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Title: THE ENVIRONMENT: A Changing Ecosystem.

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Abstract: Chesapeake Bay is the U.S.'s largest estuary, a place where ocean saltwater meets freshwater from rivers. On the bay, Virginians harvest oysters and load them onto sailing vessels called skipjacks. But the skipjacks are not as full of shellfish as they were 20 years ago. Life in and around the bay is changing because parts of the bay's ecosystem are changing. The bottom of the Chesapeake does not have enough oxygen for the bay's underwater wildlife. Washington D.C., and the states of Virginia, Maryland, and Pennsylvania are working together to watch the bay's health carefully. And in 2000, the Chesapeake Bay Program adopted a new agreement known as Chesapeake 2000. This agreement will guide the restoration efforts until the year 2010.
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THE ENVIRONMENT: A Changing Ecosystem

Chesapeake Bay is the nation's largest estuary, a place where ocean saltwater meets freshwater from rivers. On the bay, Virginians harvest oysters and load them onto sailing vessels called skipjacks. But the skipjacks are not as full of shellfish as they were 20 years ago. Boaters still cruise the bay in colorful sailboats, but some swimmers have chosen to go elsewhere. Life in and around the bay is changing because parts of the bay's ecosystem are changing.

An ecosystem is a community of living and nonliving things in nature, including plants, animals, soil, air, and water. Each living member in an ecosystem needs nutrients (nourishment needed for health) and depends on the other members in its ecosystem for these nutrients.

Nutrients occur naturally in the bay's water. But they also enter the water from sources outside the bay. For example, to make crops and lawns grow better, people apply fertilizers. Fertilizers contain nutrients in the form of nitrogen and phosphorus. Eventually, rainwater washes some of the fertilizer into the bay or into rivers that drain into the bay. This process is called nutrient runoff.

Another source that brings nutrients into the Chesapeake Bay is wastewater. Wastewater is the water that carries sewage from homes, businesses, and industries to sewage

treatment plants. Wastewater contains many nutrients that come from the sewage it carries. When wastewater reaches the treatment plants, it is filtered, cleansed, and then released into rivers or the bay. Treating waste-water, however, does not remove any of its nutrients.

Forty-eight rivers, some with tributaries (arms) as far north as New York, flow into Chesapeake Bay. These waterways carry both nutrient runoff and treated wastewater from six states and more than 15 million people. The great number of nutrients entering the bay has changed its ecosystem. Some of its members are multiplying rapidly, while others are dying.

For instance, algae — small rootless plants that live just under the water's surface — feed on the many nutrients in the bay and grow very thick. A certain amount of algae is good. They are a source of food for fish. But the algae in the bay are so thick that the fish do not eat all of them. Eventually, the plants that do not get eaten die and sink to the bottom of the bay.

Dead plants are food for bacteria (tiny, one-celled organisms). The bacteria at the bottom of the bay multiply easily because of all the dead plants there. All these bacteria use a lot of oxygen, another substance needed by living things.

The bottom of the Chesapeake does not have enough oxygen for both the bacteria and all the bay's underwater wildlife. When bacteria thrive, many of the fish and oysters, which cannot get enough oxygen, either die or leave the area.

Washington, D.C., and the states of Virginia, Maryland, and Pennsylvania are working together to watch the bay's health carefully. By reducing pollution and by teaching farmers and homeowners to use less fertilizer on their crops and lawns, they hope to improve the bay's health.

And in 2000, the Chesapeake Bay Program adopted a new agreement known as Chesapeake 2000. This agreement will guide the restoration efforts until the year 2010. With everyone's participation, Chesapeake Bay may have a better future.

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PHOTO (COLOR): Boats crowd Chesapeake Bay during summer months.

PHOTO (COLOR): Chesapeake Bay's ecosystem includes more than just marine life. Birds such as bald eagles are also part of it.

PHOTO (COLOR): Fertilizers used in Virginia's fields drain into the bay.

PHOTO (COLOR): Pollution in the bay comes from factories, as well as from homes and businesses.

PHOTO (COLOR): Algae grow in a river that flows into Chesapeake Bay.

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By Karen Sirvaitis

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