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Information About Estuaries and Near Coastal Waters Summer 1995, Volume 5, Number 3

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EPA Announces New Additions to the National Estuary Program

On July 6th, Carol M. Browner, Administrator of the US Environmental Protection Agency, announced that seven estuaries in eight states would be added to the EPA's National Estuary Program. She also pledged \$10 million in federal assistance to help restore the environmental and economic health of the selected estuaries.

Joining the twenty-one estuaries already included in the Program are:

Mobile Bay, Alabama

Morro Bay, California

Charlotte Harbor, Florida

Barnegat Bay, New Jersey

Maryland Coastal Bays

New Hampshire Estuaries

Columbia River, Washington and Oregon

Each of the selected areas was nominated by the Governor of the respective state, who also committed a 25% match of all federal funds provided to the individual programs.

Browner's comments at the announcement emphasized both the environmental and economic benefits of healthy estuaries. She noted that more than half of all Americans live in coastal counties, where almost one-third of the Gross National Product is produced. "Estuaries are essential to our nation's economic productivity. These grants will help communities and businesses develop common-sense solutions for the economic and environmental future of these vital areas", Browner said.

Participation in the National Estuary Program makes each estuary eligible for \$300,000 to \$500,000 a

year for three years. These funds bring representatives from government agencies, local residents, business leaders, educators, and scientists together to develop a comprehensive plan to protect and revitalize the estuary. The funding also supports new technologies and innovative programs to help restore and protect the estuaries. After completion of management plans, the estuary programs will be eligible for additional funding to help support activities related to their implementation.

The existing estuary programs have addressed a wide range of issues in their planning efforts, including the reduction of contamination from runoff, preventing shoreline erosion, creation of new marshlands, reduction of hazardous waste generated by industrial activities, improving habitat for commercially harvested species and wildlife, and improving local economies. In areas where the resultant plans have gone into implementation, EPA and the estuary programs have identified numerous successes.

The National Estuary Program was established in 1987 by the US Congress to identify and protect nationally significant estuaries. EPA selected the new additions based on the nature and scope of environmental threats, consensus on likely corrective actions, demonstration of strong working relationships among state and local environmental programs and local residents, as well as demonstration of strong support for the effort. The seven areas incorporated into the Program in 1995 comprise the fifth, and largest, group to join since the Program's inception.

For further information on the EPA's National Estuary Program, contact Steve Taylor at (202) 260-6578.



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Mini Grants = Maxi Benefits

by Nancy Steinberg, New York Public Participation Coordinator for the New York / New Jersey Harbor Estuary Program

Atrolley full of "eco-tourists" traverses Long Beach Island, New Jersey, stopping to allow the naturalist onboard to engage passengers in hands-on activities, teaching them ecology, and the necessity for stewardship of the region. Across the harbor, members of Project to Research Our Bay Environment (PROBE) monitor water quality in Little Neck Bay twice a week, recording over 1500 observations of temperature, salinity, and dissolved oxygen. Upriver, school children learn firsthand about the ecology of the Hudson River Estuary by climbing aboard the schooner *Mary E.* on a field trip that will never be forgotten.

These are only a few of the exciting and creative educational programs that have been made possible by the New York/New Jersey Harbor Estuary Program's Education Mini grants. The goals of this program, as stated in the 1994 request for proposals, are to "...demonstrate that the public can help to protect the Estuary; motivate people to actively participate in its restoration; utilize innovative activities to involve people and encourage local action; increase public awareness and education; and emphasize that the NY/NJ Harbor Estuary ecosystem is a living environmental and social resource."

Harbor Estuary Program (HEP) funds have provided up to \$4000 for each of the projects mentioned above plus 40 others, demonstrating that a little bit of money can go a long way in motivating watershed residents to care about the urban estuary. With \$4000, the Heritage Task Force (now the Greenway Heritage Conservancy) took 22 elementary and middle school teachers into Piermont Marsh and Tivoli Bays (elements of the Hudson River National Estuarine Research Reserve), teaching them the ecology of the Hudson River estuary to pass on to their students. The New York City group of the Sierra Club

needed only \$2875 to conduct 47 environmental lifestyle workshops in schools and other forums, reaching 2,250 people of all ages.

A total of \$151,523 has been used to fund 43 projects over three grant cycles since 1991, with an increase in applications for mini grants of more than 20% between 1991 and 1994. Recipients of mini grants have ranged from individual schools to environmental organizations to education centers. Although many of the activities funded are multi-dimensional, the types of projects carried out can be roughly sorted into seven categories:

- € environmental remediation,
- € adult education,
- € exhibits,
- € environmental monitoring,
- € action projects,
- € environmental education for children (consisting of programs based at both environmental education centers and at individual schools preparing students for action projects), and
- € teacher training and curriculum development.

The Education Subcommittee of the HEP's Citizen's Advisory Committee (CAC) is responsible for evaluating proposals and deciding on awards. Emphasis has been placed on those projects that include education programs geared toward preparing the youngest citizens of the estuary region for action projects.

"It has always been one of the highest priorities of the CCMP (Comprehensive Conservation and Management Plan) to preserve our waterways by encouraging children to share their knowledge with their parents," says Eugenia Flatow, co-chair of the CAC. Special consideration has also been given to projects which promote participation in the CCMP. Other criteria for selection include educational merit and likelihood that the project will invoke awareness, understanding, and motivation; likelihood that the project will successfully serve as a model elsewhere in the Harbor Estuary Program; and the demonstrated ability of the applicant to complete the project successfully.

In addition to fostering general environmental awareness and stewardship, mini grant recipients are asked to specifically promote the HEP whenever possible. Grantees have done a remarkable job with that charge. For example, HEP materials are distributed as part of many projects, and some programs encourage direct participation in the evaluation and implementation of the CCMP.

The HEP is very enthusiastic about the success of the mini grant program thus far. Recently, the Public Participation Task Force of the HEP voted to give an expanded mini grant program the highest priority for funding in the Public Involvement and Education chapter of the CCMP.

"By imparting knowledge, awareness and a sense of stewardship, these grants empower watershed residents, particularly the youngest ones, to take the future of the estuary into their own hands," says

Anne Galli, co-chair of the HEP CAC and mini grants committee coordinator.

For further information, contact Nancy Steinberg, New York Public Participation Coordinator for the NY/NJ Harbor Estuary Program, (212) 924-8290, or write her c/o the Hudson River Foundation, 40 W. 20th Street, 9th Fl., New York, NY 10011.



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Yellow Pages and Water Quality

Open the Seattle Yellow Pages to the "Easy Reference Guide" section, let your fingers scan to the "Community Information" category, and what will you find? "Water Quality on Puget Sound," page EZ 23.

US West agreed to feature a page on water quality after being approached by the Puget Sound Water Quality Authority (PSWQA). The PSWQA provided the text and photo, plus a list of 800 numbers for further information on topics such as recycling, hazardous substances, emission control, beach closures, and, of course, the PSWQA.

"This effort is part of the Action For Puget Sound campaign, which is trying to get people more actively involved in protecting Puget Sound," said Sheryl Hutchison of the PSWQA. "We are pleased that US West decided to participate and devote a page in the phone book to our effort."

A US West spokesperson said the company decided to carry water quality information because people are environmentally conscious and want to know how to be good stewards. The water quality information is also being carried in five other western Washington phone books, and four more are under consideration.

Contact: Barbara Fenster,

External Relations Coordinator of the PSWQA, (360) 407-7330.



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Chesapeake Bay Continues to Improve

Bay Grasses and Striped Bass Rebounding

How is Chesapeake Bay doing? Some good news and some bad. According to the 1995 "State of the Bay" report, the nation's largest estuary is improving steadily in many areas and dramatically in others, although land-based pressures on the Bay have not eased.

Most dramatic a 75% increase in underwater grasses since 1976 and record -breaking numbers of juvenile striped bass.

"After 12 years of effort by government, farmers, developers, watermen, and private citizens to protect and restore the Chesapeake, it looks like the Bay is coming back," said Bill Matuszeski, Director of the US EPA's Chesapeake Bay Program (CBP) office. "What we don't know yet is whether this is a weak rally from a sick patient or the beginning of a healthy recovery."

Since 1987, the CBP's top priority has been controlling and reducing the overabundance of the nutrient pollutants nitrogen and phosphorus. These nutrients fuel algal blooms, which block sunlight to the underwater Bay grasses. When the algae die and decompose, they rob the water of oxygena necessity for the growth of underwater grasses and the survival of fish, shellfish, and other aquatic life.

Findings from the report include:

€ Underwater Bay grassesone of the best indicators of water quality and a critical habitat for crabs, fish, and waterfowlcontinue to rebound. The increase since 1976 represents about 64% of the initial CBP restoration goal of 114,000 acres. (Good news.)

€ In 1993, the Maryland and Virginia pooled juvenile striped bass index was the highest ever recorded, in contrast to the all-time lows of the 1980s. (Very good news.)

€ The shift to urban/suburban land use continues and now covers about 10% of the watershed. By the year 2000, 13% of the land, or about 5.4 million acres, will be urban or suburban, a 35% increase since 1985. (Potentially bad news.)

€ When accounting for all of the nitrogen and phosphorus entering the Bay, the two largest contributors are agriculture and point sources such as wastewater treatment plants. (Bad news in that the sources are still contributing to the Bay, good news in that they have been identified and actions are underway to lessen their impacts.)

€ Phosphorus loading from point sources has decreased 70% since its peak in the 1970s, despite a 40% increase in flows from wastewater plants. Increased wastewater treatment and bans on detergents containing phosphorus have led to the decrease. (Good news.)

€ Nitrogen levels are beginning to decline due to new technologies being used by municipal wastewater treatment plants and industry. (Good News.)

€ Native species of waterfowl are undergoing a long-term decline in abundance. (Bad news.)

Established in 1983 by the Chesapeake Bay Agreement, the CBP is the cooperative partnership among the states of Maryland, Virginia, and Pennsylvania; the District of Columbia; the Chesapeake Bay Commission (a tri-state legislative body); US EPA; and participating citizen advisory groups.

For more information, or to obtain a copy of the "State of the Bay" report, contact Kate Naughten, Chesapeake Bay Program Communications Office, (410) 267-5758.



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From Farm Waste to Environmental Protection and Economic Development

The treatment facility will process an estimated 145,000 gallons (approximately 560 tons) of manure daily, which will be supplied by 40 or more farms with more than 10,000 head of dairy cattle. Supplemental raw material may be available for either digestion (fish waste) or fertilizer-related production (wood waste).

Liquids brought by tanker trucks from participating farms to the treatment facility are injected into digester tanks where natural bacteria convert the waste products into biogas. Methane from the biogas fuels the generator,

which produces electricity for customers of TPUD.

The remaining slurry is dried. Solids are converted to commercial fertilizer and soil amendments, including potting material and other premium garden and nursery products. The liquid that is extracted, an odorless organic nutrient, is distributed to participating farmers, who then fertilize pasture land with the sanitized organic liquid, while also enhancing surface and ground water quality.

"I think it's going to keep us in business," said Ed Myers, board member of the Tillamook County Creamery Association. "Not only that, I think we might make a few dollars" from the sale of fertilizer, potting soil, and related products.

The MEAD Project is a cooperative

public/private effort involving primarily the SWCD and TPUUD agencies plus the Creamery Association of participating farmers. Oregon State University horticultural researchers have been involved in developing the commercial fertilizer products, and the Oregon Department of Energy and the US EPA are providing financial assistance to the Project.

"MEAD is innovative, and people like working with innovative ideas," said Gregory A. Booth, MEAD Project Manager. "It's attracted quite a bit of attention, including national and international news coverage."

Progress continues on several fronts, including operations of the test digester at Tillamook High School under the direction of Richard Mattlocks, MEAD Technical Advisor, and analysis and testing of sample products at Oregon State University. Facility operation is anticipated to

begin in 1996.

For further information, contact Gregory A. Booth, MEAD Project Manager, (800) 422-2535, or (503) 842-2535.



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The New Members of EPA's National Estuary Program

~~Columbia R., OR & WA~~

Setting

The Columbia River is the second largest river in the United States in terms of flow and the thirty-second largest in the world. The lower 300 miles form the boundary between Oregon and Washington. The river drains a total of 259,000 square miles, with the drainage divided by the Cascade Mountain Range forming two basins which differ widely in hydrology. The eastern, drier segment makes up 92% of the drainage but only provides 76% of the water flow. The much smaller western segment has considerably higher rainfall rates and consequently provides a significant amount of water flow despite its size.

Priority Areas for Management

The nomination for this component indicated four major issues of concern: toxic levels in fish and sediments and their potential for damage to human and environmental health, habitat loss and/or modification, water quality problems, and an overall decline in anadromous fish runs.

~~Morro Bay, CA~~

Setting

Located on the California coast roughly mid-way between Los Angeles and Monterey Bay near the community of San Luis Obispo, the bay occupies approximately 3.6 square miles. The watershed draining into the bay is roughly 69 square miles, with an existing population density of more than 400 persons/square mile and increasing development pressures.

Priority Areas for Management

Priority problems include water quality (sedimentation, pathogens, nutrients, heavy metals and other toxic materials), water quantity (storm-driven high flows, dry season low flows), and habitat loss (exotic species invasion, land development, riparian/wetland degradation).

Charlotte Harbor, FL

Setting

Charlotte Harbor is located on the Gulf coast of Florida, south of, and directly contiguous to, Tampa and Sarasota Bays, sites of existing NEP components. The estuary includes approximately 270 square miles of open water with a watershed of about 4,360 square miles covering all or part of six counties.

Priority Areas for Management

The nomination package identified three principal problems to be addressed in the development of a management plan: hydrological alterations (protecting inflows of a natural river, reversing flow reductions caused by industry and aquifer impacts in a second river, and decreasing excessive inflows from a third river), eutrophication, and habitat loss.

Barnegat Bay, NJ

Setting

Barnegat Bay and Little Egg Harbor, contiguous water bodies which make up this component, are located in Ocean County, north of Atlantic City, New Jersey. The 105 square miles of the combined areas include a portion of the Intracoastal Waterway. The area draining to the bay and harbor consists of

555 square miles of land varying in stages of development and protection.

Priority Areas for Management

Prior reviews of the environmental health of the bay and harbor led to the definition of two major priority areas for management: balancing between various user needs and balancing those needs with wildlife /ecosystem health, and managing ecosystem health and sustainability by controlling nonpoint source pollution and open space/habitat loss and degradation.

New Hampshire Estuaries

Setting

The New Hampshire Estuaries; Great Bay and Hampton Harbor, make up most of the 150 miles of tidal shoreline in the state. Great Bay has inflow from seven major rivers while Hampton Harbor is a tidally - dominated, bar-built estuary.

Priority Areas for Management

Shellfish resources are a major interest in both Great Bay and Hampton Harbor. The project will focus on four aspects of this issue: beds closed or restricted due to pathogen contamination, non-point pollution having impacts on shellfish resources, absence of shellfish aquaculture, and institutional barriers to solving these problems.

Mobile Bay, AL

Setting

The Mobile Bay estuary sits at the southernmost portion of Alabama and includes the bay proper and the Mobile-Tensaw River Delta. It receives drainage from almost two-thirds of Alabama and portions of Georgia, Mississippi, and Tennessee totaling 44,170 square miles.

Priority Areas for Management

Priority problems identified by the nomination package include water quality problems, wetland and other habitat losses, and declines in living resources. All of these concerns were attributed, directly or indirectly, to a high rate of population growth in the two coastal counties adjacent to the estuary.

Maryland Coastal Bays

Setting

Maryland's Coastal Bays consist of a group of embayments along the Atlantic shore of the state, separated from the Atlantic Ocean by barrier beaches. These include the Assawoman, Isle of Wight, Sinepuxent Bay and Chincoteague Bay. Collectively these shallow embayments cover an area of about 125 square miles. The terrain of adjacent lands is relatively flat and the watershed draining to the bays is approximately 185 square miles.

Priority Areas for Management

Six priority issues for management have been identified: eutrophication, habitat modifications and losses, decline in finfish populations, uncertainty about movements and effects of toxicants in the system, pathogen contamination leading to closures of shellfish beds, and suggestions of adverse impacts from water-based human activities.



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Bargain Sale:

Saving Land by Stretching Dollars

There's a critical parcel of shorefront property that, if protected, would preserve a rockfish spawning stream. You work for Save the Bay and you know the owner, a land-rich/cash-poor native who's held on to the land longer than she perhaps should have, out of pride in her woodland more than her financial ability to support the property. You also know that developers call on her every month, encouraging her to sell out like her neighbors have done. Her husband has died, and her kids live and work in the city. The land is her only convertible asset for retirement or nursing home expenses.

Save the Bay cannot hope to compete dollar for dollar with any developer's offer. Some money could be raised from members, maybe even into six figures, but not the amount the parcel could command for development.

It's time to pull out your secret weapon as a charitable organization: the bargain sale technique. You may not have leveled the playing field, but you've gained home field advantage, not by competing directly with developers, but by changing the equation.

When an owner sells land for *less* than its full, fair market value to a developer (or any other entity that's not a charitable group), the owner is simply a poor negotiator or a desperate seller. But when she volunteers to sell land to a charity (or government agency) for less than full value, it's called a "bargain sale" and she is lauded for being both civic-minded and financially savvy. That's because she has benefited community objectives (in this case, open space and habitat protection) and generated both cash

and tax savings for herself.

A bargain sale, says the Internal Revenue Service, is one made to a charity that is "partly a charitable contribution and partly a sale". The difference between the appraised fair market value and the selling price is a charitable deduction. That's one tax benefit. The other is a reduction (though not elimination) in capital gains taxes that would have accrued from a full value sale. Capital gains tax is imposed on the "profit," the difference between the property's value when one acquired it (plus improvements) and the selling price.

Good accounting and tax law advice is needed to analyze the interplay among these tax benefits and a property owner's financial situation in any particular bargain sale transaction. But the bottom line is simple: The seller who is willing to forgo *maximum* after-tax cash, but still wants substantial after-tax cash *and* intangible rewards (such as preservation of family land, habitat protection, etc.) should investigate a bargain sale. The seller's intangible or "spiritual" motivation is crucial in the equation because rarely will the cash and tax savings of a bargain sale equal the full cash sale to a developer.

The accompanying table provides a brief summary of how a bargain sale might work. In this example, the owner bought a property for \$100,000 which is now appraised at \$350,000. The owner can easily get that value from a developer, or she can sell it to a charitable conservation group (or a state or federal natural resources agency) for, say, 75% of the full value or \$262,500.

If sold to a developer, the owner pays a 28% federal capital gains tax and 6% state capital gains tax on the difference between the sale price and the original purchase price (28% + 6% of the \$250,000 increase in value is \$85,000). And she has no tax benefit from the sale for development. Her after-tax income associated with the private sale is \$265,000 (\$ 350,000 less \$ 85,000), and the land is ready for development.

If, on the other hand, she sells to Save the Bay for \$262,500, her federal and state capital gains tax is \$63,750 (based on a mathematical formula, rather than subtraction, that involves market value and original purchase price). And she has an \$87,500 charitable deduction (the difference between actual selling price and market value). An important factor here is that income taxes can be reduced over a period of up to six years (resulting in a total income tax savings of 28% of \$87,500, or \$24,500).

	Bargain Sale	Development Sale
€ Fair Market Value	\$350,000	\$350,000
€ Sale Price	\$262,500	\$350,000
€ Basis (original value)	\$100,000	\$100,000
€ Charitable Deduction	\$87,500	\$0
€ Capital Gain	\$187,500	\$250,000

€ Capital Gains Tax (28% fed + 6% state)	\$63,750	\$85,000
€ Income Taxes Saved (over six years, 28% bracket)	\$24,500	\$0
€ After-Tax Sales Result	\$223,250	\$265,000
Conservation Result	Land saved	Land developed

So what's the bottom line? By selling the land for development, the owner ends up with \$265,000. The bargain sale for conservation gives her \$223,250 after six years. Therefore, the \$87,500 gift has only "cost" her \$41,750 in after-tax income over six years (See Table 1).

In practice, the biggest drawback is not the confusing numbers so much as the unfortunate terminology. Some landowners are put off by the term "bargain" sale because in other settings it implies "fire sale" prices. Land trusts as buyers are beginning to use the term "charitable sale" instead, to emphasize the philanthropic nature of the transaction. National land trusts, such as The Nature Conservancy and the Trust for Public Land, almost always use the bargain sale technique when purchasing property for open space. It stretches their hard-won fundraising dollars. It satisfies the seller's need for some significant cash. And it preserves land.

When is a bargain sale not a bargain sale? First, it has to involve a qualified 501c3 charity, such as a land trust, recognized by the IRS.

(Any government agency also qualifies.) Second, it should be capital gain property, typically an appreciated asset held for more than a year. (Short-term, or ordinary income property, generates limits on the charitable deduction aspect.) Third, developers usually cannot fully benefit in a bargain sale since they cannot deduct appreciated value. And, finally, the sale price should be less than 80 percent of the fair market price, so the IRS can discern charitable intent.

For more information about bargain sales or other open space protection techniques, contact the Land Trust Alliance, 1319 F Street NW, Suite 501, Washington DC 20004-1106; (202) 638-4725.



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Improving Stewardship on Private Lands

The future of wetlands is closely linked to land use decisions made by the stewards of the resource, and more than 75 percent of the remaining wetlands in the US are on private lands. Working with state, county, and local governments, as well as private groups, EPA is developing a program to encourage wetlands stewardship on private lands.

More than 54 percent (about 117 million acres) of the nation's original wetlands no longer exist, and, according to US Fish and Wildlife Service figures, about 290,000 acres are being lost each year due to human (e.g., agriculture, and dredge and fill) and natural (e.g., Louisiana subsidence) causes. Due to the vital ecological and socioeconomic benefits and functions now known to be associated with wetlands, an effective national stewardship strategy is clearly necessary.

The August 1993 Clinton Administration Wetlands Plan strongly encourages cooperative efforts with private landowners to reduce reliance on regulatory programs as the primary means to protect wetlands resources, and to accomplish long-term wetlands gains. Collaborative efforts can help landowners to conserve wetlands resources while meeting their personal management and financial objectives.

As the result of a pilot project in 1992, the "Private Landowner's Wetlands Assistance Guide: Voluntary Options for Wetlands Stewardship in Maryland," was written as a cooperative venture by EPA, Maryland Cooperative Extension Service, and over a dozen other agencies and private organizations. The guide is a comprehensive document of federal, state, and private nonprofit programs offering technical and/or financial assistance to private wetland owners within the state of Maryland.

State and county governments from around the country have expressed enthusiasm for, and interest in, the project. Several states have obtained the guide on diskette as a template for developing their own guides. The California Coastal Conservancy has already developed a draft of their own Wetlands Assistance Guide, and has been conducting workshops for landowners through the central valley.

"The guide developed in Maryland has served as a good template for California," said Jane Freeman, Environmental Protection Specialist for EPA in California. "We have revised it to reflect the way things work here, and added a few case studies to make it more tangible to the landowners that we are trying to reach."

The National Wetlands Conservation Alliance, consisting of government and private nonprofit groups, has formed to promote wetlands conservation and restoration, and to assist EPA in developing a national strategy. "Our purpose is to promote a non-regulatory approach to wetlands protection, restoration, and conservation," said Gene Whitaker of the Alliance.

Efforts at the Alliance are geared to people who work directly with landowners. "In order to be truly effective, we need to reach the landowners of wetlands, and they trust those who work most closely with them," said Whitaker. The Alliance has established programs in Oregon, Arkansas, and Ohio, and has entered discussions with four other states.

The goal of the program is to ensure that government programs serve the interests of all those who view natural resource stewardship as an integral component of their management objectives.

For more information on wetlands private land projects, contact Marjorie Wesley or Stan Austin of EPA at (202) 260-1905, or Gene Whitaker of the National Wetlands Conservation Alliance in Washington, DC, at (202) 547-6223. For copies of the Guide, contact the Wetlands Protection Hotline, (800) 832-7828.



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Urban Stormwater Management in the Indian River Lagoon

A massive, multi-year, cooperative effort of water re-diversion and water quality improvement is expected to dramatically impact the Indian River Lagoon (IRL) and the Upper St. Johns River in east central Florida.

Large volumes of fresh water, periodically released into the IRL near Melbourne, Florida, degrade water quality and cause harm to lagoon resources. According to published reports by the IRL Surface Water Improvement and Management program, the Turkey Creek watershed and central IRL are considered critical areas of the lagoon system in need of water quality improvements and habitat restoration. In a cooperative effort involving several levels of government from city to federal, a large water re-diversion effort is being implemented so that only the natural drainage area to the central part of the IRL flows into the lagoon.

"The origin of the fresh water diversion to the IRL dates to the 1920s, when agricultural interests in a 100 square mile area to the west of the IRL worked to drain the area for crop production," said Joel Steward, Technical Program Manager for the St. Johns River Water Management District. The plan was to construct a major canal plus several tributary canals leading to Turkey Creek, which flows into the IRL (see map).

The project wasn't completed until the 1950s, according to Steward, when much of the 100 square mile area was purchased by a major development company for single family home construction. Now the area is heavily developed with residential and commercial properties of the City of Palm Bay, and the drainage for the entire area eventually flows into the IRL.

Turkey Creek and the Indian River Lagoon

The natural drainage area for Turkey Creek is only about 14 square miles, but with the canal system channeling drainage from the adjacent 100 square mile area as well, the IRL has been degraded.

A multi-million dollar hard clam fishery exists just south of the discharge point for Turkey Creek, and continued success of open water harvesting and mariculture, depends on good water quality, especially proper salinity ranges. According to area scientists, excessive discharges from Turkey Creek can cause precipitous and sustained declines in salinity, posing potential harm to hard clam larvae and juveniles.

Excessive discharges can also cause significant shoreline erosion in the Turkey Creek Sanctuary, and possibly the loss of residential property along Turkey Creek. There are also indications that suspended matter and nutrient over-enrichment in this area are leading to a decline in seagrass growth, and increases in phytoplankton and algae.

According to published reports, nonpoint source loadings of organic material, upland soils, and nutrients from the drainage area contribute substantially to the eutrophication of the central IRL, with loading rates of nitrogen at two to four times those of lesser developed drainage areas.

The Re-Diversion Project

As a result of these environmental impacts to the lagoon, the Melbourne-Tillman Water Control District (MTWCD) has taken the lead in a multi-million dollar stormwater re-diversion project to restore the natural drainage and improve water quality, ultimately affecting 90% of the 114 square mile drainage area and approximately 20 square miles of the IRL. According to Gary Garrison, manager of the MTWCD, reconstruction of the main canal (known as the C-1 Canal), is the first phase of the project. Another phase includes construction of an "intermediate water control structure," which will divert water to the west into a two square mile detention pond. From the pond it will be pumped to the Sawgrass Lake Water Management Area (SLWMA), a four square mile marsh which drains to the Upper St. Johns River.

Steward noted that these measures would result in additional benefits of the project. "The Upper St. Johns River will receive an increase in fresh water allocation and improved water quality of that flow because the canal water passes through the detention pond and marsh area before reaching the river," he said.

A Cooperative Effort

In order for the re-diversion plan to succeed, even conceptually, it needs to be coordinated with the

Upper St. Johns River Basin Project (USJRBP), another large watershed restoration plan that is a joint effort of the U.S. Army Corps of Engineers and the St. Johns River Watershed Management District (SJRWMD). The USJRBP, designed to rehabilitate the water quality and habitats of the historical USJRB floodplain and marshes, was modified to accommodate the re-diversion project. Ensuring that the canal drainage waters from the detention pond are adequately managed with respect to USJRB restoration objectives was a major concern, according to Steward.

The City of Palm Bay is another key player in the project, according to Steward. "To ensure that the target of 80% reduction of total annual loadings of nutrients and suspended matter is reached, it is essential that the City of Palm Bay become a participant by developing and implementing a stormwater management plan," he said. The City and the SJRWMD entered into a cooperative program agreement to make a municipal stormwater plan a reality.

"Construction of the marsh area should commence in the spring of 1995, and the large detention pond is scheduled for 1996," said Garrison. "This multi-year project will result in significant improvements to the water quality and resources of the Indian River Lagoon and the Upper St. Johns River as well," he concluded.

For further information, contact Joel Steward, (904) 329-4363.



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"It's All Connected" from the Lake Michigan Federation

The Lake Michigan Federation has announced the availability of materials from its multi-media, pollution prevention campaign, "It's All Connected." Included is a K-12 curriculum teaching the reduction and/or elimination of hazardous household pollution from homes, lawns, and gardens. "It's All Connected" also includes television and radio public service announcements, three videos, a slide show, and a brochure series including a Guide to Non-Toxic Cleaners. This program is designed so that each component can be easily duplicated and edited to reflect a community's own local information and contacts. Cost of the program is \$100, and more information is available from Toni Schoen, (414) 271 - 5059.



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Galveston Bay Plan Approved by EPA

In April, US EPA Administrator Carol Browner announced final approval of The Galveston Bay Plan. "It is our understanding that no environmental program in the history of Texas has involved citizens and stakeholders more actively in environmental problem-solving as the Galveston Bay National Estuary Project," said Browner. "We take special note of the strong local government participation in implementation, and substantial commitment of resources by the State of Texas."

The Galveston Bay Plan was developed during the past five years by a conference of bay stakeholders representing business, industry, governments, conservation groups, and local residents. Representatives of more than 85 agencies and organizations were involved in drafting the plan that was submitted to EPA in December, 1994.

"With this announcement, our program is now ready to move into the implementation phase beginning in early fall," said Dr. Frank Shipley, Program Director of the Galveston Bay National Estuary Program. "The various federal and state agencies and local governments that have jurisdiction over bay waters will now begin to undertake actions specified in the plan in order to restore and protect this vital economic resource for the future of our citizens."

When notifying Texas Governor George Bush of the approval, Administrator Browner noted that the State is now eligible to receive assistance under Section 319 and Titles II and VI of the Clean Water Act for implementation of the 82 specific action items recommended. The plan will be implemented as a program of the Texas Natural Resource Conservation Commission (TNRCC).

"With this plan, Galveston Bay, for the first time, will be managed using an ecosystem approach that joins the cooperative efforts of federal, state, and local environmental agencies," said John Hall, Chairman of the TNRCC. "Working together, we will eliminate duplication of activities, achieve more efficient and effective use of personnel and resources, and ensure proper stewardship of this vital natural

resource."

*For more information or a copy of The Galveston Bay Plan, contact M.A. Bengston, Public Participation
Director of the Galveston Bay National Estuary Program,
(713) 332-9937.*



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PUBLICATIONS

Wetlands: Characteristics and Boundaries.

(1995, 268 pp.) Prepared by a committee of the National Research Council. As a result of the controversy over changes to the federal wetlands delineation manual, Congress asked EPA to create a study group to establish a scientific basis for characterization of wetlands. The resultant two-year study by a 17-member committee produced this report. The report suggests the use of primary indicators or establishment of a hierarchical method to characterize and delineate wetlands. Copies of the report are available from the National Academy Press, 2102 Constitution Ave. NW, Washington, DC 20418.

Marsh Grass Protection with Low-cost Breakwaters: Shoreline Erosion Control Demonstration.

(1994, 61 pp.). by S. M. Rogers, Jr. This report describes the design and construction of erosion control demonstration projects using a combination of planted marsh grasses and low-cost wooden breakwaters. The method can be attractive to property owners because the marsh/breakwater is significantly less costly than other alternatives offering the same level of protection and useful lifetime. Available from North Carolina Sea Grant for \$2.00. Write to NC Sea Grant, North Carolina State University, Box 8605, Raleigh, NC 27695, and ask for publication NCU-T-94-001 (R472).

Compass and Gyroscope: Integrating Science and Politics for the Environment .

(1993, 244 pp.). by K. N. Lee. This book demonstrates how science and politics can, in the appropriate combination, be enlisted in the search for a sustainable material culture, and to describe cases showing

how some elements in this search have been organized and tried. At the core of the analysis is the idea of adaptive management. Available for \$24.95 from Island Press, P.O. Box 7, Covelo, CA 95428, (800) 828-1302.

Perspectives on Nonpoint Source Pollution.

(October 1994, 514 pp.). Produced by the Terrene Institute in cooperation with US EPA. Nearly ten years ago, 40 national organizations joined with six federal agencies to exchange practical information on the nonpoint source pollution problem and how it should be handled. This book contains 133 papers from a conference held in Kansas City in the spring of 1985. Long out of print but still in demand, the proceedings have been reprinted using the original negatives. Available for \$29.95 from the Terrene Institute, 1717 K Street NW, Washington, DC 20006, (202) 833 -8317.

Handle with Care: Your Guide to Preventing Water Pollution.

(1991, 40 pp.). Produced by the Terrene Institute in cooperation with US EPA. This citizen's guide to protecting water quality explains how to pollution-proof your home and take personal responsibility for pollution prevention. Topics include yard runoff, septic tanks, household chemicals, car care, pet waste, erosion, and yard maintenance. Included is an up-to-date national source list for further information, including state and regional contacts for nonpoint source, soil conservation, forest and Cooperative Extension offices. Available for \$9.95 from the Terrene Institute, 1717 K Street NW, Washington, DC 20006, (202) 833-8317.



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WORKSHOPS

Dates Set for Upcoming Local Government Workshops on Coastal and Resource Protection

U.S. EPA's Office of Wetlands, Oceans, and Watersheds; Oceans and Coastal Protection Division, has scheduled the next round of coastal resource protection tools workshops. The workshops are intended to familiarize state and local government officials, managers, and technical experts with restoration and protection of coastal watersheds. Many examples are drawn from the successes within the National Estuary Program. Dates and contacts for the workshops are as follows:

€ Huron, OH, August 30 & 31, 1995

Contact: Mr. Gene Wright, Old Woman Creek National Estuarine Research Reserve, (419) 433-4601

€ Mobile, AL, September 13 & 14, 1995

Contact: Ms. Connie Alexander, US EPA Region 4, (404) 347-1740.

€ Apalachicola, FL, September 18 & 19, 1995

Contact: Ms. Connie Alexander, US EPA Region 4, (404) 347-1740.

€ Naples, FL, September 28 & 29, 1995

Contact: Ms. Connie Alexander, US EPA Region 4, (404) 347-1740.



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Coastlines

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