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Potable Water Distribution in Rural Paraguay

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Abstract

To provide an overview about the potential to supply water to another 500 families in the near future, the following presentation will outline the process of determining the size of the required system, investigating the local water sources, and implementing a five kilometer radius around a central water tower for immediate provision of water to an additional 250 families. The new system will include a gravity driven water distribution system, primarily consisting of a water tower, well pump, and a pipe network that leads to each individual dwelling. Team Flow’s distribution network would be linked into six existing smaller community water systems that currently supply 250 families. The system would have the potential to supply water to another 500 families in the near future.

This report contains an analysis of numerous components that could be used to construct the system along with an overarching recommendation of which components Team Flow feels when combined, would create the best system.

Objectives/Requirements

- To provide an over-arching recommendation of the best combination of practices and materials to create and maintain a water distribution system.
- To integrate the existing water networks in an attempt to create redundancy and minimize cost.

Methods/Process

- Determine the size of the required system
- Investigate the local water sources
- Evaluate water consumption within the community
- Determine the water table depth
- Research different types of pumps that could be used
- Consider different possible pipe materials
- Determine if any geographical or technical impediments are present
- Identify possible water contaminants and remediation processes
- Communicate with end user to determine their unique needs and/or desires
- Consult WPI staff for assistance with obtaining previous related works

Recommendations

- Groundwater sourced water system due to ample natural supply
- Gravity powered system to conserve energy
- Water tower placed in a geographically favorable location to provide 40-70 PSI at each tap
- Deep well submersible pump recommended based on aquifer depth
- Utilization of the existing pipe network to minimize cost and installation time
- Implementation of PVC pipe to minimize cost
- Pipes buried six feet underground to avoid disruption from machinery and agricultural traffic
- Monthly tests performed for microbial and industrial diseases common to agricultural regions

References


Pit, Robert. Water Demand and Water Distribution System Design Web.


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