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## Tidings The Newsletter of the Friends of Perdido Bay

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Jackie Lane -Editor

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### **Thank you for showing your support**

In spite of the fact that we haven't really been able to clean up our bay after 35 years of trying, you all have continued to support Friends of Perdido Bay. Thank you. While we have prevented International Paper (IP) from getting a permit, this hasn't done much to help our cause. People keep saying that IP doesn't need a permit; they will operate anyway. That appears to be true. But I believe that IP will get tired of operating without a permit. There are reasons for permits - one of them being, that the permit is a legal justification for allowing the pollution IP is dumping. Yes, IP is allowed to legally dump dioxin in our bay - that is the 2,3,7,8, TCDD type which is considered the most dangerous chemical known to man. And IP can't be sued for dumping this chemical in our bay. After all, their permit allows them to dump this dangerous chemical. But does their permit allow them to discharge dangerous chemicals in their stormwater discharge? No. Does their permit allow them to discharge residual chlorine and herbicidal chemicals in their discharge? No. Of course, IP knows these things. So eventually IP will get, maybe, a little nervous about not having a permit. Will they want to invest anymore money in an old mill which can't get a permit? I hope not. This will have to be our plan since the environmental agencies are not going to do their jobs and enforce the law.

### **Tale of Two Domestic Wastewater Treatment Plants**

Friends of Perdido Bay has been following events on Perdido Bay for a long time. We have a memory of events, both significant and non significant (at the time). In 1983, the Florida environmental agency, DER, (it is now DEP) issued Consent Orders to small wastewater treatment plants to close. At the time, there was no Escambia County Utilities Authority and the wastewater treatment plants were privately owned. It was a mishmash collection of sewage treatment. But there was a reason for DER's decision.

Sewage treatment plants which were ordered to close, were located in areas with poor flushing and insufficient dilution. They were poorly performing, and at best, barely removing the organic material (secondary treatment) and the plant nutrients, nitrogen and phosphorus. Several of these small sewage treatment plants were located on Bayou Chico and on Upper Perdido Bay. The plants on Bayou Chico were, in some cases, treating wastes from local industries located on Bayou Chico. Most of the plants on Bayou Chico were small (releasing less than 1 million gallons of effluent a day (MGD)); the Warrington wastewater treatment plant released about 1 MGD. The Warrington plant closed and diverted its effluent to the downtown Mainstreet Plant. The downtown Mainstreet Plant has since closed and shipped its sewage to the Central Wastewater Plant on Upper Escambia Bay.

It was a different story on Perdido Bay, however. Many of the small wastewater treatment plants closed; the wastewater was consolidated and sent to the Avondale Plant. The Avondale Plant discharged less than 2 MGD(million gallons per day) into Bayou Marcus Creek just near its discharge into Upper Perdido Bay. Most of the discharges from this plant drift along my beach. In 1986, a developer tried to start a development near the Avondale Plant. Most of the land around Bayou Marcus was wetlands and the developer had begun to dig ditches to drain the wetlands before he was stopped by the EPA. This area had also been part of the historic logging town of Millview. In 1988, Friends of Perdido Bay was approached by the DEP (it was now Protection rather than DER Regulation). The Avondale Plant was owned by Escambia County Utilities Authority, ECUA (now called Emerald Coast Utilities Authority), and they had a plan to discharge to wetlands instead of a direct discharge to Bayou Marcus. We were told that the effluent (less than 2 MGD) would be applied to about 700 acres of wetlands. We thought this was a good idea. They were also going to build boardwalks in the wetlands and turn it into a recreational area. No one said anything about expanding the discharge. This Avondale Plant was going to be state-of-the-art with a disinfection system using ultra-violet light. It was also renamed to the Bayou Marcus Reclamation Facility. It sounded OK to us. And we stopped paying attention to this discharger. We shouldn't have. We figured DEP would do its job.

If you look at Perdido Bay, it is shaped like an hourglass with a constriction in the middle. Water comes in from the upper part of the hourglass, but not exactly in the middle. The water from the Perdido River comes in on the western side of the hourglass. There are additional flows into Upper Perdido Bay but they come from the east, namely Elevenmile Creek, Bayou Marcus Creek, and Herron Bayou. These flows are trapped in that upper part of the hourglass, especially when the tide is coming in and are not instantly diluted very well with Perdido River water. But, it is difficult to predict just where the water masses will go because of the winds. But never the less, water and the things that it carries get trapped in the upper part of the hourglass. The same thing is true with the lower bay. A hydraulic study of the lower bay showed that water remains in the eastern side of the hourglass a lot longer than the western side. Therefore, the eastern side of lower Perdido Bay is a depositional area.

Based on hydraulic studies, it is clear that as little nutrients as possible should be released into the eastern side of Upper Perdido Bay, because there is insufficient dilution. Unfortunately, that is just where most of the nutrients are released. Throughout the 1990's, we saw massive amounts of drift algae at our beaches (Our website has pictures of the drift algae at our beaches). Perhaps these algae blooms occurred to illustrate Dr. Livingston's story that there were too many nutrients which were causing toxic algae blooms which were killing the bay. These algae blooms seemed to end in 2000, the year International Paper took over the mill. But Dr. Livingston who studied the bay until 2007 continued to report blooms of toxic algae.

Site-specific nutrient rules were adopted for the Florida side of Perdido Bay (east side) in 2012. These rules limit the amount of nitrogen, phosphorus, and chlorophyll a which can exist in the different segments of Perdido Bay. According to the rule, 62-302.532 Florida Administrative Code, for all bay segments other than Big Lagoon, the limits shall not be exceeded in more than 10 percent of the measurements and shall be assessed over the most recent seven year period. The bay segment with the highest allowable levels of total nitrogen, phosphorus and chlorophyll a is the Upper Bay. This makes no sense unless you understand that the limits were set on the advice of Dr. Livingston's 17-year study of Perdido Bay from 1988 to 2007 and to accommodate the paper mill. Upper Perdido Bay which is closest to the discharge of the Perdido River, Perdido Bay's main source of fresh water and a very clean river, should have the lowest allowable levels of nutrients and not the highest. The highest level of chlorophyll a allowed in Upper Perdido Bay is 11.5 ug/l versus 6.9 ug/l in the Lower Perdido Bay. Allowable levels of chlorophyll a in other bays are as follows: Upper Pensacola Bay - 6.0 ug/l; Lower Escambia Bay - 6.8 ug/l; East Bay - 4.0 ug/l; Blackwater Bay - 11.3 ug/l; Upper Escambia Bay- 7.4ug/l.

In spite of the fact that Upper Perdido Bay has the highest allowable level of chlorophyll a of all water segments in our area, it is still not meeting the that high level. The long term average(7 years) of the chlorophyll a values in the Upper Bay are over 11.5 ug/l. Many of the chlorophyll a values were exceeded in 2018, the year after the paper mill blew up. WHY? Well, I think Friends of Perdido Bay has figured it out. There is something being put into Upper Perdido Bay which inhibits algal growth. When we did our algal growth potential studies last Fall, we found that in spite of the high nutrients, algal growth was subdued. Then in the Spring of 2023 we found that larvae grown in Elevenmile Creek water were deformed. But more important, the labs which ran our larval studies, found residual chlorine in the water. The values weren't that high, but there should be NO chlorine in the water. Everyone knows what chlorine does when you add it to swimming pools. It disinfects, and it kills algal growth. Well it is doing the same thing in Perdido Bay.

The question then becomes, "Where is this chlorine coming from" . Since we found it in the discharges coming out of IP's stormwater in Elevenmile Creek - IP. How

about the the Bayou Marcus wastewater Plant? Don't think so. They don't use chlorine for disinfection, but rather U.V.Light.

So now that we know that chlorine is coming from IP, I have begun to test for chlorine and chlorophyll a at my beach which is just below where Bayou Marcus discharges. On August 17, 2023, chlorophyll a was 7.16 ug/l, below the upper limit in Upper Perdido Bay, but chlorine was 0.1 mg/l. On August 21, 2023, chlorophyll a was 14.1 ug/l, above the upper limit, but chlorine was non-detectable at 0.05 mg/l. There seems to be an inverse relationship between chlorine levels and chlorophyll a which is what you would expect.

In the interval while we were not paying attention to what was happening at Bayou Marcus, the DEP allowed ECUA to increase the permit at Bayou Marcus to 10 million gallons per day. So far the flow is only at 6 MGD. How did that happen? This wastewater treatment plant was supposed to close in 1983 but went to having an allowable discharge of 10 MGD!!. Did the wetlands make that much difference? I don't think so. Now, the permit for Bayou Marcus is up for renewal, but alas, the chlorophyll a values in Upper Perdido Bay are too high and ECUA is having a hard time justifying the nutrients which are being added to an area of the bay which doesn't flush. And the chlorophyll a values would probably be a lot higher if it weren't for the chlorine, IP is dumping in. This is a mess which was created by DEP: they should never have allowed ECUA to expand the Bayou Marcus Plant even to 6 MGD.

The bottom line here is that **wetlands are not a permanent solution to removing plant nutrients.** For awhile the nutrients which are discharged to wetlands will be absorbed. But there is a limit to the capacity of wetlands to absorb these nutrients and the wetlands will started exporting these nutrients. This has begun to happen at Bayou Marcus and it is causing plankton blooms near the mouth of Marcus Bayou. Solution - just dump in more chlorine, IP.

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