APES- Chapter #21- ***Water Pollution and Treatment***- Guided Reading

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Read, *“North Carolina’s Bay of Pigs”* and answer the following:**

1: Why was pig farming such a controversy in North Carolina during this time?

2: What did pig farmers do with the pig waste? *Why was this allowed*?

3: What is the lesson learned from North Carolina’s *“Bay of Pigs”?*

4: What legislation has been created as a result of this catastrophe?

**Water Pollution**

1: How is **water pollution** defined?

2: What are some of the *common water pollutants*?

3: What is the *primary water pollution* problem in the world today?

4: What are the major uses for water today?

5: How many of the drinking water sources in the United States have been reported with *at least one violation* of federal health standards? \_\_\_\_\_\_\_\_\_

**Biochemical Oxygen Demand (BOD)**

1: What is BOD and how can it become increased?

2: Where does approximately 33% of all BOD in streams come from?

3: What about in urban areas (BOD)?

4: What is the *relationship between BOD and dissolved oxygen levels*?

5: Explain the **3 zones of BOD**:

**Waterborne Disease**

1: What happened in **Milwaukie, Wisconsin**? *What organism caused it?*

2: What is **Fecal Coliform Bacteria** and *where does it come from*?

3: What happened in **Walkerton, Ontario** and *what was the cause*?

**Nutrients**

1: How do urban streams get *high concentrations of Nitrogen and Phosphorus*?

**Eutrophication**

1: Define **Eutrophication:**

2: What is the solution to ***artificial or cultural eutrophication***?

**Oil**

1: Which *Environmental Act* was created after the ***Exxon Valdez*** disaster?

**Sediment**

1: Why is *sediment pollution* considered to be a two-fold problem?

2: What are some of the techniques employed by a sediment control program?

**Acid Mine Drainage**

1: Define **Acid Mine Drainage** and *explain how it occurs*:

2: What site was once designated by the U.S. Environmental Protection Agency as the nation’s worst hazardous waste site?

**Surface Water Pollution**

1: What are some **point sources** of surface water pollution?

2: What are some **non-point sources** of surface water pollution?

3: What are the *2 approaches to dealing with* surface water pollution?

**Groundwater Pollution**

1: \_\_\_\_\_\_\_% of the 175,000 known waste disposal sites in the United States may be producing plumes of hazardous chemicals that are migrating into groundwater resources.

2: What is **bioremediation**?

3: What are the 5 important points about groundwater pollution?

**Wastewater Treatment**

1: Summarize how **Septic Tank Sewage Disposal Systems** work.

2: What happens during **primary treatment** of sewage?

3: What happens during **secondary treatment** of sewage?

4: When is **advanced wastewater treatment** used?

5: What are some of the risks associated with **Chlorine** treatment of wastewater that is later discharged?

**Land Application of Wastewater**

1: Explain the process of wastewater renovation and conservation cycle.

**Wastewater and Wetlands**

1: How can applying treated sewage to wetlands be helpful to the wetland ecosystem?

**Water Reuse**

1: What is the difference between indirect and direct water reuse?

**Environmental Laws**

* Make sure to *memorize the following laws*:
* Clean Water Act
* Federal Safe Drinking Water Act
* Water Quality Act

*How safe do you believe the drinking water is in your home? How did you reach your conclusion? Are you worried about low-level contamination by toxins in your water? What could the sources of contamination be?*