CHESAPEAKE BAY: MANAGING AN ECOSYSTEM

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The Chesapeake Bay is the largest and most productive estuary in the United States. It is also among the most productive estuaries in the world. Efforts to restore the Chesapeake Bay are now more than two decades old and there are many lessons to be learned. Ann Pesiri Swanson, Executive Director of the Chesapeake Bay Commission, will highlight the successes and challenges of the effort to restore the Bay as a single ecosystem, including all of its waters and the land that defines its watershed.

The Chesapeake Bay Program — the cooperative compact forged to spearhead the restoration — has become a model for estuary cleanup efforts across the country and around the world. It is multi-jurisdictional in scope, involving federal, state and local governments and all segments of the public. The Program traces its beginnings to a time when citizens, scientists, and politicians collectively realized that the Bay's health was in serious decline. Together, these constituencies worked to restore the Bay, each prodding the other to do more. The processes involved in engaging so many players are complex, but they have worked.

The Chesapeake Bay has often been referred to as the "crown jewel" of the United States' 850 estuaries. It extends 180-miles from the tidal reaches at the mouth of the Susquehanna River in Maryland to Cape Charles, Virginia, where it meets the Atlantic Ocean. Its watery wedge runs through the entire north-south length of two states — Maryland and Virginia — helping to define their landscape, their cultures, and their economies.

With a width of between three and thirty miles, the surface of the tidal Chesapeake covers 2,500 square miles. The Chesapeake's 64,000 square mile watershed includes six states and encompasses a number of geologic formations, from the flat coastal plains to the forested mountains of the mid-Atlantic region with the fertile piedmont in between. It receives most of its fresh water from about 45 major tributaries and hundreds of smaller streams throughout its sweeping watershed.

The Bay is an 18-trillion gallon estuarine home for more than 2,700 species of plants and animals, from tiny creatures wallowing in the mud of a marsh to giant bald eagles, which are making an awe-inspiring comeback around the Chesapeake region. Some 250 types of fish, crabs, clams, and oysters live in the Bay — many in extraordinary numbers. Together, they have a commercial value of more than one billion dollars annually. Half of the national catch of Atlantic blue crabs is harvested from Bay waters. At about 80 million pounds in a

good year, that equates to between 150 and 240 million individual crabs. Of the Nation's soft shell catch, 90 percent is taken from the Chesapeake.

But still, for all this productivity, the Bay is not without its woes. The Chesapeake acts as a giant catch basin for everything that drains from the land and rains from the sky throughout the watershed. Today, much of the Bay's watershed lies in some of the fastest developing regions of the country and is at the southern end of the megalopolis forming along the northeastern United States. Two of the country's five major North Atlantic ports — Baltimore and Hampton Roads — are on the Chesapeake, and more than 10,000 ocean vessels ply its waters each year.

Close to 13 million people live in the watershed that drains into the Chesapeake, a figure that is expected to reach 14.6 million by the year 2000. Thousands of municipalities, industries of every sort, and farms, big and small, use water from the Bay and its tributaries to do everything from irrigate crops to cool nuclear reactors. They also use it as a place to dispose of treated waste.

It is estimated that 1.5 million gallons of treated sewage flows into the Bay each day from more than 5,000 sources. This does not include the soil, fertilizer, and pesticides running off the farms. By their very nature, pesticides are toxic, while heavy amounts of the nitrogen and phosphorus in fertilizer set off a chain reaction that ultimately chokes out underwater grasses, the spawning ground for a variety of aquatic life.

Political leaders, citizens, scientists, farmers, and industries have now joined forces to mitigate the negative impacts of these man-made impacts. They have recognized that the Bay can remain productive only if the pollution loads from the surrounding land uses are kept in check. Successes have required switching to cleaning products that are phosphate-free, preventing nitrogen influx by upgrading waste containment and treatment, using less fertilizers at home and on the farm, directing growth to suitable places, and installing best management practices at industries and sewage treatment plants, the farm, the city and the suburban lot.

To lead the effort, the Chesapeake Bay Program was formed, an amalgamation of public officials in the region. Under the auspices of the Program, these political leaders signed the Chesapeake Bay Agreements of 1983 and 1987. The agreements incorporate the resolve of the five major jurisdictions — Maryland, Virginia, Pennsylvania, the District of Columbia, the federal government — and the Chesapeake Bay Commission, a tri-state legislative body charged with coordinating the laws and budgets of the states as they relate to the Chesapeake Bay.

The agreements specify 31 goals, among them nurturing living resources, improving water quality, planning for development, increasing public awareness and access, and continuing intergovernmental cooperation. The jurisdictions carry out the agreements in their

own ways — passing new legislation, creating new programs, extending (and better enforcing) existing ones, and backing their commitment with money.

The Program is now nearly two decades old. Ann Pesiri Swanson, Executive Director of the Chesapeake Bay Commission and a leader in the cleanup effort, will summarize the key lessons learned and share insights concerning the challenges that mold the future.

The lessons described will collectively constitute a framework for ecosystem management that can be applied anywhere in the world. Although each ecosystem will require some adaptation of these approaches, the overall message remains the same. Weaving management into a pre-existing governmental framework will require constant re-evaluation, flexibility, creativity, and awareness of cultural values. In order to truly succeed, the public management strategies must become as comprehensive, interactive, and responsive as the ecosystems that we are trying to manage.