ALBEMARLE-PAMLICO ADVOCATE

. . . the newsletter of the Albemarle-Pamlico Estuarine Study

Vol.5 No.1 November 1992

Point source discharges and the A-P estuary

Of the 17 EPA National Estuary Programs (NEPs) now in place across the country, 14 involve estuaries strongly affected by urban/industrial "point source" pollution -- estuaries like Long Island Sound (New York City), Santa Monica Bay (Los Angeles), San Francisco Bay, and Galveston Bay (Houston). One of the three NEPs examining an estuary not surrounded by large cities and a major industrial base is the Albemarle-Pamlico Estuarine Study.

Despite the absence of major cities adjacent to the sounds and only one urban concentration of over 100,000 people anywhere in the watershed (Raleigh-Durham, though Nags Head and Bogue Banks are equivalent in summer), point sources still have significant impacts here. Industries, municipal sewage plants, private sewage plants, schools, and other dischargers pipe an average of 270 million gallons of treated wastewater into the waters of the A-P region every day. There are in fact some 855 permitted discharges in the North Carolina portion of the A-P watershed.

The following table depicts the number of permits and average daily flow in the major sub-basins of the watershed:

SUB-BASIN	# PERMITS / TOTAL AVG. DAILY FLOW (millions of gallons daily - MGD)
Neuse River/estuary	350 / 107 mgd
Tar-Pamlico River/estuary	140 / 81 mgd
Roanoke River (below Lake Gaston)	261 / 78 mgd
Chowan/Pasquotank (in N.C.)	95 / 2 mgd*
Albemarle/Pamlico sounds	9 / 2 mgd

* Significant discharges in the Chowan basin occur in Virginia

While the total flow of point source wastewater has increased dramatically in the past 30 years, some types of pollutants have actually decreased as a a result of improved treatment processes. Turn to page 2 for a brief description of North Carolina's point source pollution program, current efforts to improve point source management, and A-P Study recommendations concerning point sources.

THE ALBEMARLE-PAMLICO ESTUARINE STUDY

Initiated in 1987, the Albemarle-Pamlico Estuarine Study is a five-year program of research and education on the Albemarle and Pamlico sounds and the rivers that feed them. The Study is charged with developing a Comprehensive Conservation and Management Plan (CCMP) to help guide long-term environmental protection of the estuary. The projected schedule for the drafting, review and publication of the CCMP is as follows:

PROGRAM GOAL	SCHEDULE AS OF NOVEMBER 1992
First draft of CCMP to committees	Reviewed; comments incoporated in draft
Public review of draft	Completed
Public meetings on CCMP draft	Completed
Second draft to committees	Delivered; under review
Second draft to public	December 1992
Second series of public meetings on CCMP	January 1993
Final document to committees	February 1993
CCMP approved	February 1993
Implementation Kick-off	March 1993

Coming together is a beginning; keeping together is progress; working together is success

DEM oversight, self-monitoring key to point source program

The discharge of wastewater into surface waters of North Carolina is regulated by the state's Division of Environmental Management (DEM). DEM approves or denies permit applications, sets conditions on what can be contained in discharges, and is the enforcing agency for permit compliance.

Permits set limits on the total daily flow of discharge and on the pollutants that can be contained therein. The types of pollutants regulated by permits will vary depending on the discharger, but nearly all permits contain limits on the following:

Ammonia - a form of nitrogen which is a problem nutrient and is also potentially toxic to aquatic life.

Biochemical oxygen demand (BOD) - wastes that use in-stream oxygen during decay and thus reduce oxygen available to aquatic animals.

Total suspended solids (TSS) - sediment and other matter which diminish water clarity.

pH - a measure of acidity/alkalinity; permits require discharges to be of a similar pH to receiving waters.

Other pollutants which may be limited in permits, depending on the type of discharge and the receiving water's characteristics, include nitrogen and phosphorus, fecal coliform, and various toxics and metals. In addition, DEM may require a permit holder to monitor the level of other substances not specifically regulated in the permit, but which could pose water quality problems.

DEM tracks the performance of dischargers by requiring them to submit monthly self-monitoring reports and by periodic on-site testing by DEM personnel. If violations of permit limits are found, the discharger may face fines or other penalties. In some cases, noncompliant dischargers may receive "Special Orders by Consent" (SOCs), which allow them to exceed their permit limits while repairs are made to the system.

APES' POINT SOURCE RECOMMENDATIONS

The current draft of APES' Comprehensive Conservation and Management Plan (CCMP) contains two primary recommendations for minimizing point source pollution in the region.

One proposal is for the state to encourage less "end-of-pipe" pollution by working with dischargers to reduce wastes produced further up the waste stream. In many cases, better plant efficiency alone can bring significant reductions. The CCMP recommends that more support be provided for technical assistance and operator education programs to dischargers to promote this goal.

The CCMP also supports proposals currently under consideration by DEM to strengthen policies on "assimilative capacity" and "secondary treatment." DEM currently sets permit limits by assessing the assimilative capacity of the receiving water -- its ability to absorb pollutants through natural processes -- then permitting pollutant loading up to the full capacity. The draft CCMP recommends that permit limits be capped at no more than 75% of assimilative capacity. The CCMP recommendation on secondary (two-stage) wastewater treatment is that permit limits be tightened on pollutants such as BOD, TSS, and ammonia, to reflect improved and readily available treatment technology.

POINT SOURCE ALTERNATIVES EXPLORED

As health and environmental concerns prompt new requirements for industries and municipalities to control point-source pollution, some alternative methods of wastewater management are already being used or explored in the A-P region. Examples include:

***Wastewater recycling** - Texasgulf Inc., a phosphate mine in Beaufort County, has nearly completed a system that will allow the company to reuse its own process wastewater, thereby reducing a 5 to 7 million gallon per day (mgd) discharge to about .5 mgd.*

***Wastewater reuse** - The City of Washington (NC) and National Spinning Co., a local textile firm, are exploring the possibility of combining their separate Tar River discharges into a single discharge through wastewater reuse. Tests are ongoing to see if the effluent from Washington's soon-to-be-upgraded sewage plant can be used in the company's yarn-dyeing process. If so, Washington will send approximately 67% (1.6 mgd) of its wastewater flow to National Spinning, rather than to surface waters. This would also mean that National Spinning would not have to tap a shallow aquifer for its process water.*

***New processes** - Union Camp, a paper mill on the Blackwater River (Chowan Basin) in Franklin, VA, is replacing two of its three chlorine lines with a new ozone bleach for its pulp. This will significantly reduce the plant's total wastewater flow, BOD, and effluent coloration, as well as virtually eliminate its dioxin emissions.*

***Basinwide permitting** - DEM is implementing a "basinwide permitting" system which will bring all permits in a given river basin up for review on the same five-year cycle. This system should help give DEM a better handle on the cumulative pollutant loading and assimilative capacities in each river basin. The first basinwide plan is now being developed for the Neuse River (see note on DEM hearings, p. 4).*

Learning About the Waters

the estuary, its functions and its issues

Wetlands: many different types affect estuary's function

"Wetlands" is a generic term that refers to various land ecosystems covered or saturated with water for substantial periods of time. There are many different types of wetlands, each with its own particular benefits. The following are brief descriptions of several types of wetlands in the Albemarle-Pamlico region that play a major role in maintaining the health of the estuary:

Tidal Salt Marshes

These tidally flooded marshes surrounding coastal sounds support vast expanses of Spartina alterniflora grass. Spartina marshes provide a physical substrate for an ecosystem of encrusting organisms that form the basis of a food web that includes early-age classes of many species of fish. These young fish then become food for larger predators of the estuary and coastal waters like flounder, bluefish and mackerel, which in turn become food for top ocean predators like porpoise and shark. If the function of the salt marsh is impaired, a vast food web which includes great creatures of the sea is threatened.

Brackish Marshes

Salinity and tidal influences decrease in areas upstream from coastal sounds, but there are still many lowlands where marshes can form along river shorelines. These brackish marshes are dominated by expanses of Juncus roemerianus, or black needlerush. Inland marshes provide essential habitats for juvenile flounder, weakfish, drum, shrimp and many other species which are drawn by the food and shelter found in these rich "nursery areas."

Pocosins

Pocosins are inland wetlands which lack a direct connection to surface waters. Virtually exclusive to eastern areas of North and South Carolina, pocosins are essentially depressions in higher ground that retain large amounts of rainwater. This water retention propagates a slow, long-term breakdown of organic matter that results in the formation of peat. Over thousands of years the nutrient-poor peat, which has not released its elemental minerals into inorganic form, has become very thick in some pocosins, ranging to depths of ten feet or more.

Though drier at the surface than most wetlands, pocosins still play a vital role in protecting the estuary's water quality. Their concave topography and absorbent peat layers make them act as "sponges" that slow down and filter runoff flowing across land toward open water.

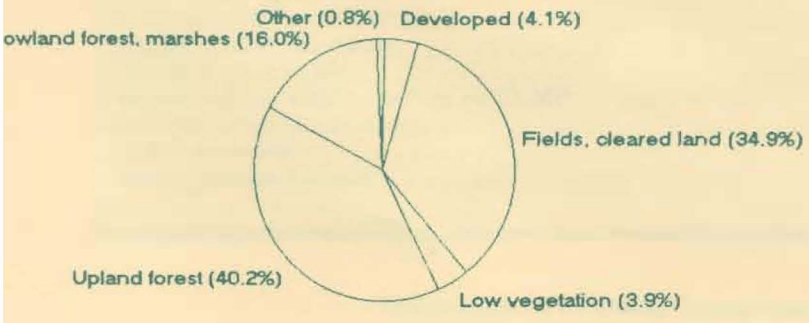
The Alligator River National Wildlife refuge, which encompasses much of mainland Dare County, includes many areas of nearly undisturbed pocosin habitats.

Forested Swamps

Inland from brackish areas of estuary are the thickly wooded "bottomlands" that lie along floodplains of freshwater rivers. In very low ground where the soils are always soggy and often flooded, these forests are dominated by cypress and gum trees, while in slightly higher areas there are oaks, sycamores, and other deciduous species. In periods of heavy rain, bottomlands store huge flows of water and thus minimize problems from flooding. The upper Albemarle Sound and lower Roanoke River basins contain some of the most extensive forested swamps east of the Mississippi River.

Land use/cover of APES region mapped

"Mapping and GIS Development of Land Use and Land Cover Categories for the Albmarle-Pamlico Drainage Basin"
Dr. Robert Holman, Water Resources Research Institute, APES Report 91-08

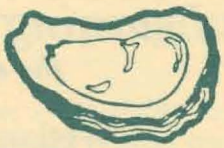


Using satellite photography and computer mapping, Dr. Holman produced an overview of the land use/land cover in the Albemarle-Pamlico region. The chart to the left depicts the percentage of land encompassed by particular land use or cover. The chart is based on a total of 16.5 million acres (ma) of land area in the APES region.

***Upland forest - 6.66 ma** - pine plantations, hardwood and conifer forests*
***Fields, cleared land - 5.79 ma** - predominantly agricultural land; also golf courses, road corridors, clear cuts*
***Lowland forests, marshes - 2.66 ma** - wetland marshes, forests in low areas and near open waters*
***Developed - .68 ma** - land covered, 25% or more, by structures or pavement*
***Low vegetation - .65 ma** - young forests, fallow fields, some residential areas*
***Other - .14 ma** - dunes/beach; maps undecipherable*

Sound Bites

news and notes about the A-P Study and other environmental issues



ENVIRONMENTAL ED WORKSHOP

The N.C. Office of Environmental Education (OEE) is sponsoring a workshop, "Building a Shared Vision for Environmental Education in North Carolina." The workshop will be held November 16-17 at the Sheraton Imperial Hotel in Research Triangle Park.

Registration fee is $35, and will be accepted until November 13 (hopefully, this newsletter has arrived before that date). Contact Ron Still of the OEE at (919) 733-0711.

DEM HEARINGS ON NEUSE BASIN PROGRAM

Public hearing dates have been set on the Division of Environmental Management's Neuse Basinwide Water Quality Management Plan. The plan reports on issues such as the status of surface waters in the basin, major water quality concerns, and long-range goals and plans for protecting water quality. The Neuse is the first of the state's 17 river basins to have a basinwide plan prepared. Dates and locations for the hearings are:

** Wayne County Courthouse, Goldsboro, 7p.m., Nov. 12*
** Craven County Courthouse, New Bern, 7p.m., Nov. 17*
** Highway Building, Raleigh, 7p.m., Nov. 19*

Contact DEM at 733-5083 (Raleigh), or 946-6481 (Washington), for a copy of the plan or more information about the hearings.

FIRST ROUND OF PUBLIC MEETINGS HELD

Four public meetings on the first draft APES' Comprehensive Conservation and Management Plan were held September 29 - October 1 in four separate locations.

Over 60 people attended each of the New Bern and Elizabeth City meetings, while less than 20 attended the Rocky Mount and Franklin, Va., meetings.

Considerable concern was expressed at most of the meetings that APES not be a vehicle for new environmental regulations. There was, however, virtually unanimous support for several cost-sharing initiatives in the CCMP to support Best Management Practices for non-agricultural land uses and commercial fishing.

Comments from the meetings will be assessed and a second draft of the CCMP will be produced during October-November. A second round of public meetings is planned for early January.

UPCOMING APES MEETINGS NOV.- DEC.

Technical Committee	***December 7, Raleigh***
Joint Citizen Advisory	***December 8, Washington***
Policy Committee	***December 9, Raleigh***

Call Joan Giordano, (919) 946-6481, for location and agenda specifics of all A-P Study meetings.

THE ADVOCATE...

is the newsletter of the Albemarle-Pamlico Estuarine Study, a five-year project funded jointly by the US EPA and the State of North Carolina, intended to develop an environmental management plan for the Albemarle-Pamlico estuarine system. The Study, which will conclude in 1992, is part of the EPA's National Estuary Program. It is being conducted within the N.C. Dept. of Environment, Health, and Natural Resources, POB 27687, Raleigh, NC, 27611-7687.

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