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Tidings

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What A Difference Dilution Makes

With the deluge the Pensacola area experienced on June 9th, the drought that was plaguing this area, was finally broken in a big way. Thirteen to 20 inches fell in one day at certain areas close to the bay. Less rain fell in the northern part of the watershed. The few rains we have had this past Spring were not really sufficient to break the year long drought. Before the June 9th rain, the Perdido River was at very low flow. Any type of man-made pollution entering Perdido Bay would not get sufficient dilution and toxic substances (what ever they are) would increase in the bay. This is especially true of paper mill effluent from International Paper, which during times of low flow of the Perdido River, can constitute one-fifth of the flow of the Perdido River. Because of the very concentrated pollution of paper mill effluent, especially high levels of organic chemicals and organic nitrogen, paper mill effluent needs to be greatly diluted in order not to cause harm.

This spring there was a dearth of life in the bay. A 2-liter plastic bottle placed in the upper bay, had no barnacles growing on it after three weeks in the bay. No barnacles, no small plant life, only some strange, small animals settled on the floating bottle. There were no small crabs, no shrimp, and very few minnows. This was alarming. The salinity was about half the strength of seawater which was not too unusual for late Spring. Then came the rains. About three days after the heavy rains, small barnacles had settled on the floating bottle, and they grew fast. About a week later, small clams began appearing in the bay bottom. The cold water seeping into the bay from the ground water springs began showing up. During times of normal rainfall, these seepage springs add fresh water to the bay, especially in shallow areas. These seepage springs also help dilute the concentrated paper mill effluent. Scientists studying the bay have never really measured the dilution these seepage springs provide.

The rains also brought back fish, especially around areas of freshwater outflow. Bass, flounder and even red fish began to be caught in areas where freshwater entered the bay. It used to be common for people to go floundering at night with a spot light and a gig. Lately however floundering has all but disappeared because of the pollution of the bay. Since International Paper instituted their new activated sludge treatment, the bay has become so turbid that it is difficult to see flounder with a floundering light. Our children were catching flounder with artificial worms on hook and line. We ate the flounder but the question of whether the flounder were safe to eat because of contamination, remains.

One very interesting aspect of the summer rains was the fact that the salinity in Perdido Bay did not drop very much. In years past, when a heavy rain occurred, the salinity would drop very quickly, especially in the upper bay. But this summer, the water level in the bay has been unusually high. It appears that sea level rise is actually occurring in Perdido Bay and bringing more salt water into the upper reaches of the bay. Rising sea levels would keep the salinity from fluctuating so much. For years paper mill and the government scientists who are running interference for the paper mill, have used fluctuating salinity as a reason for the poor diversity of life in Perdido Bay, especially the upper bay. This is of course ridiculous, as fluctuating salinity is a characteristic of all estuaries. Estuaries are defined as places where freshwater and saltwater meet. All estuaries have salinity fluctuations. Depending on many variables, the salt water and the fresh water mix to varying degrees. At a recent meeting, a DEP scientist gave the impression that salt water and freshwater don't mix in Perdido Bay. He described Perdido Bay as "stratified", with the heavier salt water on the bottom and the lighter fresh water on the top. He gave the impression that stratification was unique to Perdido Bay and occurred all the time. This impression is totally false. From looking at the 20-year salinity records on Perdido Bay, I would say that stratification occurs about 20 to 30 % of the year and only lasts about a week. Stratification generally occurs in the summer or early fall when winds are calm and there is sufficient river flow. Stratification **does** occur at the mouth of the Perdido River and the mouth of Elevenmile Creek in areas of deep holes. But rising sea levels would help moderate salinity changes with heavy rains.

Falsehood upon Falsehood

Just recently (July, 26th), the Florida DEP held a meeting on the new numerical, nutrient standards which are being developed for estuaries, including Perdido Bay. Both the Florida DEP and the EPA are going to proposed nutrient standards using different methods. On Perdido Bay, the Florida DEP is using what they call the "historical approach". The EPA is doing modeling to develop their numerical limits. The "historical approach" should be called the "hysterical approach" or the Dr. Livingston approach. This method chooses the nutrient levels from 1988 to 1991 as the standard. According to DEP, Dr. Livingston, who was a paper mill consultant working for Champion, said that these were the years when Perdido Bay had a healthy phytoplankton population and was not polluted, so the nutrient levels must have been O.K. Perdido Bay is the only bay in Florida where this approach is being used. It is absolutely ridiculous to say Perdido Bay was not polluted in 1988. In 1988, Champion was spewing out about 6,000 pounds a day of organic solids, much of this in the form of organic nitrogen. The amount of ammonia entering the bay from the rotting material in the settling ponds was huge. According to Dr. Livingston, the toxicity of ammonia was responsible for lack of life in Elevenmile Creek. The amount of total organic carbon entering the bay from the paper mill was over 100 mg/liter. A scientist who was studying the bay at the time for the ADEM/DEP study said that it was the worse case of pollution that he had ever seen.

So what is DEP's justification for using nutrient limits from 1988 -1991? According to the draft nutrient report which you can read on line at www.dep.fl.us/water/wqssp/nutrients/, DEP is saying that the judge upheld or approved this "historical method" at the first administrative hearing at which Friends of Perdido Bay prevailed. You may remember that Friends of Perdido Bay won the first hearing. However, the judge made some Findings of Fact at that hearing, which were, in our opinion, not true. We were not able to contest (appeal) these facts because we had won the hearing. In retrospect, I am sure this was planned by the paper mill and DEP.

The draft nutrient report is also full of false assumptions. One false assumption was that Perdido Bay was continuously stratified as discussed above. Not true. Another false assumption was that opening the mouth of Perdido Bay at Perdido Pass let in the salt water and caused the deterioration of the bay. Wrong again. Allowing a paper mill to dump pollution equivalent to

350,000 people into a bay which does not flush well is the problem. Another false assumption - there were never any grass beds in the upper bay. When asked about the large grass bed which existed at Grassy Point until the year 2000, the DEP spokesman said it was the salinity changes which caused its demise. I do not believe it.

The actual nutrient values which are being proposed for the different segments of Perdido Bay are very high. The total nitrogen value (TN) for upper Perdido Bay is 0.677 mg/l; for central Perdido Bay is 0.463; and for lower Perdido Bay is 0.588. So why would upper Perdido Bay have a proposed total nitrogen value higher than middle Perdido Bay when the Perdido River enters the upper Perdido Bay with a nitrogen value around 0.300 mg/l? It is obvious - the 0.677 value is to accommodate the paper mill pollution. What is even worse is the exceedance value which the DEP will tolerate before the limit is violated. DEP used a fancy statistical subterfuge to allow single samples (to be accurate - less than 10% of single samples) to be twice the 0.667 mg/l value or 1.27 mg/l before the nutrient standard is violated.

To compare the nutrient limits set for Perdido Bay with nutrient limits set for Choctawhatchee Bay will show the obvious bias. In Choctawhatchee Bay, the total nitrogen value set for the middle bay is 0.355 mg/l and for the west part of the bay is 0.313 mg/l. These values are half of the values for upper Perdido Bay (0.677 mg/l). In Choctawhatchee Bay, the total nitrogen values are exceeded if the average exceeds 0.47 and 0.46 mg/l. These exceedance values for Choctawhatchee Bay are far lower than the 1.27 mg/l value for upper Perdido Bay.

The total phosphorus limits proposed for Perdido Bay are again nearly twice the values proposed for Choctawhatchee Bay - 0.034 mg/l in Perdido versus 0.018 mg/l for Choctawhatchee. Again the exceedance numbers for total phosphorus are very much higher in Perdido - 0.10 for Perdido versus 0.02 mg/l for Choctawhatchee. Five times more phosphorus will be allowed in Perdido Bay. The Florida environmental agency is obviously protecting the paper mill at the expense of property owners on Perdido Bay.

Not Believable

According to Dr. Livingston, the phytoplankton in Perdido Bay were healthy in 1991 but not in 1995. The paper mill began to put too many nutrients into the bay. This is true. Friends of Perdido Bay has graphs which show that the owners of the mill at that time, Champion, began to put phosphorus into the bay in nearly a perfect bell-shaped curve. And we saw lots of algae blooming in those years. The question is - why did Champion keep increasing the amounts of phosphorus? And why did the environmental agencies allow Champion to cause the very bad outbreaks of drift algae? According to the story line of Dr. Livingston and the DEP, in 1995, this increase in nutrients caused hazardous algae blooms (HAB) to begin. These organisms were, *Heterosigma*, and one or two other types of toxic algae. Where did these algae come from? Dr. Livingston couldn't answer this question at the administrative hearing. But they were there. According to Dr. Livingston, these HABs were the reason the bay deteriorated for the next 10 to 12 years. Well, I do not believe this to be true.

In late 1994, Champion paper company began using the chemical, chlorine dioxide for bleaching instead of elemental chlorine. Use of elemental chlorine caused dioxin formation. Mullet were found down in Soldier's Creek with relatively high levels of dioxin in 1995. I had been growing small algae on glass plates in the bay beginning in 1990. The algae grew fine until late 1994, when I could no longer get the small algae to grow. Library research produced papers which showed that the chemical chlorate (a precursor of chlorine dioxide) and chlorine dioxide were harmful to small plant plankton. Friends of Perdido Bay tested for chlorine dioxide and chlorate in Elevenmile Creek after 1995 and found both present. Further, grassbeds which had started growing at our beaches in upper Perdido Bay, developed a strange color. Instead of being green, the blades of the grasses were red. Microscopic examination of chloroplasts (little structures which contain the chlorophyll) in the blades of the algae showed that the chloroplasts were deformed. Snails which

ate the microscopic algae began to disappear. Today, microscopic algae still does not grow and normal plankton populations are rare. It was not hazardous algae blooms which killed life in the bay, but use of the chemical, chlorine dioxide which destroyed life in the bay. The story about too many nutrients and hazardous algae blooms was invented to mask the effects of the paper mill chemicals - chemicals which are especially damaging in a bay which does not flush.

Too Much Trash

Spending a lazy day drifting in the cool waters of the Perdido River is very relaxing. Some people think this outdoor experience is made more enjoyable with a 6- or 12-pack. But alas, the refreshment comes in containers which have to be disposed of somewhere. If you are a kayaker and launch at Barrineau Park bridge and take out at Fillingim Villages landing, you will dispose of your containers in the trash bins at Fillingim Villages landing (unless you are a total slob). But according to one of our members, there is a problem. Fillingim Villages landing is managed by the Northwest Florida Water Management District which does not allow alcoholic beverages in the management area. The wildlife officers are very strict at enforcing this rule. So if you show up with beer cans to toss into the trash bins, even though they are empty and have been drunk at some point in the river, you are likely to get a ticket. As a result of this heavy-handed enforcement, people have started dumping their beer cans in the river. People who normally clean-up the river as volunteers, say they are discontinuing their efforts to keep the river clean. So a beautiful river has been turned into a trashy river. There must be some solution - maybe less zealous enforcement.

Spreading the Filth

We recently tested the very fine sediment which washed on to our property after Tropical Storm Debbie brought high water and waves. The increase in the solids being released by the paper mill has become obvious at our beach. The coarse sand is black, because of decomposing organic matter, even in shallow water. The new treatment which International Paper installed produces solids (up to 10,000 pounds a day) which do not settle readily. These solids which are contaminated with heavy metals are being spread into Perdido Bay. These metals come from the chemicals which the paper mill uses to digest the wood chips, and from the washing of coal ash into ash ponds. Arsenic, barium, chromium, lead and mercury are especially elevated from the practices of the paper mill. Of these metals, only arsenic is over the soil clean-up guideline of 2.1 mg/kg. The arsenic concentration of the fine sediments in upper Perdido Bay is 8.0 mg/kg. Arsenic contaminates the alkali which the mill uses to digest wood chips. Public health studies have shown that arsenic in concentrations of 0.38 to 0.41 mg/kg can cause cancer, especially bladder cancer.

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