

## **APES – Review Book - Activity – CHAPTER 6**

**READ the Chapter 6** Review and complete the following WS. Please study the summarized content to help you understand the **KEY Terminology** and the **KEY concepts**.

The responses are hand generated (in PEN). You don't need to print this document; you just need the lined paper to respond to the questions.

- I. Copy the **Key Terms** and define them all. Make sure to memorize the terms. *(There will be quiz on each Chapter Review)*
- II. Answer the **Comprehension Questions and/or Concept Topics**:

1. STUDY and IDENTIFY types of waters:

A) **freshwater resources** – less than 1% readily available, and 0.024% is drinkable water

B) **groundwater** – **DRAW** the cross-section of the groundwater and the layers – LABEL all!

C) **surface water** – identify the difference between the **surface runoff and watershed**

2. Water Equity, shortage, and floods – define at least three reasons why we have more water shortage than we had in 2010?

A) DEFINE the difference between **FLOODPLAIN and WATERSHED**.

3. IDENTIFY two ways how surface water and ground water depletion happen. EXPLAIN why sinkholes and subsidence are the common outcomes of the above mentioned depletions.

4. There are many unsuccessful water projects that were depleted by agriculture:

A) **Ogalla Aquifer** – naturally occurring water source was depleted by agriculture

B) **California water project** – EXPLAIN what is happening here

C) **Colorado River Basin** – EXPLAIN what is happening here

5. World examples of water depletion – **MEMORIZE and EXPLAIN**

A) Three Gorges Dam – Yangtze River

B) Aral Sea – former Soviet Union, today it is between Kazakhstan and Uzbekistan

C) China's Water Transfer project – Yangtze River

6. **Water Conservation Methods:**

A) DEFINE and LIST **all Irrigation Practices for AGRICULTURE**

a) LIST three other irrigation conservation methods

B) DEFINE and LIST **all Irrigation Practices for INDUSTRY and RESIDENTIAL Conservation**

a) LIST three other irrigation conservation methods

C) OTHER sources for the Freshwater – **DESALINIZATION**

I) **reverse osmosis**

II) **distillation**

7. **IDENTIFY and DEFINE Water Pollution as**

A) point-source pollution

B) nonpoint-source pollution

There are three sources of water pollutions:

A) Agriculture

B) Industrial

C) Mining

8. **SUMMARIZE** all types of water pollution from the chart on pg. 191

- a) infectious agents
- b) oxygen-demanding wastes
- c) plant nutrients
- d) organic chemicals
- e) inorganic chemicals
- f) sediments
- g) heavy metals
- h) thermal

9. Lack of clean water poses health risks: **DEFINE and MEMORIZE** the chart on pg. 192

- A) BACTERIA
- B) VIRUSES
- C) PARASITIC PROTOZOA
- D) PARASITIC WORMS

10. **Pollution of Streams, Rivers, and Lakes** – **DEFINE** the most common causes of pollution and **EXPLAIN** what oxygen sag curve is?

A) **IDENTIFY** situations when streams/ivers have difficult time coping with self-cleaning process

B) **IDENTIFY** pollution in freshwater lakes

- a) **cultural eutrophication vs eutrophication**
- b) **remediation and prevention** of cultural eutrophication – 3 examples HERE
- c) **EXAMPLES** of cultural eutrophication in US: Great Lakes water pollution and Lake Washington

11. **DEFINE and MEMORIZE - Water Quality Testing Technologies:**

- A) Physical tests – temperature, river/stream flow velocity, turbidity
- B) Chemical tests – pH, dissolved oxygen, nitrates/nitrites and phosphates, hardness
- C) Biological tests – fecal coliform, biological assessment benthic macroinvertebrates, fish species,

12. Another type of water is **GROUNDWATER POLLUTION** – majority of human population relies on groundwater supplies. **Name three common pollutants of ground water.**

**MEMORIZE: Typical contaminants of the ground water –**

- A) **DEFINE:** arsenic
- B) **DEFINE:** nitrate ions
- C) **DEFINE:** MTBE – methyl tertiary butyl ether
- D) preventing and remediating groundwater pollution – give three examples on how we can clean up the groundwater

13. **Clean Drinking Water** – **COMPARE** the situation in developing vs. developed countries

14. **STUDY** a diagram on pg. 198 and 199 make a **LIST** of **all the potential pollutants** coming from the cities, industries, etc. and entering

**A) GROUNDWATER**

**B) OCEAN**

15. **SUMMARIZE** the Case Study: **The Chesapeake Bay**

16. Oil pollution in Ocean and Oil Spills – **DEFINE** and identify

**A) Exxon Valdes - Alaska**

**B) BP oil spill – Gulf of Mexico**

17. STUDY – prevention and reduction of water pollution, LIST three methods that are used to reduce non-point pollution

18. **Modern Sewage system** – allows treatment of human wastewater systems. DEFINE and MEMORIZE all three steps of the sewage system:

A) Primary sewage treatment

B) Secondary sewage treatment

C) Tertiary sewage treatment

19. UPDATES and further **RECOMMENDATIONS** for sewage treatment – STUDY and MEMORIZE, prove three examples

20. Water quality Legislation – **Clean Water Act** – DEFINE and MEMORIZE