City of Franklin Springs

A Refreshing Place to Live

Importance of Wastewater Treatment

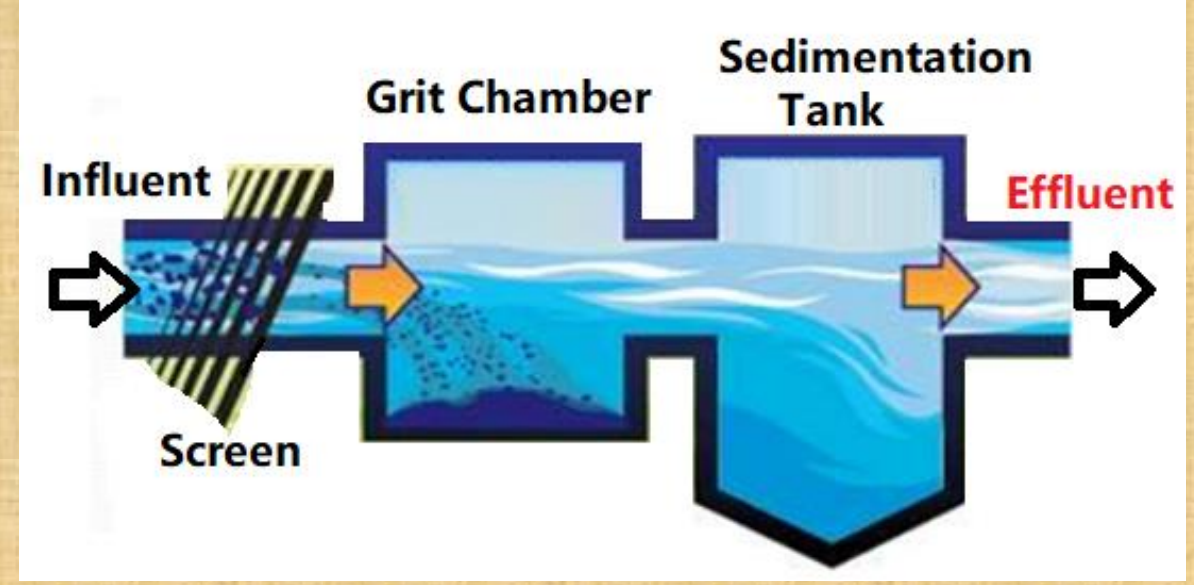
Wastewater treatment is crucial for public health and environmental protection. It is essential in ensuring safe water for human use and preventing the spread of diseases, while also safe-guarding aquatic ecosystems from pollution.

Franklin Springs Current Wastewater Pond

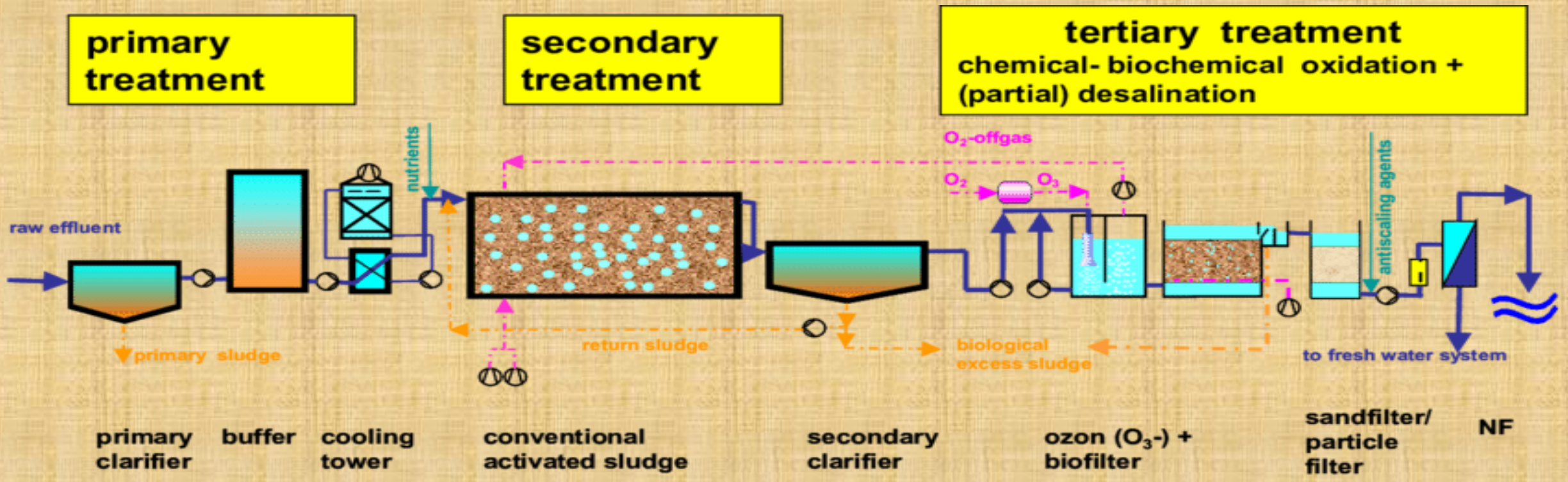
Influent vs Effluent

- **Influent** – raw, untreated wastewater entering in to the treatment facility.

- **Effluent** - completely treated wastewater that is discharged out of a treatment facility after meeting specific water quality standards.

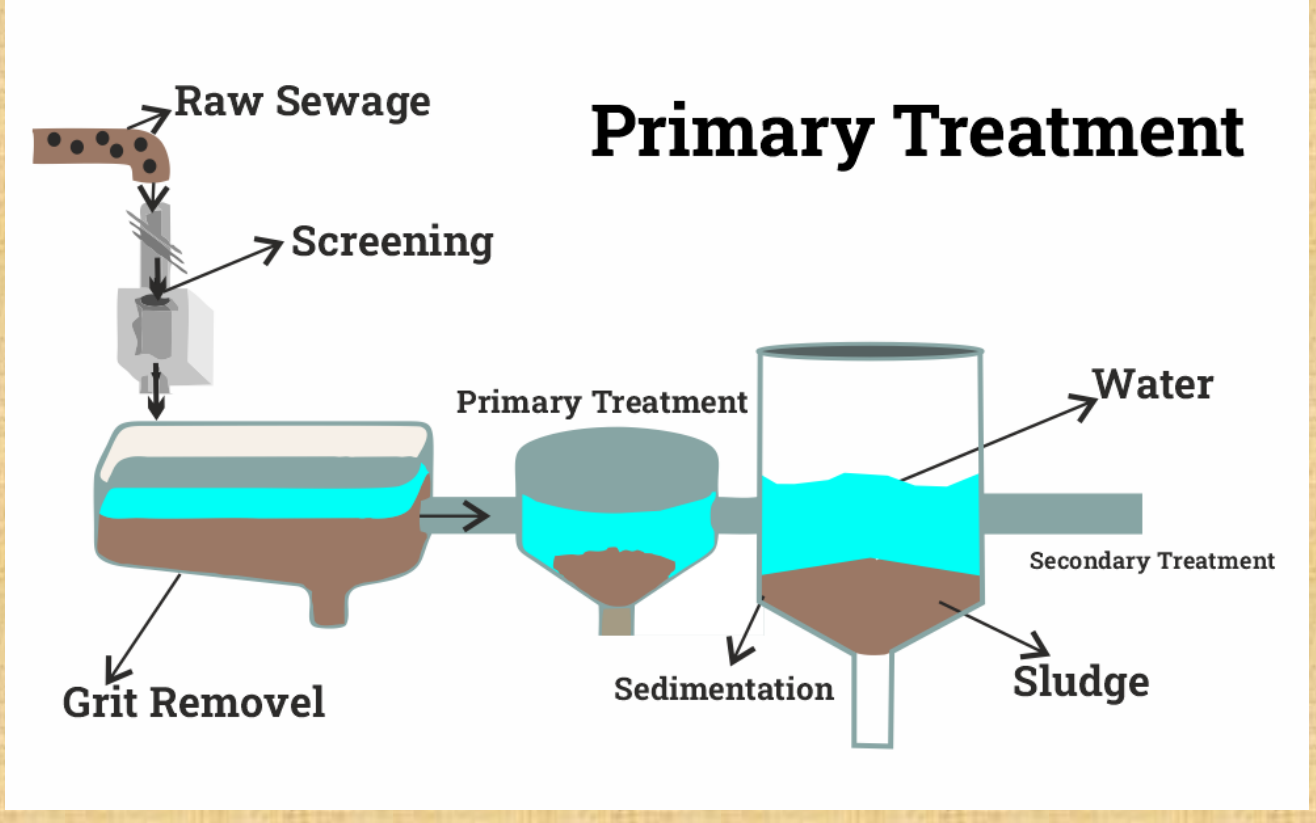


Three Stages of Wastewater Treatment



Primary Treatment

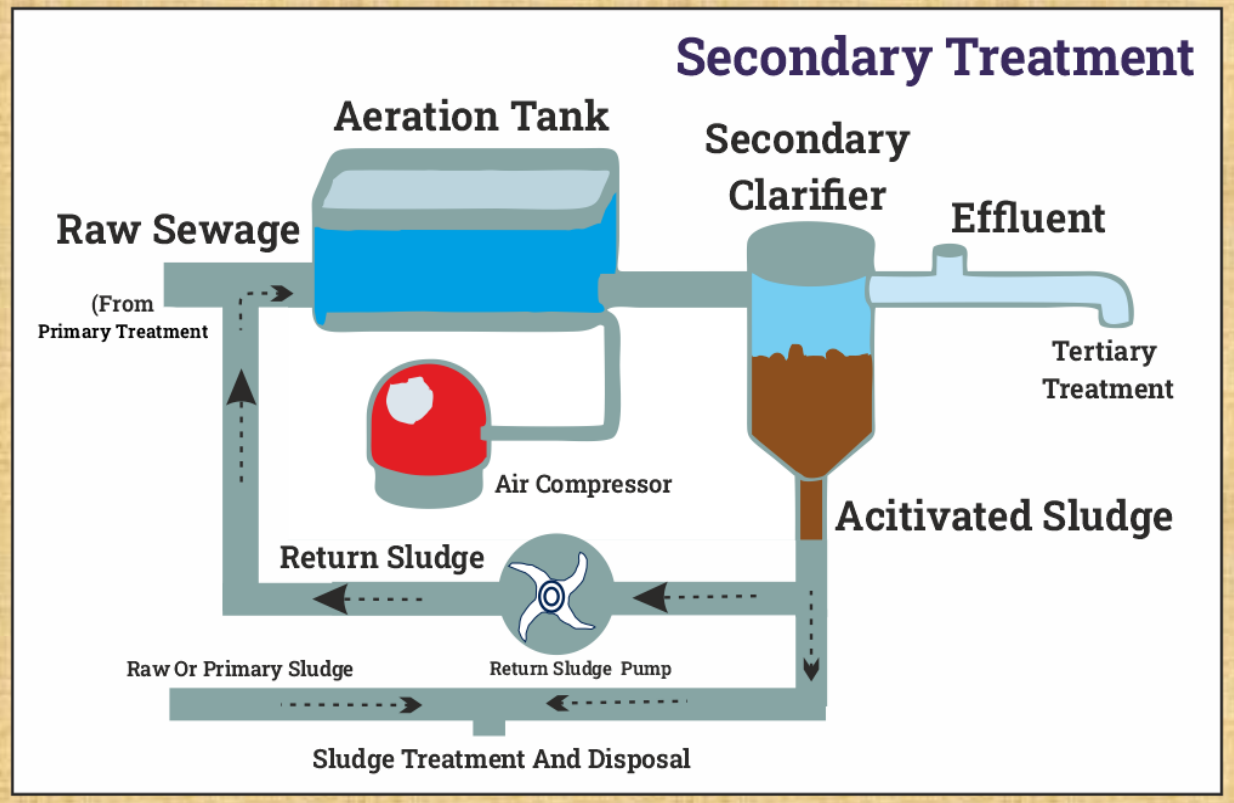
Primary – the initial stage of the treatment, focusing on physically removing large debris, grit, and settleable solids from wastewater using screening, grit removal and sedimentation processes.



Secondary Treatment

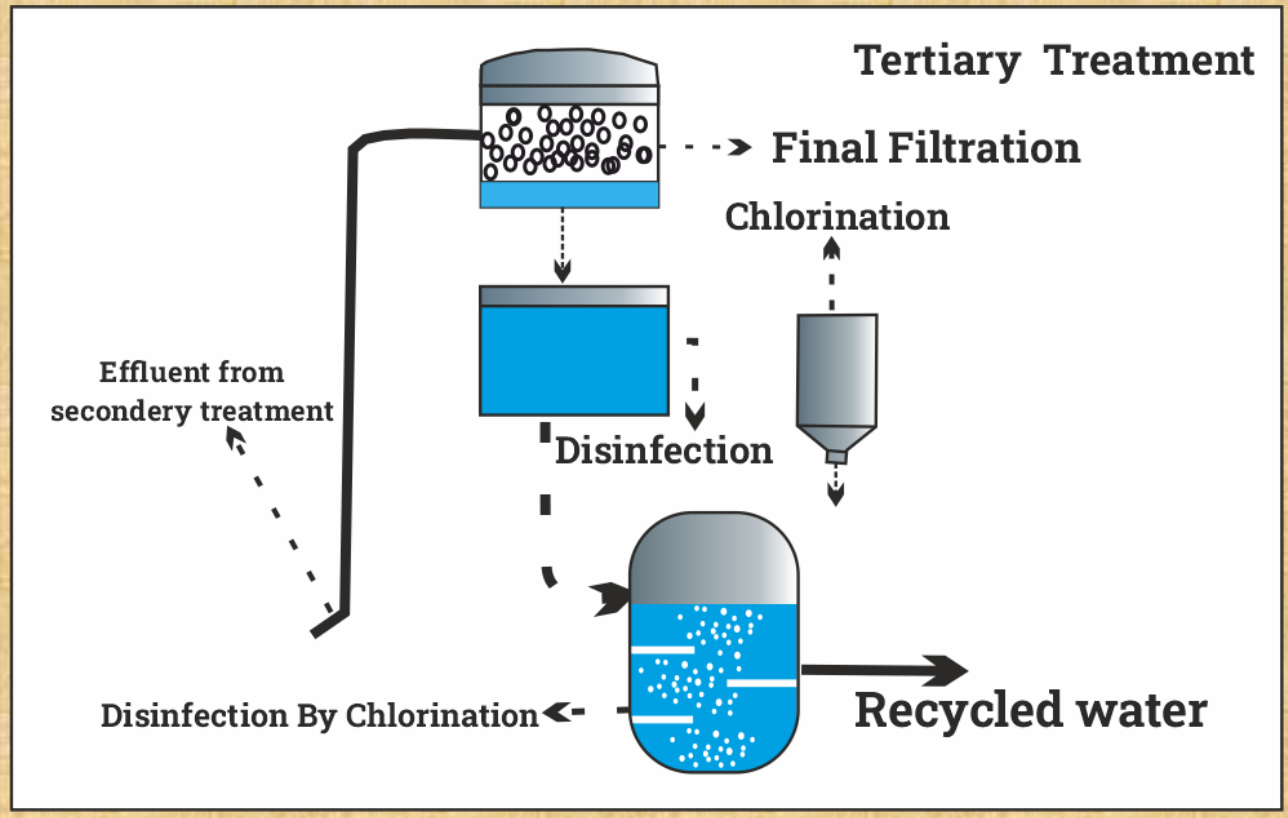
- **Secondary** – uses biological methods to purify the water further following the physical treatment process.

In this phase in wastewater treatment uses millions or microorganisms to consume and remove waste, preparing the water for the tertiary treatment phase before it returns to a natural water source. During this phase, over 90% of the organic matter present, including biochemical oxygen demand (BOD) and suspended solids are removed primarily using bacteria to break down pollutants.



Tertiary Treatment

- **Tertiary** – the final stage of wastewater management, removing contaminants that secondary treatment couldn't. Eliminating non-biodegradable pollutants, pathogens, and other harmful substances.



This method includes:

- Filtration
- Disinfection

TOTAL SUSPENDED SOLIDS (TSS)

What is TSS: TSS are solid particles in water or wastewater that are not dissolved and can be retained by a filter.

How its measured: A water sample is filtered, and the remaining solids are dried and weighed to determine the TSS.

The impact TSS has on wastewater treatment: High TSS levels can reduce the efficiency of a biological treatment processes and negatively impact aquatic life. Reducing TSS is crucial for improving wastewater treatment and protecting the environment.

TOTAL SUSPENDED SOLIDS (TSS)

How is TSS removed from wastewater: Physical separation or filtration reduces TSS in wastewater using strainers, sediment filters, screens and depth filtration.

75 lbs./min of TSS flowing down the Board river
0.03 lbs./min of TSS at FS pond at 60,000 gallons a day
Surrounding WWTF 0.03 lbs./min of TSS at 1,000,000 gallons of reclaimed water a day.

Biochemical Oxygen Demand (BOD)

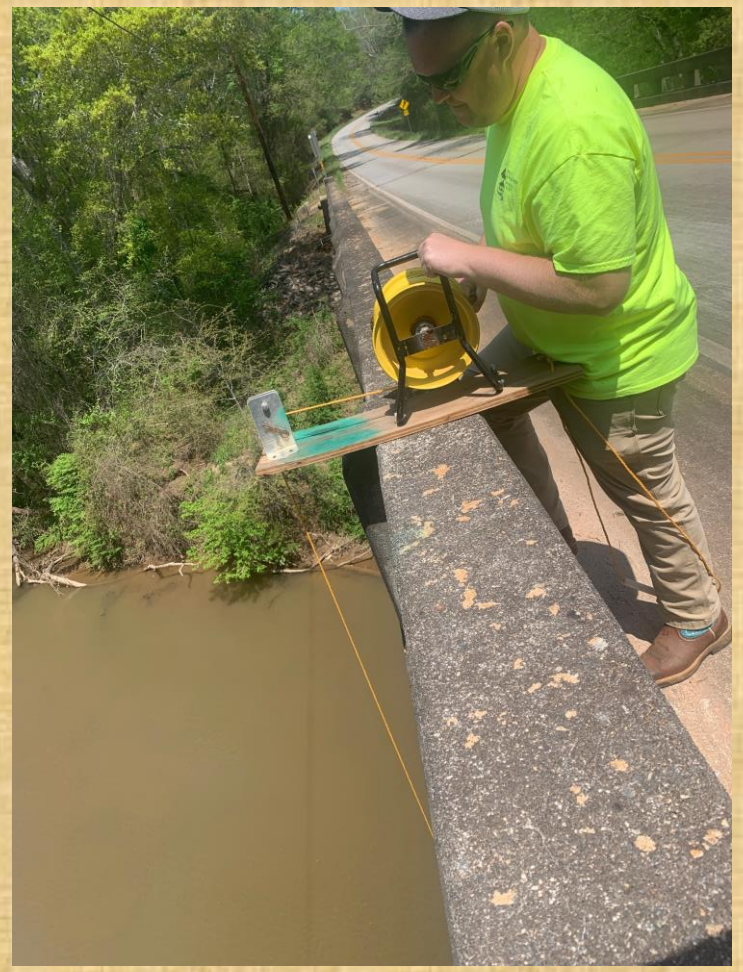
What is BOD: a measure of the amount of oxygen required to remove waste organic matter from water in the process of decomposition by aerobic bacteria.

How its measured: it is measured by incubating a water sample for five at 20 degrees Celsius and measuring the amount of dissolved oxygen consumed by microorganisms during that period.

BOD and Water Quality

- Low BOD values indicate good water quality, with little organic pollution.
- High BOD values indicate poor water quality, with a high level of organic pollution.
- BOD above 8mg/L is considered high and indicates significant pollution.
- BOD below 2mg/L is considered low and indicates very good water quality.

BOD Comparison

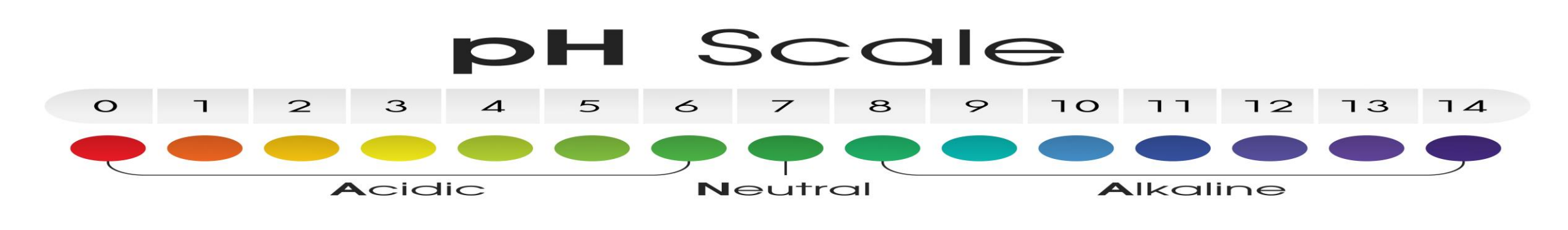


- Surrounding WWTF = 0.00034 lbs./min
- Franklin Springs Pond = 0.0048 lbs./min
- Broad River = 18 lbs./min

pH in Water

- pH stands for the measurement in hydrogen ion activity in water.

- It indicates the basicity or acidity of a solution on a scale of 0 to 14, with pH 7 being neutral.



Franklin Springs
Wastewater Plant

Date	Discharge into Hayes Creek										
	Flow MGD	Temp	Do	PH	Fecal	Bod5 Kg/day	Bod5 lb/day	Bod5 lb/min	TSS kg/day	TSS lb/day	TSS lb/min
10/9/24	0.058	21.60	7.73	7.19		10.41	22.95	0.0159	14.11	31.11	0.0216
10/16/24	0.042	15.80	8.99	7.35	100.00	3.92	8.64	0.0060	4.25	9.37	0.0065
10/23/24	0.042	15.80	8.59	7.35	6.00	3.22	7.10	0.0049	1.67	3.68	0.0026
10/31/24	0.050	17.40	7.67	7.24		2.22	4.90	0.0034	1.71	3.77	0.0026
11/6/24	0.050	18.20	6.21	7.41		0.83	1.83	0.0013	2.15	4.74	0.0033
11/15/24	0.102	14.50	6.12	7.30	0.00	7.60	16.76	0.0116	4.09	9.02	0.0063
11/20/24	0.068	14.00	7.81	7.32		4.32	9.53	0.0066	3.65	8.05	0.0056
11/26/24	0.042	11.30	9.73	7.43	49.00	3.30	7.28	0.0051	3.59	7.92	0.0055
12/4/24	0.003	7.10	8.80	6.45	0.00	0.29	0.64	0.0004	0.33	0.73	0.0005
12/11/24	0.038	8.80	11.53	6.45	6.00	3.43	7.56	0.0053	2.24	4.94	0.0034
12/17/24	0.028	7.50	10.05	7.01		1.12	2.47	0.0017	1.77	3.90	0.0027
12/24/24	0.030	7.90	10.05	7.10		0.11	0.24	0.0002	0.17	0.37	0.0003
12/30/24	0.035	7.00	11.10	6.45		2.25	4.96	0.0034	1.75	3.86	0.0027
1/8/25	0.014	4.40	10.12	7.01	0.00	0.41	0.90	0.0006	0.30	0.66	0.0005
1/15/25	0.010	4.70	10.09	7.54	0.00	0.43	0.95	0.0007	0.64	1.41	0.0010
1/23/25	0.042	4.40	10.90	7.36		0.95	2.09	0.0015	15.50	34.18	0.0237
1/29/25	0.058	6.20	11.20	7.41		1.82	4.01	0.0028	1.25	2.76	0.0019
2/5/25	0.050	10.70	9.64	7.17		1.89	4.17	0.0029	0.98	2.16	0.0015
2/10/25	0.042	16.00	9.60	7.71	301.00	0.73	1.61	0.0011	2.11	4.65	0.0032
2/17/25	0.250	8.30	10.67	7.64		3.79	8.36	0.0058	9.68	21.34	0.0148
2/26/25	0.068	9.50	11.25	7.54	0.00	3.63	8.00	0.0056	3.18	7.01	0.0049
							0.00	0.0000		0.00	0.0000
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Broad River

Instream Recordings

Date	South Broad River											
	Flow MGD	Temp	Do	PH	Fecal	Bod5 Kg/day	Bod5 Lb/day	Bod5 Lb/min	TSS kg/day	TSS Lb/day	TSS Lb/min
10/9/24	359.2	19.3	8.77	7.45	1490	3199	7054	4.90	2091	4611	3.20
10/16/24	244.0	13.8	10.44	7.55		6390	14090	9.78	9551	21060	14.62
10/23/24	213.6	16.3	10.08	7.83	1820	87712	193405	134.31	2246	4952	3.44
10/31/24	212.3	17.0	9.04	7.83		2360	5204	3.61	893	1969	1.37
11/6/24	215.7	18.9	9.08	7.59	1930	771	1700	1.18	2885	6361	4.42
11/15/24	225.8	13.9	9.91	7.50	1008	2087	4602	3.20	956	2108	1.46
11/20/24	227.8	15.4	9.35	7.44		2980	6571	4.56	6817	15031	10.44
11/26/24	192.7	13.0	10.21	7.39		1380	3043	2.11	21433	47260	32.82
12/4/24	234.0	5.5	12.98	7.39	1728	839	1850	1.28	3907	8615	5.98
12/11/24	282.0	12.6	10.10	7.50		2087	4602	3.20	4705	10375	7.20
12/17/24	494.0	12.2	10.41	7.22	7200	2920	6439	4.47	5008	11043	7.67
12/24/24							0	0.00		0	0.00
12/30/24							0	0.00		0	0.00
1/8/25	575.0	4.0	13.16	7.95	1440	4369	9634	6.69	4364	9623	6.68
1/15/25	456.0	6.0	12.62	7.58		4628	10205	7.09	4364	9623	6.68
1/23/25	377.0	1.4	14.26	7.59	1728	3075	6780	4.71	3007	6630	4.60
1/29/25	259.0	7.8	11.77	7.59		2089	4606	3.20	2936	6474	4.50
2/5/25	347.0	12.5	10.81	7.64	114	3084	6800	4.72	6424	14165	9.84
2/10/25	317.0	15.5	10.66	7.58	123	1308	2884	2.00	1823	4020	2.79
2/17/25	1260.0	7.7	11.63	7.41		11690	25776	17.90	46998	103631	71.97
2/26/25	577.0	11.9	10.54	7.59		5087	11217	7.79	4253	9378	6.51
							0	0.00		0	0.00
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Fecal Coliform Test

- Fecal coliform testing in wastewater helps identify potential contamination by monitoring indicator bacteria.

- Membrane filtration is the method of choice for the analysis of fecal coliforms in water. Samples to be tested are passed through a membrane filter of a particular pore size (generally 0.45 micron). The microorganisms present in the water remain on the filter surface.

Agriculture and Pet Pollution to Local Waterways

- How many here tonight have at least one animal at home of any kind? (Dog,Cat,Cows,Horses, etc..)

- One dog produces 0.75 pounds of waste a day, equaling 273.75 pounds per year alone.

- One cow produces 106 pounds of waste per day, equaling 38,690 pounds per year alone.

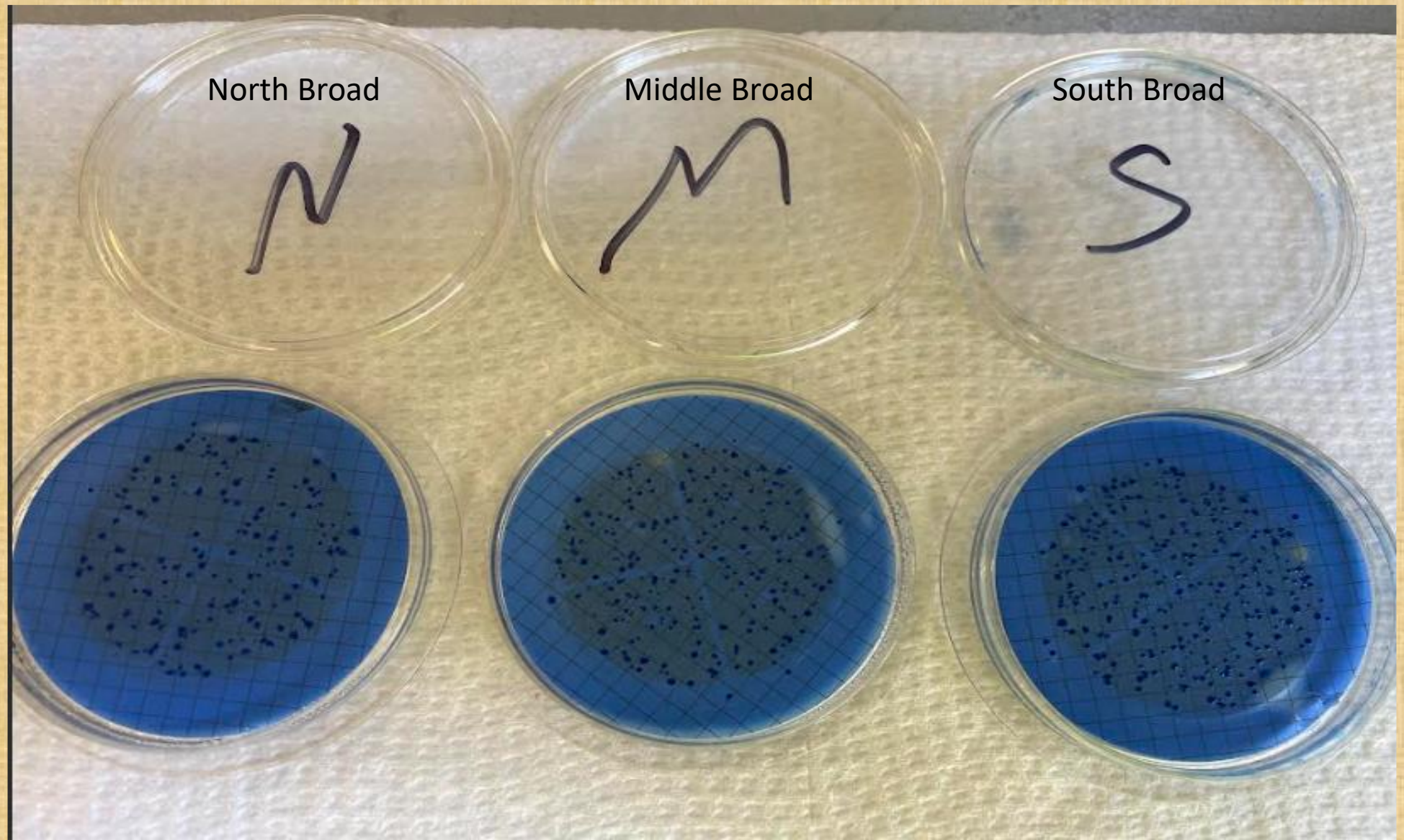
Agriculture and Pet Pollution to Local Waterways

- Those faces contain a variety of pathogens, including bacteria (E.coli and Salmonella), viruses, and parasites that contaminates the surrounding soil, and water ways.

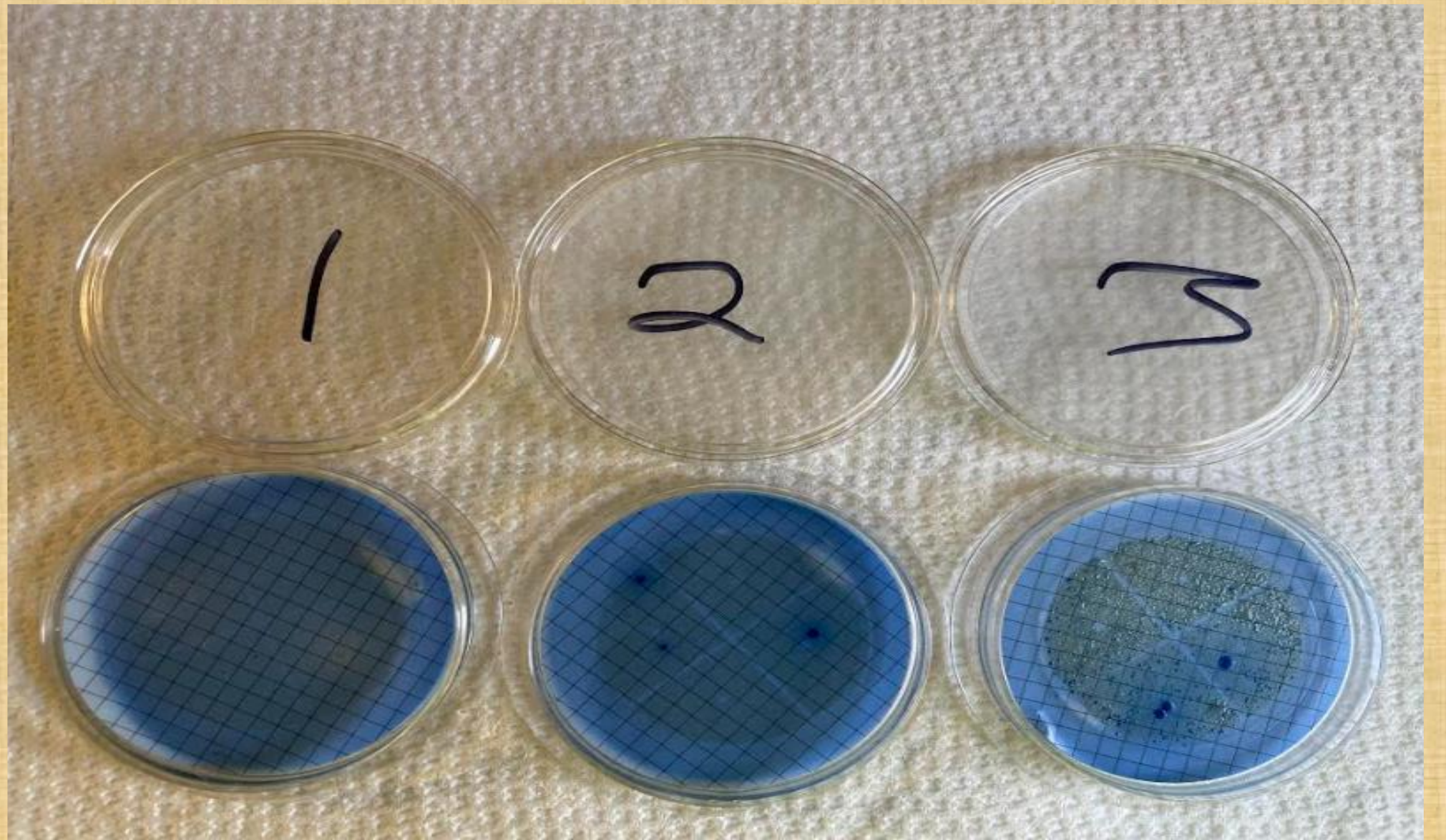
- Fecal matter from house hold animals and local farms do eventually decompose, but this is a slow process, taking about a year to biodegrade.

- During this time of decomposing with each rain this contamination is running off in the local streams and rivers, polluting them with raw fecal matter and pathogens.

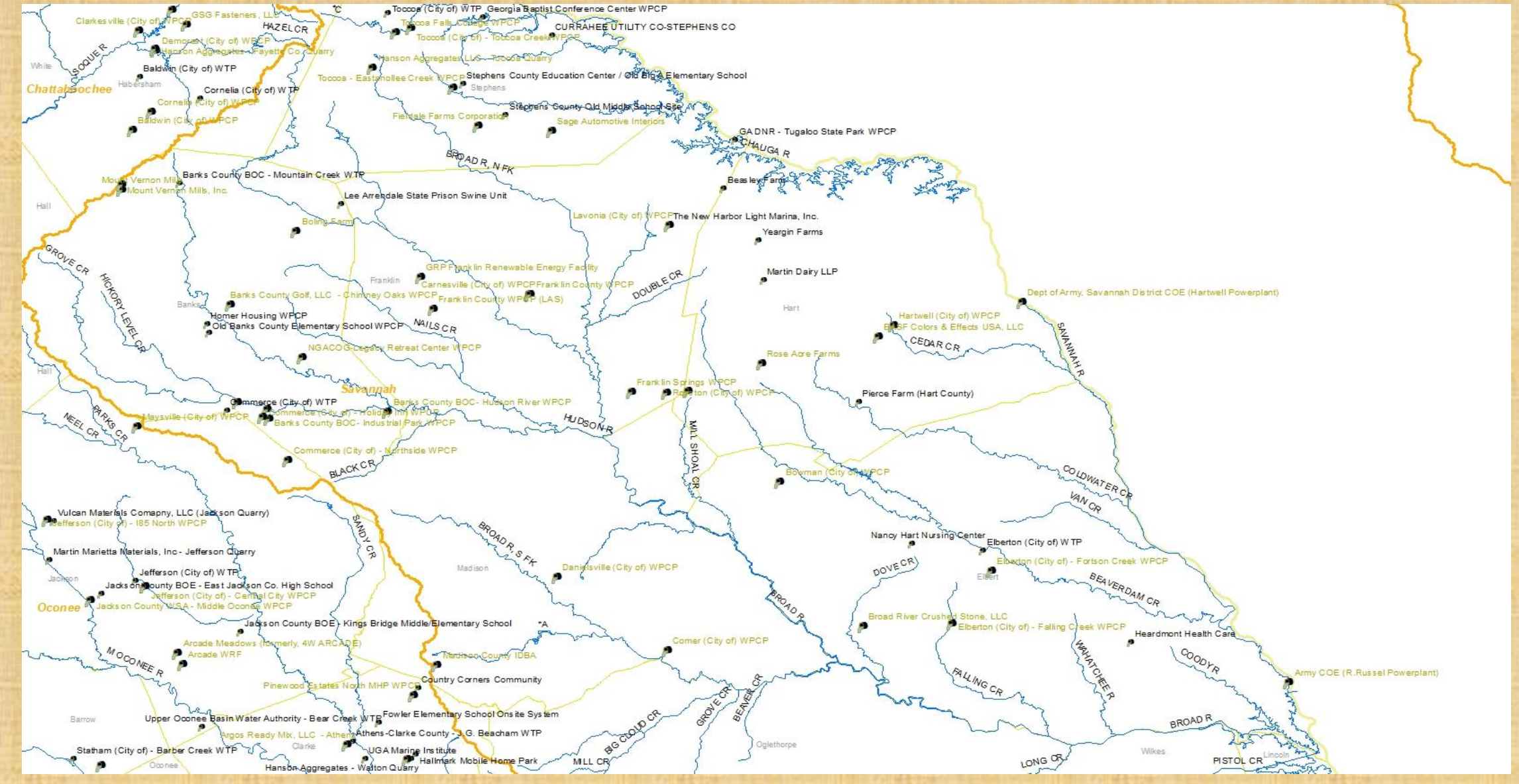
Broad River Fecal Coliform Test



Franklin Springs Current Effluent Coliform Test



Wastewater Facilities that Currently Pumps Reclaimed Water into the Broad River



Benefits of Reclaimed Water

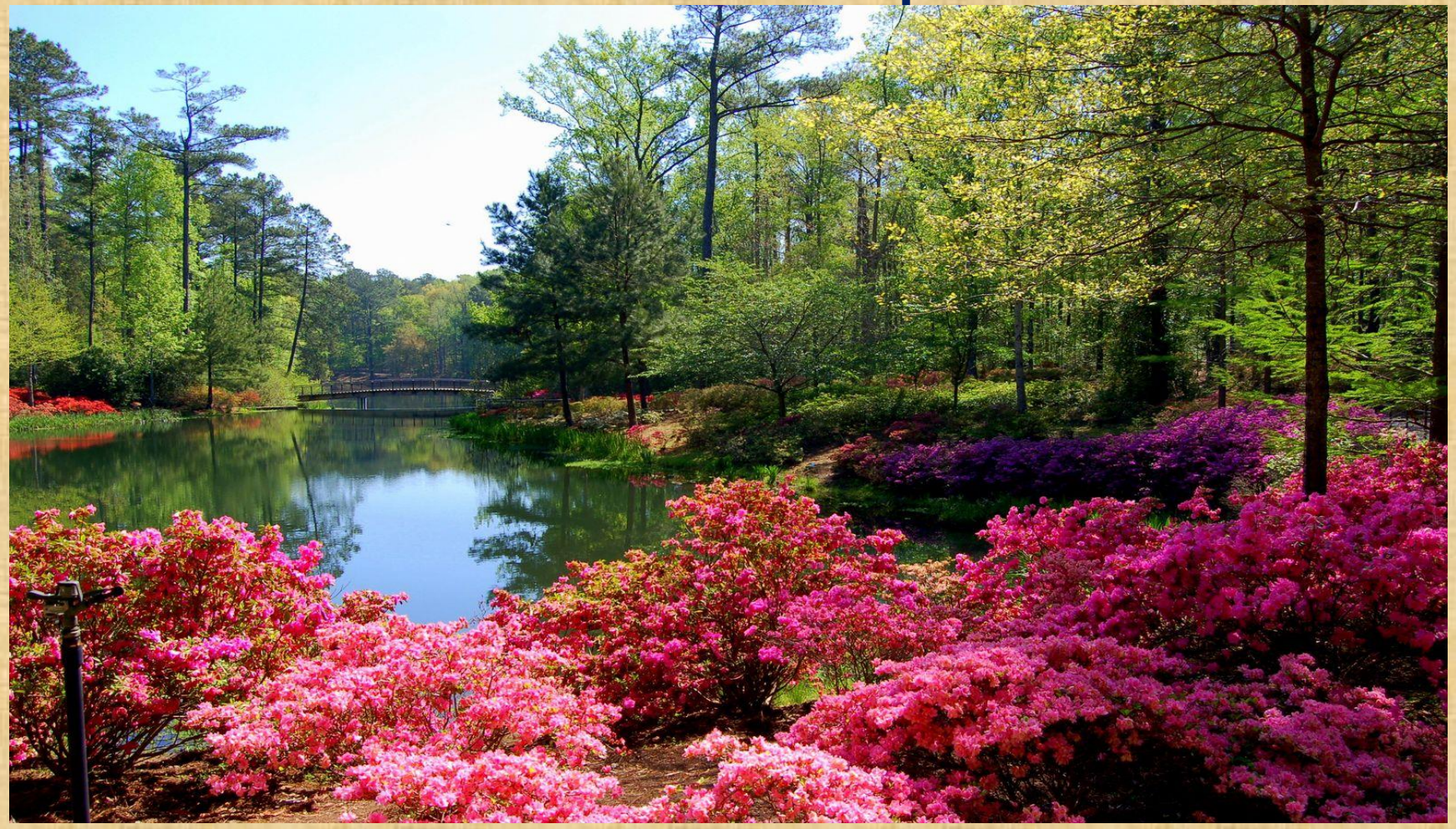
The benefits of reclaimed water into rivers, lakes, and oceans support ecosystems by providing water for water ways that might otherwise be dry or have reduced flows, supporting aquatic and wildlife habitats.

Franklin County's Reclaimed Water

- Franklin county with an approx. population of 25,208, discharges in to the environment average of 2.5 million gallons of reclaimed water per day.

- City of Franklin Springs with an approx. population of 2000 , discharges in the environment an average of 80,000 gallons of reclaimed water per day alone.

This concludes our presentation.



Thank you for your time!