



June 11, 2019

Project : **Phases 2 and 3 of Barangay Old Sagay iHome Community Drainage System and CWTS**

Subject : **Progress Report and Additional Works**

1. General Information on Latest Developments Regarding Drainage System, Phase 1 thru Phase 2.
  - 1.1. The storm drainage system along the road between the school and housing project was extended by a total of twenty-one (21) lineal meters (69 feet, more or less). This additional work, inclusive of pre-cast panels and catch basins shall constitute Phase 2.
  - 1.2. The first extension of 16 lineal meters was necessary in order to provide a connection branch for future developments. The site development plan for the iHome housing project was recently revised and the drainage plan must be adapted to this new plan. New housing units will be allowed to be built towards the east. Refer to Picture No. 1 and 2.
  - 1.3. The second extension of five (5) lineal meters was necessary in order to provide a termination point for the drainage system. The termination point is a cistern where both the rainwater collected by the storm drainage and pre-treated effluent from the CWTS will be stored to be used as irrigation water. Refer to Picture No. 3.
  - 1.4. Pre-cast concrete panels were also added to the portion of the drainage canal where the community road intersects with the main road. Refer to Picture No. 3 and 4.
  - 1.5. Pre-cast concrete panels were also added to the part where the drainage system has encroached on the lots of two houses. The drainage canal is constructed on lots allotted to iHome so as not to get in the way of the City Engineer's plans on road paving in the future. Refer to Picture No. 2 and 3.
  - 1.6. Catch basins will be constructed at the corners of intersecting roads. This will not only serve as branch connection for future drainage system for the community roads but will also control the flow of debris carried by surface run-off when it rains and is discharged into the canal that also serve as a storm drainage. Refer to Photos 3 and 5.
  - 1.7. Four uPVC drums for the primary treatment tanks has been delivered to the site.

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2. Additional Works to be referred to as Phase 3

2.1. With the confirmation of the proposed site for the homestead garden, secondary treatment and cistern tanks are proposed to be constructed. The primary treatment tanks, secondary treatment chambers and cistern make up the Communal Wastewater Treatment System (CWTS). Refer Picture No. 1

2.2. To maximize the collection of surface run-off rainwater the drainage canal will be extended from the cistern's rainwater collection chamber towards the lower end of the sloping main road. This extension will also serve as a sort of over-flow reservoir if and when the cistern becomes full. This will keep some of the excess water instead of just discharging it. Excavation work on this item has actually started. Refer to Pictures 3, 4 and 6.

2.3. The greywater line installed by volunteer Partner-Builders has been damaged as it was not covered properly. This greywater line is used for directly draining the discharge from the baths and kitchen sinks. Depending on each individual household's practice, laundry wastewater flows into the defective greywater line. Refer to Picture No.7.

It is proposed that a covered drainage canal be constructed to replace the greywater line. This canal is a narrower version of the drainage canal already constructed. It will also serve as a protective cover for the blackwater line, i.e., the pipes that will convey the effluent from the septic tanks to the primary treatment tanks. This new drainage system has two useful functions:

2.3.1. This will make maintenance of the blackwater line easier.

2.3.2. It will enable the collection of rainwater from the roof of houses that will consequently be deposited in the cistern. This will keep the water in the cistern at useful level. From simple observation only, the output of water from the two primary treatment tanks will not be sufficient to keep water level in the cistern so it can be used to irrigate the garden. The addition of rainwater into the system will dilute the chemicals from laundry water; it is common clothes-washing practice to use bleaching solutions. Refer to Picture No. 8.

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### 3. Related Developments

#### 3.1. Ihome is presently engaged in discussion with a foreign NGO to develop the homestead garden.

The proposed development involves fencing, lighting and of course irrigation and cultivation of the designated garden area which is almost 1 hectare in size. The proposed homestead garden will use the water from the cistern that will be constructed.

#### 3.2. The status of this project may be described as “approved-in-theory” which means that there is a commitment to pursue the proposed project but there is no definite indicator of how far the development will be carried out.

#### 3.3. It is proposed that in order to make use of the water collected in the cistern upon its completion, a smaller version of the proposed homestead garden be carried out. Budget for this endeavour will come from savings from the original budget for the CWTS. The effort to recycle water and harvest rain water is made more fruitful if used for a productive end. This will involve the procurement of additional pvc drums, polyethylene pipes and a small booster or submersible pump. The following are screen shots from youtube videos about drip irrigation.



Two types of water tanks but both are being used for a gravity-fed drip-irrigation system. The one on the left is a makeshift elevated tanks using plastic or pvc drums. The one on the right is made of stainless steel and quite expensive. Water in the tanks are pumped from a source at a fair distance from its location. Both were featured in Youtube and the videos featured farms using drip irrigation in the Philippines. For the proposed homestead garden drip irrigation helps in minimizing direct contact with the recycled water as compared to common plant-watering methods.

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The photo at the left shows how pipes are arranged when using the drip irrigation system. The red knobs are control valves that can be shut off to cut the supply of water in garden plots that are not in use, for example, after the plants are harvested. The pipes are permanently positioned.



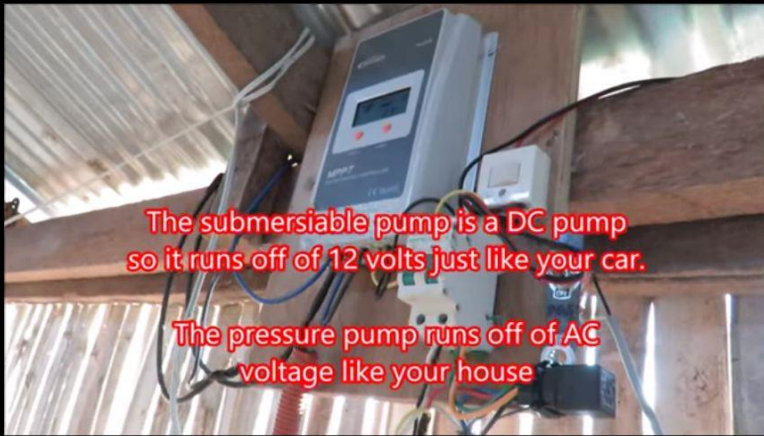
Water spurt from holes in the pipes directly to the plant. Very low pressure is required for the system to work thus a simple elevated tank is all that is needed.

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The system where the stainless tank was used (previous photo) use two pumps - a DC or battery powered submersible pump and an AC powered booster pump. These are small pumps because these merely supply water into the tank and not to provide pressure in the system. The battery is charged by a single solar panel (see photo at bottom left corner).



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