

WHAT'S IN THE WATER?

Alabama Course of Study – SCIENCE:

6th:

2.) Describe factors that cause changes to Earth's surface over time.

Examples: earthquakes, volcanoes, weathering, erosion, glacial erosion or scouring, deposition, water flow, tornadoes, hurricanes, farming and conservation, mining and reclamation, deforestation and reforestation, waste disposal, global climate changes, greenhouse gases

7th:

7.) Describe biotic and abiotic factors in the environment.

9-12th:

Marine Biology:

2.) Differentiate among freshwater, brackish water, and saltwater.

5.) Discuss physical and chemical properties of saltwater.

- physical-turbidity, temperature, density;
- chemical-salinity, pH, dissolved gases

6.) Describe components of major marine ecosystems, including estuaries, coral reefs, benthic communities, and open-ocean communities.

11.) Describe positive and negative effects of human influence on marine environments.

Environmental:

1.) Identify the influence of human population, technology, and cultural and industrial changes on the environment.

- Describing the relationship between carrying capacity and population size

7.) Identify reasons coastal waters serve as an important resource.

Examples: economic stability, biodiversity, recreation

- Classifying biota of estuaries, marshes, tidal pools, wetlands, beaches, and inlets
- Comparing components of marine water to components of inland bodies of water

8.) Identify major contaminants in water resulting from natural phenomena, homes, industry, and agriculture.

- Describing the eutrophication of water by industrial effluents and agricultural runoffs
- Classifying sources of water pollution as point and nonpoint

9.) Describe land-use practices that promote sustainability and economic growth.

Examples: no-till planting, crop rotation

- Defining various types and sources of waste and their impact on the soil

Examples:

- types-biodegradable, nonbiodegradable, organic, radioactive, nonradioactive;

- sources-pesticides, herbicides

- Identifying ways to manage waste, including composting, recycling, reusing, and reclaiming

12.) Identify positive and negative effects of human activities on biodiversity.

Geology:

9.) Describe the movement and storage of water in terms of watersheds, rainfall, surface runoff, aquifers, and surface water reservoirs.

- Identifying major regional and national watersheds

OCEAN LITERACY: ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS:

1 The Earth has one big ocean with many features.

a The ocean is the dominant physical feature on our planet Earth – covering approximately 70% of the planet’s surface.

e Most of Earth’s water (97%) is in the ocean.

f The ocean is an integral part of the water cycle and is connected to all of the earth’s water reservoirs via evaporation and precipitation processes.

g The ocean is connected to major lakes, watersheds and waterways because all major watersheds on Earth drain to the ocean.

2 The ocean and life in the ocean shape the features of the Earth.

c Erosion—the wearing away of rock, soil and other biotic and abiotic earth materials—occurs in coastal areas as wind, waves, and currents in rivers and the ocean move sediments.

d Sand consists of tiny bits of animals, plants, rocks, and minerals. Most beach sand is eroded from land sources and carried to the coast by rivers, but sand is also eroded from coastal sources by surf. Sand is redistributed by waves and coastal currents seasonally.

6 The ocean and humans are inextricably interconnected.

a The ocean affects every human life. It supplies freshwater (most rain comes from the ocean) and nearly all Earth’s oxygen. It moderated the Earth’s climate, influences our weather, and affects human health.

b From the ocean we get foods, medicines, and mineral and energy resources. In addition, it provides jobs, supports our nation’s economy, serves as a highway for transportation of goods and people, and plays a role in national security.

d Much of the world’s populations lives in coastal areas.

e Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (point source, non-point source, and noise pollution) and physical modifications (changes to beaches, shores, and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

g Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.