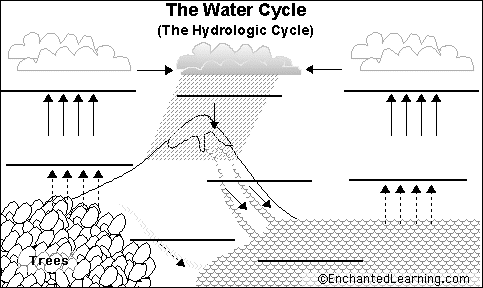
**Water Uses and the Water Cycle**

Date:

SWABT: Draw and describe the water cycle. ID and describe sources of freshwater and how to conserve the resource.

|  |  |  |
| --- | --- | --- |
| All living things need water  Human uses include:       * Hydroelectric Energy | | Distribution of Water on Earth |
| Water moves on Earth through the continuous process of the **water cycle.**  **Water Cycle** – | | |
| **The Water Cycle** | Description | |
| Evaporation  (liquid 🡪 gas) |  | |
| Transpiration  (liquid 🡪 gas) |  | |
| Condensation  (gas 🡪 liquid) |  | |
| Precipitation | * **A decrease in precipitation decreases the amount of infiltration of water into the ground** | |
| Infiltration | * Infiltration recharges groundwater supplies | |
| Groundwater | * http://www.hydratelife.org/wp-content/uploads/2012/12/via-bournestreampartnership-dot-org-dot-uk.gifVast amounts of water are unseen underground. * This water can move through the water cycle several ways:  1. Transpiration by plants 2. Move into surface water like streams 3. Move or storage in the ground | |



**Groundwater, Wells, and Springs**

Date:

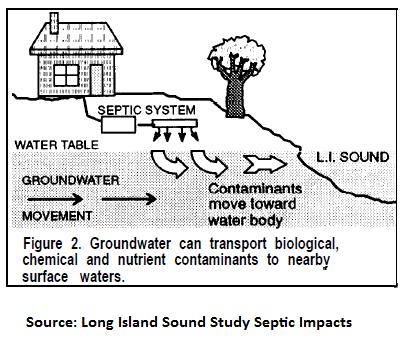
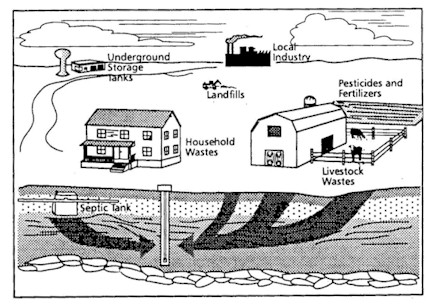
SWBAT: Draw and describe the layers of groundwater & discuss how water infiltrates the soil. ID sources of groundwater pollution.

**Aspects of Groundwater**

|  |  |  |
| --- | --- | --- |
| **Term** | **Description** | |
| Groundwater | Water under the lands surface often stored in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| Aquifer | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layers or sediments that transmit groundwater freely.   * Important source of well water | |
| Porosity | http://onshoregas.vic.gov.au/__data/assets/image/0017/1027430/porosity.jpghttp://onshoregas.vic.gov.au/__data/assets/image/0017/1027430/porosity.jpgPercentage of the total volume of rock or sediment that consists of  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Sorting: Rocks can be sorted into porous or non-porous | |
| Permeability | http://onshoregas.vic.gov.au/__data/assets/image/0007/1027429/permeability-.jpgA materials ability to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  interconnected pore spaces   * Groundwater moves more slowly when the pore spaces are smaller   http://onshoregas.vic.gov.au/__data/assets/image/0007/1027429/permeability-.jpg   * Ex: **Fine clay** is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because its pore spaces are so small water can’t move through them | |
| Zone of Aeration | The region between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * **A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ during periods of heavy rainfall or rapid snow melt can lead to flooding** * **Since the ground is already saturated (full of water), no more water can infiltrate into the ground which leads to flooding!** | http://www.un-igrac.org/sites/default/files/Figure%201%20Water%20Table.png |
| Water Table | the level below which the ground is saturated with water |
| Zone of Saturation | Area where water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in sediment and rock   * **Groundwater is within this zone** |

**Groundwater and Surface Water Interaction**

|  |  |
| --- | --- |
| **Term** | **Description** |
| Ordinary Well | A hole that is dug below the water table and fills with groundwater.   * Pumping is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * **Several wells drilled in a given area will: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| Artesian Well | **Groundwater rises on its own \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ out of well.**   * The pressure is due to the water being sandwiched between two impermeable rock layers * No pumping is necessary! |
| Subsidence | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in response to *geologic* or man-induced causes.   * **Caused by pumping water out of the ground.**   http://failures.wikispaces.com/file/view/portergill_covercollapse.gif/472462360/811x158/portergill_covercollapse.gif |
| Why is subsidence an issue for North Carolina? |  |
| Springs | A section of impermeable rock forces groundwater to \_\_\_\_\_ and emerge onto the surface of the Earth |
| Hot Springs | Temperatures increase into the earth.   * Water from hot springs just originate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ earth or is heated by magma. |
| Geyser | Hot springs that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Small opening in crust…pressure builds until an eruption occurs * Ex: Old Faithful in Yellowstone National Park |



**Groundwater Pollution**: Ground water is renewable; yet limited

* Ways groundwater can be polluted:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Pesticides
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Arsenic (naturally occurring, factories, mining, and preserving bodies)

**Populations Effects on Water Resources**

Dates:

SWBAT: Understand where point/non-point source pollution originates.

|  |  |  |
| --- | --- | --- |
| Water pollution is the addition of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   * Sources of water pollution in the US include:    + run-off from fields treated with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   + run-off from areas that have been mined | | |
| **Types of Water Pollution** | | |
| **Point Source Pollution**  http://i.ytimg.com/vi/SfX8o2Is_uQ/mqdefault.jpgDefinition: contamination that enters the environment through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_means  Examples:   * Sewage plant pipe * **Coal ash ponds** | **Non-Point Source Pollution**  Definition:   * Results from land runoff, precipitation, atmospheric deposition, drainage or seepage.   Examples:   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Arsenic from mining * Sediment from land runoff | |
| **How to Reduce Point and Non Point Pollution**   * Use fertilizer and pesticide according to package directions * Have septic systems \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Conserve sprinkler water * Never dump anything down a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Pick up after your pets. Pet waste left on the ground can spread E. coli, roundworms and Salmonella. | | |
| Pollutants move through a water supply \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * As water moves towards the ocean, pollutants build up and can become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Population Effects on Water Quantity**   * Communities across the country are starting to face challenges in maintaining healthy and affordable water supplies * **An increase in population size means there is**   Methods of Conservation:   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Turning off the faucet * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Water rations * Watering plants at night or early morning | | **Population Effects on Water Quality**   * As populations grow rapidly, health standards find it difficult to keep up. * **This leads to an increase in ­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_as pollutants build up.**   http://extensionpublications.unl.edu/assets/html/g1848/build/graphics/stop%20copy.jpg |
| **Water Treatment** | | |
| **Wastewater Treatment Systems**   * The major aim of wastewater treatment is to remove   before the remaining water is discharged back to the environment.   * **Treatment facilities are unable to filter out all contaminants.** | | **Drinking Water Treatment System**   1. Remove small and large sediments from water 2. Water forced through filters to remove \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. Removal of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**River Health**

Date:

SWBAT: Identify indicators of freshwater quality.

|  |  |  |
| --- | --- | --- |
| **Indicators of Water Quality** | | |
| Term | Description: | Changes Caused By: |
| Turbidity | Definition: The measure of the degree to which water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ due to the presence of suspended sediment.   * **The Mississippi River is an example of a high turbidity body of water** | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Re-suspended sediments from the bottom * Waste discharge * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Urban runoff |
| pH | Definition:   * 0🡪7 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * 7🡪14 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Surface freshwater is usually 6.5-8   Changing pH in a stream can be an indicator of increasing pollution | * Natural conditions * Dumping of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   Results of changes in pH:  Most aquatic life cannot withstand water outside of the usual pH range, thus resulting in death |
| Dissolved Oxygen | Definition:  When D.O. drops too low, fish die. When DO is high, the water tastes better but can damage water pipes. | * Rapidly moving water (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) * Increased temperature (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) * Discharge from sewer pipes (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)   + Causes an increase in bacteria |
| Temperature | Definition:   * Extreme low or high temperatures are only tolerated by hardy fish!   **Factory thermal pollution by dumping heated water into lakes and rivers – decreases species in body of water** | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Depth of water * Shade from shoreline |
| Nitrates | Definition:  Algae and other plants use nitrates as a source of food.  If algae have an unlimited source of nitrates, an algae bloom begins to grow.   * **This algae bloom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dissolved oxygen in water leading to aquatic insects and fish death** | **Improper use of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can lead to algae blooms** |
| Bio-Indicators | Definition: species that are used to monitor the health of an environment or ecosystem. | Example: Amphibians |

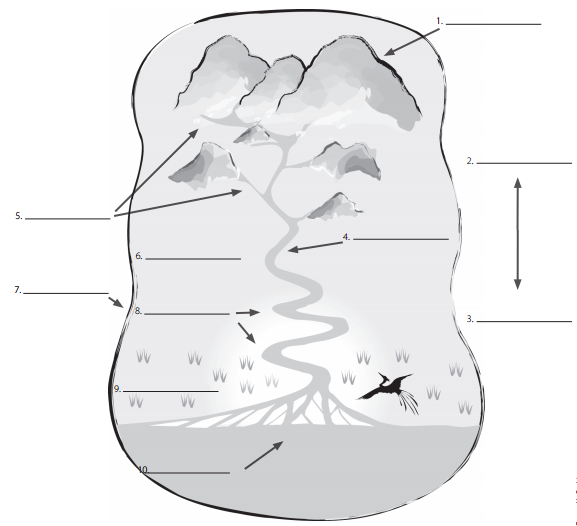
**River Basics and Stream Erosion and Deposition**

Date:

SWBAT: Describe the parts of a river and investigate NC’s river basins. ID causes and effects of stream erosion.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parts of a River** | | | | | |
| Term | Description | | | | |
| Headwaters | Definition:   * Usually found in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Runoff from mountains flow into valleys, valleys become saturated * Flows to lowest point | | | | |
| Tributaries | Definition:   * More found in mountains than on flat land | | | | |
| Mouth | Definition: | | | | |
| Watershed/  River Basin | http://www.bae.ncsu.edu/support/graphics/templates_logos/nc%20watershed%20maps/nc-watersheds%20outline.jpg**Definition:** | | | | |
| Divide | http://www.indiawaterportal.org/sites/indiawaterportal.org/files/watershed.bmp_.jpg**Definition:** | | | | |
| Channel | Definition: | | | | |
| Gradient | Definition:   * Usually expressed as the vertical drop of a stream over a certain distance (change in elevation) | | | | |
| Discharge | Definition:   * Usually measured in cubic meters per second | | | | |
| Stream Load | Definition:   * Erosion removes mineral material from the stream banks adding this material to the regular flow of water. * **Higher stream velocity equals higher stream load capacity—streams that move fast erode more and carry more sediment.** | | | | |
| **Stream Erosion and Deposition** | | | | | |
| Sediment Deposition   * Sediment is deposited in a stream when there is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the speed of the water. * Speed may decrease because of:    2. Bed widening * Stream deposition can create landforms or change the river valley | | | | | |
| **Term** | **Description** | | | | |
| Alluvial Fan | Definition:   * Occurs where a stream descending a steep slope reaches flat land. | | | | |
| Levees | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - raised river banks caused by flooding. * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - an embankment built to prevent the overflow of a river. | | | | |
| Floodplain | Definition:   * **A floodplain forms where a stream cuts mainly side to side**   Sediment is deposited making  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Flooding Precautions   1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** 2. Flood insurance if you own a home in a high-risk area 3. Be prepared to evacuate if need be 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   Why limit floodplain development?   * Allows floodplains to      * Prevents structures from being put in harm’s way | | |
| Meander | Definition:   * Erosion occurs on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a bend * Deposition occurs on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a bend. | | | | |
| Oxbow Lake | Definition: | | | | |
| Stages in the Development of a River | Young River  \_\_\_\_\_\_\_\_\_\_\_\_\_ shaped channel  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sides | Mature River  \_\_\_\_\_\_\_\_\_\_\_\_\_ shaped channel  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sides  Features: | | | Old River  \_\_\_\_\_\_\_\_\_\_\_\_\_ shaped channel  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sides  Features: |
| Delta | Definition:   * Occurs because the water slows down as it is emptied into another body of water. | | | | |
| Dam | Definition: | | | | |
| Advantages   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Hydroelectric power * Recreational facilities * Irrigation | | | Disadvantages   * Increase accumulation of sediment in water * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Destruction of natural habitat for plants and animal | |

Label the components of a watershed on the diagram using the words listed below



**Word Bank**

Tributaries

Head of the River

Mouth of the River

Upstream

Wetlands

Watershed Boundary

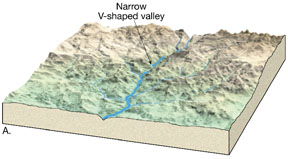
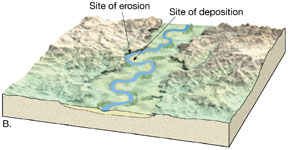
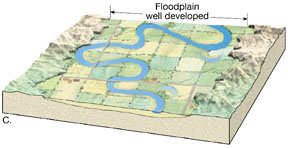
Main River

Floodplain

Downstream

Meanders

Use the three rivers below to answer the following questions:

****

**River A River B River C**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Highest Gradient
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Has the most whitewater rapids and waterfalls
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Has the lowest gradient
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Youngest (earliest) stage
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Widest floodplain
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Least likely to flood
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Has the most depositional features

**Wetlands and Estuaries**

Date:

SWBAT: Identify factors of wetland degradation and discuss impacts of saltwater intrusion

|  |  |
| --- | --- |
| Wetlands – Areas of land that are covered by water at least part of the year.  Roles of Wetlands in the Ecosystem   * **Wetlands prevent flooding by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** * **Natural water quality improvement.** * Fish and wildlife habitat * Natural products for economy (etc. shellfish, timber, blueberries, medicines) | |
| Wetland Loss  Definition:   * The United States alone has lost more than half of its original wetlands | Wetland Degradation  Definition:  Some human activities that degrade wetlands are:   * Urbanization  * Marinas |
| **Types of Wetlands** | |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - An ecosystem in which fresh water from rivers mixes with salt water from the ocean.   * Becomes a nutrient trap: mineral-rich mud drops to the bottom.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Freshwater wetland that contains non-woody plants.   * Attract many types of nesting birds.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Freshwater wetland that contains woody plants and shrubs.  Water Ecosystems   * Freshwater: lakes, rivers and wetlands (swamps and marshes) * Mix of fresh and saltwater: estuary | |
| **Saltwater Intrusion** | |
| Definition:  How does it occur?   * Saltwater has a higher mineral content than freshwater so it is denser and has a higher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Saltwater can push inland beneath the freshwater. | |
| Causes  Human activities have increased saltwater intrusion in many coastal areas by:   * **An increase in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of freshwater along a coastal area** * Digging navigation channels * Digging drainage canals   Saltwater intrusion can be worsened by extreme events like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surges and sea level rise | |
| Why is saltwater intrusion an issue for North Carolina?   * It can lead to contamination of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| How to prevent saltwater intrusion?   * The use of injection wells, subsurface barriers, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ would improve water quality and prevent saltwater intrusion. | |