

Assignment/Quiz:

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Question No:1

Suggest waste water collection system for your area and also justify with the help of merits and demerits of the suggested system?

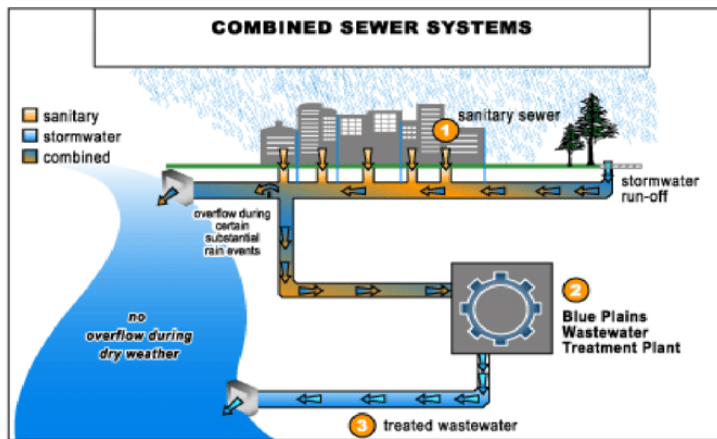
Answer:

Waste water collection system: A system composed of gravity pipes, manholes, tanks, lift stations, control structures, and force mains that gather used water from residential and nonresidential customers and convey the flow to the **wastewater** treatment plant.

- We need Combine Sewer System for our area.

Combine Sewer System:

Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic **sewage**, and industrial wastewater in the same pipe. Most of the time, **combined sewer systems** transport all of their wastewater to a **sewage** treatment plant, where it is treated and then discharged to a water body.



Advantages:

- Both domestic sewage and storm water are carried in a single sewer, so construction cost is less.
- The strength of domestic sewer is reduced because of dilution of storm water.
- In town with Narrow Street, this system is preferred.

Disadvantages:

- Initial cost is high because of large dimension of sewer.
- Because of large size of sewer, their handling and transportation is difficult.
- If the whole sewage is to be disposed off by pumping it is uneconomical.

Question:2

Explain WHO/EU standards for drinking water in detail. What are the different impurities in natural water?

Answer:

WHO (World Health Organization) produces international norms on water quality and human health in the form of guideline are used as the basis for regulation and standard setting worldwide.

WHO/EU drinking water standard comparative table, The EU standard are more recent (1998), complete and strict then the WHO standard (1993).

Some Examples are:

- Bromate (Br): Not mentioned by WHO, 0.01 mg/l guideline in the EU standard.
- Manganese (Mn): Guideline reduced from 0.5 to 0.05 mg/l.
- Cyanide (CN): Guideline reduced from 0.07 to 0.005 mg/l.
- But in some cases the EU guideline are less strict than the WHO's.
- Cadmium (cd): Guideline rised from 0.003 to 0.005 mg/l

Here is a comparative table of both WHO and EU standard:

	<u>WHO standard:</u> (1993)	<u>EU standard:</u> (1998)
Suspended solid	No guideline	Not mentioned
COD	No guideline	Not mentioned
Oxidisability		5.0 mg/l O ₂
Grease/oil	No guideline	Not mentioned

Turbidity	No guideline	Not mentioned
pH	No guideline	Not mentioned
Conductivity	250 micros/cm	250 micros/cm
Color	No guideline	Not mentioned
Dissolved oxygen	No guideline	Not mentioned
Hardness	No guideline	Not mentioned
TDS	No guideline	Not mentioned
Colony count 37oC	Not mentioned	20/ml
Acrylamide	Not mentioned	0.0001mg/l
Benzene (C6H6)	Not mentioned	0.001mg/l
Benzo(a)pyrene	Not mentioned	0.00001mg/l
Chlorine dioxide(ClO2)	0.4mg/l	

B) There Are some impurities in natural water:

1. Heavy Metals:

These are material such as lead or copper which can be present in water through the corrosion of plumbing system.

2. Chemicals-Chlorine:

Is of course along established chemical found in our water system, having been used as a disinfectant since the 19th century, this can cause mild sickness or an unpleasant taste to drinking water if/when variations or found, but this is quite rare.

3. Pesticide and insecticide:

Can find their way into tap water from rivers in agricultural areas and this would result in poisoning again, such exposure is very rare, but depending on the level of ingestion the effect could range from a mild stomach complaint to prolonged sickness and even death.

4. Fluoride:

Is also present in drinking water, as an additive to protect teeth and maintain bone structure, in some areas of the world level can be quite high in drinking water, which could lead to yellowing of teeth and damage to the spinal cord.

Question No:3

How do you understand the term waste water? Explain the scope and applications in civil engineering, of the subject water supply and waste water management with the help of proper examples?

Answer:

Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface run off or storm water, and any sewer inflow or sewer infiltration.

Source of waste water:

It include the following household activities:

- ✓ Human waste water mixed with other material called black water.

- ✓ Water used for washing clothes, dishes, and floors etc that used water is known as grey or sullage
- ✓ Liquid from domestic source like water used for cooking, oil, pesticides, paints, lubricants, cleaning liquid.

Application of waste water management in civil engineering:

Civil Engineering Wastewater Investigation:

Wastewater investigations play a key role in wastewater management, especially when wastewater treatment plants need more information than a standard survey can provide. In this role, the civil engineer may conduct research to uncover why a plant is not meeting regulatory compliance standards, or why a plant is producing unacceptable contaminants, at some wastewater facilities, civil engineers are also responsible for investigating health.

Wastewater Treatment Engineering Design:

Civil engineers play an important role with the implementation of their plans, such as working with state agencies to make sure that the wastewater plant follows regulatory guidelines, helping manage the contracts a plant holds with third parties and overseeing incoming project bids and terms.

Civil Engineering Certification and

Licensure:

In addition to the proper education, wastewater engineers may need to possess certifications and licensing in their respective states. Each state has its own board of civil engineering that issues licenses

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