

INNOVATION LAB

STUDENT PROJECT TEMPLATE

Date	7-10-2016
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Team Members	Darren[leader] Shane ,Claudius, Dereck.
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Std/Section/ House	Std :7 section :C house: St.Patricks
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Class Teacher/ House Leader	Mrs.Odella John house leader; Darren Dsouza
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OBA Mentor	Mrs. Andrea Britto
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Title	Water Conservation During Heavy Rain and Floods ;By Construction of Sump Tanks.
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<p><u>Social Problem</u></p> <p>1)Effects normal life</p> <p>2)Heavy floods leading to</p> <ul style="list-style-type: none">• Destroying crops-this reduces the business and hard work taken by the farmers leading to food inflation .farmers go trough heavy depression causing death for some.• Flooding leads trough heavy traffic jams-making it difficult for people to move out of their houses which makes it difficult for them to go to work. Occupies lots of time and authorities may even block a few roads sometime. This leaves thousands of people stranded for hours without food or water. <p>3)Life stalk in these flooded regions also faces hardship because of fodder</p> <p>4)Diseases will occur ,sewage pipes are often broken and leaks into the flood water leading to water</p>

borne diseases such as cholera ,typhoid etc.....

5)The stagnant water floods house-the excess water enters houses with sewage and debris and makes living very difficult. This causes damage to the wood and furniture inside the house. IN some cases very poisonous insects are carried with the water, sometimes even snakes, mosquitoes etc.....

- This takes place in places like Japan ,China ,Manglore ,Goa etc.....most of them are mainly near water bodies because of tsunamis or very high tides. The main continent this takes in is Asia.

Overall highlight

This project highlights the social man-made disaster of heavy rains causing floods and this especially in Bangalore leads to crippling the lives of innocent people especially those living in the slums as they are left with nothing causing severe damage. This is a very interesting concept of storing the rain water \flood water which is excess by constructing underground tanks \ sumps. Over the tanks small openings should be made the collect the excess water at any time of the year keeping our city clean and safe from damage.

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Proposed Solution (CLAUDIUS)

Solution; construction of underground tunnels or sumps to conserve water.

- This helps by reducing the excess water from entering homes and blocking roads .It protects the people and makes them feel safe. When the water enters the tunnel it can be reused for many purposes.ie harvesting .we need team work, government support ,we also need people around the area to support.We also need generators produce power to help make this project successful.
- We can save water which can be used for the future like in times of water shortage. This water can rerouted for watering the plants, cleaning purposes, and other minor purposes.
- *How Can we achieve this?*
- First with the help of area representatives schedule and discuss this in a meeting

- Then bring out a proposal, and discuss with the local government people.
- Once approved, plan for the budget , man power and the resources
- Plan the area of building the underground sump/ location, as attest run in one locality.

Calculating how much water you need to store depends upon several factors like annual rainfall, typical usage totals and specific intent for collected water. For instance you could simply reuse rainwater for a small garden, or to irrigate landscaping or even as an alternative plumbing water supply for toilet flushing. For an in depth study you should consult a professional system designer but for a simple calculation you can use the following guideline:

During a one inch rain, approximately 620 gallons of water can be collected for every 1,000 sq. ft. of surface area. That means an average house roof will collect over 1,000 gallons for every inch of rainfall. Commercial buildings will often have flat open roofs perfect for collecting rainwater and although rainwater cannot be used for every potable water application, the majority of potable water usage can be offset using recycled rainwater.

Tasks & Timelines (SHANE'S IDEAS)

- Once the local representatives have approved, a sump is dug up and the water tank is placed underground. This is done before the monsoon season, time period- march and May.
- The water is collected and level is marked to see the capacity collected.
- The water levels are recorded by the representatives, and this water can be rerouted for the watering of plants in times of water shortage. Some of the most efficient ways we can do are :
- Fiberglass

Fiberglass tanks are light-weight, reasonably priced, and long lasting. They are built in standard capacities from small 50 gallon barrels to much larger 15,000 gallon tanks and are available in both vertical cylinder and low-horizontal cylinder configurations. Smaller fiberglass tanks (i.e. under 1,000 gallons) are expensive for their size, so polyethylene might be preferred. Tanks for potable use need to have a USDA-approved food-grade resin lining and the tank should be opaque to inhibit algae growth. The durability of fiberglass tanks has been thoroughly tested and proven to last for years and can be easily repaired. The fittings on fiberglass tanks are an integral part of the tank, eliminating one common potential problem - leaking fittings.

Polyethylene

Polyethylene tanks are probably the most common type of tank being sold today and are readily

available at most farm, ranch supply, and large landscape retailers. They vary greatly in size, shape,



and color, and can be used above or below ground. Most of the tanks stocked by farm and garden supply houses are usually for above-ground installations. For buried installation, specially designed and reinforced tanks are necessary to withstand soil expansion and contraction. Polyethylene tanks are comparatively inexpensive, lightweight, and long-lasting and are available in capacities from small 50 gallon barrels to large 10,000 gallon tanks. They are lighter in weight than other types of tanks, including fiberglass, and consequently, are cheaper and easier to transport.

Polyethylene tanks tend not retain paint well, so use pre-painted (i.e. pigmented) tanks manufactured with opaque plastic. Black and dark colored tanks will absorb heat and thus, should be shaded or buried. The fittings of these tanks are aftermarket modifications and are easy to plumb. However, the fittings are not always tight, and should be checked for leakage occasionally.



General Guidelines (DERRECK)

General guidelines for all tanks include:

- Before you start, conserve, conserve, conserve. Cutting your water usage will reduce the size of tank you need and save you money.
- Remember - water is very heavy. (i.e., 500 gallons weighs over 2 tons!)
- Make sure the tank is easy to access and maintain.
- Tank should be opaque or darker, either upon purchase or painted later, to inhibit algae growth.
- For potable systems, storage tanks must never have been used to store toxic materials.
- Tanks must be covered and vents screened to discourage mosquito breeding.
- Tanks used for potable systems must be accessible for cleaning.
- Install first-flush and screening devices prior to water reaching the tanks to keep it as fresh and clean as possible.
- Keep tops of tanks free of debris to make it harder for animals to reach the top of the tank.
- Buried tanks should be located in well-drained soil and location.
- Water weighs about 8 pounds per gallon so plan your pad, if any, before installing your tank.
- Plan where storage tank overflow should be piped or directed to. Keep it away from underneath your holding tank to prevent pad erosion and to keep animals away

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