

CPP Water Treatment Plant



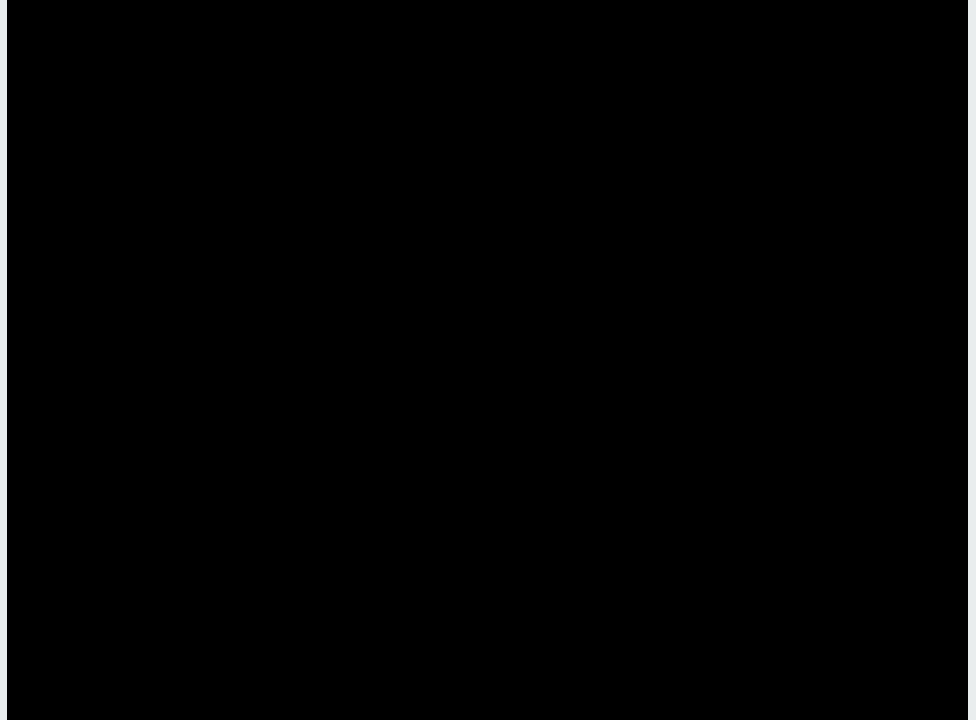
Presented By:

Group 2

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If video doesn't work, use link:
https://youtu.be/rg3B_xLj_nk

Project Description

Project: Preliminary Plant Design

Location: Cal Poly
Pomona

5 Experiments performed



Testing



Water tests required for plant design

- Filtered, tap, and pond water
- Pond water used as influent
- Pond water data obtained used for plant design



Retesting?

Two experiment:

- Experiment 2: Coliform
- Experiment 5: Dissolved Oxygen and microbial investigation

Retesting? Cont.



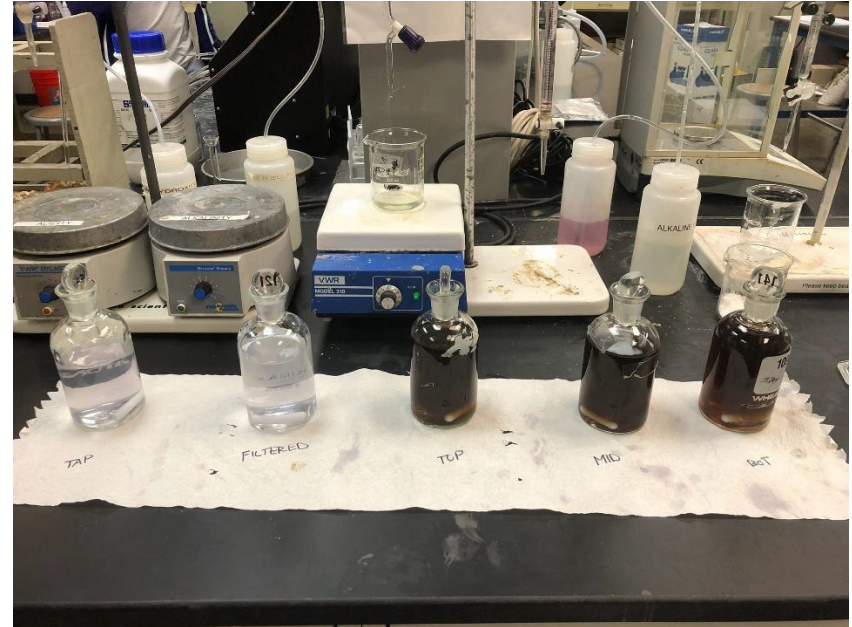
Exp #2: Coliform (indirect way to test bacteria)

- Lab required to observe coliform in the incubator after 24 hours.
Obtained data 48 hours later
- and...

Retesting? Cont.

Experiment 5: dissolved oxygen and microbial investigation

- Unable to get duck pond water to clear
- No clear reason or explanation
- Further test must be conducted
- Different location of pond or just retest



Water Quality Parameters



- Turbidity
- Coliform/Disinfection
- Color
- Dissolved Solids

Why are these parameters important?


Turbidity

Based on EPA standards,

- EPA Primary standard
- Measures the cloudiness of the water

National Primary Drinking Water Regulations

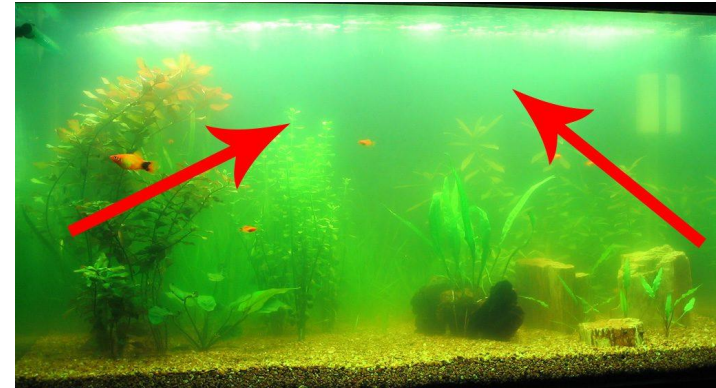
EPA 816-F-09-004 | MAY 2009

Contaminant	MCL or TT ¹ (mg/L) ²	Potential health effects from long-term ³ exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) ²
 Turbidity	TT ²	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites, and some bacteria. These organisms can cause short term symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff	n/a

Turbidity Cont.


Based on EPA standards,

- Used as an indicator of water quality
 - High turbidity = higher level of disease
- Has no max contaminant level



National Primary Drinking Water Regulations

EPA 816-F-09-004 | MAY 2009

Contaminant	MCL or TT ¹ (mg/L) ²	Potential health effects from long-term ³ exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) ²
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Turbidity Cont.

Based on EPA standards,

- Has no max contaminant level
 - How do you contain turbidity? Or get rid of cloudiness?
 - Through indirect means: microbes/coliform, dissolved solids, color

National Primary Drinking Water Regulations

EPA 816-F-09-004 | MAY 2009

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Coliform Disinfection



Based on EPA primary standards

- All microorganism levels should be zero
- Water is safe and clean to drink without getting sick

Color

If the water color is not clear, people are less likely to drink it.

The color outcome of the water samples are based on how much chemical used to treat the water.

Not only should water be safe to drink, it should look good/safe

https://www.youtube.com/watch?v=MeGDE_4wloo



Dissolved Solids



Part of secondary standards

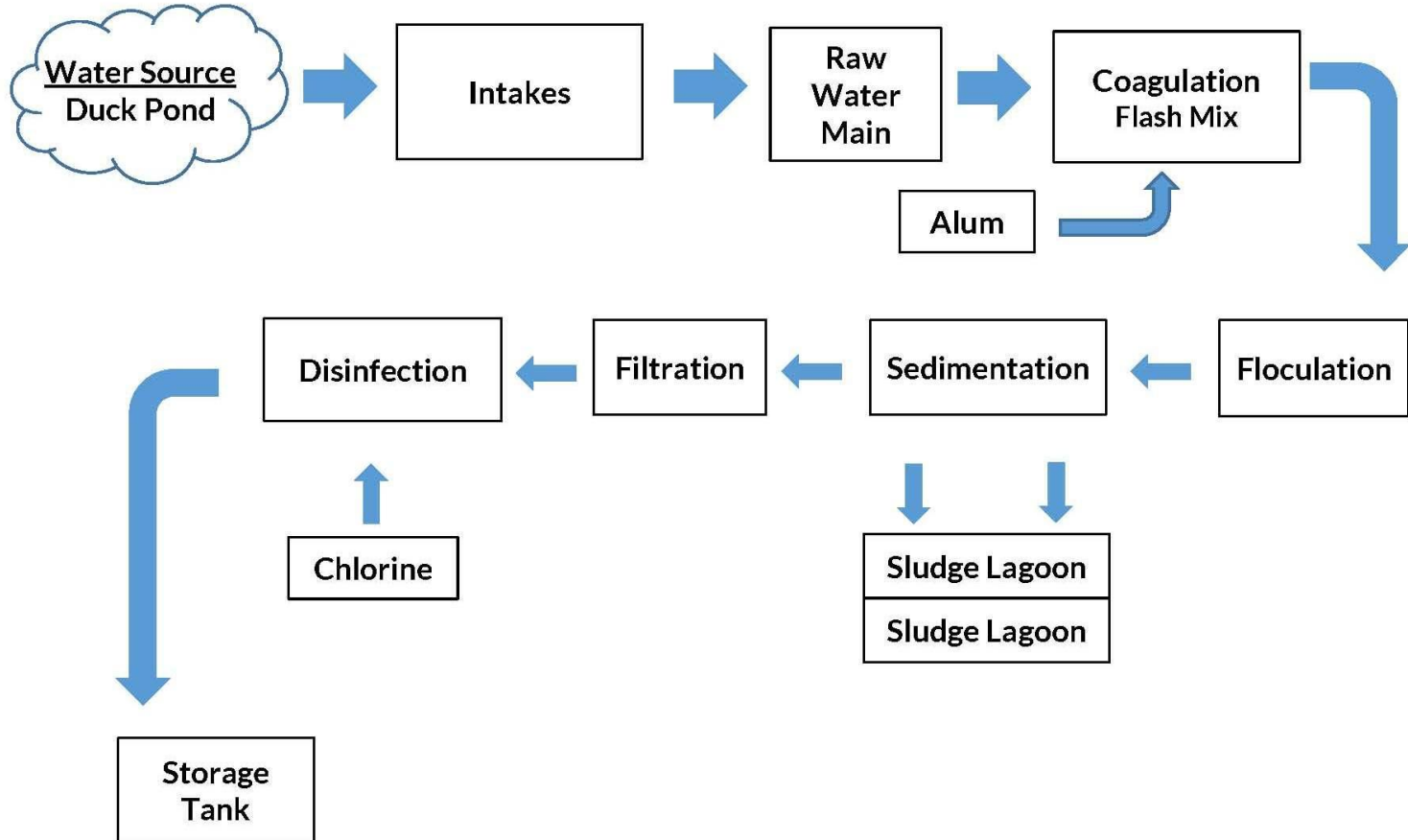
Basically metal and minerals such as magnesium, potassium, sodium.


Will affect taste

If taste is not good, people might not want to drink it even though the water is clean.

Not only should the water look good and be safe, it should also taste good.

Water Treatment Plant Process Diagram





Now that you know what the water treatment plant is
about....

What will it look like?

The Structure

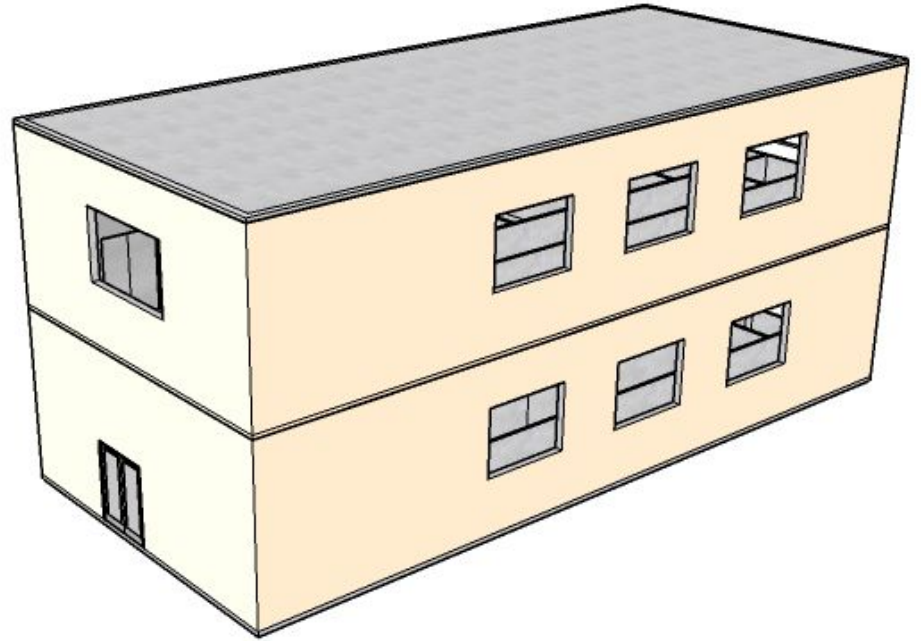
Reinforced Concrete

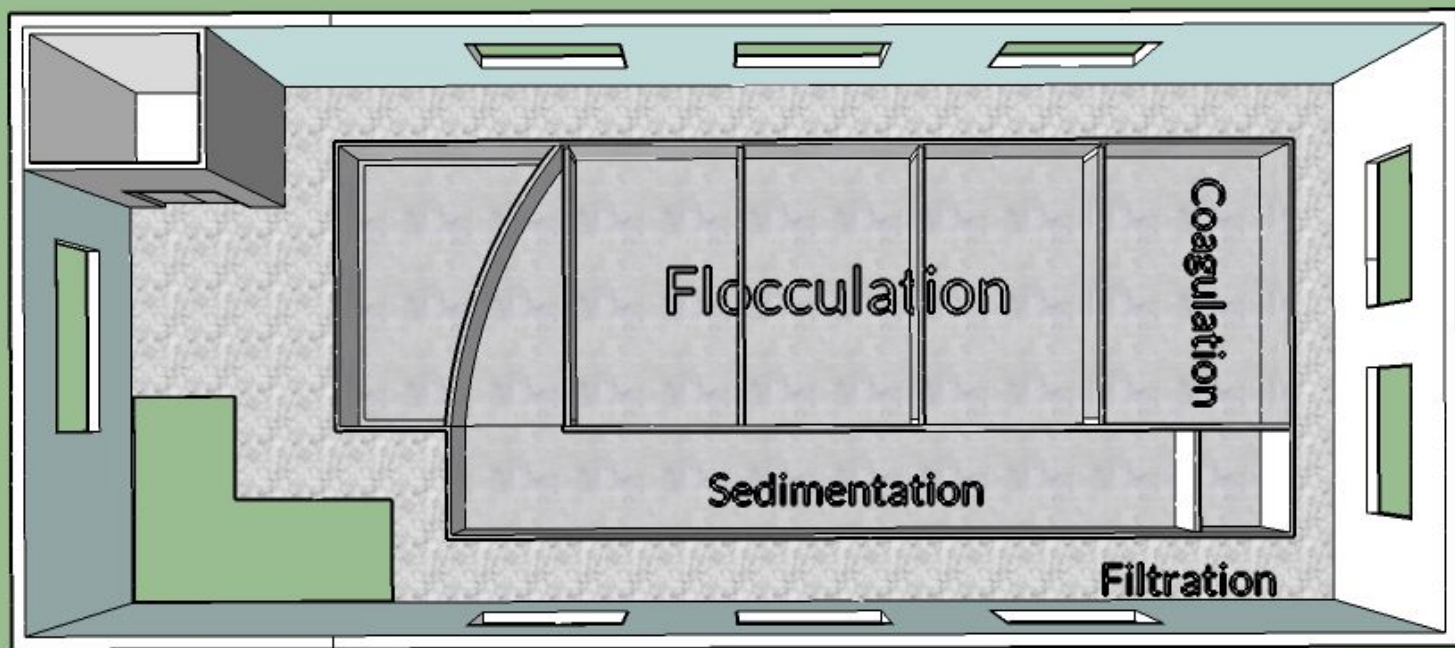
Around 31 feet in height

- 2 stories

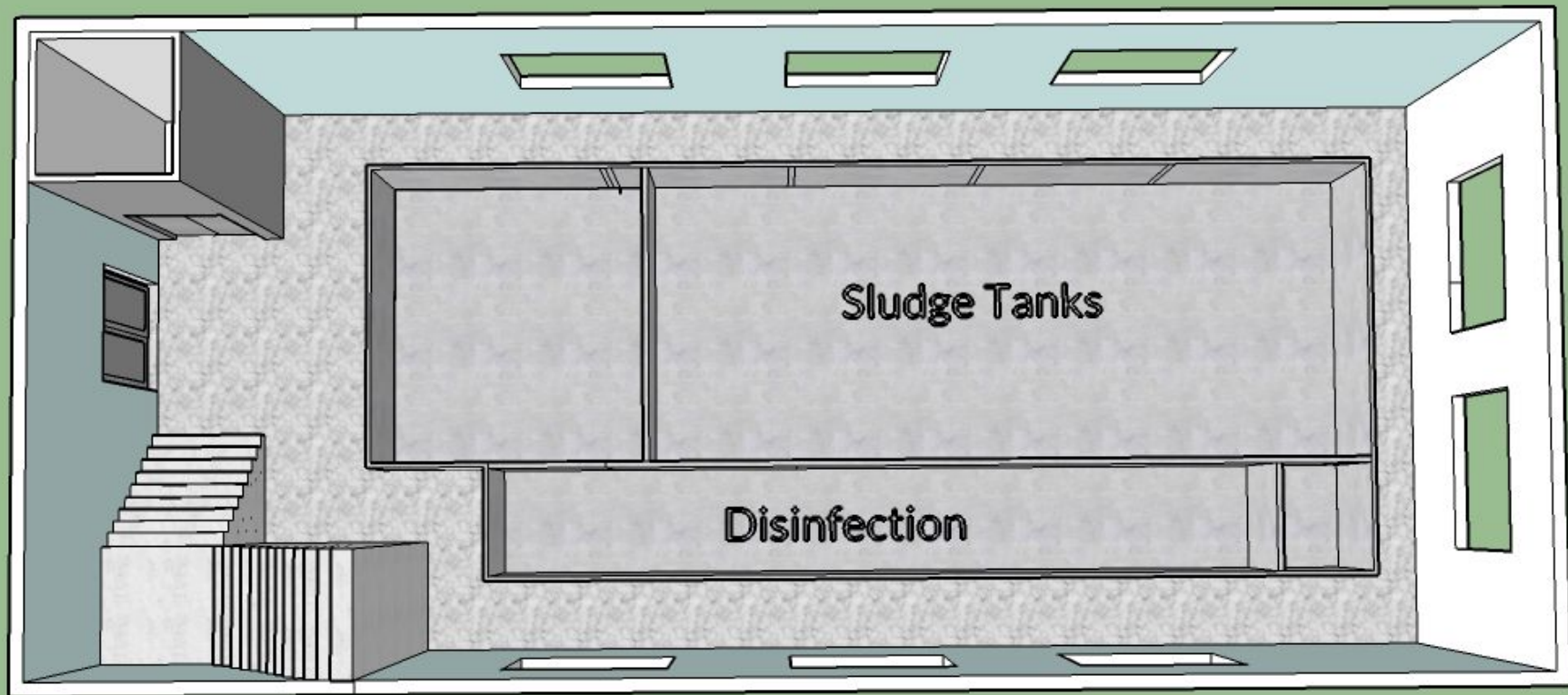
Sustainability (green design)

- Use recycled materials
- Use swales to capture rainwater






2nd Floor



1st Floor

An aerial photograph of a campus featuring a large, tan-colored building with a red-tiled roof in the foreground, a smaller tan building with a white roof in the center, and another tan building with solar panels on the right. A pond is located in the lower right, and a road is at the bottom. The area is surrounded by dense green trees. The text "Proposed CPP Water Treatment Plant" is overlaid on the image.

Proposed CPP Water Treatment Plant



Proposed CPP Water Treatment Plant



THE END

(FINALLY)