

St. Johns River Modeling Overview
Questions & Answer Summary
March 12, 2024, via GoToWebinar
10:00 am – 10:56 am

Attendees

Ginger Adair, Volusia County	April Davis, City of Altamonte Springs
Melissa Adams, SJRWMD	Brenda Defoe-Surprenant, ECFRPC
Leah Aidif, Halff	Rob Denis, Liquid Solutions Group
Soraya Aidinejad, St. Johns Riverkeeper	Shawn DeRome, Rayonier
Carolina Alvarez, Brevard County	Cammie Dewey, SJRWMD
Khalil Atasi, SBC Global	Jian Di, SJRWMD
Lisa Bally, ATM/Geosyntec	Melisa Diolosa, SJRWMD
Michael Barr, DEP	Dean Dobberfuhl, SJRWMD
Wes Barraw, Halff	Regina Doherty, Citizen
Evelyn Becerra, DEP	Leslie Dumas, Woodard and Curran
Connie Becker, DEP	Douglas Dycus, FDOT
Eric Blount, Palm Bay	Bill Eggers, Evans Prop
Amanda Boone, Woodard and Curran	Alys Eide, City of Maitland
Julie Bortles, Orange County	Justin Elkins, Lake County
Ansel Bubel, DEP	Kristine Eskelin, SRWMD
Patrick Burger, Jones Edmunds	Julie Espy, SAS
Robert Burleson, ATM	Austin Evora, City of Maitland
Tiffany Busby, Wildwood Consulting	Amanda Exposito-Ferree, AtkinsRéalis
Marcia Bush, Lake County	Chris Fagerstrom, Pond and Co
Rene Camacho, Citizen	Jessica Fetgatter, DEP
Lauren Campbell, DEP	Corrine Flumerfelt, DEP
Andy Canion, SJRWMD	Cathy Foerster, Geosyntec
Andrew Carswell, Levy County	Jennie Ford, City of Gainesville
Cathie Catasus, Lake County	Larry French, CFL
Stacy Cecil, SJRWMD	Melissa Fuller, City of Eustis
Raghu Chatrathi, CSX	Holly Giles, Volusia County
Rodney Christensen, DEP	Susan Gosselin, Osceola County
Carolin Ciarlariello, DEP	Justin Gostnell, Seminole Electric
Doneda Cole, Putnam County	Jade Greene, DEP
Steven Collins, JMT	Amy Griffin, St. Lucie County
Johnathon Combs, City of Cocoa	Chris Guth, Federico & Associates, Inc.
Nick Cooper, City of Casselberry	Elizabeth Guthrie, Ducks Unlimited
Angela Cope, Brevard County	Lauren Hall, SJRWMD
Ed Cordova, JEA	Cindy Haller, Citizen
Kelsey Cox, JAXPORT	Samuel Hankinson, DEP
Kevin Coyne, AMP	Madeline Hart, FDACS
Jeanne Curtin, State of Florida	Kenny Hayman, DEP
Jane Dai, City of Casselberry	Cori Hermle, SJRWMD
Veronica Dau, Lake County	Robin Holland, FDACS
Steven Davie, GHD	Maira Homann, DEP

Helen Hutchens, Miami Corp
Teresa Irby-Butler, FGUA
Danielle Ivey, Audubon Society
Adam Jacobson, JB Howell
Tony Janicki, ESA
Yanbing Jia, SJRWMD
Megan Johnston, GHD
Johnny Jones, DEP
Tom Kallemeyn, DEP
VJ Karycki, City of Rockledge
Chandler Keenan, DEP
Tracy Kelley, Wildwood
Lisa King, Halff
James Klein, City of Mount Dora
Trevor Knight, Marion County
McKenna Korzeniewski, ECFRPC
Danielle Koury, City of Lake Mary
Tricia Kyzar, UF
Jacob Landfield, SFWMD
Taylor Lankford, Applied Sciences
Timea Lewis, Hernando County
Heather Lindell, Orange County
Melissa Long, City of Jacksonville
Esteban Lopez, RES
Lisa Lotti, City of Orlando
Mary Beth Lupo, DEP
Celeste Lyon, RES
Donald Marcotte, City of Winter Park
Danielle Marshall, City Altamonte Springs
Matt McKinney, Duke Energy
Mike McMunigal, SJRWMD
Gloria McNair, Groundwork Jacksonville
Melissa Meisenburg, Indian River County
Andre Mele, Citizen
Gabrielle Milch, St. Johns Riverkeeper
Daniel Millan, City of Eustis
Shannon Monahan, City of Winter Park
Abby Morgan, City of Cocoa
Lori Morris, SJRWMD
Anna Morville, Molasky Group
Daryl Myers, Hanson Inc.
Pradeep Nagarajan, GHD
Mark Nelson, Jones Edmunds
Cindy Newton, Citizen
Ryne Nimmo, DEP
Jarek Nowak, FDACS
Kevin O'Donnell, DEP

Michael Osborn, City of Lake City
Josh Papacek, SJRWMD
Joe Parish, Seminole County
Jeremy Parrish, DEP
Steve Peene, ATM/Geosyntec
Ben Pernezny, Ardurra
Jon Perry, ESA
Timothy Perry, Gardner Bist Attorneys at Law
Nicolas Pisarello, ATM/Geosyntec
Wendy Poag, Lake County
Michael Poniatowski, ESA
Ray Pribble, ESA
Marty Proctor, Citizen
Chris Rada, Molasky Group
Benjamin Ralys, DEP
Charles Ramdatt, City of Winter Park
Raulie Raulerson, FDACS
Jeremiah Reding, Citizen
Catherine Register, SJRWMD
Allyson Reinert, DEP
Sandra Reller, City of Titusville
Ethan Richardson, DEP
Faith Ricketts Ross, Citizen
Lisa Rinaman, St. Johns Riverkeeper
Michele Rundlett, WestRock
Jordan Salinger, Lake County
Ivee Sauls, Citizen
Laura Savage, Georgia-Pacific
Luke Sekula, Alachua County
Nevin Shah, Mittauer & Associates
Andrew Shashy, NOAA
Joshua Sheldon, ECFRPC
Michelle Shelton, Seminole County
Jennifer Sikes, RES
Michael Sims, Molasky Group
Randy Smith, SWFWMD
Lucy Sonnenberg, JU
Jennifer Spain, Volusia County
Saurabh Srivastava, City of Altamonte Springs
Tammy Steen, Wren Environmental
Victoria Steinnecker, Carollo
Connor Steven, City of Maitland
Anita Stine, DEP
James Sutton, NFWMD
Kaitlyn Sutton, DEP
David Taylor, DEP
Jennifer Thera, FDACS

Riley Timbs, SJRWMD
William Tredik, Applied Sciences
Diana Turner, DEP
Michael Ulrich, Volusia County
Lisa Van Houdt, DEP
José Vega, Indian River County
Katrin Villinger, DEP
Dung-Anh Vo, DEP
Tim Waln, SJRWMD
Maria Watt, Black & Veatch

Ken Weaver, DEP
Heather Webber, Clay County
Ondine Wells, UF
Benita Whalen, Dispersed Water
Cavel Williamson, Halff
Jesse Wineberg, Orange County
Robert Woithe, ESA
Tim Wool, GHD
Katrina Yancey, DEP
Kelly Young, Volusia County

Questions and Answers

Q: How do I get notices of future meetings and updates to the modeling process?

A: Future meetings will be announced via the DEP GovDelivery notification system and those signed up for a region that includes any portion of the St. Johns River will receive the notifications. To sign up for notices by region or statewide, visit this website to manage email notifications:
<https://floridadep.gov/dear/dear/content/subscribe>.

Q: Is tidal influence taken into consideration?

A: Absolutely, it always has been included in the models for the Lower St. Johns River.

Q: For total nitrogen, would atmospheric deposition loading be included, if substantial?

A: Yes, nitrogen, phosphorus, and carbonaceous materials from the atmosphere will be considered.

Q: Will the HSPF Model have changing land use during the recalibration?

A: Yes, we will work with St. Johns River Water Management District (SJRWMD) to determine when the land use will change and how. At some point during the simulation, we will translate to the new land use and that will be included in the calibration. We will work closely with the Florida Department of Environmental Protection (DEP) and SJRWMD on how, where, and when we make that transition.

Q: If we are loading data to the DEP Watershed Information Network (WIN), will the consultants be able to access the data there? Exactly what data are being looked for? So, then why a separate email address to which to send data?

A: The data will be used for the calibration. The team will have access to the data in WIN, so it is unnecessary to provide data if they are already uploaded into WIN. If you have data that would be useful that is not already shared in WIN, please contact the consulting team at StJohnsRiverData@ghd.com.

Q: I understand that the model will focus on water quality, but will any part of the model/study look at quantity, for example: sea level rise (SLR), currents, water levels...and how those may impact water quality?

A: Yes, in the upstream basins above the EFDC Model, the flow direction is one way. When you get downstream to where the EFDC Model will represent the hydrodynamics, then the flow direction can vary. The EFDC Model is a three-dimensional hydrodynamic model that resolves those currents and water mixing as a function of tide and freshwater inflows. The hydrodynamics do have a profound impact on water quality.

Q: Does the HSPF Model include influences of consumptive use permits (CUPs), reuse, or high irrigation systems on fertilized lands?

A: We are still taking inventory on these items. Some of those are not addressed in the current version of the HSPF Model. If it is determined that it is important to include regional reuse or other sources, we could add it to the model. We will need to account for agricultural lands and their fertilizer processes; we need to estimate the nutrients flowing off the land surface. The influence of minimum flows and levels (MFLs), in the rivers in particular, should be recognized in the ambient flow data. Where they affect water quality those certainly will be considered.

Q: You mentioned that one goal from this project is to help inform total maximum daily load (TMDL) development. Some waterbody identification areas (WBIDs) already have TMDLs established. Do you see this as potentially being used to update existing TMDLs if results from the new modeling differ from past TMDL modeling efforts?

A: The benefit of having a universal model set like this, we can use the updated models for any future TMDLs. The DEP priority would be for new waters with new impairments and setting TMDLs for those. These models would also allow us to revisit older TMDLs if we decided to pursue TMDL updates.

Q: Water quality is really key. The Orlando Wetlands Park has created a great way to clean the water before it gets back to the St. Johns River. How can that model be recreated in other areas? Are projects like this going to be included in the modeling?

A: If there are data to allow us to characterize project efficiencies, we can consider building those into the model.

Q: There is raw land near me in the St. Johns River Basin that needs to be preserved and not developed at all. The Lockhart-Smith Canal flows into the corner of my neighborhood and then into the river. This land is wetlands and floodplain. I have sent an email to Seminole County staff regarding this.

A: Thank you for this comment. The different land uses, including conservation lands, are part of the watershed model inputs. To encourage land conservation, contacting the county or land conservation organizations is recommended.

Q: If the model can incorporate efficiencies of projects will it account for agricultural cost share projects St. Johns River Water Management District (SJRWMD) and others have funded?

A: It is too early to know exactly what will be incorporated. However, we plan to use the available data to help parameterize the model. We will work with the SJRWMD and the different entities to ensure the model is representative. The DEP has done a lot of work to pull together BMP efficiencies, which will be available for the modeling.

Q: What years does the full simulation period include?

A: We will use the current HSPF which runs from 2012 to 2018, and we will extend the time period it covers to 2023; we will add five additional years of modeling.

Q: Are there data about the wasteload allocations and spills partially treated and untreated in the St. Johns River, bacteria data, and such?

A: We are not going to be modeling bacteria. When it comes to spills, we have not yet assessed what point source or data are available. This is a long term simulation modeling project, so while it can address spills in certain areas, it's goal is not to be a near-field impact model. Our team has experience with reviewing spills. However, spills are typically ephemeral, so in terms of a long term response, only large magnitude

spills need to be included. The big problem with including spills into models are the adequacy of the data in terms of time, space, and data quality. In the HSPF Model, the influence of biosolids applications in the watershed will be included in this effort. A lot of work has been done by our colleagues at the SJRWMD in extending the biosolids data that are available, so we can include biosolids loading estimated into the HSPF Model.

Q: Is saltwater intrusion being looked at in groundwater adjacent to the river (in the surficial groundwater)?

A: Currently, our thinking is that would be excluded. We have not looked at all the available data and what could be included with the HSPF Model.

Q: Will saltwater intrusion and its impact on water quality in the Lower St. Johns River be incorporated into this model? If so, how? If not, why not?

A: The model will account for saltwater flowing into the Lower St. Johns River from the Atlantic Ocean and its impact on biochemical oxygen demand (BOD) and dissolved oxygen.

Q: In the Central Florida Water Initiative (CFWI) area has harm been incorporated for wetlands and upper aquifer?

A: Most of the information from the CFWI that may be of use to us are the permits and the water withdrawals from the river and their effects on flows. By and large, most of the information from the CFWI will not be applicable to this effort.

Q: Could you provide additional clarification on the extent of EFDC Model versus HSPF Model coverage?

A: We do not plan to change the extent of the SJRWMD current EFDC grid in the Lower St. Johns River. The grid will start with the Upper Basin lakes, move downstream through the Middle Basin to Lake George, and then downstream through the Lower St. Johns Basin. The HSPF Model will be used to provide the flows and loads into the WASP Model, which will provide flows and loads to the EFDC Model. We are not anticipating any changes to the EFDC grid, we are only extending the model through time.

Q: How will the DEP rectify potential changes in loading due to new modeling when dealing with TMDLs developed with older models?

A: With all TMDLs, they are developed with the best available information at the time. There are currently about 450 TMDLs. If we make a determination that DEP need to redo a TMDL, we could do that with the new modeling. In some cases, in areas that already have a basin management action plan (BMAP), you can incorporate a new model using the adaptive management process. This modeling effort is important because it can also be used to develop alternative restoration plans.

Q: Will the Modeling Plan include a full list of parameters to be calibrated, locations (hydrodynamic, hydraulic, and water quality) and the evaluation metrics to be utilized?

A: All of the activities will be documented. The Modeling Plan will have the metrics we will use for the calibration. Calibration has two main components: we have a quantification (using statistical metrics) and visual to see how the model is doing. There will be an output report that will be generated that will show some of these results.

Q: Will the land cover/land use review include the entire watershed? Will the modeling include all of the tributaries? As a follow up, is there a current list of the "major tributaries"?

A: Yes, we will be starting with the 2014 Florida Land Use Cover and Classification System (FLUCCS) coverage for the St. Johns River Basin. Yes, we will cover all the tributaries. It is not certain that all tributaries will have a WASP Model associated with them, because some may be too small to model individually. All of the major tributaries will have an HSPF component and a water quality model component using WASP. The major tributaries that will be modeled with WASP has not yet been determined; we are not working on WASP right now. When we get to that stage of the effort, we can share a coverage of the proposed areas for the WASP coverage and ask for comments and if the model needs to be extended for a specific reason. Two of the major tributaries—the Wekiva River and the Ocklawaha River—will be included. The major tributaries will be covered. The question is how far upstream to carry the water quality model. For computational speed, we need to keep the model size within reason so that it will be a useful tool.

Q: Why is the 2014 land cover baseline being used?

A: We are using the 2014 land cover because it is the most current published version available for the St. Johns River Basin. It is our understanding that the next coverage that represents the 2020 land coverage will be published by SJRWMD this month (March 2024) or next month.

Q: What general changes will occur in the hydrodynamic modeling, like water level forecasting?

A: One of the scenarios that will be ultimately run at the end of the model development period is a 2050 scenario. So that scenario will include changes in ocean levels. Water levels throughout the whole modeling network will be simulated by the models. The changes to water levels are simulated based on the meteorological conditions and by water withdrawals.

Q: What data period of water quality data will they be using to calibrate the model?

A: The calibration will be performed for the entire simulation period. This way, we are considering all the meteorological conditions that are experienced throughout the simulation period. This is now a more customary method to perform calibration, rather than having a specific calibration period.