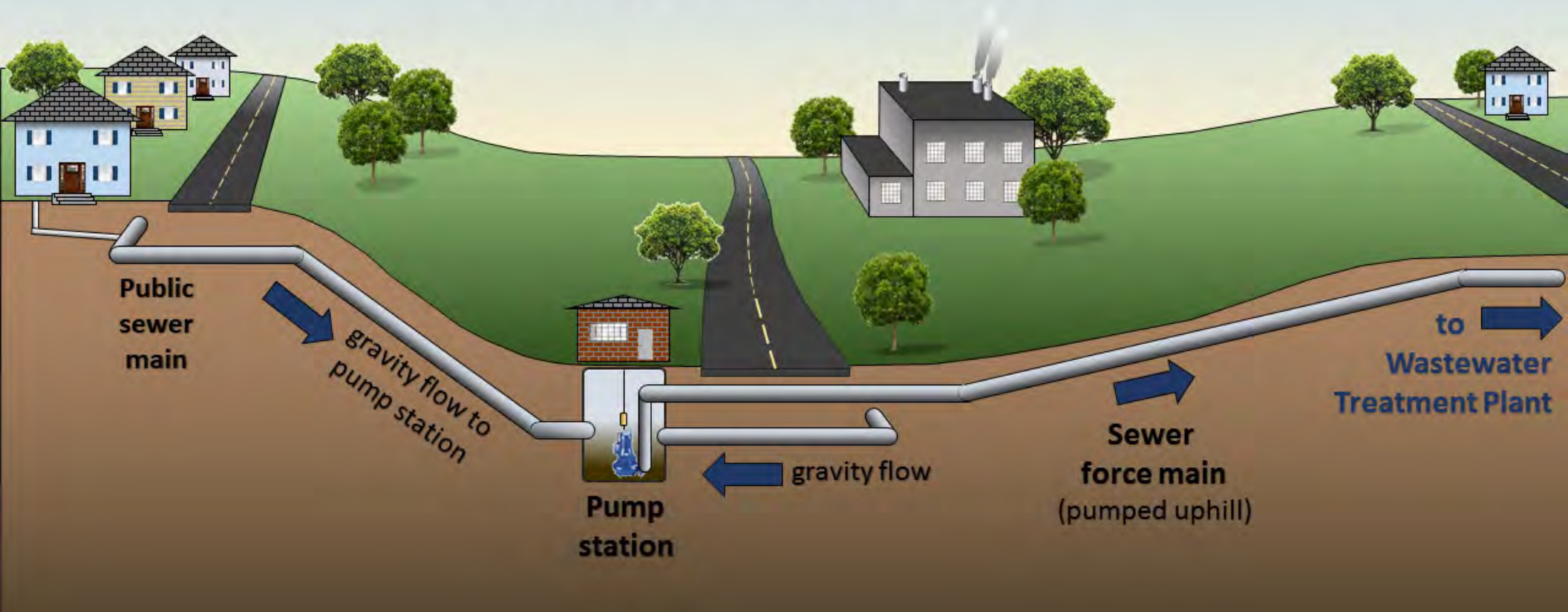
Wastewater Collection

Down the Drain:

- Toilet
- Shower
- Bathroom Sink
- Kitchen Sink
- Washing Machine



How the Sewer Works





82 pump stations

Lift Stations pump waste water to a higher elevation and direct it to the waste water treatment facility

**What can cause
clogs in the
system?**



Remember
the 3 P's

NO



WHEN YOU FLUSH
ANYTHING
OTHER THAN:



OOPS

**YOU CREATE
A MONSTER
IN OUR
SEWER
SYSTEM**



Gross!

Please don't!

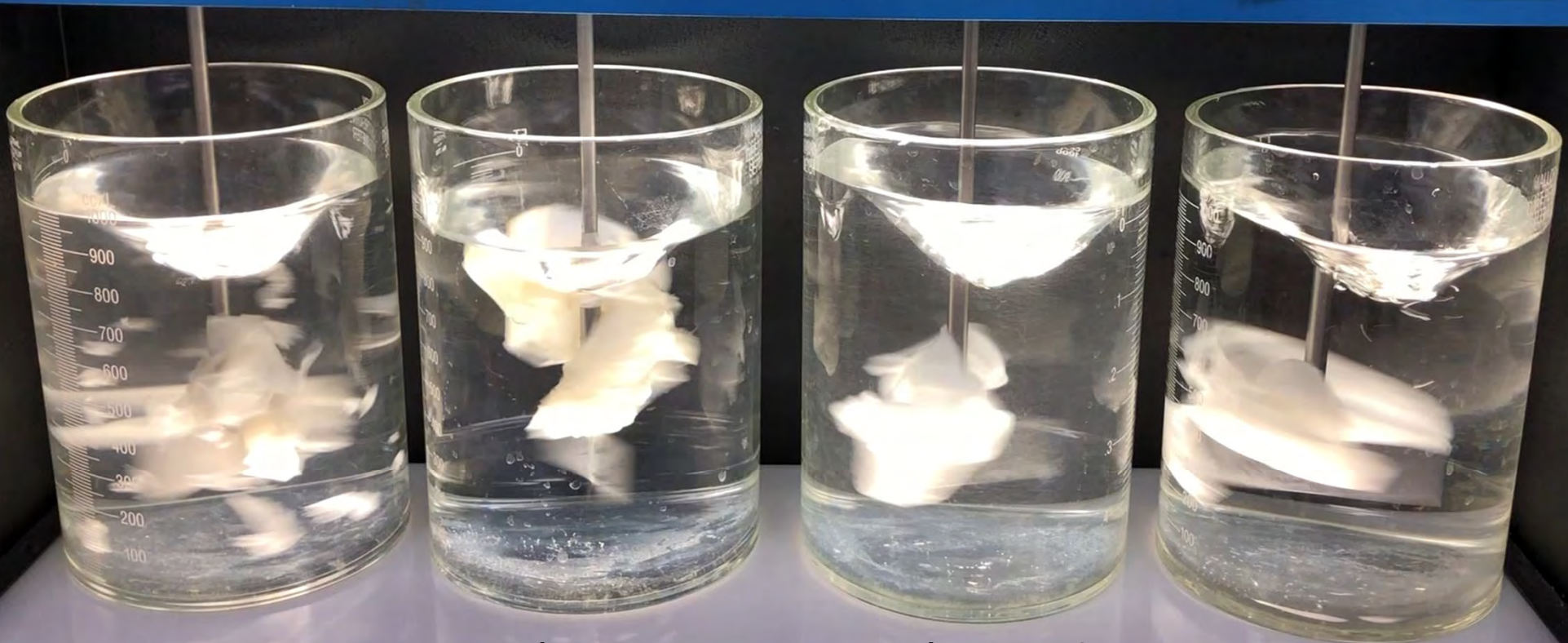


Toilet Paper

Facial Tissue

"Flushable" Wipe

Paper Towel



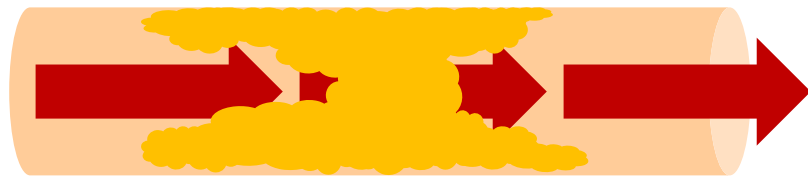
Toilets are **NOT** trash cans!

if you
LOVE *your*
SINK



STOP *&* **THINK**

Grease Clogs Pipes



Eventually blocking the flow

Sewer Pipe vs. Human Artery



A clogged sewer

A clogged artery

Keep grease out of the drain



Proper grease disposal



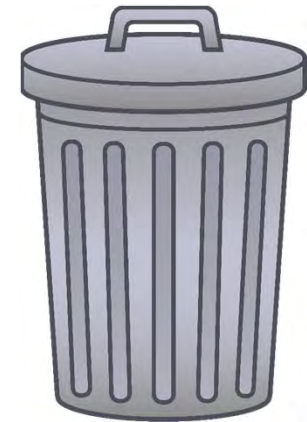
1. COOL IT



2. CAN IT



3. TRASH IT

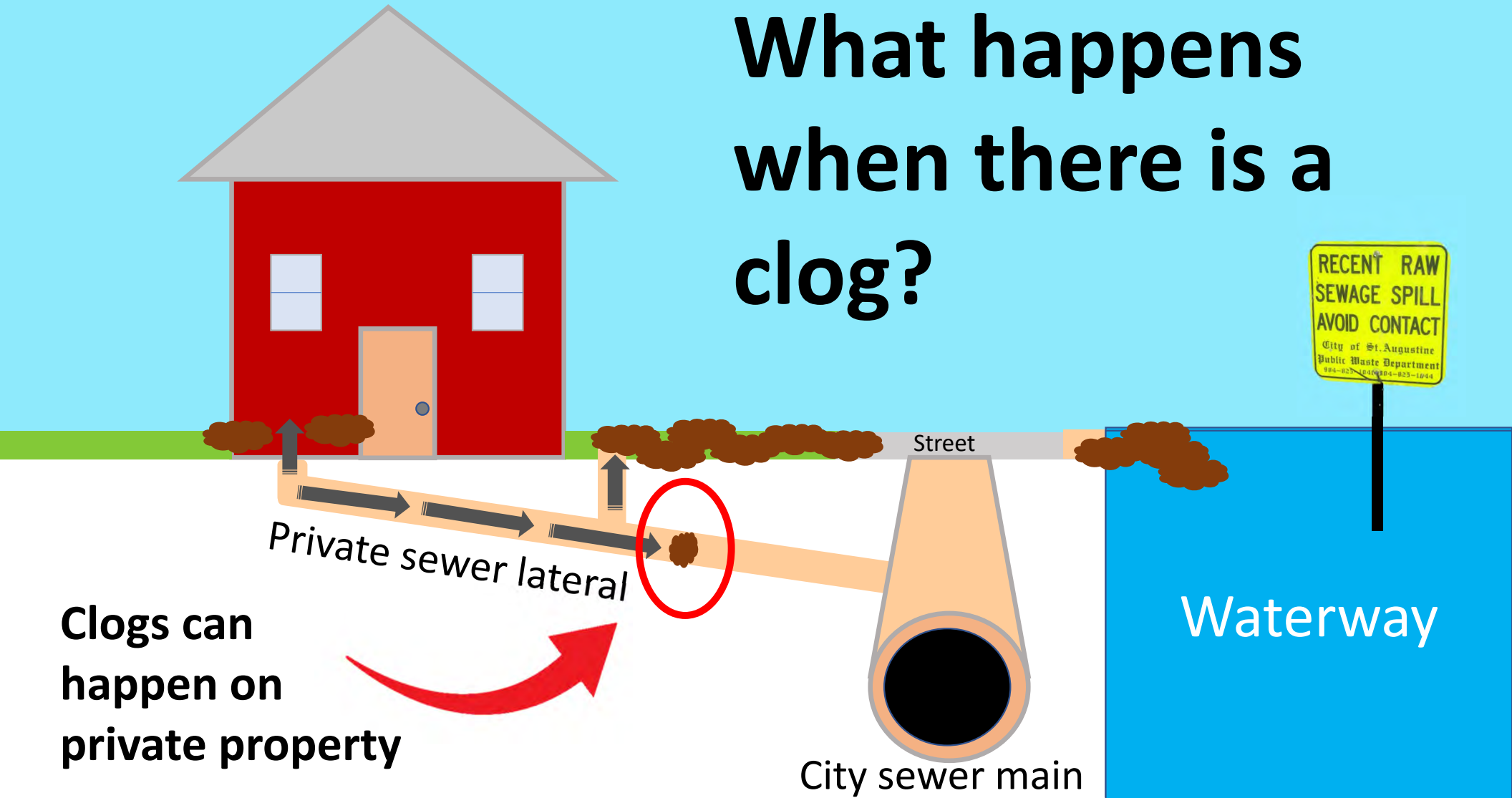


Disposing of large quantities of used cooking oil



*Drop-off here at
the Wastewater
Plant for
recycling!*

What happens when there is a clog?



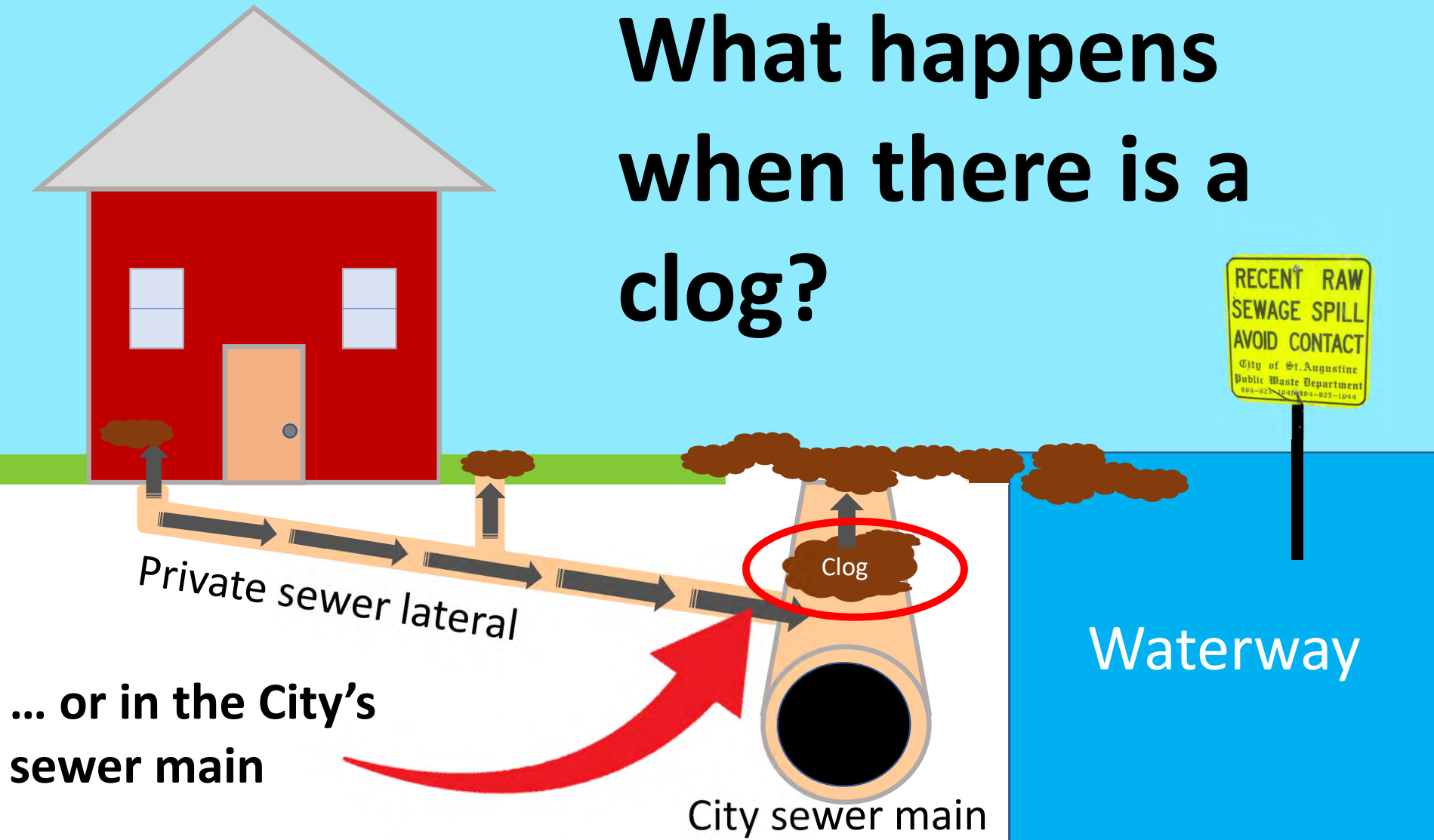
Clogs can happen on private property

RECENT RAW SEWAGE SPILL
AVOID CONTACT
City of St. Augustine
Public Waste Department
904-825-0400/904-825-1234

Waterway

City sewer main

What happens when there is a clog?



Sewer Spills



Why it's important to avoid clogs

Protect health &



the environment.



Save money.



**Aside from sewage,
what else shouldn't
go down a storm
drain?**

Stormwater & Illicit Discharges

ONLY RAIN DOWN THE DRAIN

Protecting our waterways from illicit discharges

CITY OF
ST. AUGUSTINE,
FLORIDA

22
MILES
OF STORM
SEWER PIPES

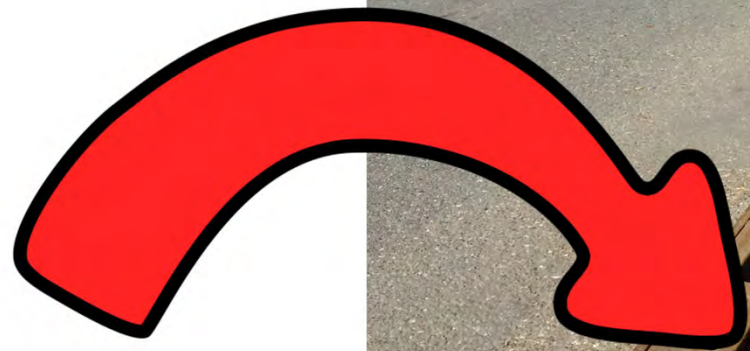
111 OUTFALLS DISCHARGING
TO SURROUNDING WATERBODIES



1137 STORMWATER
INLETS

Storm Drains

Lead directly
to waterway
without
treatment



Rain washes contaminants into the stormwater system









**Trash
collected**







Keep leaves away from storm drains

1. They plug drains and increase flooding issues
2. They release excess nutrients into the water





LEAVES CLOG STORM DRAINS



RAKE • BAG • MULCH or **COMPOST**

Keep drains flowing by keeping leaves out of streets and storm drains

www.CityStAug.com

Swimming Pools



Chlorine is toxic to aquatic life

Average chlorine concentration
in pools = 2 - 4 mg/L

Recommended maximum
chlorine for all fish and aquatic
life = **0.01 mg/L**



Swimming Pool Drainage



- **Dechlorinate before discharge**
- **Discharge into grassy area, not the street / storm drain**

Fertilizer



Dead Zones



Pet Waste



OUR WATERS HAVE A MASSIVE DOG POO PROBLEM



Dogs can be found in **35-47%** of Canadian and US households..



..and each dog produces 180 kg of waste every year!!!



An estimated **40%** of owners don't "scoop the poop"..



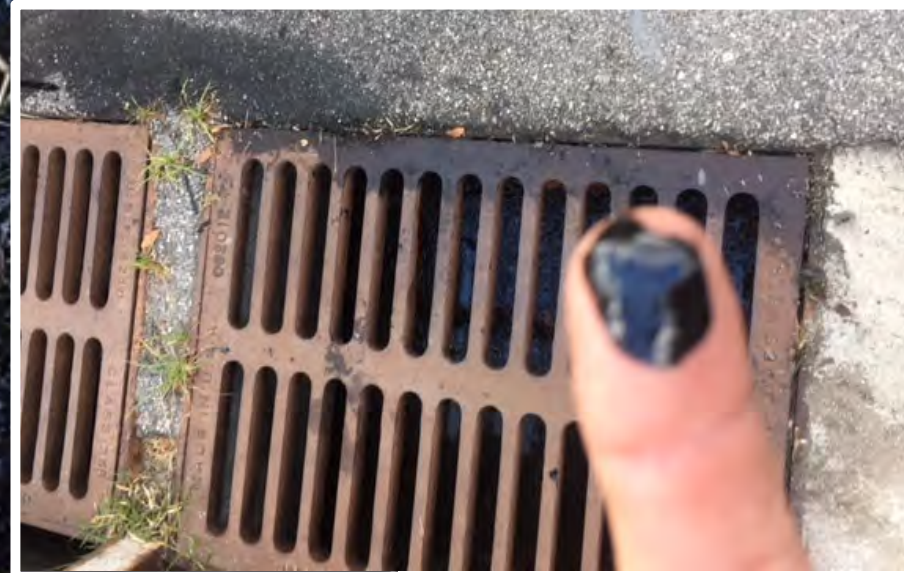
...a lot of it ends up in our swimming holes (along with a load of bacteria, parasites, viruses, and nutrients)

SWIM
Guide

Paint



12/20/18



Motor Oil

Wastewater Treatment Plant



Fun Fact!

**99.9% of
wastewater is....**

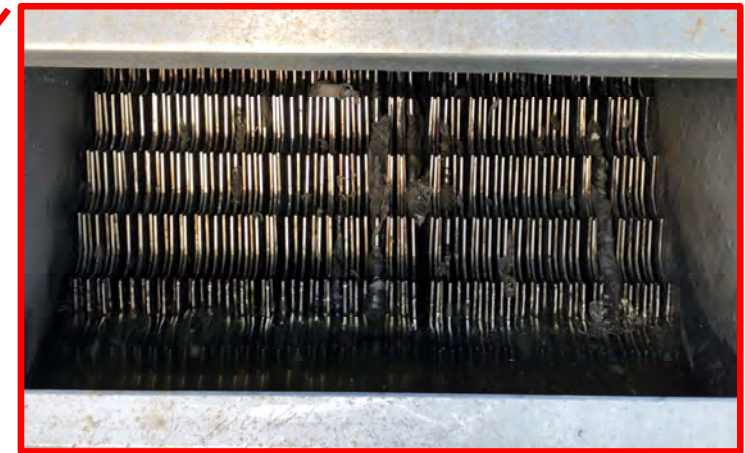
WATER!

(only 0.1% waste)

1. Influent / Headworks



Influent Structure



Bar Screen

Slots are 6 mm wide

Materials caught by the bar screen



**Think Before You Flush:
Wipes, rags and other items
removed as wastewater enters
treatment plant.**

2. Biological Treatment Unit

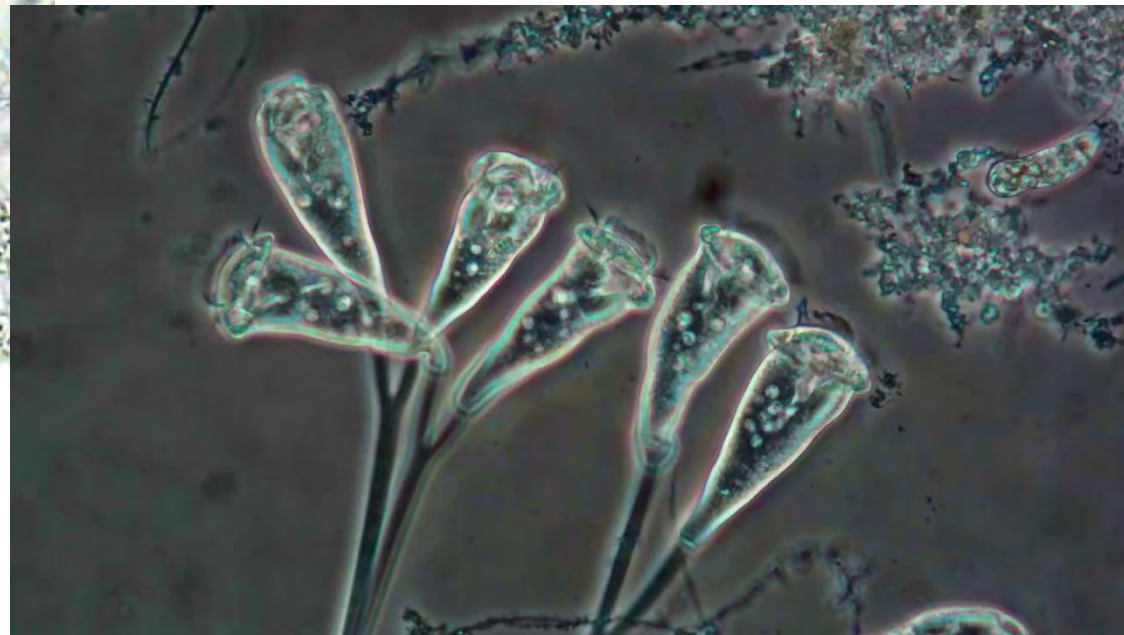


Microorganisms (a.k.a. “bugs”)



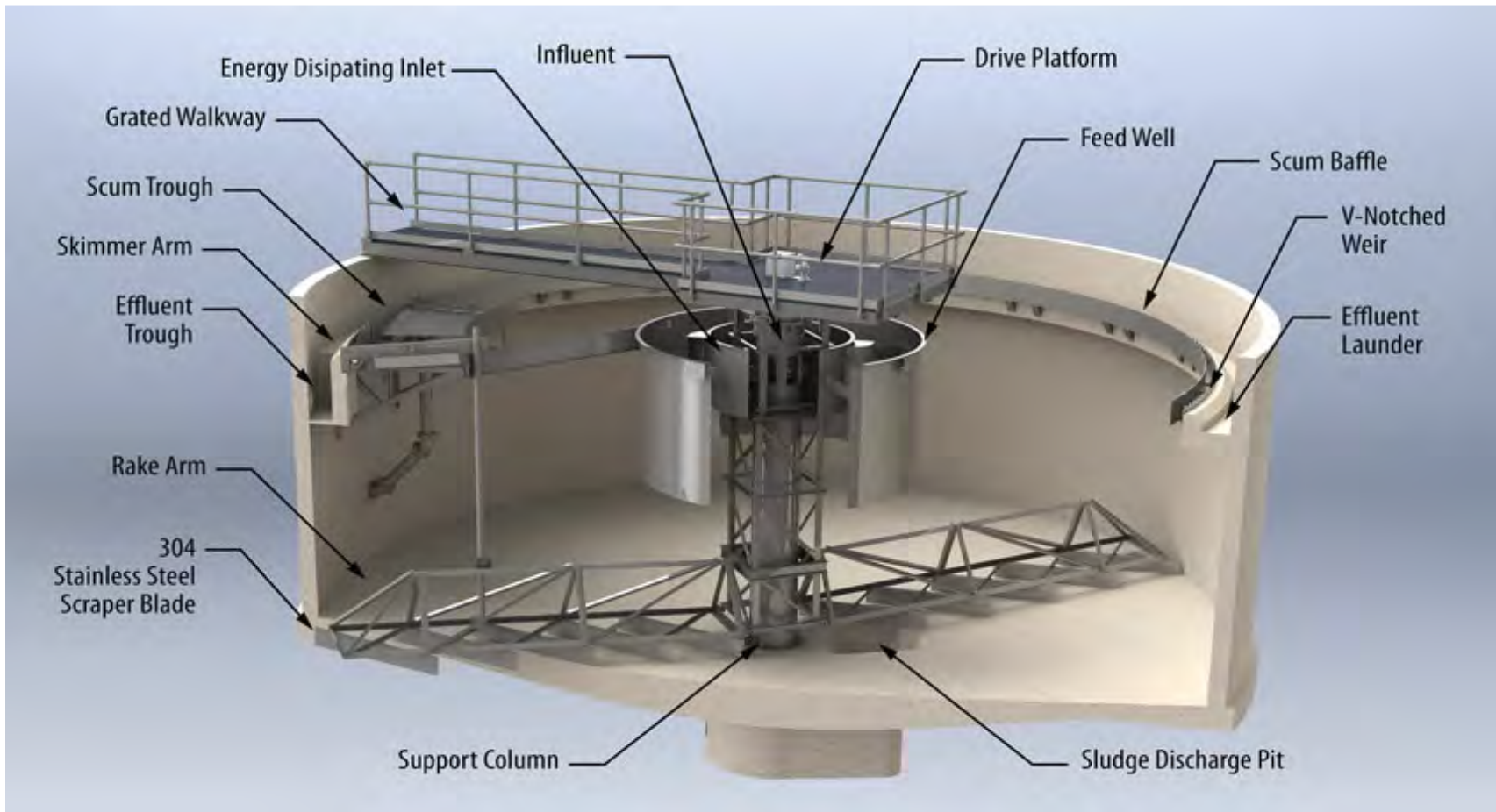
Free swimming ciliate

*At any given time, we are
producing more than 1.75
tons of bugs per day!*



Stalked ciliate

3. Clarifier



Wipes Cause Clogs!



4. Disinfection



Peracetic Acid

Acetic Acid + Hydrogen Peroxide = Peracetic Acid + Water



Final
treated
water

Outfall Pipe - to Matanzas River



5. Digesters Sludge Holding Tanks



6. Dewatering



Biosolids to Compost Facility

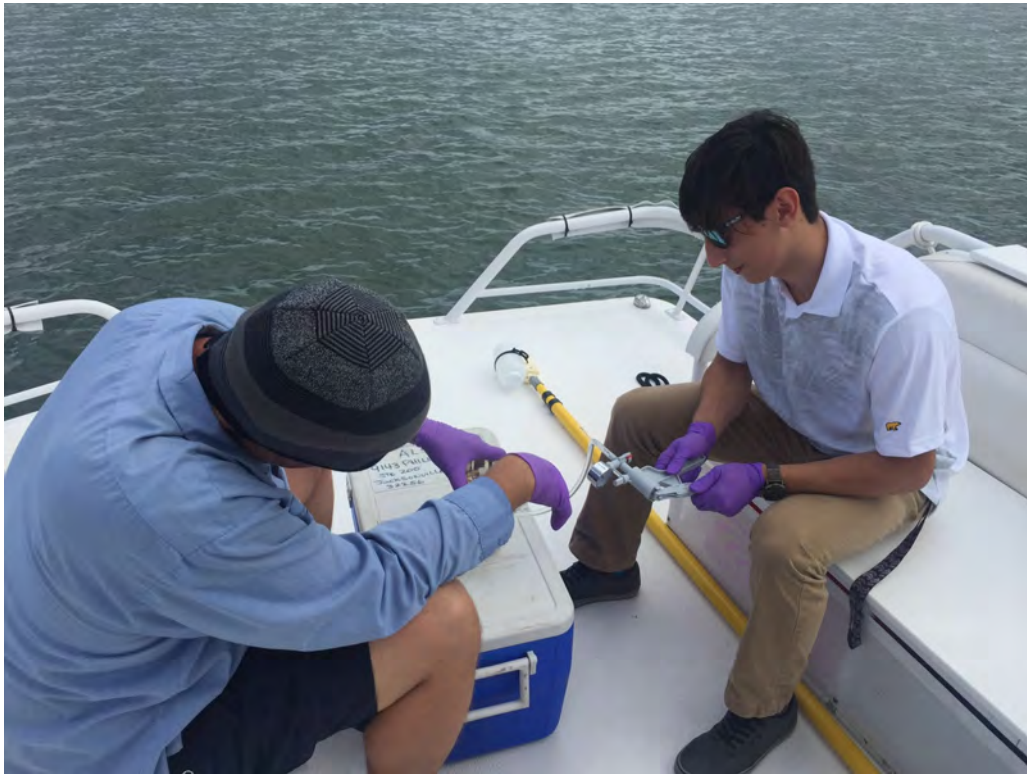


**Biosolids
mixed
with yard
waste to
make
compost**



Sampling & Laboratory

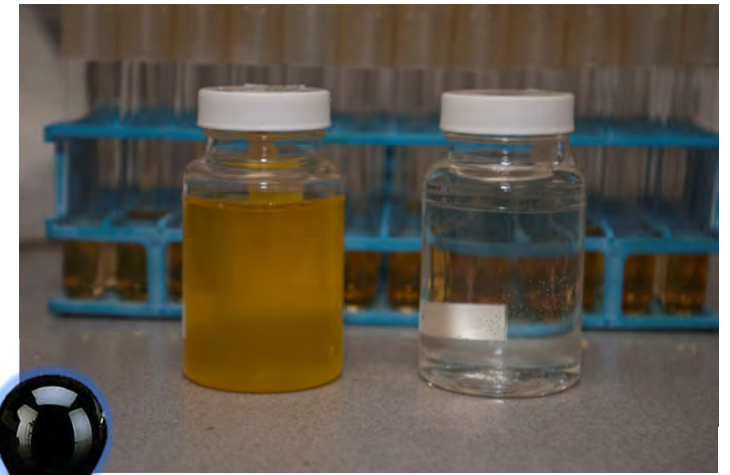
Sample Collection





Sample analysis

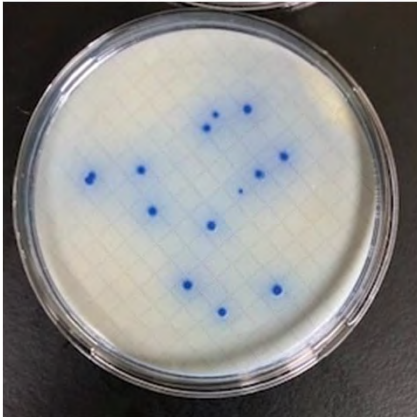
Drinking water samples
Total Coliform & E.coli



= *E. coli*

Sample analysis

Wastewater Fecal Coliform



Indicators of the likelihood of
pathogenic organisms being
present



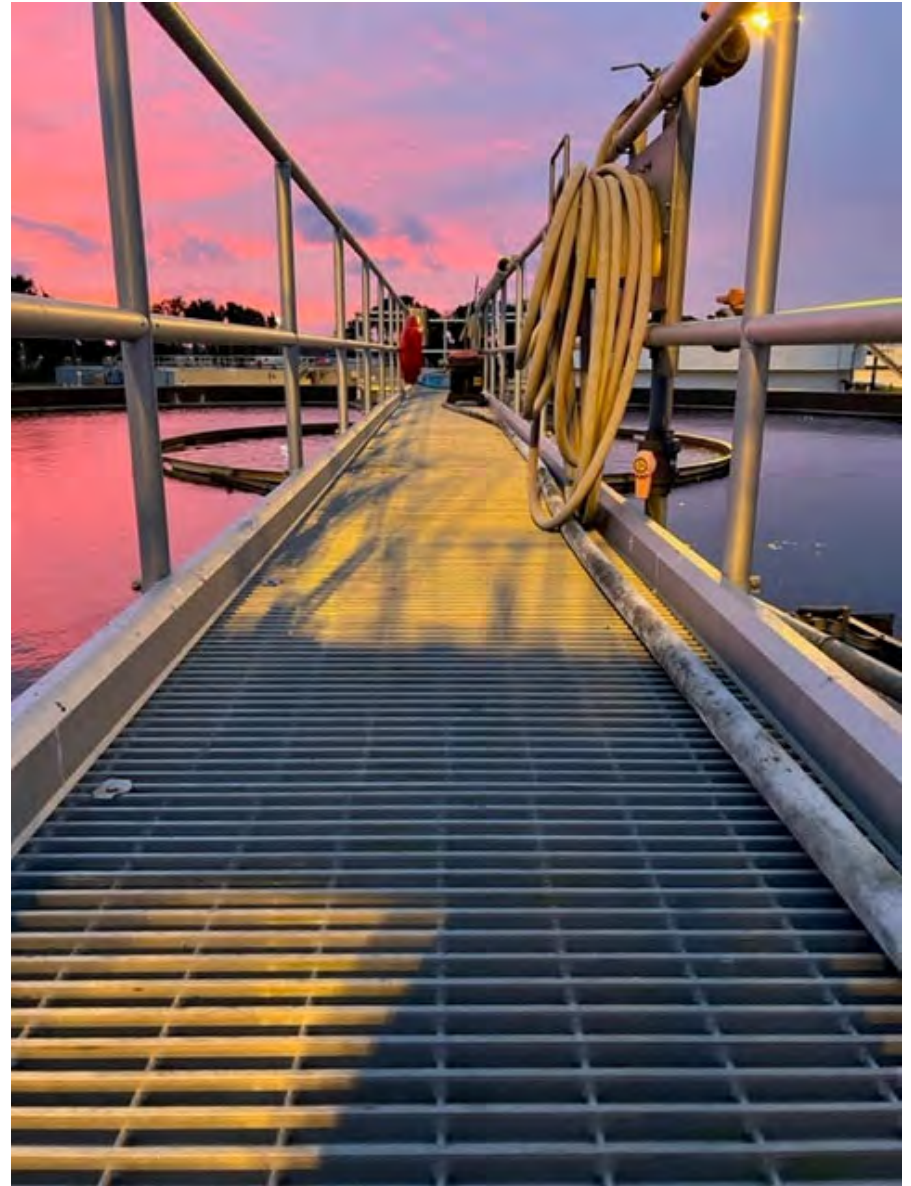
Jobs in this field

- Water treatment plant operator
- Wastewater treatment plant operator
- Transmission & Distribution Field Crew
- Wastewater Collections Field Crew
- Pump Stations
- Environmental Compliance / Lab Analyst
- Engineering
- GIS

Walking Tour: Safety

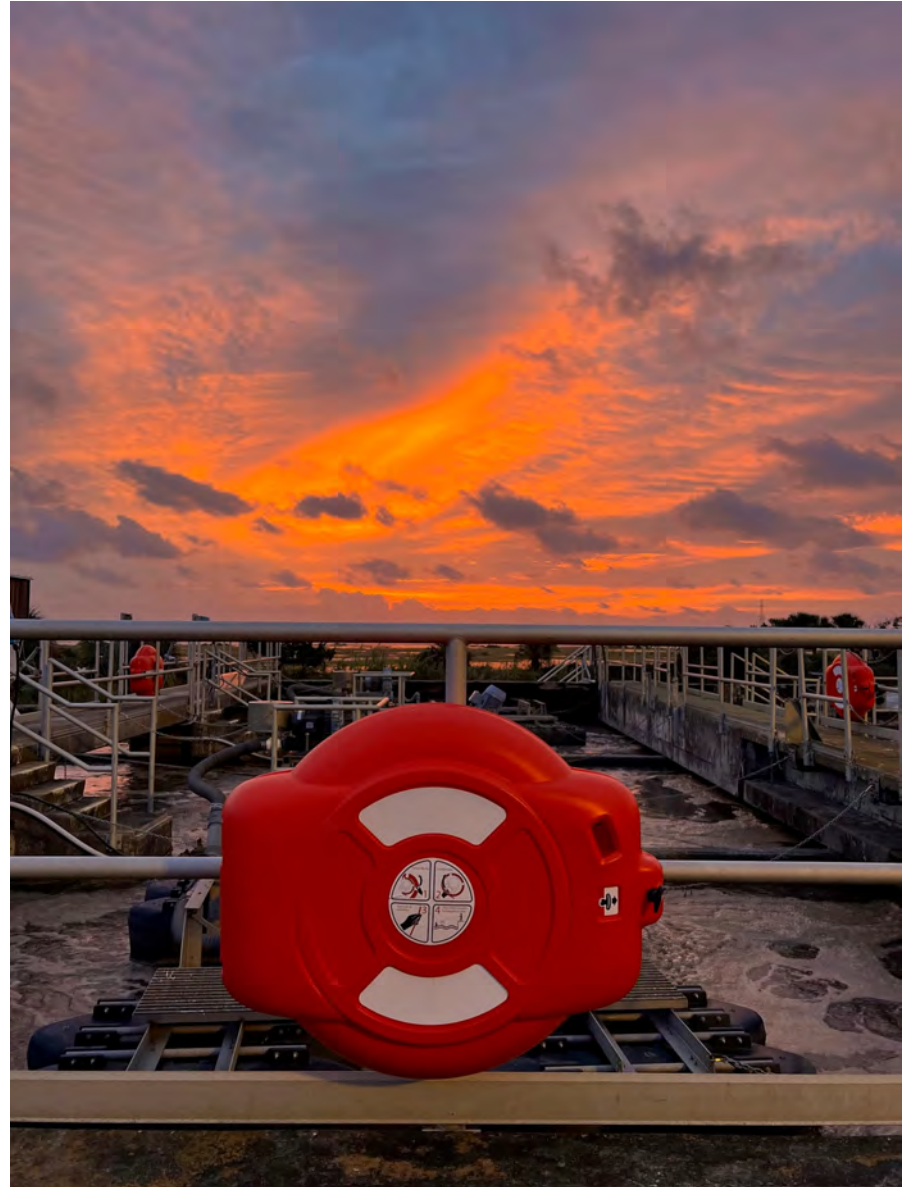
Watch your step!

- Grated walkways
- Hoses & other trip hazards



Flotation Rings

- Throughout the facility
- Just in case!





- **Pay attention to what you touch**
- **Wash or sanitize hands afterwards**

Questions?

