



## INDIAN RIVER COUNTY, FLORIDA DEPARTMENT OF UTILITY SERVICES

**Date:** December 4, 2018

**To:** Jason E. Brown, County Administrator

**From:** Vincent Burke, P.E., Director of Utility Services

**Subject:** Blue Cypress Lake Informational Update

### **BACKGROUND:**

On June 19, 2018, the Indian River County Board of County Commissioners (BCC) directed staff with compiling existing data on monitoring activities that are being, or have been, performed on and around the Blue Cypress Lake (BCL) in western Indian River County. This request was a result of publications in which regulatory agencies were quoted as saying that the water quality of the lake has degraded, possibly linked to the land application of biosolids near the lake. BCL is classified under Florida Department of Environmental Protection's (FDEP) Surface Water Quality Standards Classes as a Class I waterbody (Potable Water Supply), forming the headwaters of the St. Johns River.

Staff presented this information to the BCC on July 10, 2018, and the BCC directed staff to work with the Florida Department of Environmental Protection (FDEP) and the St Johns River Water Management District (SJRWMD) staff on the status of the current monitoring performed on and around BCL, and to identify what additional testing may be needed to determine the source or sources of increased nutrient pollution in the lake. During this July 10<sup>th</sup> meeting, the BCC also directed staff to draft an Ordinance and schedule a Public Hearing to consider a temporary moratorium prohibiting the land application of Class B biosolids in the unincorporated portions of Indian River County.

On July 17, 2018, after having a public hearing to discuss the issues, the BCC adopted a temporary six-month moratorium on the land application of biosolids in the unincorporated portions of the County (Attachment 3). The effective date is July 18, 2018, when the document was filed with the Department of State. Thus, the 180-day moratorium is set to expire on January 14, 2019. County staff were asked to bring back an update in December, prior to the expiration of the moratorium.

### **ANALYSIS:**

The following table is a brief compilation of activities that have occurred since the summer of 2018, as well as some upcoming milestones.

Date	Description
July 10, 2018	Indian River County Department of Utility Services (IRCDUS) provided the BCC a BCL Testing Update as a Department Item during the BCC Meeting.
July 17, 2018	Six-month temporary moratorium on the land application of Class B biosolids in unincorporated IRC. Ordinance 2018-016.

Date	Description
July 19, 2018	Staff requested data from FDEP and SJRWMD.
July 20, 2018	Treasure Coast Regional Planning Council (TCRPC) discusses Management Alternatives for Human Wastewater Biosolids & Resolution. Resolution 18-003 adopted.
July 27, 2018	IRC contracts with Jones Edmunds & Associates (JEA) to assist with BCL Water Quality Study.
August 2, 2018	Fellsmere adopts six-month Class B biosolids land application moratorium. Ordinance 2018-06.
August 8, 2018	Conference call: IRC, Consultant team - JEA with Janicki Environmental (JE team), FDEP, SJRWMD. Discuss issues and upcoming monitoring plan.
August 17, 2018	JE team representatives met with SJRWMD staff at SJRWMD headquarters to discuss past biosolids analyses and available data.
August 21, 2018	St. Lucie County unanimously adopts Resolution 18-148 to increase collaboration with surrounding communities and regulatory agencies to prioritize the reduction and eventual elimination of land application of human wastewater biosolids.
August 28, 2018	Second conference call: IRC, JE Team, FDEP, SJRWMD.
September 5, 2018	1 <sup>st</sup> Biosolids Technical Advisory Committee (TAC) meeting in Orlando, attended by IRC and JE Team.
September 14, 2018	Site visit to BCL and IRCDUS BCL Wastewater Treatment Plant (WWTP) by IRCDUS staff and JE team. Discussion on approach to quantifying phosphorus load increases to account for current upward trend. Quantification to be completed with currently available data.
September 17, 2018	Compiled spatial and tabular biosolids data available from SJRWMD for review/use.
September 18, 2018	At the 9/11/18 BCC meeting, BCC voted to adopt the resolution, similar to the TCRPC addressing biosolids and biosolids applications. IRC Resolution 2018-084 was adopted September 18, 2018.
September 19, 2018	JE Team provided to IRC trend analysis for BCL water quality.
September 25, 2018	Received DRAFT University of Florida's Institute of Food and Agricultural Science (UF/IFAS) Ranch Soil and Grass Tissue Sampling Plan.
October 3, 2018	Draft Regulatory Agency Sampling Plan/Model.
October 4, 2018	JE Team reviews draft water and nutrient budgets available from draft SJRWMD model with SJRWMD staff.
October 9, 2018	2 <sup>nd</sup> TAC meeting scheduled - canceled due to Hurricane Michael.
October 12, 2018	TCRPC presents Joint Resolution of Support on "Management Alternatives for Human Wastewater Biosolids" at Joint Meeting of the Treasure Coast and South Florida Regional Planning Councils.
November 2, 2018	Automated storm water sampling event occurred on Friday 11/2/18 at the BCRC sampling location.
November 6, 2018	UF/IFAS staff collected soil and vegetation samples from 23 sites on the Pressley ranch property. Samples delivered to an IFAS laboratory in Gainesville
November 8, 2018	The integrated tracer collectors (POECIS) were deployed at two sites downstream of biosolids application sites. Those collectors will remain in place for 30 days before being returned to the contract analytical lab.
November 14, 2018	JE Team provided draft estimates on phosphorus load increases and causative factors to IRC.

Date	Description
November 16, 2018	Rescheduled 2 <sup>nd</sup> TAC meeting held in Orlando FDEP offices.
November 28 & 29, 2018	TAC Meetings 3 and 4 held in Orlando FDEP Offices. Response to Charge Questions provided to FDEP.
December 11, 2018	Update on BCL and land application of biosolids presentation to the BCC.
January 14, 2019	Six-Month Temporary Moratorium Expires
January 23, 2019	TAC Meeting 5 Planned. Follow-up meeting on FDEP response to Charge Questions at FDEP offices in Orlando.
February 2019	TAC Meeting 6, if necessary. It is unknown at this time if there will be a meeting in February. It is likely that January may be the last TAC meeting.

The FDEP continues to collaborate with representatives from SJRWMD and staff from the UF/IFAS on completing the sampling regime that was designed to fill in the gaps identified in the analytical data available. Results from this collaborative effort are just beginning to become available for review.

The table below is an excerpt of a tentative timeframe previously presented to the BCC showing the remaining steps and time necessary for the regulatory agencies to collect, interpret and generate a recommendation on Class B biosolids land applications in the BCL watershed.

Task	2018			2019								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Field Data Collection												
Analysis, Modeling, and Interpretation												
Final Report, Presentations and Recommendations												

To further investigate the overall science behind the land application of Class B biosolids, the FDEP created a Biosolids TAC. Meetings of the selected panel experts have taken place since the inception of the committee in September 2018, with a formal response from this committee not expected until late February 2019. Presentations from members of the TAC, as well as invited experts, have taken place at the meetings. In-depth discussions were held to decide whether or not the current permitted application approach is based on the best science available, or whether the dated rules may need to be revisited with tools available to scientists today. This committee is focused on the state-wide application of Class B biosolids, not isolated to the BCL watershed.

The Biosolids TAC was charged with 3 topics:

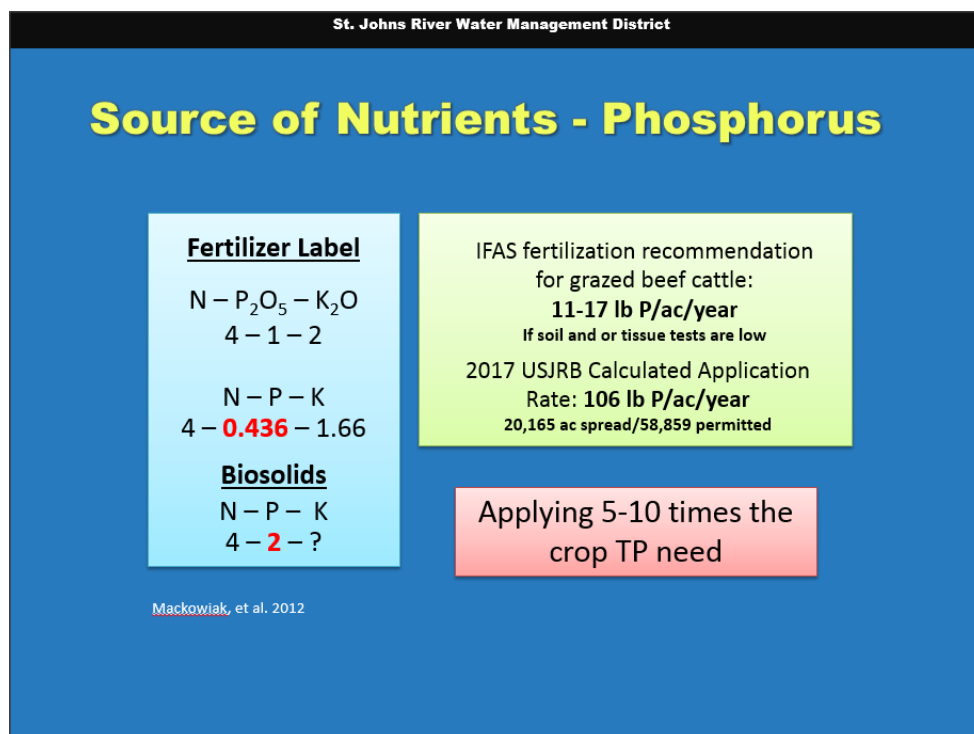
- What are the options for biosolids management in the State?
- How can biosolids management be improved to ensure the environment is protected?
- What research is needed to improve biosolids management?

JEA were hired to assist the County in understanding this complex issue. They have reviewed all available data and have compiled four technical memorandums (TM), which are listed as follows:

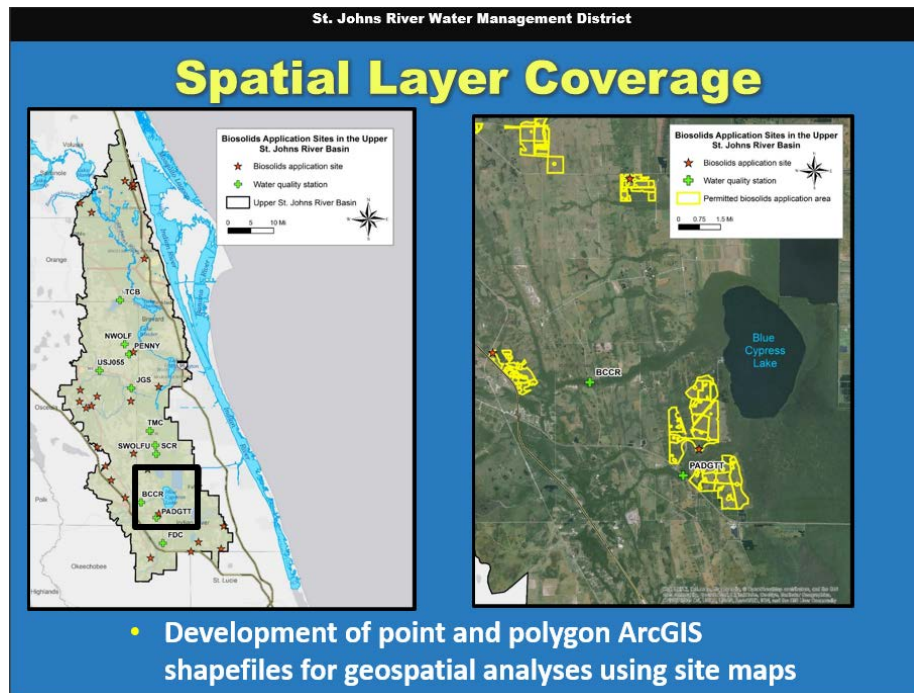
- TM1: Data Collection, Trend Analysis
- TM2: Data Collection, Biosolids
- TM3: Phosphorus Budget
- TM4: Waterbody Identification (WBID) Assessment

All the technical memorandums can be reviewed in Attachment 2. In addition, JEA has also compiled a quick summary/ fact sheet of the BCL water quality, which can be found in Attachment 1.

Data presented to the TAC by SJRWMD staff shows that there has been an increase in phosphorus concentrations in the Upper St Johns River Basin (includes BCL) that match up in time with an increase in biosolids land application. This increase of phosphorus in the basin appears to be coming from the excessive application of phosphorus contained within the biosolids applied to the land, well in excess of the agronomic rates recommended for phosphorus application.



The following is a graphic prepared by SJRWMD staff showing the water quality monitoring station locations in relation to the sites in the basin permitted for land application of Class B biosolids. In 2017, 89% of all the biosolids land applied in the upper St. Johns River basin came from outside the basin.



Guidance to the FDEP from the TAC is not expected until late February 2019, but it is anticipated that the committee will present a multi-faceted response. It is believed that the response will include an educational outreach program along with recommendations addressing the outdated Phosphorus Index approach that has been used to determine fertilization rates for certain crops.

FDEP staff has indicated that the land application of Class B biosolids within Indian River County has been done in accordance with the receiving site's approved Nutrient Management Plan and under the application program allowed in the FDEP Biosolids Site Permit issued for the receiving site. This is evident from the FDEP site inspection compliance findings that have taken place at the permitted land application sites.

Although application rates and procedures meet current regulatory requirements, the marked increase of phosphorus levels identified in BCL appear to have a strong correlation to the increase in Class B biosolids that have been applied in the vicinity of the lake. Consequently, current requirements may not be adequately addressing phosphorus loading from biosolids land application.

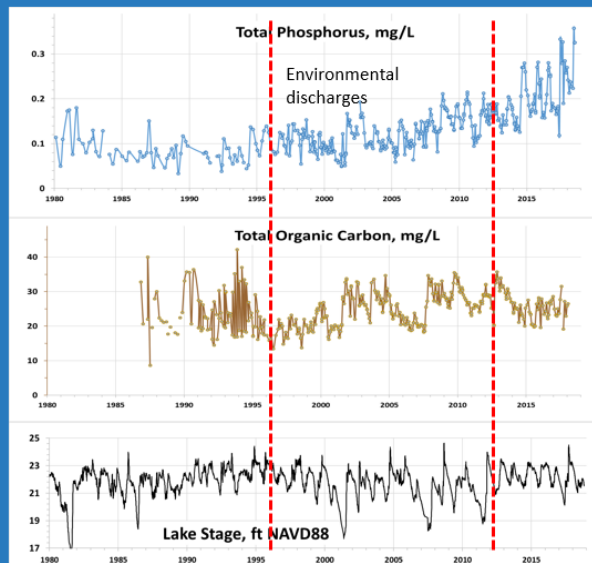
Since the enactment of Florida Statute 373.4595 in 2007 on the Northern Everglades and Estuaries Protection Program restricting the land application of Class B biosolids in the Okeechobee, St Lucie River and Caloosahatchee River watersheds (effective date of 2012), Indian River, Osceola, and Brevard counties have seen a marked increase in the amount of Class B biosolids applied on agricultural lands.

## 2017 USJRB Generators

- Class B biosolids produced at 42 generating facilities were land applied in the USJRB in 2017
- Three facilities land applied > 5000 dry tons of biosolids in the USJRB in 2017
- Most utilities contract with haulers that land apply biosolids



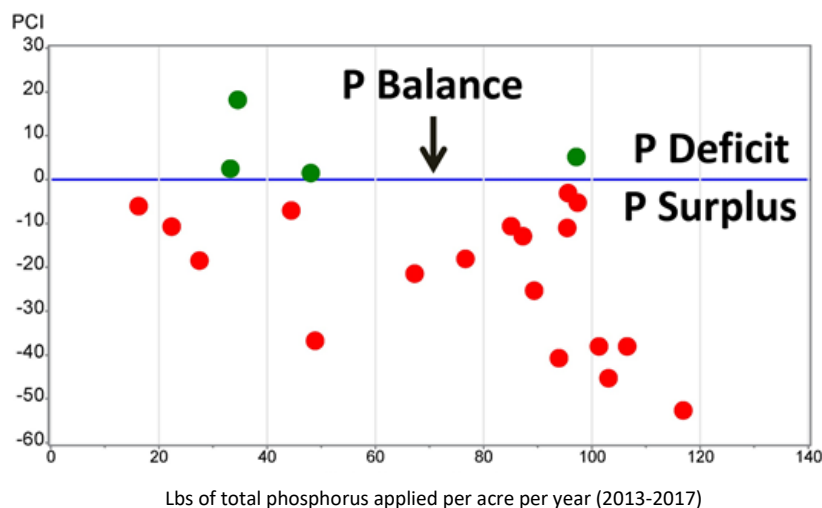
## Blue Cypress Lake



The increase in phosphorus levels in BCL has taken place without any marked changes of Land Use within the BCL watershed. As stated above, application rates of biosolids within the watershed have not exceeded the permitted rates, but the currently allowed rates of application do not take into account phosphorus loadings. This is where there has been discussion at the TAC on possibly updating the rules to take into



account an updated Phosphorus Index when applying biosolids, in effect, limiting the application of Class B biosolids to the level of phosphorus that can be used by the plants as opposed to applying excess that may run off into the environment. When comparing the acceptable, permitted application of Class B biosolids on agricultural land to the Phosphorus Index (as demonstrated in the chart below prepared by JA staff). In the chart, each dot represents the calculated Phosphorus Index result from samples that were collected by UF/IFAS staff in biosolids application zones identified in the site's Nutrient Management Plan. The negative Phosphorus Capacity Index indicates that for those dots in red (below the P Balance line), the soil/plants have no additional capacity to hold/absorb the excess phosphorus. Any excess phosphorus deposited on site is susceptible to run-off or groundwater intrusion as opposed to being taken up by the soil and/or plants. This demonstrates that, by following the current rules, excess phosphorus has been and can continue to be applied in the BCL watershed unless regulatory changes are made.



## CONCLUSIONS:

The property owner at BCL has been very cooperative with the regulatory agencies and has voluntarily ceased any biosolid applications since May 2018. The property owner has allowed the regulatory agencies access to private property in order to install data collection stations and collect samples to help understand the complex dynamics of weather, nutrient loadings and nutrient transport over time. The owner should be commended for his willingness to assist in this endeavor. Also of note is the detailed investigation process/plan that the FDEP, SJRWMD and IFAS put together to cooperatively work to gather this information and analyze it in a way that helps to determine what is/is not happening in the Upper Basin, including BCL. Staff from these organizations have been very professional and helpful in assisting the County with the results of their ongoing investigations. Some of the historical data collected have been analyzed by the County's consultant and are included as Attachment 2.

FDEP staff has indicated that while the prior application rates and procedures used by the FDEP permittees for land application of biosolids followed the rules in effect at that time, it is evident that there are some inconsistencies with the way the program is structured. There has been a sustained upward trend in total phosphorus concentrations in BCL, which has a strong correlation to the increase in the regulated application of Class B biosolids within the BCL Watershed. While the data are compelling, studies from the regulatory agencies and experts continue and are not yet complete.

Representatives from FDEP commented that the data collected to date support the notion that the BCL Watershed would be on the FDEP's list for phosphorus impairment. This designation will lead to the creation of a Total Maximum Daily Loading (TMDL) amount that will define the phosphorus loading limits for the lake's watershed and the creation of a Basin Management Action Plan (BMAP) to remediate the loads. This process is likely to take two years or longer based on the typical regulatory process. If the application of Class B biosolids were to continue in the BCL watershed during this rule creation timeframe, it is likely that the phosphorus levels in BCL would continue to increase. The revised Phosphorus Index and recent data collected support this conclusion. Consistent with the preliminary findings from the TAC, reports from UF/IFAS, and data presented by SJRWMD, there are concerns that the existing rules and methodologies may be outdated and need review in order to account for all nutrients making their way to the environment.

Curtailling any additional phosphorus inputs to the lake from the surrounding watershed is not the only remedy, but will assist in the process of lake recovery. Although immediate action would be beneficial, it should be recognized that the lake's response to reduced loadings may not be immediate. It has been estimated that removing nutrients from the environment through some type of site remediation activity may cost on order of three (3) magnitudes or greater than the cost of preventing the loading from taking place initially. Therefore, prevention of further phosphorus loading is prudent.

The following possible action items are offered for the BCC to consider:

1. **Discontinue Moratorium** - Let the existing six-month moratorium expire. The BCC approved moratorium became effective July 18, 2018, and expires January 14, 2019. This would allow permitted land application of Class B biosolids to continue.
2. **Extend the Moratorium** on the permitted land application of biosolids until such a time that the Biosolids TAC can provide feedback on their charge questions and furnish the FDEP with the information that may be necessary for FDEP to revise the current rules regarding the land application of Class B biosolids included in the Florida Administrative Code. This moratorium extension would also allow more time for the regulatory agencies to continue collaborating to gather more data in and around BCL, and possibly refine science-based recommendations. Staff recommends the BCC provide direction on authorizing staff to bring back an ordinance and hold a public hearing at the January 8, 2019, meeting to extend the moratorium.
3. Pursue an **Emergency Order** request through the FDEP that would restrict the application of Class B biosolids within Indian River County to ensure a no net increase to the Phosphorus loads on the land applied material. Pursuant to section 120.54(4), Florida Statutes, an emergency rule shall not be effective for a period longer than 90 days and shall not be renewable, except when the agency has initiated rulemaking to adopt rules addressing the subject of the emergency rule and either: 1) A challenge to the proposed rules has been filed and remains pending; or 2) The proposed rules are awaiting ratification by the Legislature.
4. Combination of 2 and 3. This approach would provide for protection of BCL tied to the conclusion of the biosolids TAC and allow for additional investigations into future legislative initiatives to protect the watershed, similar to what is in effect for the Okeechobee, St. Lucie River and Caloosahatchee River watershed under the Northern Everglades and Estuaries Program.



**FUNDING:**

There is no funding for this agenda update to the Board.

On August 14, 2018, per the Continuing Engineering Services Contract Agreement for Professional Services dated April 17, 2018, the BCC previously approved a total of \$63,485.00 to Jones Edmunds and Associates, Inc. for the BCL Water Quality Study (Study). The Study is funded out of the stormwater account 111-28138-033190, which is funded through the Transportation Fund.

**RECOMMENDATION:**

Staff recommends option #4, which is to extend the existing moratorium for another six months and to request that the regulatory agency (Florida Department of Environmental Protection) enact an emergency order to afford more time for gathering data and reviewing results, considering the Biosolids Technical Advisory Committee's findings, and pursuing appropriate legislative initiatives.

**ATTACHMENTS:**

1. Blue Cypress Lake – Water Quality Study Fact Sheet
2. JEA Technical Memorandum Reports (TM1-4)
3. Ordinance 2018-016