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March 17, 2013

Nicholas A. DiPasquale  
Director, Chesapeake Bay Program  
410 Severn Avenue, Suite 112  
Annapolis, MD 21403

Dear Mr. DiPasquale:

The Atlantic, D.C., Maryland, Pennsylvania, and Virginia Chapters of the Sierra Club on behalf of its roughly 200,000 members and supporters appreciate the opportunity to comment on the draft of the new Chesapeake Bay Watershed Agreement. Protecting our waterways from pollution and degradation is of critical concern for the Sierra Club. Many of our members and supporters have been and continue to be actively engaged on various aspects of Chesapeake Bay restoration, including reducing sediment and nutrient pollution, protecting forests and wetlands in the watershed, advancing climate adaptation, and reducing toxins in our waterways. We welcome the partners' efforts in crafting a new watershed agreement at a time when the implementation of the Chesapeake Bay TMDL is advancing rapidly, and the need for responses to climate impacts is becoming increasingly urgent.

As a climate-conscious organization with a long-standing history of working to reduce greenhouse gases, Sierra Club is keenly aware of the implications of climate change for the integrity of America's eco-systems. Scientists tell us that climate impacts will play a growing role in shaping the viability of our natural resources, including in particular our waterways. We believe that climate change needs to be prominently featured in the new Chesapeake Bay Watershed Agreement. In highlighting climate change, the partners would demonstrate leadership in facing a monumental environmental challenge to one of the country's culturally, historically and ecologically most significant natural resources.

While scientists have been warning us since at least the 1980s about the consequences of failing to limit greenhouse gas emissions (Bodansky, 1999), predictions about climate disruption have become direr in the last one and a half decades. According to scientists, warming of the atmosphere increases the probability of severe storms and is associated with more intense precipitation along the East Coast, and more frequent and severe droughts in the Midwest. Within these geographic areas, precipitation patterns are shifting as well. For example, winters and springs in the Mid-Atlantic are becoming wetter while summer and fall rainfall has been on the decrease.

These shifts in weather patterns are affecting our waterways across the nation. Record-breaking temperatures have led to sharp decreases in oxygen in some waterways, resulting in massive fish kills in several mid-western states in the summer of 2012 (The Gazette, July, 22, 2012). The Colorado River, for example, already running low due to water being siphoned off for

agricultural uses, will be losing 5-20% of its volume due to climate change (Bureau of Reclamation, 2011) by 2050. In the Mid-Atlantic States, tropical storms of unprecedented force have led to flooding events that seem to be more the stuff of fiction than reality (Kenward, 2013).

Even if climate change pollution were to be drastically reduced now - which is unlikely considering the national and international status quo on this issue - warming caused by past emissions would continue for several decades. This delay - a result of the thermal inertia of the oceans - stalls the manifestation of warming effects on land by several decades. Under current emission scenarios, we are expecting a 2 - 6 degree Celsius increase in average global temperatures by the end of the century. Even an increase in average temperature by as little as 2 degrees Celsius would have devastating consequences for most eco-systems.

As the climate becomes more unpredictable, we stand to learn painful lessons about the dependence of our waterways and aquatic eco-systems on a stable climate. It is paramount to recognize then that the long-term viability of the Chesapeake Bay rests on our ability to reduce greenhouse gas emissions and to adapt to current and projected climate impacts.

As in the rest of the country, scientists are already witnessing the impact of climate change on the Chesapeake Bay. Since the 1960s, water temperatures have increased by 2 degrees F. In the last century, Bay water levels have risen by more than a foot. About a dozen islands have vanished; others have been evacuated. Thousands of acres of shoreline marshes have eroded away. (Boesch and others, 2008, The Bay Journal)

Scientists expect the impacts on the Bay to get more severe as time goes on, which will include even higher average temperatures, more intense and frequent precipitation with a greater chance of flooding events. More flooding will result in greater sediment runoff, and possibly increased nitrogen and sediment loadings. Higher temperatures in conjunction with increased nutrient loading will likely lead to decreased oxygen in the water column and greater chance of algal blooms which in turn will bring about larger dead zones. Other expected impacts include increased sea level rise, river and shoreline erosion, the disappearance of current species and possibly the arrival of new species. As a result of climate change, the watershed could also experience more severe droughts and reduced stream flows during certain times of year with adverse effects on the biological integrity of the Bay. (Pyke and others, 2010)

While we lack the ability to predict the exact nature and magnitude of climate effects on the Bay, we do know that the impacts will be severe. Some scientists assert that climate change is among the biggest challenges facing the Chesapeake Bay (Dunn, 2010). Already highly stressed from pollution, the Bay is particularly sensitive to rising temperatures and increasing or decreasing levels of precipitation.

The Scientific and Technical Advisory Committee of the Chesapeake Bay Program specifically addresses the issue at hand: "The great sensitivity of the Bay to climate change and variability leads to the unavoidable conclusion that restoration efforts must account for the effects of climate change in order to succeed" (Pyke, 2010).

It is essential then that climate change be emphasized in the Chesapeake Bay Watershed Agreement and that the partnership set explicitly articulated goals relating to climate adaptation. Excluding climate change from the agreement would not only be inconsistent with the President's Executive Order section 202 (d), which requires an assessment of the impacts of a

changing climate on the Chesapeake Bay and development of a strategy for adapting natural resource programs and public infrastructure to address the impacts of a changing climate on water quality and living resources of the Chesapeake Bay watershed; it would also be inconsistent with EPA's regional Climate Adaptation Plans.

In the work that lies ahead, it is critical that the Bay program follows the recommendations of its own research arm, the Scientific and Technical Advisory Committee (STAC). According to STAC:

“The first — and perhaps most important — step is to explicitly consider climate change in a wide range of resource management decisions: water quality regulation, tributary strategies, living resource restoration, and others. (...)The Bay Program and its partners can and should immediately require all major resource management decisions to evaluate changing conditions on both the cost and efficacy of the action and explicitly consider management options that increase resilience or facilitate adaptation to changing conditions. “ (Pyke and others, 2008)

In the following paragraphs, please find specific comments on language in the draft agreement:

Under the Principles sections in the draft agreement, under the 8<sup>th</sup> bullet, instead of “anticipate changing conditions, including long-term trends in sea level rise (...)” it should say “both address current climate impacts and anticipate changing conditions, including long-term trends in sea level, temperature, precipitation, and other aspects of environmental variability caused by climate change.”

The current draft language might be understood as suggesting that we expect climate impacts in the future, and will address them as they arise. Instead, the Bay and the watershed are experiencing the impacts of changing conditions *now*. We need to begin to do both, address current climate impacts and anticipate and pro-actively respond to changing conditions.

Most importantly, the Atlantic, D.C., Maryland, Pennsylvania and Virginia Chapters of the Sierra Club strongly urge the inclusion in the new Chesapeake Bay Watershed Agreement of two explicit and concrete goals relating to protecting the physical and biological integrity of our water bodies in the watershed from on-going and projected changes in environmental conditions. Climate-related goals might read as follows:

### ***Climate Adaptation Goal***

*Expand the implementation of climate adaptation practices that center on ecological transitions to ensure that rivers and streams and the Chesapeake Bay continue to maintain biological functioning as environmental conditions change.*

#### ***1. Corridor/Connectivity Outcome***

*The creation of species corridors, including in particular restoring and maintaining river connectivity on x number of stream miles, to support the northward migration of species as temperatures increase and seasonal changes occur;*

#### ***2. River Protection Outcome***

*Implementation of practices and land use approaches necessary to pro-actively protect x stream miles from the effects of increased precipitation and severe storm events;*

### *3. Shoreline Habitats Outcome*

*Implementation of practices and land use approaches necessary to maintain shoreline habitats on x number of shorelines as they move inland.*

## **Climate Leadership Goal**

*Integrate climate change in all management and policy decisions of the Chesapeake Bay Program to prepare and protect the Chesapeake Bay and the rivers and streams in the watershed from climate impacts.*

### *1. Climate Coordination Outcome*

*Create the role of Climate Coordinator at the Chesapeake Bay Program by July of 2014, which would be a leadership role charged with integrating climate concerns in all management and policy decision of the Chesapeake Bay Program, and advance coordination among federal, state and local partners of climate adaptation efforts mounted by the Chesapeake Bay Program;*

### *2. Climate Integration Outcome*

*Integrate climate science and adaptation approaches into the work of the various goal implementation teams to achieve alignment of climate adaption and carbon sequestration goals with all other restoration goals; to be managed by all goal implementation teams.*

### *3. Carbon Sequestration Outcome*

*Assess the carbon sequestration potential associated with forests and wetlands in the Chesapeake Bay Watershed; begin to measure loss of carbon sequestration potential caused by development; integrate planning and goal-setting for maintaining and increasing carbon sequestration potential with water quality and land use goals; coordinate with jurisdictions to include carbon sequestration goals in state climate action plans.*

We hope that the partnership will include both the term “climate change” and explicitly articulated goals in the new agreement. Thank you for considering our comments on this important issue.

Sincerely,

Claudia Friedetzky, Conservation Representative  
Sierra Club, Maryland Chapter

Roger Downs, Conservation Director  
Sierra Club, Atlantic Chapter

Thomas Au, Conservation Chair  
Sierra Club, Pennsylvania Chapter

Bill Penniman, Conservation Chair  
Sierra Club, Virginia Chapter

James B. Dougherty, Conservation Chair  
Sierra Club, D.C. Chapter

## References

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