Report for 2005DC71B: An Analytical Study of the Anacostia and Potomac Rivers

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An Analytical Study on the Anacostia and Potomac Rivers

Annual Progress Report for FY 2005

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Introduction

The Anacostia and Potomac Rivers run through Washington, DC. Both rivers suffer from poor water quality. Less than 2/3 of the rivers' water qualifies as healthy habitat for aquatic life, which is key to maintaining the health of the river. Over the years the activities and behavior of residents within the metropolitan areas have had adverse effects on streams and rivers. Water that run from lawns and streets storms into drains and streams picks up chemicals and excess fertilizers, pesticides and other chemicals that can make water unhealthy for human and wildlife. Pollution levels vary from river to river and the efforts towards cleanup has also taken a similar pattern. This is true the Anacostia and Potomac Rivers in Washington, DC.

Purpose of Study

The purpose of this study is to analyze the problem(s) afflicting the Anacostia and Potomac Rivers in Washington, DC. Particular emphasis will be paid to the sources of pollution and the role of the public and private sectors in cleaning these rivers.

Methodology

The method employed in this study is content analysis, which is a "detailed and systematic examination of the content of a particular body of materials for the purpose of identifying patterns, themes or biases" (Paul D. Leedy & Jeanne Ellis Ormrod, 2001, p.155). Content analysis help bring into context the problem being studied. Data on the Anacostia and Potomac Rivers was collected from many sources including: District of Columbia government publication, and literature published by the private organizations

involved with the river and major newspaper articles. A review of all this data helps distill vital information that is pertinent to a contextual understanding of the relevant issues in this study. Despite the helpful nature of this data in understanding the dynamics of the problems associated with both rivers, it fails to present a coherent and detail picture to the public perceptions on the state of the rivers and the various efforts geared at addressing the problems afflicting the rivers. The inhabitants of this region are important stakeholders in the cleaning-up effort of the river and revitalization plans. This is because both rivers are contributing tributaries to the Blue Plain – which is the source of portable water for the Washington, Metropolitan area.

(A) Anacostia River

The Anacostia River Watershed is located in the Washington, DC Metropolitan area. The river flows from Montgomery and Prince George's Counties to Washington, DC, where it flows into the Potomac River and eventually to the Chesapeake Bay. The watershed is comprised of three major drainage areas: the Northwest and Northeast branches and the tidal drainage. The Northeast and Northwest Branches are free-flowing streams and their confluence forms the Anacostia River in Bladensburg, Maryland. The drainage area is made up the river and its floodplain, and streams enclosed in the storm sewer systems. Excessive development on the land areas surrounding the Anacostia River has resulted in excessive surface runoff that contains metals, gases and debris that contributes to the degradation of the river and sedimentation along the segment of the river in Southeast Washington, DC. Rapid urbanization and uncontrolled development have contributed to the growing regional concern over the state and health of the river. This concern has forced varying interests

to explore way to clear the river. The Anacostia watershed currently includes several stakeholders of all socioeconomic and political backgrounds within Washington, DC and the suburban areas.

According to American Rivers the Anacostia River is polluted with a variety of substances from a variety of sources. Storm runoff, agricultural runoff, combined sewer overflow (CSO), sediment, heavy metals and other toxics constantly inundate the river to create a level of pollution which has caused American Rivers to categorize the Anacostia River as one of the 10 most polluted rivers in the United States in 1994, 1995 and on their endangered rivers list in 2000. (American Rivers web site 2001) Numerous entities have undertaken different studies on the Anacostia and Potomac Rivers over the years. In the 1990s the number of studies conducted by public and private institutions dramatically increased.

The Southeast Washington, DC segment of the Anacostia River covers 4,786 acres and approximately 32 percent of impervious area. The area is approximately 300 feet above sea level. Urbanization and development has contributed to the enormous hydrological transformation that the region has undergone. (Metropolitan Council of Government, 1999.) Prior to the arrival of the Europeans, "the Anacostia watershed was a thriving center of the Indian culture set amidst the Piedmont and Coastal Plain provinces in the early 17th century." The "Nanchotank Indian tribe" - -semi agricultural tribes inhabited the land area (Washington, DC) between the Potomac and Anacostia Rivers. The river at its virgin stage was habitat to a variety of fisheries. For example, red-breasted sunfish, white and yellow perch, catfish and herring were found in the river. The surrounding area was mostly covered with lust forest. This environment did

not only provide for a beautiful vegetal cover but was also host to numerous wild life that complimented the clear crystal Anacostia that flow into the Potomac River.

The arrival of the first European settler some 400 years ago paved the way for new human settlement to develop along the riverbanks of the Anacostia. These new settlements led to the proliferation of new land uses and urban centers. The urbanization process of Washington, DC that began with the arrival of the Europeans and continues today has drastically altered the natural ecosystem of the Anacostia River. Today the river is heavily polluted to the extent that it's difficult to find any semblance of its initial ecosystem.

Urbanization and suburbanization have greatly contributed to the transformation of the landscape of the Anacostia watershed. The building of road surfaces, commercial and residential buildings, parking lots, and sidewalks have greatly contributed to an increase in run-off into resulting from precipitation. The run-off from these impervious surfaces picks up debris and gases that are channeled into the river. It is important to add that the run-off in urban areas contain traces of metals such as mercury, copper, lead, Zinc, and petroleum hydrocarbons results from the exhausts of automobile dissolve in the run-off and are then transported to the river.

The sedimentation of the river from the cultivation agricultural field up-steam, erosion of the river banks and bed, high-suspended solid load has been complemented by runoff from paved and impervious areas to impair the biological and hydrological character of the Anacostia River. (Anacostia Watershed Network, 1999) Urbanization and suburbanisation have increased flooding, increased the deforestation and an influx of toxins and pollutants into the river. The Sewage inputs to the tidal river add organic

wastes, bacteria and debris into the river. It is important to note that the largest total suspended solids loads (TSS) generated in the Anacostia watershed comes from the Northeast and Northwest branches of the river. In fact, the annual TSS loading in the Anacostia watershed is estimated to be 48,200 tons, for an average of 0.43 tons/acre/year. (Warner, Shepp, Corish and Galli, 1997.)

Another problem afflicting the Anacostia River is the Combined Sewer Overflows (CSOs). Combined Sewer Overflows occur when the amount of runoff resulting from precipitation exceeds the capacity of this combined system resulting in the discharge of untreated sanitary waste and storm water directly into the river. It is estimated that about 6% of the annual pollutant load of the Anacostia are as result of CSOs. Additionally it is estimated that about 60 percent of the watershed in Washington, DC drains directly to the tidal Anacostia River through sanitary and sewer systems that date as far back as the 1800s. Consequently, constant broken sewage pipes created the problems of sew outflow to area. For Example, there are eleven main combined sewer outfalls to the Anacostia River and all discharge in the vicinity of the East Capitol Street and South Capitol Street bridges. (Anacostia Watershed Network, 1997)

(C) Cleanup Efforts in the Anacostia River

In 1996 the District of Columbia Environmental Regulation Administration produced an environmental report, The Anacostia River Toxics Management Action Plan, which included 113 references. The bulk of these citations were government, both Federal and local, reports, findings, regulations and studies. Ninety percent of the citations were dated in the 1990s. (pp.R1-R8)

In 1997 the United States Environmental Protection Agency (EPA) published a report An Environmental Characterization of the District of Columbia, which includes 90 citations over 90 percent of which were produced in the 1990s.

Both of these reports analyzed the levels of pollution in the waterways in Washington, DC. The recommendations outlined in each of the reports called for improvement of the condition waterways in the District of Columbia. The EPA report highlighted a need "to better communicate the idea of environmental risk to those persons whose activity patterns and lifestyles may result in potentially higher risks." (p.6-7) It called for the implementation of many of the recommendations in the 1991 Action Plan by Metropolitan Washington Council of Governments. The report also called on concerned parties to continue and expand cooperation among federal/state/local government agencies and other groups that are working to improve water quality and biological resources in the Anacostia watershed. Controlling non point source pollution and CSO is an important element of this endeavor. (p. 6-8)

The Washington Metropolitan Council of Government using the Simple Method (Schueler, 1987) estimated the annual Biochemical Oxygen Demand Load for the entire Anacostia watershed stood at 2,915680 Ibs/year. The Northeast and Northwest branches generated about 72 percent of the Biochemical Oxygen Demand

pollutant Load of the watershed. This level is about 5 times higher than the rate that exists prior to arrival of the Europeans in the Anacostia region. The Biochemical Oxygen Demand pollutant Load per sub drainage areas increases with increased size of the sub drainage area. It is important to note that high Biochemical Oxygen pollutant loads in the Anacostia River, especially during the summer months can reduce tidal river dissolved oxygen (DO) concentration to levels that are lethal to fishes and other river inhabitants. (Anacostia Watershed Network, 1997)

Various public and private initiatives have and are being undertaken to address the problems associated with the associated with the Anacostia Watershed. The clean up effort of private entities will include the work of organizations such as the Anacostia Watershed Network, the Anacostia Watershed Society and the Anacostia River Business Coalition. Each of these groups approaches the problems of the Anacostia watershed from their own unique perspectives. Additionally, the Government of the District of Columbia, Metropolitan Council of Governments, the Environmental Protection Agency (EPA), U.S. Geological Survey and National Parks and Planning Commission have over the years advance various approaches and plans designed to assist in the cleaning of the river. These governmental efforts have yielded little dividend. The combined efforts of the private and public sectors have to a limited extent contributed to advancing solutions, which are designed to address the problems of the watershed. Interestingly, none of these attempts have yielded maximum dividend. The failure to come up with a meaningful comprehensive plan for the Anacostia River in South East, Washington, DC confuses many because some will argue that part of the

Anacostia River inevitably flows into the Potomac River, which contributes to the Blue Plains. The Blue Plains provide drinking water for the Washington Metropolitan area.

Private bodies are embarking on several initiatives design to clean the river. Their activities range from educating the local population of the need for a clean river to developing comprehensive revitalization plans for the entire area. Private groups involved in different efforts aimed at revitalizing the river include: the Anacostia River Business Coalition, the Anacostia Watershed Society, the Anacostia Watershed Network, among others.

The Anacostia River Business Coalition (ARBC) was formed in 1997 by a group of businesses in and around the Washington, DC concerned about the health of the Anacostia River. The organization's main objective is to educate the citizen and businesses on the needs to control and prevent chemical pollution. ARBC undertakes a variety of projects that are design to clean and protect the river's shoreline and tributaries as well as serve as a conduct to link environmental projects with volunteered business.

The Anacostia Watershed Society (AWS) is a non-profit environmental organization that is working to restore and protect the Anacostia River and its watershed. The AWS was found in 1989 and through its volunteer restoration activities, the residents of the Anacostia watershed have the chance to be involved in determining their destiny and that of the river. The AWS since its inception has brought together 17,000 volunteers who have planted about 9,200 and have stenciled over 700 storm-drain within the watershed as well as removed 250 tons of debris and over 5,200 from the watershed. The organization has educated over 9,800 people using slides, explaining

the history of the river, the threats it presently faces and the various life style changes that people can undertake that will have a positive impact on the life of the river. (Anacostia Watershed Society, 1989.)

Equally important, the Anacostia Watershed Network, a non-profit group has undertaken studies and put out a comprehensive report, which identifies the various problems of the Anacostia river and proposed various approaches of dealing with these problems.

The Summit Fund, a private funding agency, has since 1993 “supported organizations working to bring about tangible and measurable improvement in the quality of life within the Washington, DC community.” In 1997 this organization responded to two important problems that had a direct bearing on the health and revitalization of the community. The present focus of the organization is on restoring and protecting the Anacostia River as well as one other initiative. Several recent grants have been directed towards outreach and education. The results of these programs are yet to be assessed. However, the focus of the grant recipients has not in the past been on that portion of the Anacostia River within the District of Columbia. Therefore it is doubtful whether the at-risk population will benefit from these programs.

The Private initiatives put together by private citizen to clean the river operate independent of the District government. These organizations are making serious contribution to the restoration of the river.

On the other hand, the District of Columbia government and other public entities have over the years made several attempts to clean the Anacostia River. Unfortunately, most of such efforts never took-off the ground or were simply abandoned for lack of

capital or the complete lack of political will. For example, in 1987 an intergovernmental partnership between the governments of the District of Columbia, Montgomery County, Prince George's county and the State of Maryland signed the Anacostia Watershed Restoration Agreement. The agreement was designed to formalize a cooperative partnership to clean up and restore the Anacostia River and its tributaries. Signatures of the agreement unanimously agreed to form the Anacostia Restoration Committee that was going to oversee development and restoration plans of the watershed. The Metropolitan Council of Government was also charged with providing the administrative and technical support to facilitate the Committee's efforts to restoring the watershed. Additionally, the Interstate Commission on the Potomac River was charged with conducting and implementing public education and participation program in the restoration effort and to develop a living resource program for the watershed.

It this vein that on March 22, 2000, the Mayor of Washington, DC, Anthony Williams on behalf of the District of Columbia and a dozen of federal agencies signed the Anacostia Waterfront Initiative Memorandum of Understanding (MOU) that created a partnership that will govern the creation of a new vision for the Anacostia River and its surrounding areas. This agreement represents the most important partnership ever crafted between the federal government and the government of the District. The agreement calls for the creation of a "new, energized waterfront for the next millennium, one that will unify the diverse waterfront area into a cohesive and attractive mixture of commercial, residential, recreational and open spaces."

Consequently, the District of Columbia's Office of Planning in collaboration with the General Services Administration, the National Parks Service, Office of

Management and Budget, Naval Washington District, Department of Labor, Transportation and others to develop a comprehensive and inclusive plan for the Anacostia Watershed. The new initiative for the Anacostia watershed come at the need time. (Office of Planning, Washington, DC, 2000.)

Despite numerous efforts by the District government to clean up the South east Washington, DC segment of the Anacostia River, it is still as polluted It is evident that the various cleaning-up initiatives of the Anacostia River have not been so successful over the years because the cleanup plan were never implemented properly and even in situation where implementations was done, it is usually in a disjoint and hap-hazard.

(B) Potomac River

The Potomac basin stretches across parts of four states – West Virginia, Virginia, Pennsylvania and Maryland as well as the District of Columbia. Its tributaries include the Shenandoah, Monocracy, Anacostia and the Occoquan Rivers This area cover what is often called the Potomac Water shed. About fifty-five percent of the basin is wood land with patches of agricultural land, urban and suburban developments. Almost all of the population of the Metropolitan area (approx. 6 million people) live in this basin.

Since 1965 when President Lyndon Johnson declared that the Potomac River was a “national disgrace” the Potomac has came a long way to meeting the goal of the Clean Water Act of 1970, which called for a promise of cleanable, swimmable and fishable water. Although much has been done to reduce and clean the pollution levels in the Potomac, evidence suggest that more still has to be done to restore the river to its original state. In waterways including the Potomac across the United States, researchers

found fish laden with estrogen and antidepressants. They also discovered that the fishes in these rivers showed evidence of major neurological or physiological transformation. (Juliet Eilperin, "Pharmaceuticals in Waterways raises Concerns" Washington Post, June 23, 2005; A03)

Another study that began in 2003 detected intersex among a significant percentage of smallmouth bass samples (55) collected from seven sites along the South Branch of the Potomac River including Indian Rock and Blue Beach Bridge above Romney, Old Fried Bridge above Moorefield, Fisher Bridge below Moorefield, Petersburg Gap above Petersburg and Petersburg below Petersburg . The study found that fish collected in "all but one in the sites South Branch had some incidence of skin lesions and some incidence of intersex." The source of the chemicals that contribute to the intersex condition among fish in portion of the Potomac river include poultry and animal manure, municipal sewage treatment plants, pesticides and herbicides. Run-off of these chemicals from fields applied with poultry litter to agricultural fields along the South Branch have also contributed to the pollution levels in the river. (www.wvrivers.org/poultrywaste.htm) Another major source of river pollution in the Potomac River is the massive amounts of discarded pharmaceuticals, which are often flushed down the drain, pose a threat to the aquatic life of the river and the health of people.

Additionally, rapid rate urbanization and suburbanization within the Washington, DC Metropolitan area has contributed to the increasing levels of pollution in the Potomac River. Run-off and Above surface runs washes and drains chemical into the river.

Cleaning the Rivers in the Potomac River

The Potomac River is one of 14 rivers designed out of 126 nominations from 46 states that competed for the presidential designation in 1998. The American Heritage Rivers Initiative focuses on three major objectives: economic revitalization, natural resources and environmental protection and, historical and cultural preservation. The Initiative helps communities of designated rivers to revitalize and river banks, natural habitats and helps celebrate their history and heritage. The Office of Surface Mining Reclamation and Enforcement at the U.S. Department of the Interior seized on the celebration ceremony to announce that for the FY 1999, a $150,000.00 grant to the Maryland Bureau of Mines to help control pollution from abandoned coal mines along the North Branch of the Potomac River. (Office of the Secretary, U.S. Department of the Interior, "The Potomac River is one of the 14 rivers designated" November 6, 1998)

In March 2005, the Alice Ferguson Foundation forged a clean up treaty – Potomac Trash Treaty -- between the representatives of the governments of the District of Columbia, Prince Georges, Montgomery and Charles Counties in Maryland as well as representatives of Fairfax county in Virginia committed to achieving a trash-free Potomac by 2013. The signatories to the treaty agreed to:

1. support and implement regional strategies aimed at reducing trash and increasing recycling;
2. increase education and awareness of the trash issue throughout the Potomac watershed; and

3. reconvene annually to discuss and evaluate measures and actions addressing trash reduction. (The Alice Ferguson Foundation, “DC-Regional Elected Officials Sign Potomac Trash Treaty, March 29, 2005)

The Potomac Trash Treaty forged the first ever historic coalition of political leaders to comprehensively deal with the issue water pollution in the region. The recognized that fact that trash and pollution flowing through Potomac watershed does not respect political boundaries. Collaboration of this nature if sustained will go a long way to developing recommendations that will adequately address the pollution problems afflicting the water shed.

In 1994, one of the goals of the Interstate Commission on the Potomac River Basin (ICPRB) and the Metropolitan Washington Council of Governments (MWCOG) was to educate the public on their role in cleaning the Anacostia River, and increasing their participation in other restoration activities. (Alliance for the Chesapeake Bay fact-sheet, updated by the ICPRB and MWGOG, May 1994) Although a public outreach program was initiated in 1988, very little was done to serve the most strongly at-risk population.

Additionally, the Potomac River Basin Initiative was the other public sector that contributed towards improving the part of the Anacostia River in South West Washington, which is a tributary of the Potomac. Although the initiative talked of the Anacostia River in its initial draft, evidence suggest that the problems of the river only exacerbated.

Conclusion

The Anacostia and Potomac Rivers are among American's most polluted urban rivers. The of pollution for these rivers is blamed on the private agricultural industry in Maryland as well as the residents of Maryland, Virginia and the District of Columbia for the pollution of the river as well as surface, and above surface run-off within the watershed area and urbanization and suburbanization. For many years the government did not pay close attention to the plight of urban rivers. In fact, for years the government failed to put in place meaningful and concerted efforts to clean and restore these rivers in general and the Anacostia in particular. Such benign neglect was a de facto contribution to the pollution problems that have afflicted the Anacostia and Potomac rivers for many years. It is important to add that these rivers are contributing tributaries of the Blue Plain – a major source of portable water for the Washington Metropolitan region. Perhaps this compounded with the public cry and call for cleaning both rivers, have resulted in cooperative agreements between private sector, the federal government and the government of the District of Columbia as well as intergovernmental partnerships between Montgomery County and Prince George's County in Maryland and the District of Columbia in recent years. There have been other public/private agreements that have been reached in order to enable a comprehensive clean up effort of the Anacostia and Potomac rivers.

The Anacostia River is one of the tributaries of the Potomac River. The Potomac River is a contributing source to the Blue Plains sewage treatment plant. Consequently, problems of the Anacostia River have direct or indirect consequences on the entire

Washington, DC metropolitan region. It is important that serious attention should be paid to the clean up efforts in the Anacostia and Potomac rivers.

Residents of the Washington, DC area are stakeholders in the watershed health. Private sector initiatives to educate residents on the health of the Anacostia and Potomac rivers, and development plans that are design to restore the watershed have resulted in improvements in the health of these rivers. Many private groups are active in cleanup efforts. These groups also organize workshops and training on essence of clean rivers and their impact on the health of residents. Pubic/private cooperative agreements have also encouraged and strengthen the relationship between the resident and their rivers. Consequently, the hitherto sense of abandonment and neglect, is gradually been substitute by one of encouragement and hope. Additionally, the recent government initiative such as the building of the Anacostia water front has added to this sense of hope and faith in government efforts and pronouncements. Continued cooperation between the public and private sector is one of the most viable approaches that would in the long-run sustain the revitalization the Anacostia and Potomac rivers.

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