

# IDC

## Plumbing

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## Plumbing Narrative

We originally had very little intention to do anything sustainably regarding our plumbing system. We were told anything we tried would be relatively negligible in the end and our boiler for our plumbing system was alright tied into our Cogeneration System with the helicopter turbine engine. A few weeks into the project, the detail oriented designer decided to split things into greywater and blackwater systems. There were only several small changes to that system for the rest of the semester until two days until the black and whites were due.

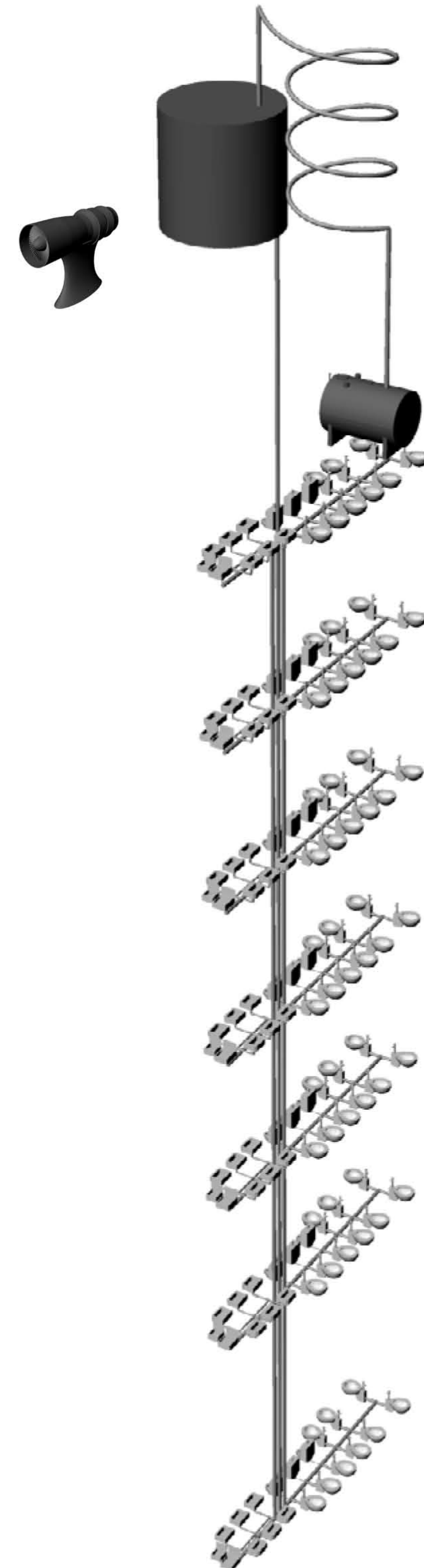
It was at 4 am when an idea occurred to the detail oriented designer while seeing a solar still that is used to produce pure drinking water from sea water by way of the process of distillation.

Distillation is a process that utilizes a heat source to vaporize water. The objective is to separate the contaminants and pure water molecules. This is achieved by heating the water to its boiling point and it begins to evaporate at which point the temperature needs to remain constant. A stable temperature above the boiling point that keeps the water boiling will ensure continuous vaporization, but prohibits drinking water contaminants that have a higher boiling point than water from evaporating. Then, the evaporated water is captured and guided into a system of tube into another container. Lastly, it's removed from the heat source, the steam condenses and it changes states back to water [now pure drinking water] while the contaminants are left behind in the original container.

Distillation was a perfect additional system to pair with the Cogeneration System because it utilizes the exhaust. This is effective because the temperature of the heat source needs to be kept at a constant, which the helicopter turbine engine easily provides because it runs 24 hours a day, 7 days a week, 365 days a year. A second turbine engine will also produce more electricity, meaning more additional income, plus saving money on water and sewage. Not a drop of water would leave the building unless someone drank out of a fountain and left the building to urinate. All of the blackwater and greywater we combined in the tank and got stuck behind could be emptied by a trap somewhere and used for maybe a fertilizer for our green roof or our planters on our property.

Unfortunately our so many of our unconventional ideas are theoretical and difficult to put in to plan. Maybe the District of Columbia will give Boeing a 25% discount on their water utility bill like the city of New York has for the Bank of America.

After further researching the biodiesel conversion setup, we found it was necessary to have distilled water for the process. Having our own source of distilled water on site would make our production process more efficient.



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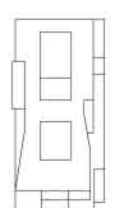
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#### Key Plan



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Titlesheet

P-001