

**CHESAPEAKE 2004
A BLUEPRINT FOR SUCCESS**

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EXECUTIVE SUMMARY

The Chesapeake Bay Program (CBP) is marking its 20th anniversary in the shared endeavor to restore the Chesapeake Bay watershed. The Chesapeake is a truly remarkable and resilient resource with boundless beauty. However, over the years the watershed has seen declines in wildlife, crabs, oysters and vegetation resulting from the over abundance of nutrients flowing into the rivers and tributaries that feed the Bay.

The Chesapeake 2000 agreement outlines a clear strategy and 100 commitments that, if implemented within the 2010 time frame, will result in a healthier Chesapeake Bay and the removal of the Bay from the list of impaired waterways. Unfortunately, progress on many of the goals has been slower than what many in the Chesapeake Bay community would like to see. The Alliance is recommending a series of bold steps that the CBP can undertake to more rapidly implement the vision of the Chesapeake 2000.

Chesapeake Executive Council Leadership - The key element to the success of the CBP structure and process is excellent, proactive and effective leadership by an Executive Council totally committed to the timely realization of the goals of Chesapeake 2000. Leadership of such quality is necessary now more than ever before

Sewage treatment upgrades. - The biological nutrient reduction (BNR) technology to reduce nitrogen loading by sewage treatment plants is well known and can be applied to most, if not all, of the 304 significant treatment plants in the region. The cost of reducing nitrogen to 3mg/l is affordable. If each resident of the 13 million residents on sewage lines were asked to pay five cents a day and amortized over 20 years, the \$2.7 to \$4.4 billion cost to install BNR technology could be easily accomplished. The plan would be “A nickel a day to bring back the Bay”.

Agricultural activities – Sixty percent of the nutrient reductions to cleanup the Bay could come from the agricultural sector. To accomplish this goal, nutrient management plans need to be written and enforced for 100 percent of the cropland and cover crops need to be planted in a timely fashion to capture their full benefits. These strategies may cost as much as \$50 million a year until technology is developed to assure the soil and crop benefits that make this practice profitable for farmers. Accomplishing these goals will require changes in laws, additional appropriations and changes in federal and state laws. Because many of these impacts to the Bay come through groundwater with long time lags, it is imperative that we start now.

Institutional structure. - The Executive Council should trumpet the innovative combination of voluntary and regulatory processes that are being pioneered by the CBP. Some have suggested that Chesapeake Bay restoration efforts need to adopt a more regulatory structure, but this is not consistent with the history of consensus-based decision-making in the region and would take five to twenty years to institute. The current CBP structure has shown considerable innovation by blending voluntary and regulatory elements in a manner that bodes well for future environmental policy.

CBP Budget. - The CBP's approximately \$20 million annual appropriation has remained essentially flat for the past seven years while it has taken on increased responsibilities under the Chesapeake 2000 agreement and expanded its role into Delaware, New York and West Virginia. Its budget should be increased commensurately to \$30 million.

Chesapeake Bay constituencies. - The program needs to emphasize the economic as well as the environmental benefits of Chesapeake Bay watershed restoration in order to expand the constituencies of people who will speak on behalf of the cleanup.. Over the past 20 to 30 years, the environmental movement has done an excellent job in raising the profile of Chesapeake Bay issues, but it is time to engage the wider watershed population. It is imperative that an economic analysis be done on the benefits of a healthier bay on the regional, multi-state economy to bring those who value quality life issues and economic development into the Bay clean up effort.

Chesapeake Bay Financing Commission – The Chesapeake Executive Council should appoint a “blue ribbon” panel of leading financial experts to examine the financial challenges of meeting key goals of the 2000 Chesapeake Bay Agreement for agricultural, air pollution and stormwater management. New financing mechanisms could include recommendations for new revenue streams, supported by taxes or user fees.

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CHAPTER ONE - INTRODUCTION

The Chesapeake Bay Program is completing 20 years of successes and challenges in the shared endeavor to restore the Chesapeake Bay watershed. From central New York to southern Virginia and from the Shenandoah Valley to the Eastern Shore of the Delmarva Peninsula, this effort has involved a cadre of talented people from all walks of life and from all jurisdictions in the watershed. These dedicated individuals and their good works need to be recognized for the groundbreaking nature of their efforts to protect and restore the most vital resource in the region. While the work that has been accomplished is unprecedented, the efforts to restore the watershed are only partially complete.

The Chesapeake is a resilient resource with boundless beauty. It is the largest and most productive estuary in North America with an intricate system of rivers and streams that provides fertile habitat for plant and animal life, a lifeline and livelihood for watermen and a county side filled with spectacular scenery. The watershed is home to more than 3,600 species of plants, fish and animals. Approximately 348 species of finfish, 173 species of shellfish and more than 2,700 species of plants live in or near the water. In addition, the Bay provides food and shelter for more than 29 species of waterfowl and more than one million waterfowl winter over annually in the basin.

The Bay watershed has struggled for more than 400 years against the increasing pressures from pollutants related to development which have compromised its health and the survival of the plants and animals it shelters. The rapid growth in human population during the 19th and 20th centuries with its sprawl development and industrialization has left its mark throughout the 64,000 square mile watershed. These impacts are likely to increase. While the population of the watershed was estimated to be 15.7 million in 2000, it is expected to grow to 17.8 million in 2020.

For years the Bay has been burdened by the over-harvesting of fish, crabs and oysters; the destruction of oyster reef habitat and loss of underwater grasses; the damming of its rivers and streams, which prevented the passage of migratory fish to their historic spawning ground; and a flood of water pollution comprised of too much phosphorus, nitrogen sediments and toxic chemicals.

Chesapeake 2000, the agreement signed by the political leadership of the region in 2000, holds much promise with its 100 specific commitments to bring the Chesapeake Bay watershed back to health by the year 2010. It is the seminal document guiding Bay restoration and it is the plan that the political leadership as well as the citizenry must adhere to if we are to see a clean Chesapeake Bay. Over the 20-year history of Chesapeake Bay restoration efforts, significant accomplishments have been made including those listed below.

- Nutrient Progress – Between 1985 and 2000, nitrogen loadings to the Bay declined from 338 to 285 million pounds and phosphorous loading were reduced from 27.1 to 19.1 million pounds;

- Nutrient Allocations - The jurisdictions have agreed to allocations on major tributaries to reductions in nitrogen loading to 175 million pounds per year and phosphorus loadings to 12.8 million pounds per year by 2010;
- Submerged Aquatic Vegetation - The distribution of submerged aquatic vegetation (SAV) reached its highest level in 2002 since 1978 and it is estimated at 89,658 acres. In addition, the jurisdictions recently agreed to a new 185,000 acre SAV goal.
- Rockfish Populations – Rockfish spawning stocks have risen from less than five million pounds in 1983 to over 50 million in 2001.

As 2010 approaches, one constant remains. The original commitment of the District of Columbia, Maryland, Pennsylvania and Virginia, and the more recent commitment of Delaware, New York and West Virginia to the value of the Chesapeake Bay watershed as an economic, natural and cultural resource must be sustained and strengthened. This report provides a blueprint for future success by outlining recommendations for strengthening current institutional structures, programmatic funding and technology adoption that will help the citizens of the Chesapeake Bay watershed achieve the goals of Chesapeake 2000 by consensus and partnership.

CHAPTER TWO - INSTITUTIONAL STRUCTURES

One of the hallmarks of the 20-year old Chesapeake Bay clean-up effort is the emphasis placed on developing consensus-based solutions to the complex problems facing the future health of the Bay and its rivers. Recently, some citizens and political leaders have grown more vocal about the progress of the restoration efforts taking place under the umbrella of the Chesapeake Bay Program, the state-federal partnership directing and coordinating the restoration of the Bay. Trial balloons have been floated about instituting a “legally binding framework” with “firm deadlines and penalties if the state and federal governments do not meet their commitments.”

While rigid command-and-control approaches may be necessary in other parts of the country that do not have a proven track record of cooperation, recent proposals to adopt a stricter, regulatory approach to Bay restoration must be closely scrutinized before such a dramatic policy change is undertaken in the Chesapeake Bay watershed. The most common organizations suggested as models are: Atlantic States Marine Fisheries Commission, Ohio River Valley Water Sanitation Commission, Puget Sound Water Quality Authority and Susquehanna River Basin Commission. This chapter will examine the current Chesapeake Bay Program structure, detail the organizational structures of the other regional commissions and draw some conclusions.

The Chesapeake Bay Program

In 1976, the United States Congress directed the Environmental Protection Agency (EPA) to conduct a five-year, \$25 million study of the Chesapeake Bay. EPA was required to assess water quality problems in the Bay, to establish a data collection and analysis mechanism, to coordinate all the activities involved in Bay research and to make recommendations on ways to improve existing Chesapeake Bay management mechanisms. As a result the first Chesapeake Bay Agreement was signed in 1983 and the Chesapeake Bay Program evolved as the means to restore this exceptionally valuable resource.

The Chesapeake Bay Program (CBP) is a voluntary effort established by Section 117 of the Clean Water Act (CWA) as well as the 1983 Chesapeake Bay Agreement which was signed by the Bay states and the United States government through the U.S Environmental Protection Agency. The voluntary nature of the program which pools the strengths of the signatory jurisdictions is consistent with the 1980 report *An Evaluation of the Institutional Arrangements for the Chesapeake Bay* by the Resources for the Future. This report stated that, in general, formal regional institutions in the United States have not been as effective as anticipated because they are resisted by existing local, state and federal entities. The 1983 report, *Chesapeake Bay: A Framework for Action* rejected the option for a Comprehensive Bay-Wide Authority for that very reason.

The Chesapeake Bay Program (CBP) was created as a regional partnership to act as a catalyst for the management of the Bay to benefit all of the citizens in the region. The 1983 Agreement set in motion a coordinated campaign to reverse the decline of living

resources in the Bay. It established the major elements of a cooperative structure to develop and coordinate the comprehensive Bay cleanup, including the Chesapeake Executive Council, the Implementation Committee, and the EPA Chesapeake Bay Liaison Office, along with a Bay-wide monitoring program to gather basic data against which desired change could be measured.

More recently, legislative authority for the Chesapeake Bay Program was most recently renewed by Pub. L. 106-457, title II, Sec. 202, Nov. 7, 2000, 114 Stat. 1967, stating that: “(a) Findings. - Congress finds that - (1) the Chesapeake Bay is a national treasure and a resource of worldwide significance; (2) over many years, the productivity and water quality of the Chesapeake Bay and its watershed were diminished by pollution, excessive sedimentation, shoreline erosion, the impacts of population growth and development in the Chesapeake Bay watershed, and other factors; (3) the Federal Government (acting through the Administrator of the Environmental Protection Agency), the Governor of the State of Maryland, the Governor of the Commonwealth of Virginia, the Governor of the Commonwealth of Pennsylvania, the Chairperson of the Chesapeake Bay Commission, and the mayor of the District of Columbia, as Chesapeake Bay Agreement signatories, have committed to a comprehensive cooperative program to achieve improved water quality and improvements in the productivity of living resources of the Bay; (4) the cooperative program described in paragraph (3) serves as a national and international model for the management of estuaries; and (5) there is a need to expand Federal support for monitoring, management, and restoration activities in the Chesapeake Bay and the tributaries of the Bay in order to meet and further the original and subsequent goals and commitments of the Chesapeake Bay Program. (b) Purposes. - The purposes of this title (amending this section and enacting provisions set out as a note under section 1251 of this title) are - (1) to expand and strengthen cooperative efforts to restore and protect the Chesapeake Bay; and (2) to achieve the goals established in the Chesapeake Bay Agreement.”

The CBP partners are represented on the Chesapeake Executive Council by the Governors of Pennsylvania, Maryland and Virginia; the Mayor of the District of Columbia; the Chair of the Chesapeake Bay Commission; and the Administrator of the U.S. Environmental Protection Agency. The Executive Council (EC) establishes policy direction for the restoration and protection of the bay and its living resources. It exerts leadership to marshal public support and is accountable to the public for progress made under the multi-jurisdictional agreements. There are three advisory committees that make recommendations directly to the Executive Council. These are: (1) Citizens Advisory Committee, (2) Local Government Advisory Committee, and (3) Scientific and Technical Advisory Committee.

The Principals’ Staff Committee (PSC), comprised of cabinet-level appointees, meets approximately twice a year to make recommendations to the Executive Council and to facilitate communication among the various committees, technical subcommittees and the advisory committees.

The Implementation Committee is charged with making regular policy and budgetary recommendations to the PSC. This committee meets regularly every month and has a membership consisting of representatives from all six of the current CBP partners as well as numerous federal agencies.

Interstate Compacts

The most common suggestion for altering the CBP structure is to change it into an interstate compact. Briefly, interstate compacts may be agreements between two or more states, or two or more states and the federal government, which set out a mutually agreeable solution to a common problem. Historically, interstate compacts were used to resolve issues such as defining interstate boundaries by interpreting colonial land grants or references to high tide marks. Under the U.S. Constitution, Congress must approve all interstate compacts, whether the federal government participates in the agreement or not, but the courts have ruled that approval may be implicit - no formal resolution is necessarily needed. This provision applies mainly to simple compacts where the federal government has no active role.

Most compacts that were negotiated before the 1920's were simple ones involving state boundaries. Since the 1920's, compacts have been used to address a variety of public policy issues and many have federal sponsorship and/or participation. In 2002 the Council of State Governments listed 198 interstate compacts operating nationwide.

Some significant compacts that are often cited as models for the Chesapeake Bay Program are the Atlantic States Marine Fisheries Commission, Ohio River Sanitation Commission, Puget Sound Water Quality Authority and Susquehanna River Basin Commission. A review of these organizations can be found in Attachment A.

Conclusions

None of the four “model” compacts examined are a perfect match for the circumstances being faced in the Chesapeake Bay. The water quality needs of the Chesapeake Bay watershed and the initiatives being undertaken are more wide-ranging than other “model” organizations. In addition, the amount of privately owned property in the Chesapeake Bay that needs to be wisely managed is of a totally different character than the publicly owned resources being protected the “model” commissions. Lastly, the size of the Chesapeake Bay watershed, 64,000 square miles with seven state jurisdictions in addition to federal participation, is on a scale vastly different from anything the “model” organizations are addressing.

However, seen in the four model organizations that were examined, interstate compacts and state authorities can: (1) increase compliance by using command-and-control authority of the federal government; and (2) increase financing mechanisms at the federal and state level that can accelerate watershed restoration.

If it were deemed appropriate to pursue an interstate compact in the Chesapeake Bay watershed, there are at least three ways that a formal change of institutional structure could be made. One would be to negotiate a brand new Chesapeake Bay Compact between Maryland, Pennsylvania, Virginia, the District of Columbia and the United States which gives the resulting commission full authority to implement the Clean Water Act in the portions of the signatory states that lie within the Chesapeake Bay watershed. To avoid complications, it may be advantageous to allow participation by Delaware, New York, and West Virginia, but not to make their membership mandatory for the implementation of the compact. A second approach would be to revise the existing Tri-State Agreement on the Chesapeake Bay, which created the Chesapeake Bay Commission, and add executive powers to include Clean Water Act enforcement authority. Its relationship with the Clean Water Act authorities of EPA would have to be specified, probably by legislation. Finally, the CBP could have powers added, either through a compact or by revising the Clean Water Act.

Even if any of these alternatives seemed feasible, a primary barrier to implementation would be timing. Most of the goals of Chesapeake 2000 are to be accomplished by 2010 and many authorities on interstate compacts believe that any new compact would take between five and twenty years to be ratified by the state and federal governments.

The most logical conclusion is to rely on the creativity and synergistic effect of the current CBP structure. First, it should be noted that CBP policies can be achieved by the signatories through their regulatory programs. Second, CBP has under Chesapeake 2000 agreed to blend regulatory program requirements with the cooperative tradition of the program. Under this approach, all jurisdictions (including the Headwaters States of Delaware, West Virginia and New York) have reached agreement on: (1) the new Chesapeake Bay water quality criteria; (2) new nutrient and sediment allocations; and (3) a timetable and process for revising tributary strategies. At this time, the tidal jurisdictions have all begun their regulatory processes to revise water quality standards. In addition, a CBP work group, with stakeholders, is working on both permitting and nutrient trading proposals, with the possibility of agreement on a compatible process watershed wide. The teamwork approach to exercising regulatory functions under this blended or “voluntary-regulatory” program, if emphasized and continued, has the potential to result in more rapid adoption of new water quality standards and implementation of regulatory requirements watershed wide than the traditional state-by-state water pollution control programs.

The key element to the success of the CBP structure and process is excellent pro-active and effective leadership by an Executive Council totally committed to the timely realization of the goals of the Chesapeake Bay Agreement. Leadership of such quality is necessary now more than ever before. Good work has been done over the past twenty years, but we are now at a critical point in the governance of Bay restoration and protection. Our leaders must now energetically exploit the available and affordable technology with muscular determination. Public confidence in our efforts must be encouraged and sustained.

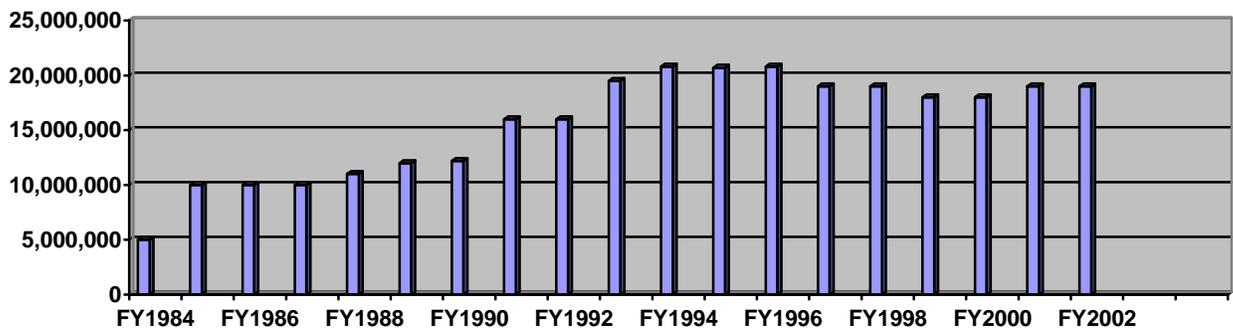
CHAPTER THREE - PROGRAMMATIC FUNDING

There have been some suggestions recently that the federal funds being provided to the Chesapeake Bay Program efforts are not being wisely allocated or that the dollars could be better utilized by distributing them directly to county and local governments. Neither of these contentions is accurate and both views indicate a lack of understanding of the purpose and function of CBP funding. While some of the monies being received by the CBP are used for on-the-ground restoration and implementation, the vast majority are supporting the science underpinning Bay restoration and ensuring the accuracy of the monitoring of restoration progress.

Overall Funding

The CBP had an FY2002 budget of \$19,517,400. Funds for program began at about \$5 million in FY1984 and grew fairly steadily until it peaked at about \$21 million in FY1994. Since then the funding dipped to around \$18 million in FY1999 and FY2000, but has now somewhat recovered. See Chart 1 – CBP FY1984-2002 Funding. Overhead for the program FY2002 including personnel, space rental, phone and other assorted services totaled \$2,955,050 making the available operating budget for the program \$16,562,350.

Chart 1 – CBP FY1984-2002 Funding (dollars)



Base Budget

The base budget for CBP operations totals about \$4.3 million which includes:

- Information and analysis - \$234,400 (5 percent)
- Database management and analysis - \$821,120 (19 percent)
- Organizational support - \$1,736,180 (40 percent)
- Communication and outreach - \$464,980 (11 percent)

- Computer Services and tools - \$724,000 (17 percent)
- GPS/Overhead - \$369,706 (8 percent)

State Grants

The CBP provides grants to the state partners and to the District of Columbia. The pool of funds used for state grants totaled \$8,087,000 in FY2002. Maryland, Pennsylvania and Virginia each receive an implementation grant of \$2.3 million annually and they must match the grants dollar-for-dollar with non-federal revenue. The District of Columbia receives an implementation grant of \$800,000 annually which it must also match one-for-one. The split of dollars among the states and the District has been a long negotiated formula of 30 percent, 30 percent, 30 percent and 10 percent.

With the signing of Chesapeake 2000, the CBP worked extensively with representatives of Delaware, New York and West Virginia (the Headwaters States) and secured the signing by their governors of a Water Quality Memorandum of Understanding (MOU). This MOU encompassed all the commitments of the water quality section of Chesapeake 2000. In early 2002, the CBP made the decision to provide each of the Headwaters States with a \$250,000 grant to assist in the implementation of the commitments of the Water Quality MOU. These grants were paid with \$100,000 in FY2002 funds and \$150,000 in FY2003 funds and must be match on-for-one with state dollars.

District of Columbia

The District's \$800,000 implementation grant was used for:

- Program management including Executive Council responsibilities;
- Education and research including youth and environment initiative focused on teachers, students and youth organizations;
- Technical assistance and regulatory control includes sediment control and storm water management programs;
- Resource protection includes habitat enhancement; and
- Integrated pest management program encourages ecological approaches to pest management through education and demonstration.

State of Maryland

The \$2.3 million FY2002 implementation grant to the State of Maryland was spent on:

- Water quality protection and restoration including, agricultural water quality cost share projects, BNR removal program and non-structural erosion control;
- Habitat protection and restoration including special rivers project;
- Stewardship and community engagement including tributary strategies; and
- Program governance including participation in CBP activities, coordination between Maryland DNR and MDE and grant management.

Commonwealth of Pennsylvania

Pennsylvania's \$2.3 million grant was dedicated to:

- Implementation of a nutrient management program including a system of BMPs to prevent pollution by addressing the most critical farm nutrient problems through measures to manage fertilizers and animal wastes to reduce soil erosion;
- Planning assistance including watershed assessments and baseline monitoring of water quality;
- Educational assistance including promotion and demonstrations;
- Technical assistance including support of technical field staff; and
- Financial assistance funding program.

Commonwealth Virginia

Funds from the \$2.3 million grant to Virginia was used for:

- Supplements funds being providing a "Gap Closer" to galvanize action and investment;
- Education and research including innovative cropping systems, Eastern Shore water quality for farmers, streamside conservation practices, erosion and sediment control workshops;
- Technical assistance including soil and water conservation district staffing, clean farm awards programs and nutrient management plans;
- Living resource restoration including American Shad fishery restoration, wetland restoration and stream buffer demonstrations; and
- Community engagement including developing conservation roundtable strategies.

Programmatic Activities

In the FY2002 budget, \$4,109,054 were dedicated to programmatic activities and implementation. These by category are:

- Demonstration projects - \$225,000 (5 percent)
- Workshops and Training - \$191,620 (5 percent)
- Communication tools - \$227,850 (5 percent)
- Monitoring and modeling - \$1,837,537 (45 percent)
- Research and analysis (20 percent)
- Staff positions and other - \$810,609 (20 percent)

Other Federal Funds

It should be noted that the U.S. Environmental Protection Agency is not the only federal agency dedicating funds to the Chesapeake Bay cleanup. While they are the lead agency, there are other federal partners dedicating considerable dollars. In FY2002, the other major federal agency players and the amounts they dedicated to Chesapeake Bay restoration and protection includes:

- National Oceanic and Atmospheric Administration - \$7,600,000
- National Park Service - \$1,750,000
- U.S. Forest Service - \$2,235,000
- U.S. Army Corps of Engineers - \$3,398,000
- U.S. Navy - \$1,731,000
- U.S. Marine Corps - \$1,451,000
- U.S. Air Force - \$85,000

Conclusions

The \$20 million per year funding being provided for the CBP is being wisely spent and allocated to meet the needs of management and monitoring a 64,000 square mile watershed restoration program. However the funding for the program has been essentially level for the past seven years. At the same time, the CBP has taken on a series of new commitments under Chesapeake 2000 and has expanded its jurisdictional area to

encompass part of three new Headwaters States – Delaware, New York and West Virginia. In this context, the CBP budget has been dramatically falling behind in relation to the charge it is undertaken and should be increase to a level of at least \$30 million per year.

A recent use attainability analysis by the Chesapeake Bay Program indicates that \$7.9 billion in capital costs will be needed to fulfill the water quality goals of Chesapeake 2000. While the study tracked federal and state government sources where approximately \$6 billion of the funds might come be able to come from, there is a \$13 billion gap in funding. Securing those are the dollars are what will help local and county governments in being able to meet the requirements of Chesapeake 2000 especially in the areas of upgrading waste water treatment plants and controlling stormwater runoff.

However, meeting the ambitious C2K goals may require the engagement of a broader group of supporters. An initiative to bring many of the region's corporate leadership to table to develop, endorse and support innovative measures that will help implement and fund Chesapeake Bay watershed clean up efforts. The first step in the process would be to would be to conduct an analysis of the economic impacts of the cleaning up the Bay. This would most probably be performed using an input output model that would provide industry-by-industry sectoral impacts. A prominent steering committee of corporate leaders and well-respected former federal economic advisors would be appointed to serve on the committee. One the corporate leaders would chair the committee and would serve as the spokes person on the results of the study at the conclusion of the analysis. This would provide the needed buy-in to the results of the study and provide the need PR positioning that Bay clean-up is not counter to job and economic growth in the Chesapeake Bay watershed.

The economic study would have two important outcomes. The most obvious is that it would juxtapose positive economic return figures against the \$7.9 billion costs of Bay watershed cleanup. The results will provide the public with the message that Bay clean up is not money down the drain, but it is indeed a prudent economic investment that will have positive benefits to the environment and the quality of life in the region. Countering the prevalent "jobs versus the environment" philosophy with a win-win message that one does not have to chose a between a clean watershed and strong economy is a story that need to be told to generate more public and corporate support for C2K goals.

The other important outcome of the analysis is the new relationships that will be built and the partnerships formed. The new found affinity of some in the corporate community to Chesapeake Bay issues will be a welcome and powerful addition to the current cadre of environmentalists, university researchers and government officials.

CHAPTER FOUR - TECHNOLOGY SOLUTIONS

The technology to achieve the goals of Chesapeake 2000 is both available and affordable. The focus of the Chesapeake 2000 Agreement is the reduction of nutrient loading into the Bay. While the key nutrients are nitrogen and phosphorous, nitrogen is generally the controlling nutrient in the saline and tidal waters of the Bay and its rivers. For simplicity's sake, this analysis will primarily focus on the numbers associated with nitrogen reductions. Where additional actions are required to deal with phosphorous, they are noted.

The Chesapeake Bay Program estimates that a 110 million pound reduction in annual nitrogen loadings will be required to meet the 2010 nutrient goals. The two largest sources of nitrogen to the Bay are sewage treatment plants and agriculture. Currently available technologies for sewage treatment plants can achieve over 30 percent of the 110 million pound reduction goal by 2010. Currently available agriculture-based technologies can achieve nearly 60 percent of the goal. This leaves about 10 percent of the goal to be met by improvements in loadings from other sources, including industrial point sources, septic tanks, stormwater and air pollution.

In other words, by focusing efforts on sewage treatment plants and agriculture, and by adding in benefits from improvements in regulatory programs already in place for industrial point sources, septic tanks, stormwater and air pollution, the states in the Chesapeake Bay watershed can reach the 2010 goal for nutrient reduction. As shown in the following analyses, it will take only a nickel a day from sewer users and a program of smart help for farmers to get us there.

Sewage Treatment Plants

The following reasonable steps are needed to meet the sewage treatment plant portion of the goal.

Wherever possible, each of the 304 significant public wastewater treatment plants in the watershed should reduce total nitrogen concentration in discharges to 3 milligrams per liter (mg/l). By way of comparison, many major plants planned to get down to 8 mg/l by 2000 in order to meet the Bay goal set in 1987. However, improvements in technology and experience in the installation and operation of nutrient removal facilities makes it possible for plants handling about 85 percent of the total capacity to reach 3 mg/l by 2010. There will have to be some flexibility for the other 15 percent. However, in no case should the combined loadings of the plants in any major tributary fail to reach average total nitrogen loadings of 3.5 mg/l.

This goal should be supported by nutrient limits placed in the appropriate water quality discharge permits, in response to new water quality standards now under development. However, a number of revisions to current permit practices should be carried out to facilitate this. First, nutrient limits should be imposed on annual loading averages,

because the effectiveness of the treatment technology depends on seasonal factors such as ambient temperature, and because it is the overall annual loads (rather than monthly or daily loads), that impact the Bay. Second, since some plants will have difficulty reaching or holding at the lower concentration levels, there should be provision for grouping facilities in watershed or "bubble" permits, and perhaps allowing trading among facilities within and between sub-watersheds to achieve the overall average of 3.5 mg/l or less.

There needs to be a program to facilitate and expedite design and construction of the facilities, to assure that milestones are met and to make sure that the permit limits are met at the appropriate time. This may vary among states and among regions within states. What is most important is to phase and schedule the improvements to assure that all are in place by 2010, while maximizing early benefit to the Bay, when practical.

The costs are affordable. The Bay Program estimates the improvements will require from \$2.7 to \$4.4 billion. The highest figure assumes all plants (not just 85 percent) will reach 3 mg/l, and assumes no improvements in technology beyond that available in 2002. Taking that higher figure and spreading it among the 13 million residents of the watershed on sewer lines over a twenty year amortization period, the cost comes to less than five cents a day per person. Essentially a nickel a day to bring back the Bay. With limited exceptions to the 3 mg/l goal and the likelihood of improvements in technology and operations, that cost could be cut in half. None of these estimates assumes any increase in Federal funding, which would also lower user costs.

Agricultural Activities

Because so much of the reduction must come from agricultural sources of nutrients, a Bay-wide program of smart help for farmers is needed to assure the quickest results from cost-effective measures. As a general policy, nutrient budgets and balances for animal operations should be measured at each farm gate; there should be a clear understanding of what is coming in and going out and what is staying on the land. Without disrupting agricultural production and productivity, and by better using Federal and state assistance to farmers, agriculture can deliver up to 60 percent of the total Bay-wide nutrient reduction goal in the following way:

By 2010, there should be 100 percent coverage of croplands, hayfields and pastures with nutrient management plans, up from the current 30-35 percent coverage. These plans should have the following characteristics:

- They must be written for both nitrogen and phosphorous, to prevent over-application of one to achieve adequate amount of the other. This is especially important for the proper application of animal manures.
- They must be implemented, and there must be accountability for their use.
- They must use realistic yield expectations to avoid overuse of commercial fertilizer and manure.

- They must be prepared by qualified people who do not have an interest in selling more fertilizer.

Highest priority for 100 percent coverage should be the areas east of Interstate 95 in Maryland and Virginia (including the Eastern Shore) and the Lower Susquehanna Basin in Pennsylvania.

Cover crops should be planted in a timely fashion wherever possible. The annual cost to achieve this throughout the watershed is estimated at \$50 million per year. There must be a multi-year dedicated budget for this effort, until technology is developed to assure the soil and crop benefits that will make cover crops clearly profitable for farmers.

A number of improvements in animal agriculture are also in order to meet the 2010 nutrient reduction goal:

- Diet management is an area for continued improvement, by increasing the use of additives to reduce the nutrient content of manure and by reducing over-feeding.
- Manure use should be transferred as much as possible from crop production to other commercial uses, such as energy production and highway landscaping.
- A coordinated regional poultry litter distribution system should be established.
- Low-cost solutions to reduce airborne ammonia from animal operations should be developed for poultry house exhaust systems, as well as manure storage and application.

It is important that these agriculture-related changes be made as quickly as possible. Although some practices may reduce nutrient loadings immediately, others will reduce the nutrient levels in groundwater, which releases slowly to the rivers and the Bay. These are especially time-critical, since there is a likely lag time of a number of years, and the reductions need to be achieved by 2010.

To meet these objectives, state laws may well need to be changed. Existing state and Federal programs to assist farmers may need to be enlarged or made more flexible. The Chesapeake Bay Commission should take the lead in initiating and tracking the necessary changes in the three states with respect to both the authority for and funding of these programs.

Conclusions

If these achievable and affordable commitments are made to improve sewage treatment plants and crop and animal agriculture up to 90 percent of the 2010 nutrient reduction goal for the Bay can be met on time. Treatment plant costs come to a few pennies a day for each resident of the watershed on sewers, and the agricultural improvements are

within the implementation capacity of expanded state and Federal programs, although significant budget increases may be needed. The remaining 10 percent of the goal relates to four areas where there are already in place regulatory programs which can be upgraded to achieve the needed reductions -- air pollution, septic tanks, stormwater and industrial point sources.

While the costs for upgrading wastewater treatment plants can be paid for by a few cents a day amortized over 20 years, the methods to pay for nutrient reductions from agriculture, air pollution, stormwater and industrial sources may need to be addressed more definitively. The Chesapeake Executive Council should appoint a "blue ribbon" panel of leading financial experts to examine the financial challenges of meeting key goals of the 2000 Chesapeake Bay Agreement, and charge them with producing a consensus report that will be used by federal, state, and local decision makers throughout the watershed.

The commission would produce a report with findings and recommendations on key Chesapeake challenges. This report would incorporate earlier work about financial gaps, and offer workable solutions to key financing issues such as agricultural controls, air pollution and stormwater management. New financing mechanisms could include recommendations for new revenue streams, supported by taxes or user fees.

The bottom line is -- the job can be done if there is commitment and leadership.

CHAPTER FIVE – CONCLUSIONS AND RECOMMENDATIONS

The Chesapeake 2000 agreement outlines a clear strategy and 100 commitments that, if implemented within the 2010 timeframe, will result in a healthier Chesapeake Bay and a removal of the Bay from the list of impaired waterways. Unfortunately, progress on many of the goals has been slower than what many in the Chesapeake Bay community would like to see. The Alliance is recommending here a series of bold steps that the CBP can undertake to more rapidly implement the vision of the Chesapeake 2000.

Maintain the current institutional structure. - While some have suggested that Chesapeake Bay restoration efforts need to adopt a more regulatory structure with command and control decision-making via an interstate compact commission, it not consistent with the history and heritage of consensus-based decision-making in the region. In addition, even it were deem reasonable to move forward with an interstate compact, that would take five to twenty years which is well beyond the 2010 deadline for Chesapeake 2000 commitments. The current CBP structure has shown considerable innovation and flexibility by the blending of voluntary and regulatory elements in a manner that is paving the ways for future directions in environmental policy.

Increase the CBP Budget to \$30 million per year. - The CBP's approximately \$20 million annual appropriation is being well spent to administer and monitor progress on a 64,000 square mile watershed restoration effort. The technical complexity and integration of the various activities necessary to administer oversight for this endeavor could not be accomplished by providing those funds to local and state governments. For the past seven years, the CBP budget has remain essentially flat while it has taken on increased responsibilities under the Chesapeake 2000 agreement and expanded its role into Delaware, New York and West Virginia. In order to account for inflation as well as to recognize the added the tasked the CBP is being asked to perform, it budget should be increased commensurately.

Expanding Chesapeake Bay constituencies. - Over the past 20 to 30 years, the environmental movement has done an excellent job in raising the profile of Chesapeake Bay issues within its own community. However, times have change and the commitments of Chesapeake 2000 are extraordinary, so it incumbent upon those interested in the health of the Chesapeake Bay to reach beyond the tradition environmental community and engage the wider watershed population in the effort by speaking to them in terms that they can understand. It is imperative that an economic analysis be done on the economic benefits of a healthier on the regional, multi-state economy to bring those who value quality life issues and economic development into the Bay clean up effort.

Sewage treatment upgrades. - The biological nutrient reduction (BNR) technology to reduce nitrogen loading by sewage treatment plants to the the streams and tributaries feeding into the Bay is well known and can be applied to most, if not all, of the 304 significant treatment plants in the region. This BNR technology will reduce the nitrogen loading down to 3mg/l in 85 percent of the plant mentioned. In addition with some slight

modifications in permit practices and with the creation of watershed or “bubble” permits, these nutrient limits should be placed on sewage treatment plant operating permits. The costs of doing this are affordable. If each resident of the 13 million residents on sewage lines were asked to pay five cents a day and amortized over 20 years, the \$2.7 to \$4.4 billion cost to install BNR technology could be easily accomplished. In essence, “A nickel a day to bring back the Bay” would be a concise way to describe the strategy.

Agricultural activities – Sixty percent of the nutrient reductions to cleanup the Bay could come from the agricultural sector. To accomplish this goal, nutrient management plans need to be written and enforced for 100 percent of the cropland in the Chesapeake Bay watershed, rather the 30 to 35 percent in currently being implemented. Cover crops need to be planted in a timely fashion to capture their full benefits. This may cost as much as \$50 million a year until technology is developed to assure the soil and crop benefits that make this practice profitable for farmers. In addition, a number of improvements in animal agriculture will have to be researched and implemented in the coming years. Accomplishing these goals will require changes in laws, additional appropriations and changes in federal and state laws. Because many of these impacts to the Bay come through groundwater with long time lags, it is imperative that we start now.

Chesapeake Bay Financing Commission – The Chesapeake Executive Council should appoint a “blue ribbon” panel of leading financial experts to examine the financial challenges of meeting key goals of the 2000 Chesapeake Bay Agreement. The commission would produce a report which would incorporate earlier work about financial gaps, and offer workable solutions to key financing issues such as agricultural controls, air pollution and stormwater management. New financing mechanisms could include recommendations for new revenue streams, supported by taxes or user fees.

Increased Leadership by the Chesapeake Executive Council – The key element to the success of the CBP structure and process is excellent pro-active and effective leadership by an Executive Council totally committed to the timely realization of the goals of the Chesapeake Bay Agreement. Leadership of such quality is necessary now more than ever before. Good work has been done over the past twenty years, but we are now at a critical point in the governance of Bay restoration and protection. Our leaders must now energetically exploit the available and affordable technology with muscular determination. Public confidence in our efforts must be encouraged and sustained. If the effort is not sustained, that confidence may be shattered and a structure for which there is no adequate alternative may collapse. That is not an acceptable risk.

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* It should be noted that any conclusions or misstatements of fact in this report are the sole responsibility of the Alliance for the Chesapeake Bay. The Alliance appreciates the graciousness of those who shared information in the preparation of document.

ATTACHMENT A

The Atlantic States Marine Fisheries Commission

The Atlantic States Marine Fisheries Commission (ASMFC) was created by compact in 1942, and received significant new powers with the passage of the Atlantic Coastal Fisheries Cooperative Management Act in 1993. While the ASMFC does not have any role in water quality, it has regulatory power and provides a useful model for state coordination. Its strategic plan defines its roles, challenges, and strategies very clearly.

The ASMFC is comprised of the fifteen Atlantic States lining the coast, from Maine down to Florida) and Pennsylvania. These member states have vowed to sustain healthy coastal fishery resources and to work collectively to achieve this goal. Each member state is allowed three representatives to sit on the commission along with the director of the state's marine fisheries management agency, a representative of fishery interests appointed by the state governor, and a state legislator. ASMFC is similar to the CBP in that it deals with concerns of habitat conservation, interstate fisheries management and research and statistics. It is dissimilar in that it has law enforcement responsibilities.

Within the larger commission there is a branch specifically designated to manage interstate fisheries, the Interstate Fisheries Management Program (ISFMP). Its main concerns are to "(1) determine priorities for the management of fisheries in state waters; (2) develop, monitor and review fishery management plans for high priority fisheries; (3) recommend to states, regional fishery management councils and the federal government management measures to benefit such fisheries; and (4) provide a means of conducting short-term research essential to preparation or revision of fishery management plans". A program similar to this would be very valuable to the Chesapeake Bay through helping to restore the Bay's living resources and to deal with the growing population in the area. Another theory corresponding with the ideals of the Chesapeake Bay program, and the Alliance for the Chesapeake Bay more specifically, is that of integrating the public into the process to encourage their leadership here. The ISFMP holds public information meetings and hearings where representatives from different industries in the area can come and voice their opinions and have them influence the fishery management planning process; opinions can be voiced at any of the four annual public hearings or written to the commission at any time.

The second branch of the larger commission concentrates on research and statistics. The Commission's Research and Statistics Program is responsible for providing the most current and innovative scientific information for the commission's fishery management plans. In addition to providing the information, they also add their advice as to the best plan of action for many of the scientific issues. The two main avenues through which this program is achieving these two goals, information and advice, are the Atlantic Coastal Cooperative Statistics Program (ACCSP) and the Southeast Area Monitoring and Assessment Program (SEAMAP). ACCSP was created to collect data of fishery-dependent activities among federal and state fisheries agencies. The end goal of this

program was to increase the efficiency and cost-effectiveness of current data collections while lessening the burden on fishermen.

A third branch concerns itself with habitat conservation. The two main objectives of the Commission's Habitat Program are policy development and education. For the first objective, "Since member state fishery management agencies usually do not have regulatory authority over fish habitat, it is important to communicate fish habitat needs to the relevant agencies" Because this is the stance that they must take, they make sure that the proper information is available for the commission so that the habitats needs are clearly outlined in the plans and can be provided for. Secondly, they provide the information to the public through the *Habitat Hotline Atlantic*, a newsletter published bimonthly concerning the marine fish habitat issues.

Lastly, the Law Enforcement Commission helps states clearly identify the problems in their area to better resolve them. It is comprised of a law enforcement representative from each of the states, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Coast Guard. This commission is also responsible for creating responsibility of the members for keeping with the agreements made. They bring forth resolution addressing enforcement concerns and coordinate enforcement efforts among states.

Enforcement of ASMFC rulings are clarified with the passage of the Atlantic Coastal Fisheries Cooperative Management Act in 1993. This act provides a mechanism to ensure state compliance with mandated conservation measures in the commission-approved management plans. Prior to the passage of this act, state implementation a commission fishery management plan was voluntary, except for the Fishery Management Plan for Atlantic Striped Bass. Now, all member states that have a declared interest in a fishery must comply with certain conservation provisions of the plan or the Secretary of Commerce may impose a moratorium in that state's waters for the harvest of the species in question.

Ohio River Valley Water Sanitation Commission

The Ohio River Valley Water Sanitation Commission (ORSANCO) was formed in 1948 among the states of Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, and West Virginia. This interstate agency came together to protect the growing pollution present in the Ohio River. Its mission statement, "to prevent pollution originating in any state from injuriously affecting the various uses of interstate water" clearly identifies pollution as the main concern. More specifically though, ORSANCO concerns itself with "insuring proper performance of some 3,000 municipal and industrial waste-control plants, upgrading their capability where required, improving guardianship of water quality through amplification of monitoring and surveillance, and taking steps to correlate reservoir releases and expected hydropower operations with river-quality variations". As a cause of the growing population over the years reaching presently near the top, the Ohio

River has been increasingly polluted by the industrialization and increased strain on its resources.

The commission is comprised of an executive board containing three governor-appointed representatives from each signatory state as well as three federal representatives appointed by the President. A chairman who elects others to oversee the actions of the commissions heads the executive board; his tenure lasts only one year. The commission meets three times a year to discuss the projects it will fund and to agree upon the budget.

The ORSANCO does not require states to adopt its water quality standards, but they are required to put the discharge limits into permits. In general, the states have adopted ORSANCO's standards or more stringent ones. In addition, it has prepared TMDLs for EPA to approval. ORSANCO does some inspections, mostly on bacteria, and can do enforcement. Of particular interest for the CBP is ORSANCO's plan to study, assess and make recommendations for the control of nutrients to protect desired uses in the Ohio River and downstream watersheds, including the Gulf of Mexico. They are planning to assess nutrient trading options.

The budget is financed through state and federal money. State monies are collected by fining the members depending on population and land area of the state; investments from municipalities and industries who often impose a service charge to provide the money, offering mortgage-revenue bonds which are more attractive than the normal bond; and voluntary aid from other organizations like the U.S. Coast Guard who distributed posters at marinas and boat clubs encouraging public-education. . Federal monies are collected through Federal aid grants guaranteed in the EPA 106 grant. Even without the other sources, the states were required" to incur a financial obligation in violation of debt limitations imposed by its constitution".

Whenever a problem arises that the commission decides is in its jurisdiction, the commission first presents it to the state and allow the it involve the other states in helping, or to use the commission to get the other states' help. "Whenever an industry notifies Commission headquarters of a spill, and the staff has made an assessment of its impact on river-quality conditions, this information is relayed immediately to the state in which the spill occurred, along with recommendations as to who should be notified downstream. It is then the option of the state agency to determine whether it will contact those who may be affected in its area of jurisdiction or instruct ORSANCO to do so". Along with this principle is the manner in which the Commission deals with municipalities. Whenever a local industry complains or causes a problem, the state agency is left to deal with it; only on matters where the Commission is requested, or it is more beneficial, does it step in. This is a very important, and beneficial, component to the commission because it reassures the states that the commission has no wish to intervene with its governmental processes or power.

The legality that the commission holds is based in the compact they formed at the beginning, and the support from Congress. ORSANCO is granted the right to "establish minimum standards for treatment for all sewage that is discharged into the interstate

waters of the district. The commissioners are vested with authority to promulgate such higher standards as may be determined by investigations and hearings, and they are also directed to prescribe requirements for treatment or modification of industrial waste based on investigations and hearings". In order to achieve these rights though, it is necessary to not only hold the votes of the majority of commissioners from the state of the problem in question, but also to hold the votes of the majority of commissioners of all eight of the states. Despite even this though, in the end the Supreme Court has reserved the right to judge all inquiries in the interstate agency's actions and compacts.

Puget Sound

The Puget Sound Water Quality Authority (PSWQA) is the entity involved with protecting the land and waters of Puget Sound and it was established in 1985 out of growing concern for the quality of the water. It is different than the other three organization being examined because it an intrastate authority not an interstate commission. The mission of the PSWQA is to develop a comprehensive plan for water quality protection in Puget Sound to be implemented by existing state and local agencies.

Within the PSWQA there are two councils: the Action Team and the Puget Sound Council. The Action Team is comprised of: "The Directors of the Departments of Ecology; Agriculture; Natural Resources; Fish and Wildlife; and Community, Trade, and Economic Development; the Secretaries of the Departments of Health and Transportation; the Director of the Parks and Recreation Commission; the Director of the Interagency Committee for Outdoor Recreation; the Administrative Officer of the Conservation Commission; one person representing cities, appointed by the Governor; one person representing counties, appointed by the Governor; one person representing federally recognized tribes, appointed by the Governor, and the chair of the action team." In addition the Action Team will "also include the following ex officio nonvoting members: The Regional Director of the United States Environmental Protection Agency; the Regional Administrator of the National Marine Fisheries Service; and the regional Supervisor of the United States Fish and Wildlife Service" The action team meets at least four times a year and at least twice jointly with the Puget Sound council.

The Puget Sound Council which provides advice to the Action Team is comprised of eleven members. Seven members are appointed by the governor, "[representing] business, the environmental community, agriculture, the shellfish industry, counties, cities, and the tribes" while two others are members of the statesenate chosen by the president representing both caucuses and another two from the house of representatives representing both caucuses again. Each member currently holds four-year terms. The Council is used to asses current water trend uses by the public and educate them of proper usage of the Sound, advise more efficient and ecologically friendly disposal of waste and use of the water, review the budgets of state agencies and their enforcement activities concerning Puget Sound. In addition they also provide recommendations for the disposal and monitoring of several aspects of the water issue, like the shellfish beds, dredge soil, and wildlife habitat.

The primary mechanism available to the PSWQA for ensuring that the commitments are carried out is through the state's budget process. The PSWQA estimates what it will cost state and local agencies to implement the water quality management plan. It then works with the Governor's office to develop a budget for plan implementation which is then submitted to the state legislature. This budget submittal identifies implementation line items for each agency, resulting in direct appropriations to those agencies. With the ability to track expenditures through the biennial progress reports, the PSWQA is able to monitor implementation. The "earmarking" of agency budgets has helped a great deal in this regard.

Susquehanna River Basin Commission

The Susquehanna River Basin Commission is a federal-interstate compact commission created out of need of regulation of the river running through New York, Pennsylvania, and Maryland on December 24, 1970. Each member state, as well as the President, is granted one governor for representation in the commission.

This commission's mission is "to enhance public welfare through comprehensive planning, water supply allocation, and management of the water resources of the Susquehanna River Basin" Some of the many initiatives that it has taken are: consulting with the public as to the best way to protect the basin's future, educating people on healthy water habits, research to better their knowledge of the water basin and its needs, conducting surveys to learn of the public's uses of the basin, and assuming jurisdiction over the signatory members. In order to do this, the members agreed to meet regularly and formed a list of six main concerns they believed need addressing. These six responsibilities are: flood protection, watershed management, water quality management and control, water supply, recreation, and cultural values. Of these six specializations, the one most important to the Chesapeake Bay is water quality management and control because of the pollutants entering the Bay from the basin. The SRBC works to protect the basin through encouraging good practices from their members and creating educational programs for the public to encourage healthy practices.

One element of SRBC operations that is of interest is its unique jurisdictional classification tactic. The SRBC defines its boundaries not by political state lines, but by the geographical boundaries of the river enabling it to better "provide coordinated management, promote communication among the members, and resolve water resource issues and controversies within the basin" . By focusing its efforts not on the states but on the needs and characteristics of the basin it can better address these realities and avoid political complications. When necessary the commission "may adopt a comprehensive plan or any revision thereof in such part or parts as it may deem appropriate provided that before the adoption of the plan or any part or revision thereof the commission shall consult with water users and interested public bodies". They collectively vote on appropriate means to be taken relating to the previous six responsibilities, one example being levels of nutrients and sediments in the water.

The SRBC has created a financial system where federal, state, public, and local monies are used to fund the projects collectively agreed upon. They “establish uniform standards and procedures for the evaluation, determination of benefits, and cost allocations of projects affecting the basin” . In the original compact the signatory states agreed upon specific standards of which all projects are held to and how to fund the projects. The commission uses low interest bonds and costs sharing of the states assigned through unanimous voting to fund the projects. From these sources, and any revenue they might receive from projects, the commission creates its current expense and capital budget to fund for the projects of the next fiscal year. Through establishing financial responsibility for each state the commission is able to fund more projects and thus have a greater influence.

In regard to authority and making sure the members fulfill their obligations, the SRBC will investigate and determine if the requirements of the compact or the rules and regulations of the commission are being complied with. If satisfactory progress has not been made, it will institute a series of actions in its own name in any state or federal court with jurisdiction to compel compliance.