AGEN 120

Water Supply and Sanitation

Spring 2011

Class Term Project

Instructor

Dr. Walid H. Shayya

Objectives

At the completion of this project the student shall be able to plan an entire onsite water supply and wastewater treatment/disposal system for a small commercial operation. The project is specifically intended to cover a realistic situation where the student will focus on a system that meets specific requirements following the guidelines covered in class.

Project Outline

1. Cover Page (Title, Course, Name, etc...)
2. Table of contents
3. Introduction
   a. Description of the situation and the special problems which must be overcome
   b. Assumptions about the situation
4. Water supply system
   a. Estimate of water need
      i. Total daily need
      ii. Peak use
   b. Sizing of components
      i. Pump(s)
      ii. Tanks (including an intermediate tank, if needed)
      iii. Distribution system
   c. A layout of the water supply system outside of the facility
5. Wastewater disposal system
   a. Size of system
      i. Daily output
      ii. Size of components
      iii. Sizing and description of disposal method
   b. A layout of the wastewater disposal system showing major components (including drains)
6. Summary
   a. Total cost estimates of system components
   b. Summary of knowledge gained from project
   c. Potential issues to be considered with the design

Suggested Situations:

The following situations are given for use on the project. These situations have prior approval of the instructor. Any other situation must be discussed with the instructor to determine whether it entails a viable project, keeping in mind that the use of a "real-life" situation is encouraged (please do not hesitate to contact the instructor about an idea for a project).

	Farm	Apartment	Campsite
Size	5 in family 60 milking cows 35 young stock & dry	6 3-bedroom Apartments Maintenance Area	65 sites (25 improved sites and 40 complete hookup)
Well Depth **- size** **- location** **- feet of water in casing** **- flow**	100 ft 6" between house&barn 75 ft 11 gpm	75 ft 6" within 100 ft 20 ft 10 gpm	85 ft 6" your choice 65 ft 15 gpm
Discharge Pressure	30 - 50 psi	30 - 50 psi	30 - 50 psi
Hardness	6 grains/gal	5 grains/gal	7 grains/gal
Water Quality (coliform)	0 per ml	0 per ml	0 per ml
Iron	0.3 ppm	0.3 ppm	0.3 ppm
Sulfur	None	None	None
Percolation Rate	15 min	20 min	20 min

References

Home Depot ProBook (2 copies available on reserve in the library)

State Health Department Bulletin on Individual Waste Disposal Systems (a copy will be available on reserve in the library)

Online resources are readily available and could be searched for through many existing search engines (including www.google.com). A sample of retailer websites that sell useful components include:

- www.grainger.com
- www.lowes.com
- www.watertanks.com
- www.NorthernTool.com (including water pumps and pressure tanks)

Project Deadlines

To allow for the successful completion of the term project, two (one interim and one final) reports must be submitted (all of the required reports must be typewritten). The timing of these reports are meant to keep you on task and maximize your understanding of the topics covered in class while increasing your chances of meeting deadlines and ultimately receiving a good grade. The required reports include the following:

Item	Due Date (weeks indicated are out of 16)	% of Project Grade
Interim Report 1: Water Supply System (to include items 1, 2, 3, and 4 of the project outline)	Tuesday - April 5, 2011	25
Final Project Report	By noon on Friday - May 6, 2011	75

Additional Comments

The term project is worth 15% of the final grade in AGEN 120. It enables the application of the variety of concepts covered in the class and the utilization of the provided computer tools to help the student in tackling real-life problems related water supply and sanitation. Neatness and evidence of effort on the part of the student are essential. Each project report should include critical system components and essential information enabling its assessment without the student having to provide additional clarifications or verbal interpretations.

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