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Water Treatment Process

OZOBOT EVO EDITION

Explore: Design a Water Treatment Process model for Ozobot Evo.

1. Using the *Water Treatment Process Engage and Explore* handout, collaborate with a partner to design an Ozobot map that illustrates the Water Treatment Process.

2. The Ozobot map design should include labels and an explanation on why each aspect of the design was chosen. This will involve computational thinking.

3. Brainstorm with your peers! Be creative!

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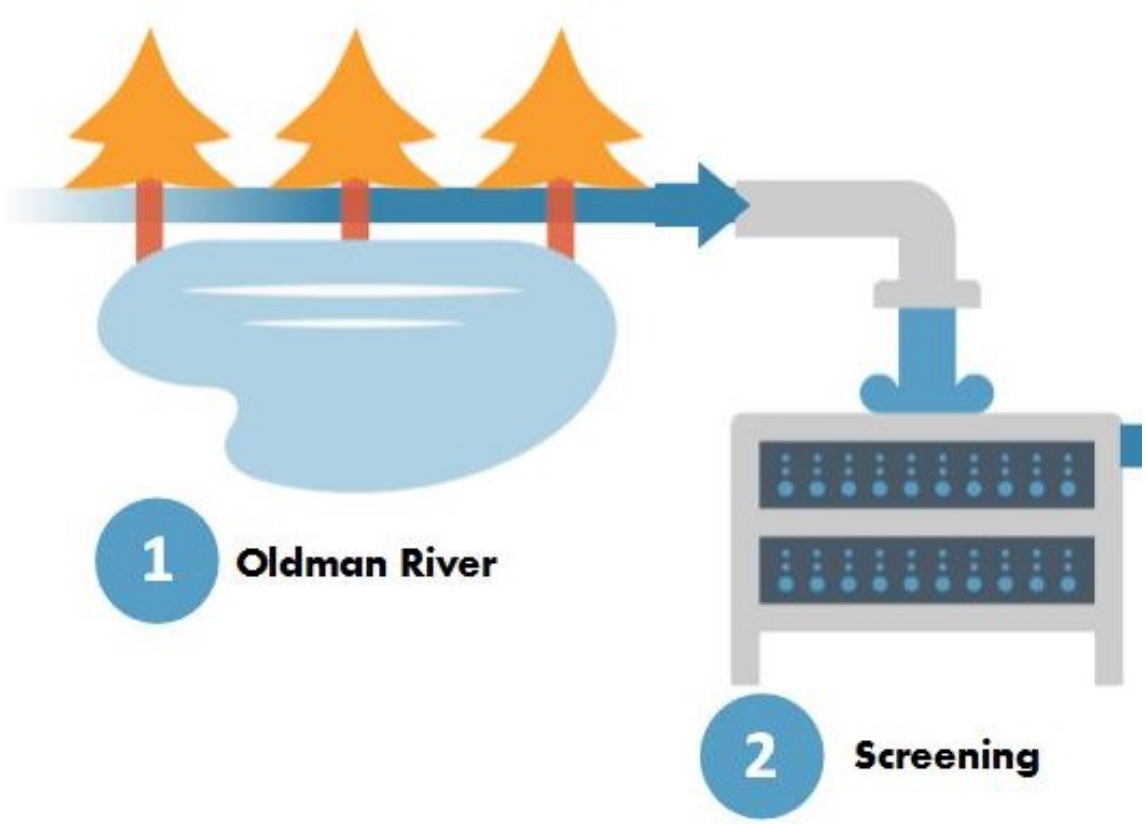
Video Link: https://www.youtube.com/watch?time_continue=266&v=gsq7SBfKjfw

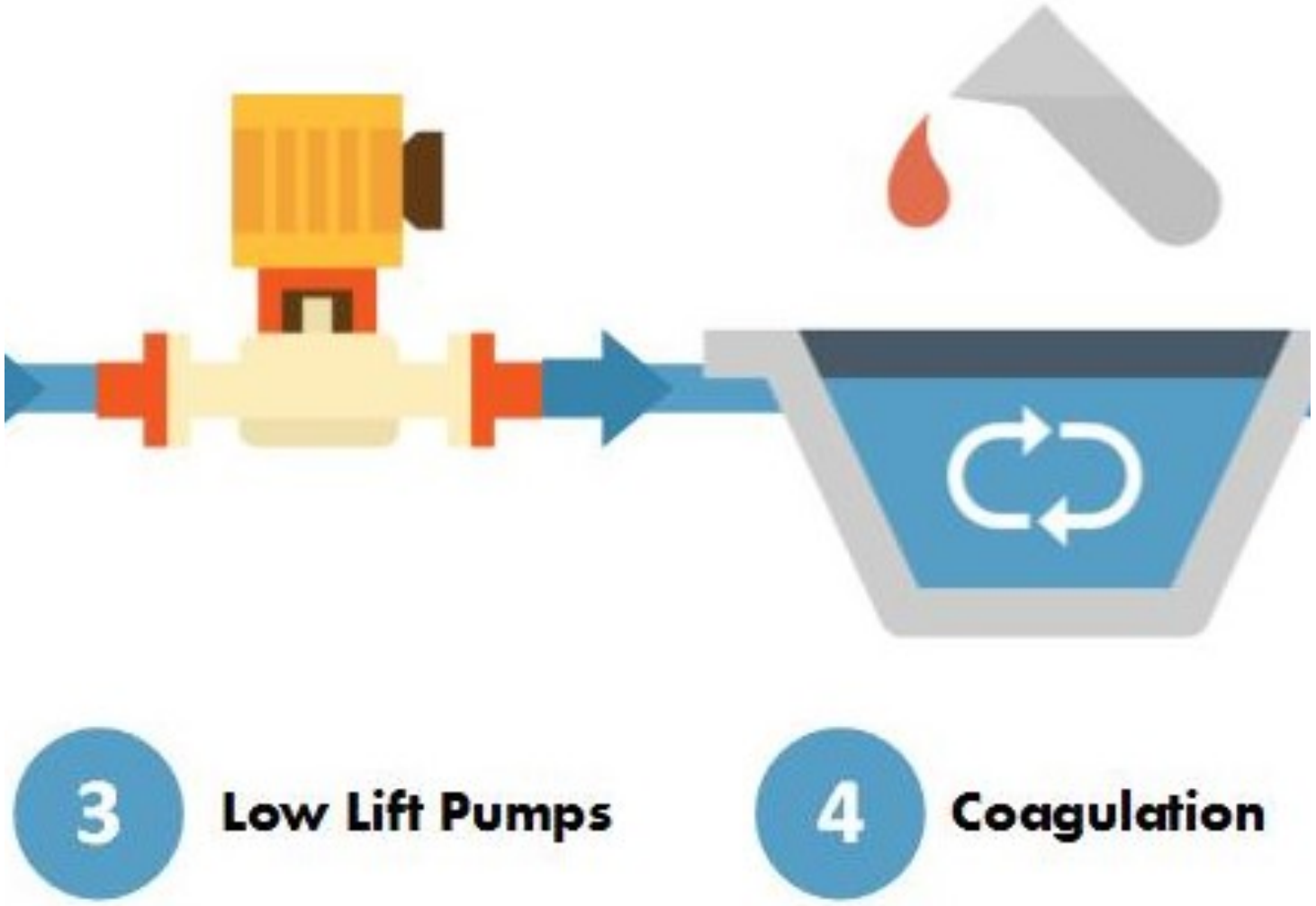


Explain

1. Collection: The water that runs through Lethbridge begins its journey from the Oldman River.

The water we drink comes from rivers, lakes, and aquifers.

2. Screening: The water then enters the Water Treatment Plant, passing through screens, which filter the water of larger debris before entering the treatment process. A screen exists to stop large items that get caught in the pump and cannot complete the treatment process. For Example: branches.



Explain

3. This type of pump is used to lift water from the river into the Water Treatment Plant for the treatment process.

4. The mixer allows for coagulation to occur, which is the addition of approved water treatment chemicals (Polyaluminum chloride) to convert microscopic particles and other contaminants into larger and heavier particles .

Explain

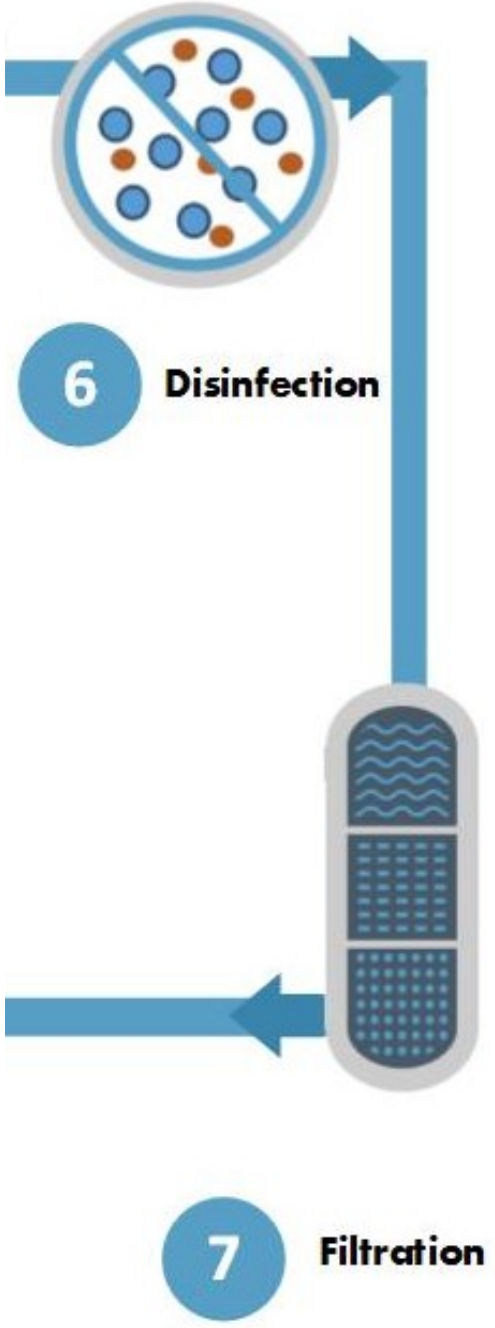
5. Clarifiers are settling tanks; clarifiers use sedimentation, a process that removes the majority of the larger particles from the mixer by settling them in tanks. Activated Carbon is added at this point of the treatment process.

Activated Carbon - is used in the form of powdered activated carbon (PAC). Activated Carbon absorbs organic compounds found in the water and is used as needed to control taste, odour, and colour in the water. The dosage of activated carbon added to the water ranges from 1mg/L to 15mg/L. The concentration of activated carbon remaining in the treated water is not detectable. The use of this chemical is not necessary to produce potable quality water.

Explain

6. Disinfection is the addition of chlorine, which disinfects the water so it is safe for drinking. Chlorine is added after the sedimentation process, before the water moves to the filtration treatment process.

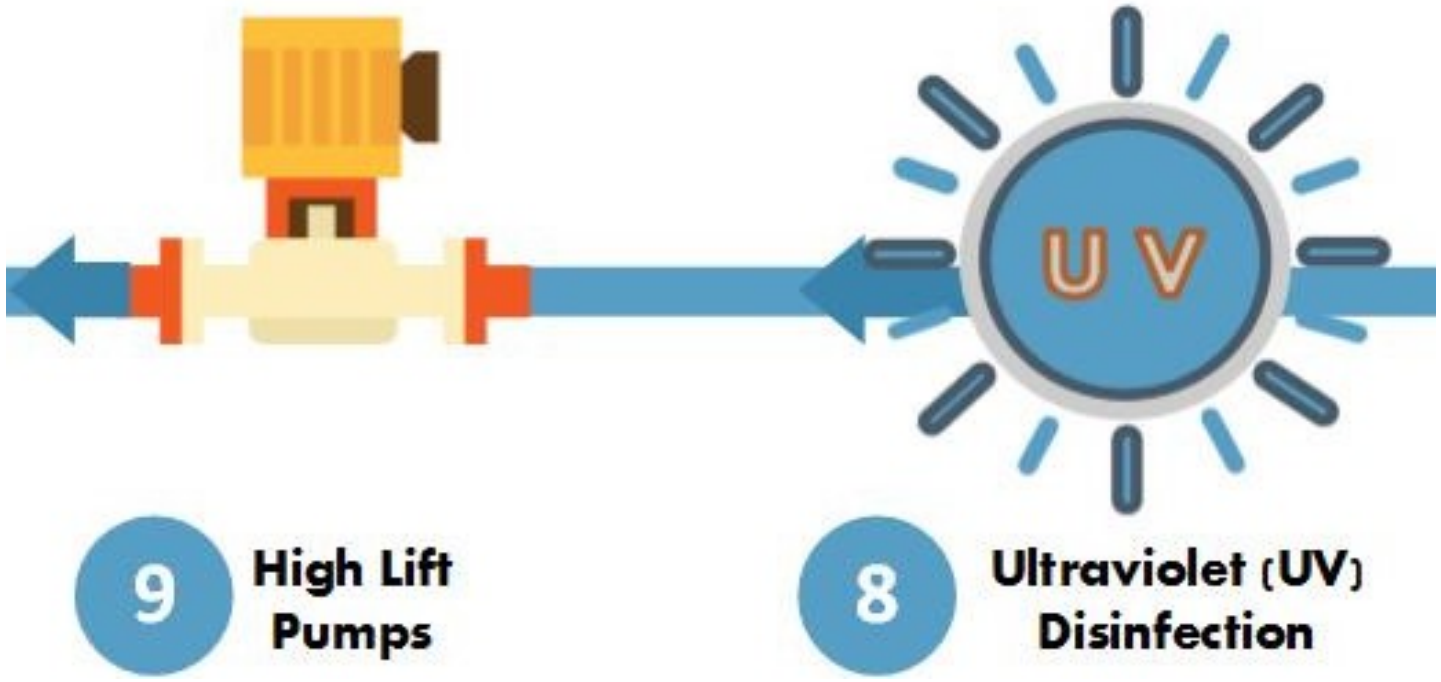
7. Filtration of the "settled" water, from the clarifier, removes most of the remaining particles to thousandths of a millimetre (too small to see).

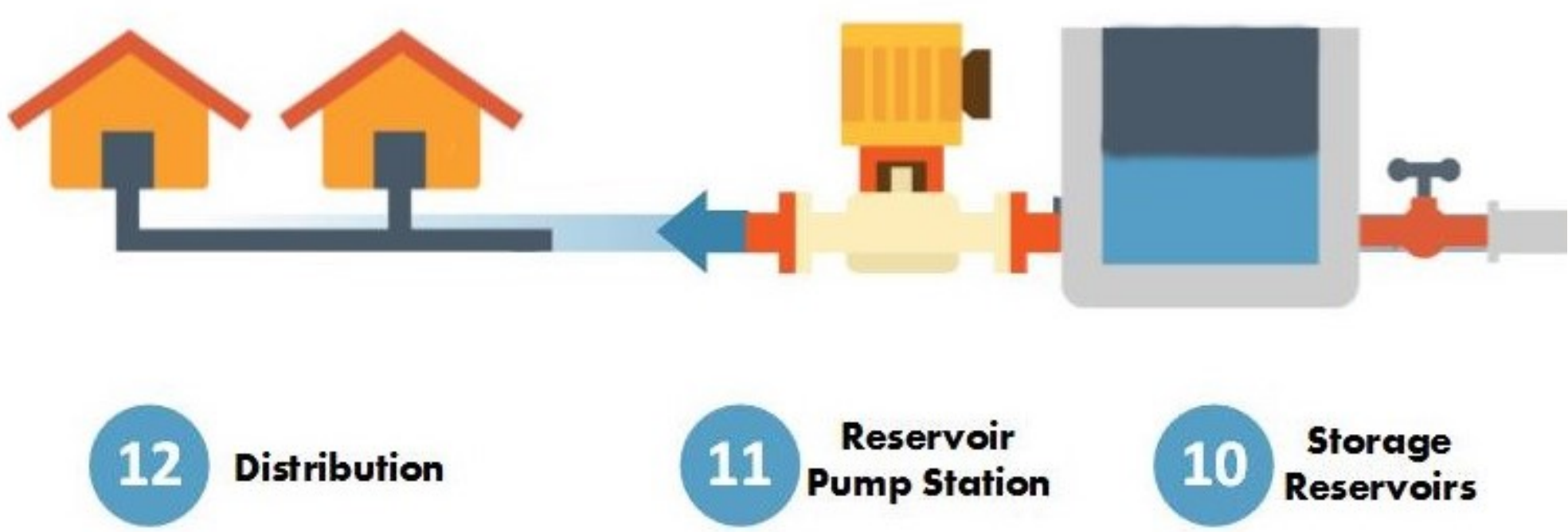


Explain

8. Ultraviolet (UV) disinfection of the water with chlorine is a way to protect public health from disease causing organisms that can be found in the river. The risk to public health is reduced further by treatment with UV light.

9. This type of pump discharges water into a nearby storage reservoir within the city or town.





Explain

10. There are reservoirs within or near cities, where treated water is stored.

11. These pumps distribute the treated water from the storage reservoirs to the taps of the users of that reservoir.

12. Water is pumped into the distribution system of the underground pipes, where it is sent to homes and businesses throughout the city and to surrounding communities.

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Water Treatment Process

OZOBOT EVO EDITION

Elaborate: Design a Water Treatment Process model for Ozobot Evo.

1. Using the *Water Treatment Process Elaborate* handout, collaborate with a partner to design an Ozobot map that illustrates the Water Treatment Process.

2. Use the Ozobot Line Codes, Ozobot Evo App, textbook, internet, and the Lethbridge Water Treatment Plant website: https://www.lethbridge.ca/living-here/water-wastewater/Pages/How-we-treat-our-water.aspx

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Elaborate: Design a Water Treatment Process model for Ozobot Evo.

3. The Ozobot map design should include

- Treatment Process labels
- Ozobot line codes
- An explanation on why each Ozobot line code was chosen for each Treatment Process. This will involve computational thinking.

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Ozobot Line Codes

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SPEED

SNAIL DOSE

SLOW

CRUISE

FAST

TURBO

NITRO BOOST

DIRECTION

GO LEFT

GO STRAIGHT

GO RIGHT

LINE JUMP LEFT

LINE JUMP STRAIGHT

LINE JUMP RIGHT

COOL MOVES

BACKWALK

SPIN

ZIGZAG

TORNADO