

St. Lucie River's Decline

By BUD JORDAN

Parts 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

Part 1

The St. Lucie River was a freshwater river emptying into the brackish Indian River Lagoon before the first “permanent” inlet was opened by local businessmen in 1898. They wanted a more direct route to the ocean and coastal trade than those offered by the few natural inlets to the north and south along the east coast of Florida .

Opening the inlet had an unexpected beneficial side effect: As the lagoon and river adapted to new, estuarine salinity conditions, the river became an outstanding — some would say unbelievable — fishery. While the north and south forks of the river remained fresh in their upper reaches, supporting a rich freshwater ecology, the lower reaches became densely populated with oysters, clams, sea grasses, and all the myriad species that even today make the Indian River Lagoon the most diverse estuary in North America .

The St. Lucie River became world famous even before the sailfish fishery was discovered offshore after World War II. Five different U.S. presidents vacationed in the area to enjoy the combination of mild winter climate and outstanding sportfishing.

The beginning of the end of the river's glory days came in 1924, when canal C-44 first opened, connecting the South Fork to Lake Okeechobee . After World War II, C-44 was widened and deepened, and canals C-23 and C-24 were built to drain western Martin and St. Lucie counties. The changes wrought by these three canals' rapid discharges of drainage water into the river were sudden, unexpected and disastrous. Sediments, pollutants and excess freshwater proved to be bad medicine. Locals were confounded by the damages, when in most wet seasons the river suffered dramatic losses of sea grasses, oysters and sport fish.

Local businessmen formed the River League in 1950 to fight damages being done by these canals to the river, primarily the large dumps from Lake Okeechobee via C-44. The membership of the Rivers League reads like a Who's Who of Martin County community leaders, but their protests to the state and federal governments fell on deaf ears.

In the late 1950s, canals C-23 and C-24 were expanded. More secondary and tertiary canals were constructed to make drainage for agriculture more efficient. By the 1960s, rapid urbanization of the tidal River Basin was under way. The freshwater extremes carrying loads of muck sediment and pollutants overwhelmed the river. The Martin County High School senior class of 1970 declared the St. Lucie River “dead” and conducted a ceremonial burial of an outboard motor to memorialize the river's demise.

Through the 1970s and '80s, climatic conditions were dryer than normal, and the river occasionally recovered some vestige of health following several dry years in a row. Overall, however, the decline continued. By 1990, once-extensive oyster bars were limited to a few tenuous locations east of the Roosevelt Bridge . Sea grasses were extinct upstream of the Crary Bridge and sparse below it. The annual eel spawn in the north fork, once a major local

fishing rodeo, was only a memory. Scattered pods of bait occasionally observed in the river provided only a hint of the acres of bait schools that were still common in the 1950s and early '60s.

Local citizens continued to complain of the river's demise. Beginning with major federal and state environmental legislation in 1972, there was hope that help would come. The Clean Water Act, Endangered Species Act, conversion of the former Central and South Florida Flood Control District to the South Florida Water Management District, and many other new agencies and laws promulgated in the 1970s and '80s were offered by politicians at all levels of government as proof the river would be restored to good health in the future.

Part 2

The St. Lucie River Initiative was formed in 1991 by local businessmen frustrated because the River continued to decline in environmental health. This despite 21 different agencies and governments with responsibility for its health, innumerable environmental rules and regulations, and environmentalist leaders in Martin County proclaiming the River was part of our good nature. The River, once an outstanding natural resource, was so badly degraded by 1991 that it offered no clue to its former glory.

SLRI founders were accustomed to obtaining results. First, scientific data were collected and evaluated. SLRI had a great advantage over our predecessors in the River League: The science of ecology had evolved since 1950, and there was a significant body of scientific knowledge about estuaries in general, and the St. Lucie River in particular.

The River's problems were described objectively. A Mission Statement was prepared, goals were set, and those goals pursued vigorously. SLRI, focusing on teamwork and consensus building, had a lot of help within and outside the local community.. We started at zero in 1991, with our funds coming from our own pockets. The local community joined our efforts, donating funds for research and publications, and initiating new programs to improve water quality and timing of stormwater drainage to the River from our local basins.

Our credibility at all levels of government and industry became very high, and today, local River cleanup efforts are well under way.

Since SLRI was formed: Martin County adopted a River element to the Comprehensive Plan, South Florida Water Management District adopted a St. Lucie River Plan, every local government in the watershed adopted and funded a stormwater quality management program, the Regional Attenuation Facility Task Force was formed by the two Counties and it produced a Report that became the forerunner of the Indian River Lagoon Restoration Plan.

We published and delivered The St. Lucie River Report to Congress. The Indian River Lagoon Restoration Plan was prepared and adopted by SFWMD and the Army Corps of Engineers and now awaits authorization by Congress, the St. Lucie River Legal Defense Fund was formed and successfully filed suit against the state for improved River protection, we prepared and distributed the "Ooze News" to educate school children in Martin and St. Lucie Counties, the Rivers Coalition formed (we are a founding member among more than 45 organizations), the St. Lucie River Issues Team was formed and funded by the state legislature, a one cent sales tax was adopted and spent by Martin County to purchase lands for River cleanup, the 9 County Coalition to Protect Lake Okeechobee, the St. Lucie and Caloosahatchee Rivers was formed,

the River Dayz Festival and River Reflections events were created, the Adopt a Drop Program for neighborhood watershed improvement created, the Muck Study completed and integrated into the IRL Restoration Plan, and the Indian River Citrus Best Management Practices Manual created.

SLRI was instrumental in all of these efforts and more, because all are necessary to restore the St. Lucie River to good health. We understand that full implementation of all these programs will take years, but a healthy River will be worth it.

Unfortunately, as we worked on all these programs, we also made a huge mistake. We believed state and federal agencies who promised that the Comprehensive Everglades Restoration Plan (CERP) would save us from the devastating discharges from Lake Okeechobee via C-44. Now we know better. There is a whole new battle on a much wider front to be fought and won before we can have a healthy River.

Part 3

The first column of this series focused on the history of the St. Lucie River and reasons for its decline from 1900 through 1990. The second focused on how widely supported local efforts since 1990 were coordinated to improve water quality and the timing of local drainage to the River. We believe these efforts since 1990 are unprecedented in any watershed, and certain to bear fruit in terms of improved River health.

Despite all these efforts, the River and Lagoon are now threatened as never before by Lake Okeechobee discharges. Even if all our local drainage were perfectly clean and perfectly timed for maximum River health, we will still be unsuccessful in cleaning up the River due to the way Lake O is being managed.

Massive discharges of water from Lake Okeechobee to the River in 2003, 04 and 05, totaling over 1.4M acre-feet (460 trillion gallons) have overwhelmed all the local efforts to improve the River and Indian River Lagoon. The coup de gras came in 2005, when the State Health Department recommended that no contact be allowed between River waters, humans and their pets, and swimming in the River was banned.

The damages done over the past three years will take many years to recover from. Florida Oceanographic Society reports that grass beds are entirely gone from the River and from the Lagoon north to Jensen Beach. Grass beds further north in the Lagoon have deteriorated to the point many are now dominated by algae rather than seagrass. These grass beds are the nursery for most of our inshore and near shore fisheries, and without grass beds, these fisheries and all the species that depend on them will suffer further declines.

Harbor Branch Foundation reports an alarming increase in the incidence of cancerous lesions in bottle-nose dolphin, from 3% to 42% since 2003, in the population that lives in the St. Lucie River and south end of the Indian River Lagoon. Fungus lesions on dolphin are also skyrocketing. These dolphins are the last "canary", heartbreaking confirmation that the Health Department warning that our waters are unsafe is an understatement.

Water management policies designed to maximize irrigation supply for the Everglades Agricultural Area and sugar farmers have kept water levels too high in Lake Okeechobee, destroyed 50,000 acres of Lake Okeechobee grass beds, and damaged the Herbert Hoover Dike around it. Not only is the Lake in the worst shape ever with respect to water quality and

habitat, the dike has become so leaky that independent experts have judged it likely to fail within the next six years if water management policies are not changed.

The Caloosahatchee River on the west coast has suffered at least as much as we have, receiving over 3M acre-feet of Lake O discharges in 2004-05, with massive grass bed destruction and huge algae blooms even more widespread and devastating than those we faced in 2005. We have more scientific proof of damages done over here, but the West Coast is mobilizing multiple scientific studies and is catching up fast.

Over the past several years, cooperation and coordination between east and west coast estuary advocates has greatly strengthened a growing appreciation of the environmental, economic and social destruction caused by using Lake O as a reservoir for the Everglades Agricultural Area.

Part 4

In our last column we described how the extensive local efforts over the past 15 years to clean up the St. Lucie River have been completely negated by damages done the River and Lagoon from massive Lake Okeechobee discharges. The Caloosahatchee River is suffering a similar fate, but even more dramatically, because it was healthier than the St. Lucie River prior to 2003. The Lake itself is in its worst shape ever, due to extended periods of high water and decades of accumulated pollution. With its grass beds destroyed and three year classes of sport fish lost, fisheries biologists predict collapse of the speck and bass fisheries. All reports indicate 2006/07 will be the season tourists visiting the Lake will realize its once great sport fishery is gone.

The Lake and the estuaries' problems result largely from a water management schedule that is designed to conserve water for irrigation, but is dangerously inadequate when there is too much water. For the past 10 years we have had too much water in most years. Why did this happen? South Florida rainfall runoff oscillates yearly between wet and dry seasons. There are larger and longer term weather patterns that affect us as well: the El Nino and La Nina cycles are well recognized influences on rainfall in our wet and dry seasons. In 2000, a SFWMD scientist and his colleagues published a paper describing another important weather cycle, the Atlantic Multi-decadal Oscillation (AMO). This roughly 30 year natural cycle governed by Atlantic Ocean warming and cooling radically the amount of rainfall runoff recorded in the eastern United States , particularly in Florida .

Average annual rainfall does not vary much between the AMO dry and wet cycles, but the average rainfall runoff doubles during the wet cycle. This apparently is because during the wet cycle there is a higher frequency of more intense events like tropical storms and hurricanes, and even "normal" rainfall events tend to be more intense, with longer dry spells between them, so more of the rainfall becomes stormwater runoff.

From roughly 1965 to 1995, we were in the AMO dry cycle. The average annual net rainfall and runoff contribution to Lake O was about 2' per year, most of which was used for irrigation during the dry season. Since 1995 the average annual net rainfall and runoff contribution to Lake O has been 4' or more.

The Lake Regulation schedule was developed using a computer model and "period of record" data from 1965-1995. SFWMD has based its water management policies on the AMO dry cycle, and so has designed mainly to conserve water for water users. During the AMO wet cycle, irrigation demands are reduced, so the problem of excessive water flowing into Lake O

becomes even larger over the year. An extra 2' of water in Lake O then creates real problems. In short, there is 1,000,000 extra acre-feet of water with no place to go, except to be dumped on the estuaries to the east and west.

The AMO wet cycle further compounds our problems by presenting more frequent large rainfall runoff events toward the end of the wet season. For example, Lake O was already full in October 2005, and then hurricane Wilma pushed the Lake level up into the danger zone.

The dike around the Lake is dangerously leaky and subject to hurricane erosion. In 2005 the SLRI sent the Army Corps a White Paper that concluded, according to the Corp's own dike studies, if Lake O had been at normal regulation stage August 1 of 2004, Hurricane Jeanne would have broken the dike in September 2004. More recently, Wilma severely damaged the dike. In 2006 SFWMD commissioned an independent engineering study that concluded the chance of dike failure is much greater than previously reported to the general public.

The total capacity to discharge water from Lake O has decreased over time as the tidal Caloosahatchee and St. Lucie basins developed. The Army Corps recognizes water can flow into Lake O six times faster than they can let it out (by dumping on us). They need a third outlet that can provide enough additional outlet capacity to save the dike failing due to rapid rises in Lake O levels, such as in August and September 2004 when it rose from 12.3' to over 18' despite maximum releases to the estuaries. The Lake must be operated at lower average levels and with more outlet capacity, both for its health and for public safety.

Part 5

Many wonder why excess Lake Okeechobee waters are not sent south to the Everglades.

There are existing canals going from Lake O to the Everglades, and there are 40,000 acres of stormwater treatment marshes built to treat drainage water before it goes into the Everglades. So why don't we send excess Lake O water south now? Because the Everglades Agricultural Area uses up all the treatment capacity to maintain its perfect drainage.

When the federal government successfully sued the state to force clean up of polluted drainage waters being discharged to the Everglades, the state embarked on a 13 year program financed primarily by taxpayers to create stormwater treatment marshes (STA's) north of the Everglades to meet mandated water quality standards. This is the famous " Everglades cleanup" we read about.

These STA's were designed to treat approximately 1,000,000 acre-feet of EAA drainage and 250,000 acre-feet of Lake Okeechobee drainage per year, prior to discharge to the Everglades. In both 2004 and 2005, more than twice the designed drainage quantity from the EAA was forced through the STA's. Most of the STA's were damaged by too much polluted water being forced through them.

Early in 2006, SFWMD advised the Army Corps that there is no capacity to send any Lake O water south in 2006, as there was no water quality treatment capacity available.

The reader may recall our prior discussion of the Atlantic Multi-decadal Oscillation (AMO) and how in the warm (wet) phase, annual rainfall runoff averages about twice as much as during the dry phase. South Florida Water Management District policies and projects, including the Lake O regulation schedule and Everglades restoration, are designed for rainfall runoff predicted for the dry phase.

The STA's were designed with the 1965-1995 dry phase rainfall runoff data. Now we are in the wet phase and the STA capacity is not adequate to treat the drainage from the EAA, and there is no treatment capacity allowed for Lake O. Interestingly, these failures to adequately treat EAA drainage have resulted in another 18,000 acres of STA being designed and constructed at taxpayer expense on an "emergency" schedule, but again, none of the additional treatment capacity designed to allow Lake O water be sent south.

So, all excess Lake O water must be sent to the St. Lucie and Caloosahatchee Estuaries, promising us one disastrous year after another unless we have a drought. We can do all we want in our local drainage basin to improve our River, only to have it destroyed by public policies that favor sugar farmers over all other interests.

You might have heard the SFWMD used the term "shared adversity" when blaming unexpected climatic conditions for destruction of our estuaries. In fact, recent climatic conditions were predictable. The adversity has never been shared, and unless and until the EAA is treated the same as any other land area in South Florida, instead of being provided perfect drainage and perfect water supply, they will never share the adversity we face nearly every year.

The Army Corps is preparing a new Lake O regulation schedule that will improve dike safety by requiring larger discharges to the estuaries at lower Lake stages. This should improve dike safety and benefit the Lake's ecology, as the Lake will be kept lower in general. However, despite the low Lake levels in 2006, the Lake is not recovering like it did in the 2000/01 drought, so it remains to be seen whether the decades of polluting Lake O with backpumping from the EAA and dairy farm drainage can be recovered from.

Even if the Corps adopts a schedule that continuously releases small quantities of water via all available outlets, including south, the estuaries are going to suffer. At best, our future is to "take a little abuse nearly all the time" and "take the big dumps" whenever the Lake is a little too high or rises too fast.

Either way, until we have a safe, secure outlet for Lake O south through the EAA, our problems with Lake O dumps to coastal estuaries will grow worse rather than improve.

Part 6

In our last column we discussed how federal protection of Everglades water quality resulted in construction of stormwater treatment areas (STA's), how Everglades Agricultural Area (EAA) drainage uses up all the stormwater treatment capacity, and how the coastal estuaries have become the only significant outlets for dumping excess Lake O water.

The SFWMD uses a massive computer model to evaluate water management policies, known as the South Florida Water Management Model (SFWMM). The model is very complex, old, and without a "user interface", very difficult or impossible for anyone outside the state and federal agencies to use. It is written in Fortran, an obsolete computer language, and changes in the model to evaluate operational options require revisions to the base code.

However, the heart of the model is simple: the groundwater table in the EAA is managed at a constant level below the ground surface, regardless of weather. Everything else in water management policy in South Florida revolves around this one criterion. This is how the 700,000 acre EAA effectively controls the fate of the Everglades, Lake O and the coastal estuaries.

A simple example from May of 2006 demonstrates the power of the EAA to control the rest of South Florida. Prior to May 14 the EAA was withdrawing approximately 5,000 acre-feet a day of irrigation from water stored in the Lake. The three Water Conservation Areas, compartments of the Everglades where drainage from the EAA is pumped to, were below regulation schedule. On May 15 it rained, less than 1" average over the WCA's, perhaps a little more in the EAA. By May 17 water levels in all three WCA's were pumped up between 0.3' and 0.5' by drainage from the EAA. The pumps that transferred this water from EAA to the WCA's are paid for and operated by the SFWMD with our tax dollars. Irrigation demand on Lake O from the EAA dropped to zero for nearly a week, then resumed as before.

Drainage of the EAA is massive and near instantaneous, as described above, because there is no storage available in the ground. Farmers say this is because they are following Best Management Practices to reduce pollution, and by keeping the groundwater high, pollution is reduced. They do not mention that our huge investment in stormwater treatment areas (STA's) to clean up their drainage is circumvented when too much drainage is pushed too fast through them. Nor that the reason Lake O water cannot be moved south is that all the STA treatment capacity has been used up by their drainage.

On the flip side of water management policy, keeping the EAA groundwater at perfect level requires storage of millions of acre-feet of water in Lake O, because the irrigation demand is modeled over multiple years and we might have two dry years in a row. Farmers publicly state holding more water in Lake O saves the estuaries from freshwater discharges, conveniently omitting that when Lake water gets too high, we receive massive discharges that take years to recover from.

The Comprehensive Everglades Restoration Plan (CERP) was touted as the solution that both sustains the status quo for sugar production and improves the environment. In fact, nearly all CERP's predicted benefits to the estuaries rely on unproven and unprecedented storage of massive amounts of water underground via deep injection wells. If this technology does not work, and increasing numbers of experts believe it will not, there is no backup plan.

The backup plan would then be status quo, dump excess water on the coastal estuaries. So much for CERP saving our River. And the reader should remember, CERP itself was created using dry cycle climate data, and all indications are we can expect 15 to 20 more years of wet cycle data.

Part 7

In the last column we discussed how providing the Everglades Agricultural Area with perfect irrigation and drainage controls all water management policy around it, and why CERP will not fix the problems the coastal estuaries face.

There are several obvious solutions to the problems the Everglades, Lake O and the Estuaries face because of the EAA's ongoing perfect drainage and perfect water supply.

Unless we are in a drought, water should be slowly leaked out of Lake O continuously to all beneficial uses and/or at rates that cause the least harm environmental resources. Water should always be sent from Lake O to the WCA's when they are below regulation stage, to protect both everglades ecology and replenish South Florida urban area wellfields.

The stormwater treatment areas cannot be reserved solely for treating EAA drainage. The public should not be paying for more EAA pollution cleanup, the EAA should pay for their own: we need our tax dollars for Lake O cleanup to protect the Lake, Everglades and Estuaries. A broad, shallow marsh flow-way must be constructed through the EAA to enable Lake O waters to be cleaned up on their way south to the Everglades. This facility is also required to provide additional discharge and conveyance capacity south in the event of dangerously high Lake O levels. Such a plan was described as recently as 1993 by the Army Corps, but was killed by powerful EAA interests.

Readers interested in learning more about the flow-way concept can review it on the riverscoalition.org web site, look for "Plan 6".

Finally, the Army Corps needs an independent computer model to evaluate their options and responsibilities for public safety and environmental restoration in South Florida. The Corps was nearing completion on such a model when work on it was abruptly suspended in February 2006. It appears powerful interests in South Florida do not want a "transparent" modern water management model that would enable the Corps and the public to evaluate water policy decisions that might actually "share the adversity".

In our last column we described the necessity for additional outlets for Lake Okeechobee to protect the dike from failure. While most agree the water should go south to the Everglades, water quality in Lake O is now so poor no one wants it. If another outlet for the Lake is to be acceptable, it must provide water quality treatment as well as volume capacity. A broad, shallow flow-way through the EAA from the Lake south to the WCA's appears the best solution.

The alternative, to turn the dike around Lake O into a dam, is by comparison prohibitively expensive, will take much too long to protect public safety, and would effectively destroy what is left of the Lake ecosystem. Even then, when the Lake is too full, the estuaries would remain the flood control outlets and subject to their continued destruction.

Part 8

The main obstacle to obtaining a Lake Okeechobee regulation schedule that treats the coastal estuaries as valuable environmental and economic assets rather than as toilets for polluted water is the sugar industry. Big Sugar exercises more political control than the electorate via a variety of methods.

For example, they have two employees, Malcolm Wade and Nicholas Gutierrez, on the nine member governing Board of SFWMD. Observations of Board voting patterns make it clear these two have at least three others voting with them. Sugar has always had major influence on water management in South Florida, but never so obvious nor so clearly in conflict with the public good as now.

Their combination of lobbyists, consultants and political allies is second to none. Their success in passing state legislation to require taxpayers first to fund and then later to extend funding to build more stormwater treatment areas (STA's) to clean up polluted EAA drainage water is truly amazing. Their next raid on taxpayer pockets will be for funding to install and operate "forward pumps" to assure they can continue to irrigate their farms from Lake O even when the Lake drops below 10' elevation.

The only time Big Sugar loses a battle is when a federal judge rules against them. Hence, local efforts to obtain better treatment for our River are now focused on the last resort, legal action. The Rivers Coalition Defense Fund, an organization we support, has filed suit in federal court to force changes in the way Lake Okeechobee is managed.

This suit alleges that dumps of polluted water from Lake Okeechobee into the River result in illegal "taking" of riparian rights that are protected by the U.S. Constitution. Twenty two local waterfront owners are named as plaintiffs in the suit, but in fact, if and when a federal judge rules riparian rights are being taken by Lake O dumps, all property owners, public and private, will be eligible for monetary damages.

The total value of such damages would be far greater than the cost of building a storage flow-way from Lake O through the EAA to the Everglades. It is our hope that faced with such a dilemma, and with public support and awareness of the issues, our political leaders will be forced to protect the environment rather than protect the status quo for the EAA.

This is truly a last resort, but we cannot and will not accept defeat by an industry that pays for our defeat with our own tax dollars. We urge readers to contribute to the fight, ask your elected officials why they are not in the fight on the public's side, send a check, and educate yourselves and your neighbors. Our River and its future depend on all of us.

Jordan, an investment broker, is president and a founder of the St. Lucie River Initiative, a citizen's action group that advocates river restoration. Contact him at floyd.d.jordan@smithbarney.com

Scripps Treasure Coast Newspapers

Guest Columnist

January 19, 2007