

# SAVE OUR LAKES

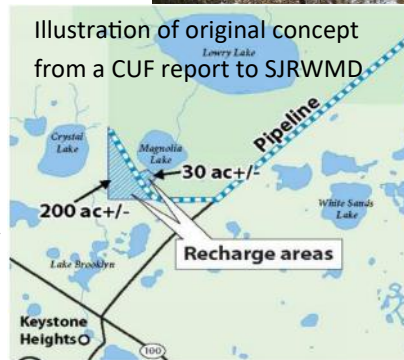


*FEBRUARY 2021* Volume 21, Issue 2

## WHAT WILL IT TAKE TO CHANGE DARK WATER INTO CLEAR WATER?

The St. Johns River Water Management District (SJRWMD or “the District”) has proposed a pipeline for the inter-basin transfer of water from Black Creek to Alligator Creek. The original plan was to discharge the highly colored water into a clear water basin/aquifer by way of a 200 acre recharge wetland located near Lake Magnolia at the southern end of Camp Blanding. Early in the design process the Project Engineers, CDM Smith, calculated that the wetland would prove ineffective in removing the color from the water after a relatively short period of time. Therefore, the District proposed putting the colored water directly into Alligator Creek and sought permitting approvals for the project which would allow this to happen. This would have required that Lake Brooklyn’s classification as a clear water lake be changed to that of a dark water lake. The United States Environmental Protection Agency (USEPA) and US Army Corps of Engineers (COE) rejected the District’s request. To keep the project moving forward, the District has sought proposals from a number of firms for treating the water so that it matches or exceeds the quality of water naturally found in Alligator Creek and Lake Brooklyn. The water quality parameters include those for Color, Lead, Nitrogen, Organic Carbon and Phosphorus.

From a large group of potential systems, a group of 7 systems were chosen for “Bench Scale” testing. Water was drawn by the District from Black Creek on 9/16/20 and shipped on ice to the selected responders. The color of the water collected for this testing was in fact darker, at 416 Platinum Cobalt Units (Pt-Co), than the 152 Pt-Co average collected from 2017-2020 and was seen as a real world test of the variety of conditions that the proposed treatment systems might face. Summaries of the systems meeting the initial criteria are on the following page.



**SAVE OUR LAKES ORGANIZATION, INC.**

P.O. BOX 185, KEYSTONE HEIGHTS, FL 32656

EMAIL: [save-our-lakes@comcast.net](mailto:save-our-lakes@comcast.net) - WEBPAGE: [www.saveourlakes.org](http://www.saveourlakes.org)

President: Chandler Rozear – Vice President: Vivian James — Secretary: Susan Welsh – Treasurer: Carol Rozear

Board Members: Webb Farber, Glenda Harper, Sue Plaster, Dr. Pat Welsh

Table 4-1 Advantages and Disadvantages of Alternative Technologies

Note: Text and Photos on this page are from the SJRWMD Website.





	Coagulation-Ultrafiltration	Electro-coagulation	Ozonation	Biofiltration SWIG	Biologically Active Media
<b>Advantages</b>	<ul style="list-style-type: none"> <li>Highly effective color and phosphorous removal</li> <li>Trailer-mounted pilot test skid available</li> </ul> 	<ul style="list-style-type: none"> <li>No chemical coagulant required</li> <li>Performed well during pilot testing</li> <li>Highly effective color and phosphorous removal</li> <li>Trailer-mounted pilot test skid available</li> </ul>	<ul style="list-style-type: none"> <li>No residuals</li> <li>Widely used in water industry</li> </ul> 	<ul style="list-style-type: none"> <li>May not require daily, on-site maintenance</li> <li>No chemical pre- or post-treatment required</li> <li>Active pilot at Doctors Lake</li> <li>Passive system</li> <li>Lower O&amp;M</li> <li>Minimum visual profile</li> <li>Removes color and nutrients</li> </ul>	<ul style="list-style-type: none"> <li>May not require daily, on-site maintenance</li> <li>No chemical pre- or post-treatment required</li> <li>Passive system</li> <li>Lower O&amp;M</li> <li>Removes color and nutrients</li> <li>No plant harvesting required</li> </ul> <div style="border: 1px solid black; padding: 5px; color: red; font-size: small;">                     Appearance is expected to be similar to the Biofiltration SWIG System                 </div>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>Moderate O&amp;M requirements</li> <li>Residuals handling and disposal</li> <li>Large building footprint</li> <li>Requires pre- and post-treatment chemical addition</li> </ul>	<ul style="list-style-type: none"> <li>Higher O&amp;M requirements</li> <li>Residuals handling and disposal</li> <li>Large building footprint</li> <li>Higher capital cost</li> <li>Requires pre- and post-treatment chemical addition</li> </ul> 	<ul style="list-style-type: none"> <li>Moderate O&amp;M requirements</li> <li>High ozone doses and LOX consumption</li> <li>May not meet color goal during worst-case events</li> <li>Large building footprint</li> <li>Does not remove TOC</li> <li>Requires chemical addition</li> </ul>	<ul style="list-style-type: none"> <li>Reliability during peak flow events</li> <li>Media replacement (approximate 20-year replacement interval to be evaluated during pilot study) and plant harvesting</li> </ul> 	<ul style="list-style-type: none"> <li>Media proposed has a high iron percentage</li> <li>There is no existing large-scale facility</li> <li>Reliability during peak flow events</li> <li>Media replacement (approximate 20-year replacement interval to be evaluated during pilot study)</li> </ul>

Table 4-3 Preliminary Comparative O&M Cost Estimates for Each Alternative

	Coagulation-UF	Electro-coagulation	Ozone	SWIG-PES	BAM
<b>Annual O&amp;M Cost Components</b>					
Labor	\$ 160,000	\$ 160,000	\$ 160,000	\$ 30,000	\$ 40,000
Equipment Repair and Maintenance <sup>1</sup>	\$ 200,000	\$ 550,000	\$ 90,000	\$ 500,000	\$ 500,000
Power	\$ 50,000	\$ 930,000	\$ 260,000	\$ -	\$ -
Chemicals	\$ 270,000	\$ -	\$ 550,000	\$ -	\$ -
Residuals Disposal	\$ 220,000	\$ 220,000	\$ -	\$ -	\$ -
Media Replacement (if applicable)	\$ -	\$ -	\$ -	\$ 350,000 <sup>2</sup>	\$ 1,300,000 <sup>3</sup>
<b>TOTAL ESTIMATED ANNUAL O&amp;M COST</b>	<b>\$ 900,000</b>	<b>\$ 1,860,000</b>	<b>\$ 1,060,000</b>	<b>\$ 880,000</b>	<b>\$ 1,840,000</b>

<sup>1</sup>All alternatives assume an equipment repair and maintenance cost of 0.5% of the construction cost except Coagulation-UF which assumes 1.0% of the construction cost.

<sup>2</sup> Includes \$7M in media replacement cost, over 20-year lifecycle (+\$350,000/year)

<sup>3</sup> Includes \$13M in media replacement cost over 10-year lifecycle (+\$1.3M/year)

Table 4-4 Preliminary Comparative Lifecycle Cost Estimates for Each Alternative

	Coagulation-UF	Electro-coagulation	Ozone	SWIG-PES	BAM
Construction Cost	\$ 20,140,000	\$ 60,660,000	\$ 17,650,000	\$ 15,170,000	\$ 22,820,000
20 Year Present Value of O&M Costs	\$ 14,800,000	\$ 30,590,000	\$ 17,430,000	\$ 14,470,000	\$ 30,260,000
<b>20 Year Present Value of Capital and O&amp;M Costs</b>	<b>\$ 34,940,000</b>	<b>\$ 91,250,000</b>	<b>\$ 35,080,000</b>	<b>\$ 29,640,000</b>	<b>\$ 53,080,000</b>

Funding for a Pilot Study of the SWIG PES Biofiltration proposal was approved by the SJRWMD Governing Board at the 1/12/21 meeting. This will use water directly drawn from Black Creek. Confirmation of the capability of the system to be scaled up to required water flow and meet the water quality, adjustments in the size and volume of the treatment beds as well as the makeup of the of the sorbic media in the beds will be enabled by this Pilot Study. The study site is shown in this SJRWMD illustration on the right. Additional information including meeting minutes on the treatment options, proposals and the selection process may be found on the District's Website at: <https://www.sjrwmd.com/projects/#black-creek>



Pilot Study location near the Clay County Animal Shelter on SR-16

**SJRWMD GOVERNING BOARD MEETING (Live Streaming available) Tuesday, FEBRUARY 8, 2021 at 10:00 AM at the CITY of APOPKA CITY HALL (Verify on website: [www.sjrwmd.com/governingboard/](http://www.sjrwmd.com/governingboard/) ) Updated meeting dates, times, locations, agendas, videos and other information are posted on the District's website.**

**MEMBERSHIP APPLICATION and RENEWAL FORM**

Cut, copy or send the whole page!

**(Please Circle One) RENEWAL OR NEW MEMBER?**

NAME \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

PHONE NUMBER(S) \_\_\_\_\_

**EMAIL ADDRESS** \_\_\_\_\_

**PLEASE CIRCLE ONE:**  
**SEND MONTHLY NEWSLETTER BY**  
**US MAIL OR EMAIL ?**

**Look for your Renewal Letter! Coming out soon.**

**PLEASE SEND THIS FORM ALONG WITH YOUR ANNUAL DUES CHECK FOR \$25.00 PAYABLE TO: SAVE OUR LAKES ORG., P.O. BOX 185, KEYSTONE HEIGHTS, FL32656. WE LOOK FORWARD TO SEEING YOU WHEN MEETINGS RESUME AT FIRST BAPTIST CHURCH OF K.H. (Hwy. 100, just east of Hwy. 21), 7PM, ON THE SECOND TUESDAY-EVERY OTHER MONTH!**

**SOLO WEBSITE [www.saveourlakes.org](http://www.saveourlakes.org)**

You can get information as well as communicate with us through our website: [www.saveourlakes.org](http://www.saveourlakes.org) or our email: [save-our-lakes@comcast.net](mailto:save-our-lakes@comcast.net) . Our newsletter comes out once a month by email and US Mail (usually the first week of the month). **Please feel free to check us out!**

Save Our Lakes Organization, Inc.  
 P.O. Box 185  
 Keystone Heights, FL 32656



Logo by: *Graham E. Kestner*

**The February SOLO Members meeting will not be held. Future SOLO Members meeting dates and times in 2021 will be announced in the newsletter, by email and by meeting signs posted in and around Keystone**

NEWSLETTER PRINTING BY FABCO-AIR. THANK YOU, FABCO-AIR!

**FABCO-AIR**  
 A member of Festo Group

Webpage Design By: **REALTY PRODUCTIONS CO.**  
 RealtyProductions.com – (904) 502-0165 - Email: [wwwweb@realtyproductions.com](mailto:wwwweb@realtyproductions.com)



**Bald Eagle**  
 Keystone Heights

**Bait and Tackle**

Fishing, Hunting, Boating  
 Supplies, Feed,  
 Dog Food  
 Snack Bar  
 352-473-6060  
 Keystone Heights, Fla.  
 State Road 100  
 Owners:  
 Joey & Patty Tyson  
 Hours: 5:30 AM - 6:PM  
 Open Seven Days a Week  
 "Not just a Bait Shop"

**Helen Hersey Realty**  
*Helen A. Hersey*  
 Broker

Office: 352-473-8882  
 Cell: 352-235-1586  
 Toll Free: 1-866-649-8882  
 Web Site: [www.helenhersey.com](http://www.helenhersey.com)  
 Email: [helen@helenhersey.com](mailto:helen@helenhersey.com)

7396 SR-21 North • PO Box 2002  
 Keystone Heights, FL 32656

Phone: 352.473.6405  
 Cell: 904.219.1562  
 Fax: 352.473.6495

Let Us Be Your  
 Hometown Electrician

Serving  
 The Lake Area And  
 Surrounding  
 Counties

**Daryl Wilkins**

**RegionalElectricInc.com**  
 Residential & Commercial  
 New Construction • Remodel • Service Calls

**TEAM BEALS**  
 Todd & Debbie

**TODD BEALS, REALTOR®**  
 (904) 588-2083 DIRECT

**DEBBIE BEALS, REALTOR®**  
 (316) 648-0595 DIRECT  
 BEALSTEAM@GMAIL.COM  
 www.TeamBeals.com

3168 US Hwy. 17 | South Fleming Island, FL 32003

ON THE MOVE

**S.O.L.O., Inc.**