

Water Operations

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An overview of operations that deliver safe and clean water.



My Job

Senior Director of Water Operations

- Support of water production, water field operations, and water reclamation

Capital project decision making

- Asset management

Workforce support

How I got here

I jumped!

Worked underwater

Hazardous waste treatment

Industrial waste treatment

Municipal waste treatment

Education



Raw Water Treatment = Clean Water Production

- The City owns and operates the Water Treatment Facility on the west end of Laporte
 - Treats and delivers approximately 8 billion gallons of water annually.
 - 32 full time employees
 - Laboratory support of 8 employees
 - Treats raw water from Horsetooth reservoir and the Cache La Poudre River
 - Fluoride addition for improved dental health



Water Reclamation

Water Reclamation (The art formerly known as wastewater treatment)

- Two treatment plants
 - Drake Water Reclamation Facility
 - Mulberry Water Reclamation Facility
- Meadow Springs Ranch
 - Biosolids application
- 33 full time employees
 - Laboratory support of 8 employees
- Drake discharges into Fossil Creek ditch
- Mulberry discharges in Cache La Poudre



Water Distribution

- 500+ miles of pipe
- 12,000 valves
- 3,700 hydrants
- 35,140 meters
- 22 full time employees
- Serving 35,000 homes and businesses

Collections

- 450+ miles of pipe
- 10,806 Manholes
- 16 full time employees

A Water Web!

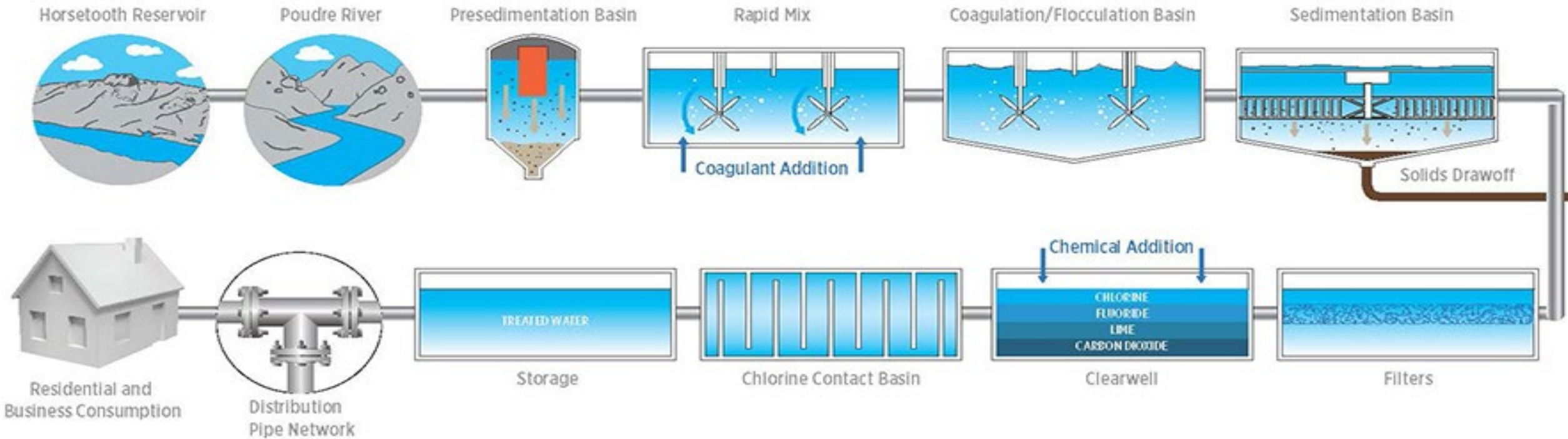


Storm Water

- 18 Full time employees
- 220 miles of piping with 3409 manholes.
- 153 retention ponds
- 182 detention ponds
- Protect public safety from and during flood events
- Key for minimizing stormwater pollution



Protecting health



Pre-sedimentation removes the big debris
Coagulation and Flocculation combine small particles
Sedimentation allows particles to settle and be removed
Filtration using sand and anthracite coal
Chemical additions
Storage, distribution and consumption (Yum!)

Into the distribution system

- Average of 83 main breaks occur annually
- Repairs procedures are regulated
- Backflow preventers do not allow intrusion of foreign substances into clean water piping
- Hydrant flushing maintains chlorine residuals and removes any sediment
- 8,500 linear feet of piping replaced annually

WATER MAIN BREAK REPAIR

IN PROGRESS





Into the collection system

- An average of 270,000 linear feet of pipe televised
- Over 2 million linear feet of pipe jet washed
- 6,000 linear feet of pipe improved (lined or replaced)
- Average of 9 blockages cleared annually

Flushable wipes **ARE NOT**
flushable!

Remember the 3 P's...or is it 4?

The notorious London fatberg



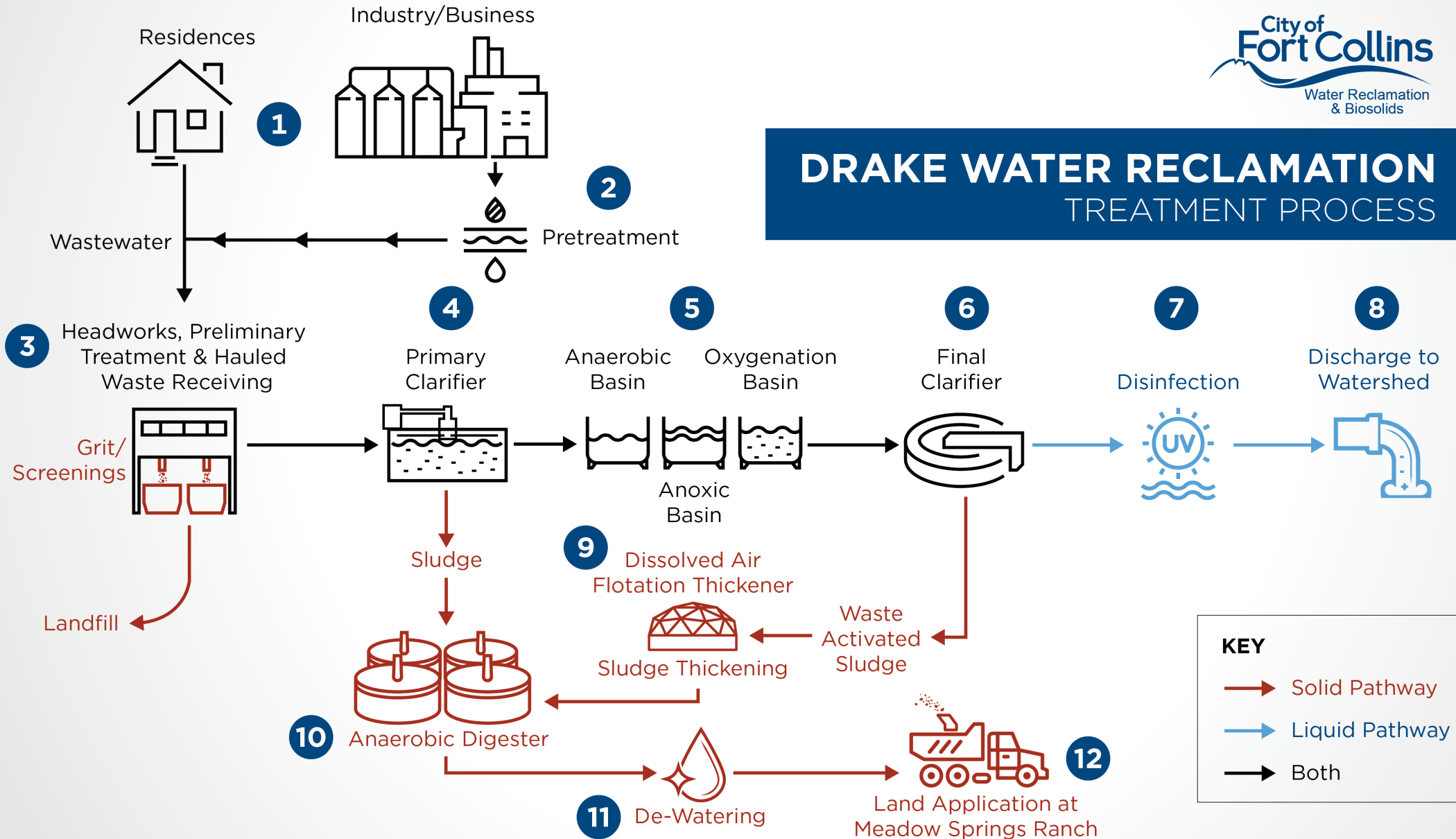
Onto the good stuff



I know everything about poo.

This is where it get's complicated

DRAKE WATER RECLAMATION TREATMENT PROCESS



How does it all work?

4 primary mechanisms of treatment

- Mechanical
 - Screening
 - Pumping
- Gravitational
 - Sedimentation
 - Clarification
- Biological
 - Activated Sludge
- Chemicals

System Classifications

- A for treatment
- IV for collections and distribution

Operators + ORC

- Monitor and adjust processes
- Perform basic maintenance activities
- Perform basic laboratory analyses

Mechanics

- Monitor equipment performance
- Complex maintenance activities

Laboratory

- Perform complex laboratory analyses
- Report regulatory compliance

Let's talk about BOD!

Biosolids (The artist formerly known as sludge)

Meadow Springs Ranch

- Obtained in 1990
- More than 26,000 acres north of Fort Collins
- Working cattle ranch
- Biosolids are land applied
 - Class B
 - Regulated



The Result



Discharge

- Monitor and report on 20+ parameters
- Current regulatory focus on nutrients
- Future CEC's microplastics, and PFAS per and polyfluoroalkyl substances

The future of
wastewater.....
drinking water?

We got issues



Regulatory

- Proposed nutrient and temperature limits require advanced treatment
- PFAS
- CEC's

Resource Limitations

Climate Change

Workforce

How to get in

- **Have a passion for water!**
- Education
 - Not required but helpful
- Ask questions
- Know how to work as part of a team
 - Individual contributions also welcome
- Enjoy working outside
 - Most water jobs require work outdoors

Thanks for having me!



Questions?