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# IRL COUNCIL STEM ADVISORY COMMITTEE

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**Tuesday, May 10, 2022  
1:30 – 4:30 pm**

Up the Creek Farms, 3590 Valkaria Road, Grant-Valkaria, FL 32950

*This meeting is open to the public*

**\*\*\* Masks are encouraged \*\*\***

*The order of items appearing on the agenda is subject to change during the meeting and is at the discretion of the presiding officer. Anyone wishing to speak on any item is requested to complete a speaker's card.*

**1. Call to Order and Pledge of Allegiance** (Dr. Chuck Jacoby, Chair)

**2. Agenda Revisions** (Dr. Chuck Jacoby, Chair)

*Note any known changes and inquire if any members have suggested revisions.*

**3. Introductions** (Dr. Chuck Jacoby, Chair)

**4. Minutes Approval** (Dr. Chuck Jacoby, Chair)

**Requested Action:** Approval of Minutes from STEM meeting on May 11, 2021, August 10, 2021, November 16, 2021, and February 8, 2022.

**5. Public Comment**

**6. Water Quality Report**

- a. Northern and Central Lagoon (Dr. Chuck Jacoby, SJRWMD)
- b. Southern Lagoon (Stacie Flood for Melanie Parker, SFWMD)

**7. Presentation**

*IRL BMAP Update, Stacy Cecil, Florida Department of Environmental Protection*

**8. Old Business**

- a. Attendance Policy Update (Kathy Hill)

**Required Action:** No action required. For information only.

**9. New Business**

- a. Bipartisan Congressional Infrastructure Investment and Jobs Law ("BIL") (Duane De Freese)

Executive Director to present a strategy to integrate new BIL funding and allocations into the IRL Council 5-year budget with specific recommendations for Board actions.

- i. FY 2022 BIL Funding (Duane De Freese)  
**Requested Action:** Review and adopt staff recommendations for FY 2022 BIL funding allocations. Authorize staff to develop and submit FY 2022 EPA BIL Workplan, revise FY 2022 budget as necessary, and revise IRLNEP FY 2022 business plan accordingly.
  - ii. FY 2022 - 2026 BIL Funding - Request for Qualifications (RFQ) (Duane De Freese)  
Identify qualified applicants ready and willing to build institutional and infrastructure capacity for seagrass restoration.  
**Requested Action:** Review and adopt RFQ recommended vendor list; authorize staff to negotiate and enter into service contracts with recommended vendors.
  - iii. FY 2023 - 2026 BIL Funding - Request for Proposals (RFP) for Water Quality and Habitat Restoration Projects (Daniel Kolodny)  
**Requested Action:** Review and adopt RFP recommended project list; authorize staff to negotiate and enter into contracts with recommended applicants.
  - iv. FY 2022 Amended Budget (Daniel Kolodny)  
**Requested Action:** Review and adopt the amended budget for FY 2022 by Resolution 2022-02, pursuant to Florida Statutes.
  - v. FY 2023 Final Budget (Daniel Kolodny)  
**Requested Action:** Review and adopt the final budget for FY 2023 by Resolution 2022-03, pursuant to Florida Statutes
- b. Discussion of public concerns regarding water quality and loss of seagrasses (Dr. Chuck Jacoby)  
**Requested Action:** Information and discussion only. No action required.

## 10. IRLNEP Staff Reports

- a. IRL Project Update (Daniel Kolodny)
- b. Communications Report (Kathy Hill)
- c. Executive Director Report (Duane De Freese)

## 11. Final Comments (Committee, Staff, Public)

## 12. Adjourn

Next meeting: Tuesday, August 2, 2022

*NOTE: If a person decides to appeal any decision made by the Board with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a*

*verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. Section 286.0105, Florida Statutes (2014).*

*Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Ashley Malcolm at (860) 416-3102. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800) 955-8771 (TDD) or 1(800) 955-8770 (Voice). For more information, contact: Ashley Malcolm, IRL Council, 1235 Main St, Sebastian, FL 32958, (860) 416-3102, or by email at [malcolm@irlcouncil.org](mailto:malcolm@irlcouncil.org).*



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# IRL COUNCIL STEM ADVISORY COMMITTEE

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**Meeting Minutes**  
**May 11, 2021**  
**1:30 pm**

## **Virtual Meeting held via Zoom**

**Members in Attendance:** Robert Day, Chris De Bodisco, Jessica Frost, Frank Golan, Dennis Hanisak, Adeljean Ho, Chuck Jacoby, Kevin Johnson, Lisa Krinsky, Dale McGinnis, Rich Paperno, Beth Powell, Mitch Roffer, Leesa Souto, Megan Stolen, Chad Truxall, Linda Walters, Kelly Young.

**Guests in attendance:** Dr. Jeff Eble, Dr. Robert Weaver, Dr. Kevin Johnson, Dr. Austin Fox, Dr. Gary Zarillo, Diane Hughes, Senator Debbie Mayfield, Kristine Morris.

**Agenda Item 1. Call to Order and Pledge of Allegiance** (Dr. Chuck Jacoby, Chair)  
THE MEETING WAS CALLED TO ORDER AT 1:34P.M.

**Agenda Item 2. Agenda Revisions** (Dr. Chuck Jacoby, Chair)  
NONE

**Agenda Item 3. Introductions** (Dr. Chuck Jacoby, Chair)  
DUANE DE FREESE WELCOMED SPECIAL GUEST SENATOR DEBBIE MAYFIELD AND KRISTINE MORRIS OF FDEP.

**Agenda Item 4. Minutes Approval** (Dr. Chuck Jacoby, Chair)

**Requested Action:** Approval of minutes from STEM meeting on February 9, 2021.  
MOTION WAS MADE BY LISA KRIMSKY, SECONDED BY KEVIN JOHNSON FOR APPROVAL OF MINUTES FROM MANAGEMENT BOARD MEETING ON FEBRUARY 9, 2021 AS WRITTEN, MOTION CARRIED UNANIMOUSLY.

**Agenda Item 5. Public Comment**  
NONE

### **Agenda Item 6. Water Quality Reports**

- a. Central and northern lagoon (Dr. Chuck Jacoby, SJRWMD)  
DR. CHARLES JACOBY, SJRWMD PRESENTED FEB 2 – MAY 3 WATER QUALITY DATA FROM THE NORTHERN AND CENTRAL IRL COLLECTED FROM SIX RECORDING STATIONS IN THE LAGOON, A SALINITY REPORT, WATER TEMPERATURE AND CHLOROPHYLL LEVELS.

### **Agenda Item 7. Presentation**

Presentation: "Restore Lagoon Inflow: Project Introduction and Phase I Findings" (Dr. Jeff Eble, Florida Institute of Technology)

QUESTIONS AND ANSWERS APPENDIX IS ATTACHED.

### **Agenda Item 8. Old Business**

- a. Science 2030 Report (Dr. Chuck Jacoby, Duane De Freese)

**Requested Action:** Discussion of Science 2030 Report.

DUANE DE FREESE EXPLAINED THAT DURING THE LAST MEETING STEM AC MEMBERS AGREED FOR EACH MEMBER TO PICK TOP FIVE QUESTIONS FROM THE REPORT FOR FURTHER DISCUSSION. VERY LITTLE RESPONSE HAS BEEN RECEIVED FROM STEM AC MEMBERS. DUANE DE FREESE REITERATED THE IMPORTANCE OF THE DOCUMENT TO START TO DRIVE HOW WE PRIORITIZE FUNDING FOR RESEARCH AND INNOVATION IN THE FUTURE. HE ASKED FOR THE COMMITTEE'S COLLECTIVE CONSENSUS FOR THE TOP QUESTIONS PRIOR TO THE AUGUST STEM AC MEETING. CHUCK JACOBY ASKED COMMITTEE MEMBERS TO GO THROUGH THE DOCUMENT BY THE END OF JUNE. FOR A MORE EFFECTIVE WAY TO RECEIVE RESPONSES DUANE DE FREESE SUGGESTED USING A SURVEY POLL (I.E. SURVEY MONKEY) TO BE SENT OUT BY IRL COUNCIL STAFF. STEM AC MEMBERS HAD NO OBJECTIONS TO USING A SURVEY. DISCUSSION OF THE TOP PICKS WILL BE PLACED ON THE AUGUST AGENDA FOR FULL GROUP DISCUSSION.

### **Agenda Item 9. New Business**

- a. FY 2022 Final Budget Adoption (Daniel Kolodny)

**Requested Action:** Recommend that the IRL Council Board of Directors adopt the FY 2022 final budget by Resolution 2021-03.

MOTION MADE BY MITCH ROFFER, SECONDED BY CHAD TRUXALL TO RECOMMEND THAT THE IRL COUNCIL BOARD OF DIRECTORS ADOPT THE FY 2022 FINAL BUDGET BY RESOLUTION 2021-03. MOTION CARRIED UNANIMOUSLY.

- b. Authorization to submit a letter of intent to the EPA – Restore America's Estuaries Coastal Watersheds Grant Program (Duane De Freese)

**Requested Action:** Recommend that the IRL Council Board of Directors direct staff to develop and submit a letter of intent in response to the RFP and develop and submit a full proposal if invited.

MOTION MADE BY MITCH ROFFER, SECONDED BY RICH PAPERNO TO RECOMMEND THAT THE IRL COUNCIL BOARD OF DIRECTORS DIRECT STAFF TO DEVELOP AND SUBMIT A LETTER OF INTENT IN RESPONSE TO THE RFP AND DEVELOP AND SUBMIT A FULL PROPOSAL IF INVITED. MOTION CARRIED UNANIMOUSLY.

**Agenda Item 10. IRLNEP Staff reports**

- a. Project update (Daniel Kolodny)
- b. Communication Report (Kathy Hill)
- c. Executive Director Report (Duane De Freese)

DUANE DE FREESE REPORTED THAT DURING THE CAC MEETING AN ISSUE CAME UP RELATED TO A CAUSEWAY PROJECT THAT WILL BE CONSTRUCTED ON THE TITUSVILLE CAUSEWAY. CAC AND MANAGEMENT BOARD HAVE RECOMMENDED FOR COUNCIL TO CONSIDER WRITING A LETTER TO APPROPRIATE ENTITIES FOR HABITAT RESTORATION IN SUPPORT OF PROTECTING SANDY BEACH HABITATS FOR HORSESHOE CRAB NESTING AND CONTINUED PUBLIC ACCESS.

**Requested Action:** Recommend to the Board of Directors to direct staff to send a letter regarding future consideration for projects such as the Titusville Causeway and Horseshoe crabs.

MOTION MADE BY ROBERT DAY, SECONDED BY MITCH ROFFER TO RECOMMEND TO THE BOARD OF DIRECTORS TO DIRECT STAFF TO SEND A LETTER REGARDING FUTURE CONSIDERATION FOR PROJECTS. MOTION CARRIED UNANIMOUSLY.

**Agenda Item 11. Final Comments (Committee, Staff, Public)**

CHUCK JACOBY REPORTED THAT MARCH RAINFALL WAS ABOUT 2 INCHES BELOW AVERAGE AND APRIL RAINFALL WAS 2.5 INCHES ABOVE AVERAGE FOR THE ST. JOHN'S DISTRICT.

LISA KRIMSKY ANNOUNCED THAT FLORIDA SEA GRANT HAS AN EXTENSION AGENT POSITION, WHICH IS CURRENTLY OPEN FOR FLAGLER AND VOLUSIA COUNTY. THE POSITION ANNOUNCEMENT CLOSES ON MAY 27, 2021. SHE ALSO INFORMED THAT SHE IS IN THE PROCESS OF COMPLETING A SEPTIC TO SEWER SOCIAL MARKETING PROJECT, WHICH CONSIST OF GUIDELINES FOR MUNICIPAL AND COUNTY GOVERNMENTS INVOLVED IN SEPTIC TO SEWER CONVERSION PROJECTS TO IMPROVE THEIR COMMUNICATION WITH RESIDENTS. THE INFORMATION IS AVAILABLE ON THE UF/IFAS WEBSITE.

**Agenda Item 12. Adjourn**

MOTION MADE BY ROBERT DAY TO ADJOURN THE MEETING. THE MEETING WAS ADJOURNED AT 4:07 P.M.

**Written Chat Room Questions from STEM AC members and IRLNEP staff at  
Zoom Meeting, May 11, 2021**

00:53:53

Frank Golan: Dr. Eble - any early correlations in baseline data to predictive model results yet?

**00:55:28 Chat Room Written Response from FIT**

**Kevin Johnson: In response to Frank: yes, I will share a tiny bit of that when I give an overview of the biological data collection and modeling in a minute.**

01:00:40

Daniel Kolodny: At the temporary pilot site, how much has lagoon water been explored mixing from the locks opening, especially at low tide, with the water in the port at the inflow site for this study?

01:00:53

Christopher de Bodisco: Is there any reason to think that volume impacts may not be smooth or possibly even discontinuous as you increase volume dramatically?

01:02:57

Richard.Paperno - IRL: How are you going to account for the temporary openings of the locks to boat traffic? What influence do you expect from the openings?

01:05:40

Robert Day: Looks like outfall will be placed where a culvert exists connecting Avocet Lagoon to the Banana River?

01:18:39

Frank Golan: What methods are being used to quantify phos [phosphorus] and ammonium flux?

01:19:14

Richard.Paperno - IRL: The pilot program plans to pump at 0.5m<sup>3</sup>/s while the full project is scaled up to 5m<sup>3</sup>/s. That seems to be a large difference and the salinity profile was quite a bit different. The impacts are not necessarily linear in regards to the biological response. How will this project address the potential unintended consequences that may arise?

01:22:04

Richard.Paperno - IRL: Do any of these models incorporate the intermittent opening and closing of the locks?

**01:23:04 Chat Room Written Response from FIT**

**Austin Fox: Benthic and water column fluxes are determined using in-situ and laboratory incubations in sealed chambers.**

01:24:40

Richard.Paperno - IRL: Once pumping is begun how will the eDNA data tell the difference between a species that is in the lagoon and a trace from eDNA that was pumped in?

01:24:43

Mitchell Roffer's iPad\_2 (2): I have several questions, I hope we have time allotted for Q&A?

01:26:08

Stacy Cecil: Piggy backing on Richard's question "Once pumping is begun how will the eDNA data tell the difference between a species that is in the lagoon and a trace from eDNA that was pumped in?" -- any stable isotope data to go along with the eDNA to track oceanic vs lagoon individuals?

01:26:08

Frank Golan: "Benthic and water column fluxes are determined using in-situ and laboratory incubations in sealed chambers." -Dr. Fox, were you answering my question here on P & NH4 flux?

**01:27:03 Chat Room Written Response from FIT**

**Austin Fox: Frank Golan, Yes**

01:31:56

Frank Golan: Thank you Dr. Fox. But how are you assessing phosphate anion conc & ammonium specifically. I got interrupted and may have missed it in the presentation. Are you correlating it to organism growth hence the incubations in sealed chambers?

01:33:51

Frank Golan: Yes - I asked that before Dr. Kevin Johnson presented. Thanks...

01:37:20 Mitchell Roffer's iPad\_2 (2):

1) The "CORE Objectives" slide had Nothing on biology and tolerances of lagoon species and likely effects of new saltwater into the lagoon.

2) Won't this project if approved be flushing the pollution from the IRL south into other counties and into the ocean community? So effectively creating a pollution problem to the coastal areas that does not exist presently?

3) If the population of the IRL land system continues to grow, as it has been and forecast to do and put more and more nutrients into the IRL, How much water will we need in 10, 15, 25, 50 and 75 years? Can we pump enough?

4) Do you and your group believe that the solution to pollution is dilution?

5) This is a one way pump so how much water can you pump into the IRL before raising the sea level and flowing coastal properties and also increasing the risk to flooding that sea level rise provides?

6) If you are modelling the present flow why aren't you modeling what the lagoon flow was before development to better know what the ori [end of chat text].



01:38:11

Mitchell Roffer's iPad\_2 (2):

7) You suggested that the turbidity will be reduced. But living on the beach the visibility of the water is usually less than 12 inches.

8) Has the new model of flow been validated and published in peer-reviewed journals?

9) Pilot project? How representative is the cove area of the IRL -in terms of inputs, fish and other organisms, rainfall, drought, extreme events? This is critical when thinking about scaling this to IRL scales.

10) Kevin: I am not sure what you meant by correlation of seatrout and salinity in your figure?

01:41:02

Christopher de Bodisco: Since you mention those correlations again, I have a question about those. In one salinity was the key factor, while in the second, temperature was the key factor. 2 questions: 1. was the entire model run with all independent factors and those were the only significant factors for those species? 2. I suspect there may be overlapping constraints, and for 1 range of factors salinity was the limiting constraint, and for another species temp was the limiting constraint. But these results could change as the range of underlying factors changes?

#### **Chat Room Written Responses from FIT**

**01:43:40**

**Jesse Blanchard (He/Him/His): @Mitchell Roffer: To your question 10 those equations were examples of the models we've developed for this program. The R2 there is a relationship between the observed values (not used in model generation), and the predictions generated by the model under observed conditions. The models are still being tuned, but as a preliminary test of accuracy it was rather encouraging. We have models for 8 species of interest and 4 metrics of community structure with 4 gear types (net types) each, where the data exist.**

**01:47:12**

**Jesse Blanchard (He/Him/His): @Christopher de Bodisco: Those RDA plots strive to explain as much of the complexity of the entire fish community in to two axes, and identifies which abiotic factor does the best job at accomplishing that task. The differences between them that you note are indeed important. In some areas certain factors are more influential than others. This also changes depending on gear type (which influences which species are observed). The RDA were generated using all available abiotic factors and all species abundances being fed in. They were done at various scales and with various focuses to try and get a good look at the issue from a bunch of different angles.**

01:52:41

Stacy Cecil: Dr. Fox - have you, or other researchers, looked at any of the paleo sedimentation in the area that signifies the lagoon was more open in the past?

01:53:29

Stacy Cecil: it's been a while since I looked at geochemistry, that term may not be the most appropriate

01:54:38

Christopher de Bodisco: Thanks Jesse, interesting answer. Do you weight your sample for a gear type by a probability of observing a particular specie? I can see how controlling for sample bias could be tricky.

Second, can you use these differences to develop binding constraint ranges for different areas or species? Finally, your predicted accuracy looks great, but do the ranges of observed independent variables encompass predicted ranges? No implied criticism just a challenging project.

01:56:38

Christopher de Bodisco: Unfortunately I am late for another meeting. Very interesting work! I look forward to seeing answers to the questions post meeting. Thanks everyone,

#### **Chat Room Written Response from FIT**

**01:57:10**

**Austin Fox: Stacy Cecil, great question. My lab is focused on processes that occur in the surface layers of sediments and have focused studies on recent sediments and processes. Dr. Zarillo has looked at deeper sediments and in that context that will more directly address your question.**

01:58:32 Stacy Cecil: Thanks, Austin, I will redirect that question to Dr. Zarillo.

#### **Chat Room Written Response from FIT**

**01:59:03**

**Jesse Blanchard (He/Him/His): @ Christopher de Bodisco: At this time, I'm keeping each gear type separate to control for sampling bias. That is an interesting suggestion though, worth considering. There are a few other considerations on that front, but worth looking at. Your second point is where I'm building towards! Great minds think alike! Last point: short answer would be yes, at least under the pilot ranges. Extreme high flow scenarios not so much, but that's something that is definitely going in to the consideration of how to handle the model outputs.**

02:01:10

Mitchell Roffer's iPad\_2 (2): Certainly at a minimum, the initial flushing will push the pollution to the coast. If the non-linear magic occurs, then it remains to be seen at what time scales. Also the pollution I am talking about is not just nitrogen and phosphorus, I am referring to chemicals and pharmaceuticals as well as fecal matter.

02:05:27

Virginia Barker: For Dr. Zarillo: Why does the model predict TN will double in a year without pump inflow? Is that model result supported by trends in the data collected over the last 2 decades?

02:09:47

Beth Powell: not at all

#### **Chat Room Written Response from FIT**

**02:17:05**

**Jeff Eble: In reply to Rich Paperno's question regarding disentangling eDNA from transport vs local generation... to provide a complimentary assessment of biodiversity impacts from pumping, eDNA sampling will not be conducted during active pumping and instead only when the pumps are off either following completion of the pilot or during the no flow phase of intermittent pumping, if that ends up being included in the pilot experimental design. This is possible because once eDNA is shed it is rapidly degraded (over hours rather than days) by microbial processes (primarily) which limits concern about any signal from dispersed DNA.**

02:18:43 Richard.Paperno - IRL: Thanks Jeff

02:55:08 Lisa Krimsky: <https://apply.interfolio.com/87155>

02:55:58 Lisa Krimsky: Septic to Sewer materials, navigate to resources, local governments.  
<https://water.ifas.ufl.edu/septic-systems/>

## **Verbal responses to questions of the 'Restore Lagoon Inflow' project team during the STEM Advisory Council Meeting on May 11, 2021**

(presented by Dr. Jeff Eble, Dr. Robert Weaver, Dr. Kevin Johnson, Dr. Austin Fox, Dr. Gary Zarillo)

### **Verbal Q&A (verbatim):**

1. Question (Senator Debbie Mayfield)

From a funding standpoint, I know Jeff you just indicated that at some point we don't even know if this is a viable project or not until we will get the study done, at what point do we make that decision? Right now, you already got based up to this point \$1.6 million is what has been funded and that does not take into account the \$921,500 million that is in the budget this year that the governor is going to be looking at hopefully in the next few weeks. So at what point are we going to be at the point that says well we don't see this as a viable project. When would that be?

Answer (Dr. Jeff Eble)

A lot of it is really going to hinge on the pilots and the data results that we are able to generate from the pilots. We have models right now as you seen some of the models and the findings from the models in today's presentation. The foundation of developing the models takes some significant time. The models are ultimately going to inform whether the full inflow project is going forward or not but we also need to validate those models. The pilot will give us that opportunity. So with completion of the pilot, validation of the models and follow-up work and summary of all inspected impacts we will present that data to stakeholders and the public to then really make a determination whether this is something that is worth going forward or not. Stakeholders and the public will have an opportunity to evaluate the impacts. We are very much in the research phase collecting the data to then make that determination.

Follow-up question (Senator Debbie Mayfield)

How much money are we talking about that you anticipate to get to that point?

Answer (Dr. Jeff Eble)

Unfortunately, I am not able to answer that question because I do not know the actual costs for the construction of the pilots. We have not gotten that far yet in our planning. Right now, the next phase will focus on the permitting, which is an immensely challenging project. The actual dollar amounts I do not know, I am sorry.

2. Question (Mitch Roffer)

If this flushing works, aren't you going to be flushing the pollution from the lagoon to coastal zones, now creating a problem in the coastal zones where you may not totally eliminate the problems in the IRL?

Answer (Dr. Jeff Eble)

That is a legitimate question. It's a concern that has come up repeatedly and we recognize that concern. As Dr. Fox emphasized this is not just about moving nutrients from one compartment to another. If that was all we were doing and trying to push them into the offshore environments I am not sure if we would get support for this project. This is about actually changing the process used in the lagoon using enhanced circulation to actually moderate the moderate temperature, moderate salinity even, in order to then support an environment that allows for sequestration of nutrients rather than just physically moving them. The impact gets to be determined. That is a key part of this project to ultimately determine what the impact of any nutrients that are exported through Sebastian inlet or the other inlets what impact they may have on that offshore environment. And we have to take that into consideration when determining whether this is a viable option of the many options we have for improving the water quality in the lagoon.

3. Question (Christine Morris)

Early on in the presentation you talked about the pros and cons. At the end of a year 3 effort what measures are you putting in place during the year 3 effort to measure those pros and cons and at the end of year 3 do you have a set of deliverables that you have in mind that would actually address those particular pros and cons that they can be evaluated. Is that planned at this year 3 effort that at the end you have measures in place to evaluate those pros and cons and produce something at the end that would lay out those pros and cons so that they can be fully evaluated?

Answer (Dr. Jeff Eble)

Without a doubt. I don't have a list of all deliverables in front of me that we have proposed for Phase 3 but right now the focus is on permitting, which will take time and then bids for the pilot and construction of the pilot. The pilot itself, there will be deliverables specific to assessing for example bottom water DO. Does pumping improve bottom water DO relative to a no-pumping scenario and is it in line with the models. That will be very clearly explained in the findings. We will identify what we consider the baseline conditions verses the impact of pumping. From that we project what the impacts for a full-scale system would be. Likewise, we were in discussions with NASA at KSC but actually tracking manatee response to pumping. So we know we have to explore the impacts to protected species. Do manatees benefit from the enhanced inflow? Obviously, they would benefit from improved seagrass availability but there is also the protection concerns about creating a warm water refuge that then puts the manatees in increased harm. So we are directly tracking that right now with the proposed help of the KSC folks. Another point is that ultimately all these potential negative and positive impacts in the end they are tied to and relate to whether pumping can reduce nutrients. So we will be directly tracking the nutrient impacts of the pilots and then using that to improve the

models themselves but we are also embedding in the models the ability to simulate HAB outbreaks. Really important test after the pilot is going to be determining whether the pumping can actually reduce nutrient loads on its own or in combination with other projects to below a level that actually promotes HAB outbreaks. So that is another example of a deliverable that will be available for the public and stakeholders to decide on their own whether this is a project they wish to support.

Follow-up question (Christine Morris)

May I ask when that would be available? At the end of year 3 or in the future?

Answer (Dr. Jeff Eble)

I can only guess on the actual timeline for permitting and then construction bids and construction, but those deliverables will be available at the end of the pilot projects. So those timelines will really depend on how quickly we can move through permitting and construction.

## Written Responses to Chat Room Questions during STEM AC meeting by members and IRLNEP staff, May 11, 2021.

00:53:53

Frank Golan: Dr. Eble - any early correlations in baseline data to predictive model results yet?

**RLI response:** Project modeling is following standard validation and verification procedures to ensure model reliability, including hindcasting to assess model performance relative to prior observations. Initial testing of the core hydrologic models was described in an earlier project report (Zarillo and Listopad 2018), and additional checks on hydrologic model performance are conducted for each update of model boundary conditions. An example output from phase 1 model performance evaluation is presented below. You can find additional information on the performance of numerical modeling of hydrodynamics and water quality in Section 4.3 of the RLI Phase 1 Report, and Sections 5 and 6 in the Brevard County Muck report (links to the reports are provided below). The same model configurations are being applied in Phase 2 of the project, and the close correlation between observed and model data is expected to continue.

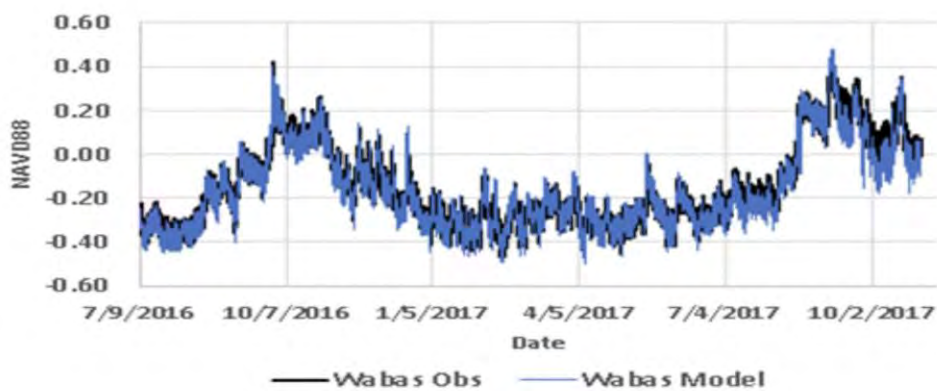


Figure: Comparison of observed and predicted water levels at Wabasso Bridge, North Indian River County, FL.

[Shelton, M., Frick, M. \(Ed.\) 2020. Restore Lagoon Inflow Research \(Phase 1\) Project Summary. End of Year Report. Prepared for the Florida Department of Education.](#)

[Windsor, J. \(Ed.\) 2016. Impacts of Environmental Muck Dredging 2014-2015. Final Project Report. Prepared for Brevard County Natural Resource Management Department.](#)

[Zarillo, G.A. Listopad, C., 2018. Hydrologic and Water Quality Model for Management and Forecasting within Brevard County Waters of the Indian River Lagoon \(Subtask 5\). Final Project Report. Prepared for Brevard County and the Florida Department of Environmental Protection.](#)

01:00:40

Daniel Kolodny: At the temporary pilot site, how much has lagoon water been explored mixing from the locks opening, especially at low tide, with the water in the port at the inflow site for this study?

**RLI response:** In this year's modeling effort, a term was placed in the model boundary conditions to allow water transit through Canaveral Lock. Model predictions with and without the assumed pumping rate include this term. At the proposed pilot pumping volume of 0.5m<sup>3</sup>/sec, models indicate the water from the Port being pumped into the Banana River will mix with and displace lagoon water at the west entrance of the locks (pilot conceptual design shown below), with the rate and ratio of mixing depending on atmospheric and hydrodynamic conditions. After several weeks of continuous pumping, the water entering the lock chamber is predicted to be primarily the pumped inflow from the port. At that point we predict lockage will have minimal impact on the water quality at the inflow intake.



Figure: Aerial view of Canaveral Locks with proposed pump intake and outfall locations and pipe route. Pilot design is preliminary and subject to change.

01:00:53

Christopher de Bodisco: Is there any reason to think that volume impacts may not be smooth or possibly even discontinuous as you increase volume dramatically?

**RLI response:** There is no expectation that impacts from enhanced inflow will be smooth or consistent over space and time. The precise impacts will vary according to water quality conditions in the Banana River, wind stress, and time of year since there is a strong seasonal variation in sea level/lagoon level driven by changes in the velocity of the Gulf Stream. Model runs to date increasingly track the variable nature of the lagoon and we continue to improve our understanding of the system. Model runs as well indicate that variability in key water quality parameters, including dissolved oxygen, may decline with increasing pumping volumes. This question will be further explored with both the proposed pilot pumping study and subsequent model runs using continued parameter tuning, improved boundary conditions, and a broader range of potential inflow rates.



01:02:57

Richard.Paperno - IRL: How are you going to account for the temporary openings of the locks to boat traffic? What influence do you expect from the openings?

**RLI response:** The water from the Port pumped into the Banana River at the pilot outflow site is predicted to mix with and displace water from the cove just south of the Canaveral Lock. After several weeks of continuous pumping the water on the western side of the Locks will be primarily pumped water from the port. At that point opening the locks to boat traffic is expected to have minimal impact on water quality at either the pump outflow or intake.

01:05:40

Robert Day: Looks like outfall will be placed where a culvert exists connecting Avocet Lagoon to the Banana River?

**RLI response:** There is a 24" culvert immediately north of the proposed outfall. The end of that pipe is about 75% below ground at the outfall location and is not expected to be impeded by the current proposed pilot design. The engineering team will continue to work closely with the US Army Corps of Engineers and Florida Department of Environmental Protection to avoid this and other potential impacts to existing infrastructure.

01:18:39

Frank Golan: What methods are being used to quantify phos [phosphorus] and ammonium flux?

**RLI response** (copied from Austin Fox's in chat reply): Benthic and water column fluxes are determined using in-situ and laboratory incubations in sealed chambers.

01:19:14

Richard.Paperno - IRL: The pilot program plans to pump at 0.5m<sup>3</sup>/s while the full project is scaled up to 5m<sup>3</sup>/s. That seems to be a large difference and the salinity profile was quite a bit different. The impacts are not necessarily linear in regards to the biological response. How will this project address the potential unintended consequences that may arise?

**RLI response:** The two salinity projections shown in the STEM Committee presentation were meant to provide an example of the data sets the team considered when determining target pilot pumping volumes. When designing the pilot phase of the project, a range of pumping volumes from 0.25 to 5.0m<sup>3</sup>/s were considered with the goal of ensuring the pilot provided a sufficient experimental area to evaluate and tune hydrographic and geochemical model performance while preserving necessary experimental control sites. As mentioned above, we do not expect impacts from enhanced inflow to be linear and our models to date are increasingly able to track the spatiotemporal variability of the lagoon. Model validation based on results of the pilot and other complimentary performance evaluations will further improve the reliability of predicted impacts (both positive and negative) across the range of volumes that may be considered for a potential full scale inflow system. To address potential unintended negative impacts resulting from either the pilot or any proposed full scale system, monitoring plans will be established and control systems will be included to adjust or stop inflow if negative unintended consequences are observed.

01:22:04

Richard.Paperno - IRL: Do any of these models incorporate the intermittent opening and closing of the locks?

**RLI response:** There is a boundary condition in the hydrologic model that applies what we know about Lock inflow. With regards to the impact of Lock opening on the proposed pilot pumping study, model projections indicate the area impacted by the proposed 0.5m<sup>3</sup>/s pumping volume will extend beyond the west entrance of the Port Canaveral locks. After several weeks of pumping, impacts of water exchange through the locks would in effect represent bidirectional exchange of port water, with port water directly entering through the east lock gate and pumped port water entering through the west lock gate.

01:24:40

Richard.Paperno - IRL: Once pumping is begun how will the eDNA data tell the difference between a species that is in the lagoon and a trace from eDNA that was pumped in?

**RLI response** (copied from Jeff Eble's in chat reply): Regarding disentangling eDNA from transport vs local generation... to provide a complimentary assessment of biodiversity impacts from pumping, eDNA sampling will not be conducted during active pumping and instead only when the pumps are off either following completion of the pilot or during the no flow phase of intermittent pumping, if that ends up being included in the pilot experimental design. This is possible because once eDNA is shed it is rapidly degraded (over hours rather than days) by microbial processes (primarily) which limits concern about any signal from dispersed DNA.

01:26:08

Stacy Cecil: Piggy backing on Richard's question "Once pumping is begun how will the eDNA data tell the difference between a species that is in the lagoon and a trace from eDNA that was pumped in?" -- any stable isotope data to go along with the eDNA to track oceanic vs lagoon individuals?

**RLI response:** Stable isotopes are not currently planned as part of the study. Because of the low likelihood of survival through the pilot pumping system, we feel the locks represent the most likely introduction source for oceanic species into the Banana River, and both larval and older stage fish are known to transit through the locks. To mitigate this potentially confounding variable, we are developing a multi-year baseline for focal taxa (eg. fishes) and water quality parameters (eg. salinity) using historical data and extensive sampling. This is to ensure we effectively capture and describe the variability of the system, including variability resulting from intermittent opening of the Canaveral Locks, to allow determination of pumping impacts.

01:31:56

Frank Golan: Thank you Dr. Fox. But how are you assessing phosphate anion conc & ammonium specifically. I got interrupted and may have missed it in the presentation. Are you correlating it to organism growth hence the incubations in sealed chambers?

**RLI response:** We are not currently correlating organism growth with nutrient cycling but plan to address this question in year 3 with direct assessment of sediment microbial

community structure and growth to improve understanding of internal loading and nutrient fate under base and pumping enhanced conditions. Currently and in future experiments, benthic chambers are deployed for a matter of hours to measure rates of nutrient cycling and geochemical processes. The chambers are sealed so we can track changes to water quality (e.g., dissolved oxygen and nutrients) during the course of the incubations, we can then subtract the water column processes using data for “blank chambers” containing just water allowing us to determine the relative importance of water column versus sediment processes.

01:37:20 Mitchell Roffer’s iPad\_2 (2):

1) The “CORE Objectives” slide had Nothing on biology and tolerances of lagoon species and likely effects of new saltwater into the lagoon.

**RLI response:** We recognize the importance of allowing stakeholders to independently evaluate the feasibility and impacts of enhanced ocean water exchange on lagoon water quality and biology. We are therefore working closely with project partners to examine key indicators of system response to inflow across a broad range of potential pumping volumes. This includes development of models in consultation with representatives from Florida Fish and Wildlife Conservation Commission to predict the impacts of inflow on fish abundance and habitat use. We have as well designed the proposed pilot study to directly assess impacts of inflow on habitat builders, benthic invertebrates, and plankton community structure. Taken together, we feel these efforts will provide the necessary understanding of how pumping induced changes in temperature, salinity, and dissolved oxygen may positively or negatively impact lagoon biology. In this context, we feel it is also important to acknowledge the degraded state of the lagoon and the Banana River in particular. The decline of the lagoon is well documented and includes an estimated 97% decline in seagrass coverage in the Banana River over the last twenty years (see Banana River mean percent seagrass cover below). With the threat of ecosystem collapse, we feel all available tools should be explored to allow a comparative assessment of their relative benefits and potential negative impacts.

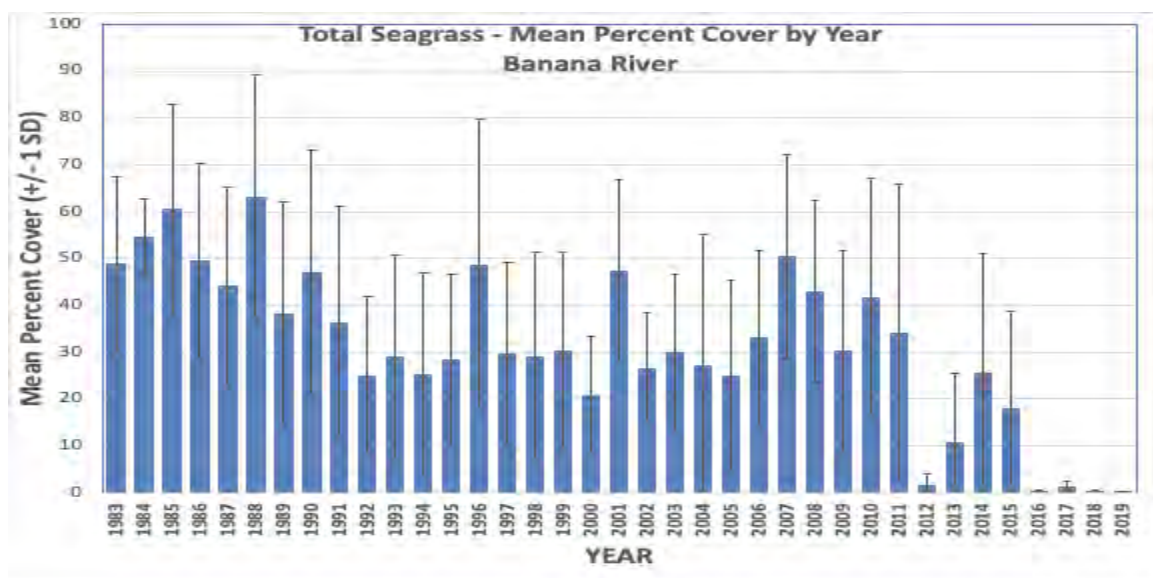


Figure: Total northern Banana River mean seagrass percent cover from 1983 to 2019.  
Figure used with permission from Scheidt 2021.

Scheidt, D. 2021. Recent Seagrass Trends in the Banana River at Kennedy Space Center, Florida In Support of Restore Lagoon Inflow Project: Prepared by Herdon Solutions Group. Kennedy Space Center Environmental Monitoring, NASA.

2) Won't this project if approved be flushing the pollution from the IRL south into other counties and into the ocean community? So effectively creating a pollution problem to the coastal areas that does not exist presently?

**RLI response:** Our work aims to reflect the interconnectedness of the IRL system and we appreciate the importance of considering how interventions in one region of the lagoon may negatively impact other regions. This is why with partners we are expanding existing models, developing new models, and filling data gaps to predict impacts, both positive and negative, across the lagoon. Through this effort, we are exploring whether enhanced ocean water exchange can bring stability to the IRL system and promote the restoration of ecosystem services that naturally remove pollutants from the system, rather than simply exporting the problem.

As we highlighted in our presentation, initial project findings indicate that enhanced inflow has the potential to stabilize bottom water temperature and dissolved oxygen across a large area, with positive effects on sediments as nutrient sinks rather than sources. If enhanced inflow is able to restore natural processes throughout large areas of the lagoon, it's possible that as a result, fewer nutrients will be exported into the coastal ocean and other lagoon compartments.

3) If the population of the IRL land system continues to grow, as it has been and forecast to do and put more and more nutrients into the IRL, How much water will we need in 10, 15, 25, 50 and 75 years? Can we pump enough?

**RLI response:** Enhanced ocean water inflow is not a silver bullet. Fifty years of increasing upland development and compartmentalization of the lagoon has resulted in dramatic declines in lagoon water quality and productivity. Recovering from these and future impacts will require a multifaceted effort to ensure effective management of nutrient loads and related impacts. If instituted, enhanced inflow will not exist in a vacuum and will instead represent one tool in the management tool-kit, which would likely include continued reduction of nutrient inputs, habitat restoration, and further improvements to water circulation.

4) Do you and your group believe that the solution to pollution is dilution?

**RLI response:** We do not believe dilution is the solution to pollution. However, we are exploring whether dilution in combination with the restoration of natural nutrient cycling can reduce nutrient loads below the threshold levels required to initiate harmful algal bloom outbreaks. We argue that the rapid and dramatic decline of the Banana River ecosystem as a result of increasingly frequent and prolonged algal blooms requires consideration of every management tool at our disposal. Only then, after considering their relative benefits and potential negative impacts can we determine the most appropriate policies and projects to ensure recovery of the lagoon ecosystem.

5) This is a one way pump so how much water can you pump into the IRL before raising the sea level and flowing coastal properties and also increasing the risk to flooding that sea level rise provides?

**RLI response:** Water elevations from an example full scale inflow project were previously examined and a maximum elevation change of 4.5cm (1.8in) was predicted for the Banana River (Saberri and Weaver 2016). For this same region, data from long term water level stations indicate water elevations fluctuate more than 75cm (2.5ft) annually (see Banana River water level monitoring below), suggesting any increase in water elevation resulting from inflow would be relatively small. However, in recognition of the threats flooding currently presents to homeowners and infrastructure, we have proposed control measures for both the pilot and any future full system that would allow reduction or pausing of inflow during seasonal high water and storm events to eliminate any additional risk of localized flooding inflow might present.

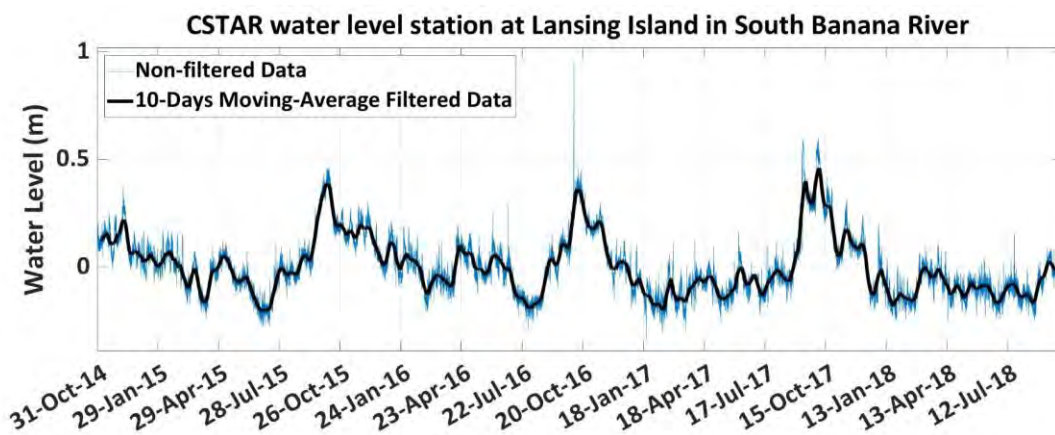


Figure: 3.75 year record of water levels in the Southern Banana River (Weaver)

[Saberri, A., & Weaver, R. J. \(2016\). Simulating Tidal Flushing Response to the Construction of a Low-Crested Weir Connecting Port Canaveral to the Banana River, Florida. \*Journal of Waterway, Port, Coastal, and Ocean Engineering\*, 142\(4\), 05016002.](#)

6) If you are modelling the present flow why aren't you modeling what the lagoon flow was before development to better know what the ori [end of chat text].

**RLI response:** This would be an interesting study; however, it is unreasonable to think that the IRL will be able to return completely to natural shorelines and historic flow. Upland development has left a permanent and lasting mark by resisting and manipulating the natural movement of sediment and water. The hardening of shorelines, beach renourishment, construction of causeways, and cutting off of Banana Creek have reduced lagoon circulation (particularly in the Banana River) and eliminated natural breeches in the barrier island that would intermittently provide inflow to the IRL. Our goal is to determine whether artificial inflow can be used as a tool to improve circulation and promote natural ecosystem services to help, in concert with other management strategies, restore the historic productivity of the IRL.

01:38:11

Mitchell Roffer's iPad\_2 (2):

7) You suggested that the turbidity will be reduced. But living on the beach the visibility of the water is usually less than 12 inches.

**RLI response:** The persistence and origin of turbidity in the IRL is strikingly different from the turbidity created by wave action on the beach, and reflects very high algal densities, extended periods of very low light penetration, and a corresponding decline in light availability for aquatic plants and macroalgae. Our goal is to determine whether enhanced inflow can significantly reduce nutrient availability in the IRL and Banana River below thresholds that promote harmful algal bloom outbreaks and the related reductions in light penetration and dissolved oxygen. However, to minimize potential impacts, the proposed pilot and any future inflow systems will be designed to limit sediment transport, including the sediments turned up by wave action in the coastal zone. If transported, these sediments settle out quickly and are expected to have a marginal impact on overall water clarity (turbidity).

8) Has the new model of flow been validated and published in peer-reviewed journals?

**RLI response:** The base EFDC/HEM3D model is a well vetted, multi-parameter finite difference model that represents estuarine flow and material transport in three dimensions. The model is supported by the US EPA and it has been extensively applied to shallow estuarine environments in Florida, Long Island, New York and other coastal states. Example applications can be found in Zarillo 2006 and Zarillo et al. 2011. Example peer-reviewed publications include Xia et al. 2010 and Ren and Hartnett 2017. The latest model setup in the IRL system has gone through several cycles of outside review under the ongoing Brevard County Muck Project.

[Ren, L., & Hartnett, M. \(2017\). Sensitivity analysis of a data assimilation technique for hindcasting and forecasting hydrodynamics of a complex coastal water body. \*Computers & Geosciences\*, 99, 81-90.](#)

[Xia, M., Craig, P. M., Schaeffer, B., Stoddard, A., Liu, Z., Peng, M., ... & Mandrup-Poulsen, J. \(2010\). Influence of physical forcing on bottom-water dissolved oxygen within Caloosahatchee River Estuary, Florida. \*Journal of Environmental Engineering\*, 136](#)

Zarillo, G.A., 2006. Calibration of the Environmental Fluid Dynamics Code for Sebastian Inlet and Vicinity. Prepared for the Sebastian Inlet Tax District., 22p. Zarillo, G., T.V. Belanger, K.

Zarillo, J. Rosario-Lantin and D. McGinnis. 2011. The Development of a Hydrologic Model for Mosquito lagoon in Canaveral National Seashore. Natural Resources Report to the National Park Service.

9) Pilot project? How representative is the cove area of the IRL -in terms of inputs, fish and other organisms, rainfall, drought, extreme events? This is critical when thinking about scaling this to IRL scales..

**RLI response:** The selected experimental and control sites are not intended to be representative of the IRL as a whole. Instead, our goal was to design a pilot system that would provide sufficient impacts to validate and refine predictions derived from initial model runs and historic and newly collected data. For example, does inflow mitigate bottom water hypoxia (low oxygen) and anoxia (no oxygen) with a corresponding benefit to natural nutrient cycling? And, with inflow, do we see a predicted change in the phytoplankton community reflecting a shift towards a more diverse and lower abundance marine influenced community? Answers to these questions (and many others) will improve the reliability of scaled model inferences and the interpretation of predicted impacts of proposed full-scale inflow systems.

10) Kevin: I am not sure what you meant by correlation of seatrout and salinity in your figure?

**RLI response** (copied from Jesse Blanchard's in chat reply): To your question 10 those equations were examples of the models we've developed for this program. The R2 there is a relationship between the observed values (not used in model generation), and the predictions generated by the model under observed conditions. The models are still being tuned, but as a preliminary test of accuracy it was rather encouraging. We have models for 8 species of interest and 4 metrics of community structure with 4 gear types (net types) each, where the data exist.

01:41:02

Christopher de Bodisco: Since you mention those correlations again, I have a question about those. In one salinity was the key factor, while in the second, temperature was the key factor. 2 questions: 1. was the entire model run with all independent factors and those were the only significant factors for those species? 2. I suspect there may be overlapping constraints, and for 1 range of factors salinity was the limiting constraint, and for another species temp was the limiting constraint. But these results could change as the range of underlying factors changes?

**RLI response** (copied from Jesse's in chat reply below): Those RDA plots strive to explain as much of the complexity of the entire fish community in two axes, and identifies which abiotic factor does the best job at accomplishing that task. The differences between them that you note are indeed important. In some areas certain factors are more influential than others. This also changes depending on gear type (which influences which species are observed). The RDA were generated using all available abiotic factors and all species abundances being fed in. They were done at various scales and with various focuses to try and get a good look at the issue from a bunch of different angles.

01:52:41

Stacy Cecil: Dr. Fox - have you, or other researchers, looked at any of the paleo sedimentation in the area that signifies the lagoon was more open in the past?

**RLI response:** The geomorphic instability of the IRL barrier island has been described in Almasi (1985), Stauble (1990), and Brech (2004), among others. Cartographic and topographic evidence indicates intermittent inlet cuts were common over the last several thousand years, including evidence of overlapping storm-induced inlet-cuts in the Banana River north of Patrick Airforce Base (Brech 2004). Much of the human infrastructure along the IRL barrier islands is constructed on the relic inlet shoals and storm surge overwash

platforms.

Almasi, M. 1985. The Importance of Inlets and Sea Level in the Development of Hutchinson Island and the Indian River Lagoon. In: The Indian River Lagoon: Proceedings of the Indian River Resources Symposium. D. Barile (ed). The Marine Resources Council, Rockledge Florida.

[Brech, A. 2004. Neither Ocean Nor Continent: Correlating the Archaeology and Geomorphology of the Barrier Islands of East Central Florida. MS Thesis, University of Florida, Gainesville.](#)

Stauble, D.K. 1988. The Geomorphology, Geologic History, Sediments, and Inlet Formation of the Indian River Lagoon System. Vol. 1 (unpublished). D. Barile (ed). The Marine Resource Council of East Central Florida. Melbourne, Florida.

01:54:38

Christopher de Bodisco: Thanks Jesse, interesting answer. Do you weight your sample for a gear type by a probability of observing a particular species? I can see how controlling for sample bias could be tricky. Second, can you use these differences to develop binding constraint ranges for different areas or species? Finally, your predicted accuracy looks great, but do the ranges of observed independent variables encompass predicted ranges? No implied criticism, just a challenging project.

**RLI response** (copied from Jesse Blanchard's in chat reply): At this time, I'm keeping each gear type separate to control for sampling bias. That is an interesting suggestion though, worth considering. There are a few other considerations on that front, but worth looking at. Your second point is where I'm building towards! Great minds think alike! Last point: short answer would be yes, at least under the pilot ranges. Extreme high flow scenarios not so much, but that's something that is definitely going into the consideration of how to handle the model outputs.

02:01:10

Mitchell Roffer's iPad\_2 (2): Certainly at a minimum, the initial flushing will push the pollution to the coast. If the non-linear magic occurs, then it remains to be seen at what time scales. Also the pollution I am talking about is not just nitrogen and phosphorus, I am referring to chemicals and pharmaceuticals as well as fecal matter.

**RLI response:** Denitrification and phosphorus adsorption are well studied processes with critical importance to maintaining healthy coastal systems. In the context of proposed inflow, we are evaluating thresholds where denitrification and phosphorus adsorption begin to shut down or become less efficient, and to what extent enhanced inflow may be able to help shift the balance to favor the reduction and ultimate removal of excess nutrients from the system. These processes are efficient in healthy coastal sediments, but as our work and others have shown, these critical ecosystem services have been severely degraded in the IRL.

Regarding more persistent contaminants like pharmaceuticals and heavy metals, currently these pollutants are circulated through the inlets to the coast by natural hydrologic processes (e.g., freshwater inputs). However, we do not currently feel it would be correct to say that pumping into the Banana River will significantly increase pollution in the coastal



ocean. Our recent analysis of IRL and Banana River circulation indicates that the seasonal variation of coastal ocean sea level and related forced IRL sea level provide enhanced circulation and flushing in the mid to late Fall and early winter months (October to January). As sea levels drop beginning in November each year there is a large drop in IRL water levels, drop in IRL water volume, and a mass exodus of water and constituents to the coastal ocean. To investigate the influence of this natural, seasonal increase in water exchange through inlets relative to projections under artificial inflow, we have initiated data collection for the coastal ocean to characterize baseline nutrient export and seasonal variability.

02:05:27

Virginia Barker: For Dr. Zarillo: Why does the model predict TN will double in a year without pump inflow? Is that model result supported by trends in the data collected over the last 2 decades?

**RLI response:** Much of the increase in TN is due to model spin-up, yet these preliminary comparisons with and without pumping are valid in a relative sense. As we update model boundary conditions and fine-tune model parameters, we will make much longer runs to allow the water quality model to equilibrate. For the phase 2 project the model runs will be 3-years.



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# IRL COUNCIL STEM ADVISORY COMMITTEE

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Meeting Minutes  
August 10, 2021  
1:30 pm

Up the Creek Farms, 3590 Valkaria Road, Grant-Valkaria, FL 32950

## **NO QUORUM WAS PRESENT**

**Members in Attendance:** Dr. Chuck Jacoby, Dale McGinnis, Rich Paperno, Mitch Roeffer, Megan Stolen, Kelly Young, Beth Powell, Chad Tuxall (phone-in).

**Guests in Attendance:** Laurilee Thompson.

### **1. Call to Order and Pledge of Allegiance (Dr. Chuck Jacoby, Chair)**

THE MEETING WAS CALLED TO ORDER AT 1:40 P.M.

### **2. Agenda Revisions (Dr. Chuck Jacoby, Chair)**

THERE ARE NO REVISIONS TO THE AGENDA.

### **3. Introductions (Dr. Chuck Jacoby, Chair)**

ROUNDTABLE INTRODUCTIONS OF EVERYONE IN ATTENDANCE.

### **4. Minutes Approval (Dr. Chuck Jacoby, Chair)**

**Requested Action:** Approval of minutes from STEM meeting on May 11, 2021.

THIS ITEM IS BEEN TABLED UNTIL THE NOVEMBER 2021 MEETING AS A QUORUM WAS NOT PRESENT.

### **5. Public Comment**

THERE WERE NO PUBLIC COMMENTS.

### **6. Water Quality Reports**

- a. Northern and Central IRL (Dr. Chuck Jacoby, SJRWMD)

DR. JACOBY GAVE THE WATER QUALITY REPORT FOR THE NORTHERN AND CENTRAL IRL. HE NOTED THAT 2021 SEAGRASS MAPS ARE FORTHCOMING.

- b. Southern IRL (Dr. Chuck Jacoby for Dianne Hughes, Martin County)

DR. CHUCK JACOBY PRESENTED THE WATER QUALITY REPORT FOR THE OUTHERN IRL ON BEHALF OF DIANNE HUGHES, MARTIN COUNTY.

## 7. Presentations

- a. Status Update on Manatees (Dr. Martine deWit, FWC)

DR. MARTINE DEWIT OF FWC PRESENTED A STATUS UPDATE ON MANATEES. THIS PAST WINTER (2021), BACK IN DECEMBER HAD A SUDDEN START TO THE WINTER AND THERE WAS AN UPTICK OF MANATEE CARCASSES AND MANATEES THAT NEEDED RESCUING. THIS WAS NOT UNEXPECTED AS MANY MANATEES WERE JUST BEGINNING, OR HAVE YET TO BEGIN, THEIR MIGRATION. SINCE THE FWC WAS STILL OPERATING UNDER COVID-19 RESTRICTIONS, THEY COULD NOT ACCURATELY ASSESS THE CAUSE OF DEATH WITH NECROPSY. IN ADDITION, SOME LIVE MANATEES NEEDED RESCUING AND LIVE ANIMALS COME FIRST. SLOWLY, FWC WAS ABLE TO INVESTIGATE THE NECROPSIES, THE FWC FOUND THERE WAS SOMETHING ELSE HAPPENING BEYOND THE COLD. MANATEES EXAMINED WERE VERY THIN WITHOUT A CASE OF AN UNDERLYING DISEASE. THEIR BODIES WERE DEPLETED SO THIS BEGAN TO LOOK LIKE PRIMARY STARVATION. EVEN WHEN THE WATER BEGAN TO WARM, AND THE MANATEES WERE ABLE TO LEAVE THEIR WARM-WATER SITES WHERE THERE WAS NO VEGETATION, EVEN THEN IT WAS TOO LATE AND THEY WERE TOO DEPLETED TO SURVIVE. THE LACK OF FORAGE IS NOT THE BIGGEST ISSUE RIGHT NOW. WE ARE BACK TO 'NORMAL' CAUSES OF DEATH, BUT STILL FINDING MALNOURISHED MANATEES.

- b. *The Aquarium Project* (Keith Winsten, Director, Brevard Zoo)

KEITH WINSTEN, EXECUTIVE DIRECTOR, BREVARD ZOO, PRESENTED THE AQUARIUM PROJECT. THE OPPORTUNITY HAS COME ALONG TO BUILD A MAJOR AQUARIUM OFF OF 1-95 IN PORT CANAVERAL ON 14-ACRES OF LAND. DUE TO THE PROXIMITY TO THE SPACE CENTER, THERE IS ALSO AN OPPORTUNITY TO DISCUSS TECHNOLOGY AND OCEANS IN A VERY UNIQUE WAY. WE ALSO MUST ACTIVELY MANAGE THE INDIAN RIVER LAGOON AND THE AQUARIUM WOULD FIT THIS NEED. THE PROPERTY FOR THE AQUARIUM IS SOUTH OF 528 AND WOULD BE LEASING 14-ACERS OF PROPERTY, IF NOT MORE. THE SITE IS RIGHT OFF OF THE HIGHWAY AND IT IS ON THE BANANA RIVER, WHICH MAKES THIS A DREAM LOCATION. THERE WILL BE A CONSERVATION HUB WHICH WOULD BE A SHARED FACILITY THAT HOUSES CONSERVATION STAFF AND POSSIBLE NEP OR ALIKE MEETINGS. IT WILL TRACK THREE WATERWAYS: BEACH, INDIAN RIVER LAGOON,

AND ST. JOHNS RIVER. THEY ESTIMATE OVER HALF A MILLION PEOPLE A YEAR WILL COME THROUGH AND HAVE PLEDGED \$1.00 PER PAID ADMISSION TO THE NEP AS A GRANTOR. THEY WANT THIS TO MAKE AN IMPACT FOR THE ENTIRETY OF THE LAGOON. ABOUT 900 JOBS WILL BE CREATED WITH THE NEW PROJECT AND WILL ALSO ATTRACT TOURISM DOLLARS. THE CURRENT ESTIMATE FOR THIS PROJECT IS ABOUT 85 MILLION DOLLARS WITH ALREADY A 30% COMMITMENT WITHOUT BEGINNING A CAMPAIGN.

- c. Update on technology application at the Satellite Beach Grand Canal dredging project (Dr. Thomas Waite, President and Founder of Ferrate Solutions, LLC)

DR. WAITE PRESENTED A NOVEL TECHNIQUE TO TREAT DREDGE WATER SO IT CONTAINS FEWER NUTRIENTS AND POLLUTANTS IN IT BY THE TIME IT IS RETURNED TO THE IRL. THE PROCESS USES FERRATE (VI), WHICH IS REACTIVE TO FORM FERRIC HYDROXIDE, A SUPERIOR OXIDIZING AGENT THAT IS MORE POWERFUL THAN OZONE, PERODIDES AND CHLORINE. WHEN APPLIED TO DREDGE WATER, THE PROCESS OXIDIZES NITROGEN FORMS TO ATMOSPHERIC NITROGEN, COAGULATES PHOSPHATES AND BINDS THEM, AND REDUCES TOTAL SUSPENDED SOLIDS AND OTHER POLLUTANTS.

- d. Florida HAB Task Force Meeting Update (Dr. Chuck Jacoby)

DR. JACOBY REPORTED HOW THE RED TIDE TASK FORCE MET ABOUT A MONTH AGO. THE TASK FORCES WILL BE GOING THROUGH RECOMMENDATIONS AND PREPARING ANOTHER SET OF RECOMMENDATIONS BASED ON WHAT HAS BEEN DONE AND WHAT NEEDS TO BE DONE IN THE FUTURE. SOME FUNDING CAME THROUGH TO HELP CREATE A STRATEGY FOR A COMMUNICATIONS PLAN. A REPORT IS FORTHCOMING FOR THE NOVEMBER 2021 MEETING. THERE WERE A FEW RESEARCH PROJECTS INCLUDING HOLOGRAPHIC IMAGING OF RED TIDES WHICH IS BEING RUN OUT OF FAU HABOUR BRANCH. THE OTHER PROJECT IS ON AEROSOLIZED TOXINS AND HOW FAR INLAND THESE TOXINS TRAVEL. THE TASK FORCE IS CURRENTLY WAITING ON FUNDING TO SEE WHAT ADDITIONAL PROJECTS CAN BE TAKEN ON.

## 8. Old Business

- a. Science 2030 Report (Dr. Chuck Jacoby)

**Requested Action:** Review draft of Science 2030 list of scientific research information gaps and priorities for the next decade. Discuss next steps and schedule for recommendation to the IRL Council Board of Directors adoption.

NO ACTION WAS TAKEN. DR. JACOBY WILL REVIEW THE DRAFT WITH DR. DUANE DE FREESE AND WILL CIRCLE BACK TO FOR APPROVAL. PLEASE EMAIL DR. JACOBY WITH ANY THOUGHTS YOU HAVE ON THIS REPORT.

## 9. New Business

- a. FY 2023 RFP categories and financial allocations for the FY 2023 budget (Daniel Kolodny)

DANIEL KOLODNY REVIEWED THE PROPOSED ALLOCATIONS FOR THE ANNUAL FUNDING CYCLE: \$600K FOR WATER QUALITY; \$200K FOR HABITAT RESTORATION; \$200 K FOR COMMUNITY-BASED RESTORATION; \$100K FOR RESEARCH/INNOVATION; \$50K FOR ENGAGEMENT AND EDUCATION; AND \$25K FOR SMALL GRANTS.

**Requested Action:** Recommend that the IRL Council Board of Directors approve financial allocations for FY 2023 RFPs and authorize staff to develop and release competitive RFPs by November 2021.

NO ACTION WAS TAKEN AS A QUORUM WAS NOT PRESENT. A CONSENSUS OF THOSE PRESENT FAVORED RECOMMENDING THAT THE BOARD OF DIRECTORS APPROVE THE ALLOCATIONS.

## 10. IRLNEP Staff Reports

- a. Project Update (Daniel Kolodny)

DANIEL KOLODNY REVIEWED THE PROJECTS IN PROGRESS AND FEATURED SEVERAL PROJECTS THAT HAD CLOSED IN THE PREVIOUS QUARTER.

- b. Communication Report (Kathy Hill)

KATHY HILL REVIEWED THE PERFROMANCE OF THE PROGRAM'S SOCIAL MEDIA AND HIGHLIGHTED A NEW SET OF ADS THAT WERE PILOT TESTED AS PAID, 15-SECONDS AD FOR YOUTUBE. WE ARE HAPPY TO SEND THESE MP4 FILES TO ANY PARTNER ORGANIZATION FOR SHARING ON WEBSITES AND GOVERNMENT TELEVISION. THE PROGRAM HAS ALSO DESIGNED A NEW IRL LAGOON LICENSE PLATE WHICH WILL BE VETTED THROUGH THE MANAGEMENT CONFERENCE PRIOR TO FINAL APPROVAL.

- c. Executive Director Report (Kathy Hill for Duane De Freese)

MS. HILL PRESENTED ON BEHALF OF DR. DUANE DE FREESE. DUANE IS DOING WELL AND WORKING AS MUCH AS HE IS ABLE. FEDERALLY, THERE IS MONEY IN THE INFRASTRUCTURE BILL THAT WOULD BRING ABOUT 1 MILLION DOLLARS PER NEP FOR FIVE YEARS, ABOVE AND BEYOND OUR REGULAR ALLOCATION FOR WATER QUALITY.

## Agenda Item 11. Final Comments (Committee, Staff, Public)

THERE WERE NO FINAL COMMENTS.

**Agenda Item 12. Adjourn**

THE MEETING WAS ADJOURNED AT 3:50 P.M.

THE NEXT MEETING OF THE STEM ADVISORY COMMITTEE IS NOVEMBER 16, 2021  
AT 1:30 P.M.



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# IRL COUNCIL STEM ADVISORY COMMITTEE

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**Meeting Minutes  
November 16, 2021  
1:30 pm**

*Up the Creek Farms, 3590 Valkaria Road, Grant-Valkaria, FL 32950*

**Members in Attendance:** Bob Day, Dennis Hanisak, Chuck Jacoby, Lisa Krinsky, Dale McGinnis, Rich Paperno, Leesa Soto, Linda Walters, Kelly Young.

**Guests in Attendance:** Elizabeth Powell, Lauren Hall, Nick Murdock.

**1. Call to Order and Pledge of Allegiance** (Dr. Chuck Jacoby, Chair)

THE MEETING WAS CALLED TO ORDER AT 1:39PM; A QUORUM WAS NOT PRESENT.

**2. Agenda Revisions** (Dr. Chuck Jacoby, Chair)

Dr. Mark Rains will be unable to present today. He sends his apologies and looks forward to presenting to us in February 2022.

**3. Introductions** (Dr. Chuck Jacoby, Chair)

Dr. Charles Jacoby led introductions.

**4. Minutes Approval** (Dr. Chuck Jacoby, Chair)

**Requested Action:** Approval of minutes from STEM meeting on May 11, 2021 and August 10, 2021.

THIS ITEM WAS TABLED AS A QUORUM WAS NOT PRESENT.

**5. Public Comment**

NONE

**6. Water Quality Reports**

a. Northern and Central IRL (Dr. Chuck Jacoby, SJRWMD)

Dr. Chuck Jacoby presented the water quality report from the Northern and center Indian River Lagoon. Southern IRL (Dianne Hughes, Martin County)

Ms. Hughes was not present for this meeting and did not give the Southern IRL Water Quality Report.

## 7. Presentations

- a. *NASA Kennedy Space Center Indian River Lagoon and Health Initiative Plan*  
(Jeffrey Collins, NASA)

Mr. Collins first acknowledged his team with him before discussing the NASA Kennedy Space Center Indian River Lagoon Health Initiative Program. Mr. Collins reminded the Management Board that the full report on this Health Initiative can be found by clicking [here](#).

- b. *The Importance of High Confidence Data in Geospatial Analysis for Environmental Management for the Indian River Lagoon*  
(Kirsten Jo "KJ" Ayres, IRLNEP)

Ms. Ayres presented her background with the GeoCollaborate project and her responsibilities in the QA/QC of data being used.

## 8. Old Business

NONE

## 9. New Business

- a. Approval of Communication Plan (Kathy Hill)

Ms. Hill reviewed the highlights of the Communications Plan, an EPA concurrence document. The plan summarizes a three-year communications strategy.

**Requested Action:** Recommend that the IRL Council Board of Directors reviews and adopts the Communications Plan contingent on EPA concurrence.

ITEM TABLED AS QUORUM WAS NOT PRESENT.

- b. Approval of Financing the CCMP Plan (Duane De Freese)

Dr. De Freese summarized the highlights of the Financing the CCMP Plan. The first part of the document contains the narrative which outlines the cost and expectations. The appendix will be eventually pulled out as value document for our partners.



**Requested Action:** Recommend that the IRL Council Board of Directors reviews and adopts the Financing the CCMP Plan contingent on EPA concurrence.

ITEM WAS TABLED AS QUORUM WAS NOT PRESENT.

- c. Planning for FY 2023 IRLNEP Workforce Analysis (Duane De Freese)

Dr. De Freese summarized the proposed IRLNEP Workforce Analysis which would include adding in a full-time position for a GIS Specialist and three Community Engagement Coordinators that would be positioned in the North, Central and South IRL regions.

**Requested Action:** No action required. Discussion and direction to guide development of the tentative FY 2023 Budget.

NO ACTION REQUIRED.

- d. IRL Council Leadership Transition Policy (Duane De Freese)

Dr. De Freese reviewed the IRL Council Leadership Transition Policy which guides the first 30 - 90 days of a leadership transition. and outlines a series of steps with the Board of Directors on how to move forward with internal/external recruitment.

**Requested Action:** Recommend that the IRL Board of Directors reviews and adopts the IRL Council Leadership Transition Policy.

ITEM TABLED AS QUORUM WAS NOT PRESENT.

- e. 2022 Meeting Calendar (Ashley Malcolm)

**Requested Action:** Recommend that the IRL Council Board of Directors approves the proposed 2022 Meeting dates.

Ms. Malcolm presented the proposed 2022 meeting dates.

ITEM TABLED AS QUORUM WAS NOT PRESENT; CONSENSUS OF THOSE PRESENT WAS TO APPROVE THE MEETING CALENDAR.

## **10. IRLNEP Staff Reports**

- a. Project Update (Daniel Kolodny)

Mr. Kolodny reviewed the end of year (2021) project list including 28 CCMP projects and activities completed in 2021 and 17 projects and activities were completed in quarter four alone in 2021.

- b. Communication Report (Kathy Hill)

Ms. Hill reviewed the communications report and reported good numbers and engagement with the 10-second YouTube Ads, including high viewing numbers in each key demographic. Facebook is performing well; Instagram is performing moderately; and Twitter is still proving to be a challenge.

c. Executive Director Report (Kathy Hill for Duane De Freese)

Dr. De Freese reviewed 2021 for the IRLNEP which included \$2.64 million dollars in IRLNEP revenue, 28 completed projects, and \$963,470.00 secured through a FDEP Innovation Grant. Additionally, the IRLNEP completed two EPA concurrence documents and one Climate Ready Estuary report completed. He discussed the 5 Year EPA Program Evaluation Noted that EPA meetings and field trips associated with the PE will be scheduled for May.

**Agenda Item 11. Final Comments (Committee, Staff, Public)**

Discussion regarding STEM Advisory Committee Members attendance and alternatives. Dr. De Freese is to investigate quorum and attendance prior to the February 2022 meeting. This item was requested to be on the February 2022 Agenda.

**Agenda Item 12. Adjourn**

THE MEETING WAS ADJOURNED AT 3:50 PM.

NEXT STEM ADVISORY COMMITTEE MEETING: Tuesday, February 8<sup>th</sup>, 2022\*

**\*Contingent on adoption of the 2022 Meeting Calendar.**



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# IRL COUNCIL STEM ADVISORY COMMITTEE

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**Tuesday, February 8, 2022  
1:30 – 4:30 pm**

Up the Creek Farms, 3590 Valkaria Road, Grant-Valkaria, FL 32950

*This meeting is open to the public  
\*\*\* **Masks are encouraged** \*\*\**

**In Attendance:** Bob Day, Frank Golan, Lisa Krimsky, Dale McGinnis, Rich Paperno, Beth Powell, Mitch Roffer, Chad Tuxall, Kelly Young.

**Guests:** Melanie Parker, Stacie Flood, John Windsor, Kyle Bartow, Doug Scherdt.

**1. Call to Order and Pledge of Allegiance** (Chad Truxall, Vice Chair)

Mr. Truxall called the meeting to order at 1:43 PM and led the committee in the Pledge of Allegiance.

**2. Agenda Revisions** (Chad Truxall, Vice Chair)

There were no agenda revisions.

**3. Introductions** (Chad Truxall, Vice Chair)

Mr. Truxall led roundtable introductions.

**4. Minutes Approval** (Chad Truxall, Vice Chair)

**Requested Action:** Approval of Minutes from STEM meeting on May 11, 2021, August 10, 2021 and November 16, 2021.

THIS ITEM IS TABLED AS A QOURUM WAS NOT MET.

**5. Public Comment**

There was no public comment.

**6. Water Quality Reports**

- a. Indian River Lagoon Water Quality (Dr. Chuck Jacoby, SJRWMD)

Dr. Duane De Freese gave the water reports for the northern, central and southern lagoon. He began with the water quality report for the central and northern lagoon where salinity, temperature, Chlorophyll-A (at or above bloom concentrations) and DO were discussed. Manatee provisioning began on December 20, 2021 with approximately 20-30 pounds of vegetation per day, however, it was not consumed. Active manatee feeding began on January 20, 2022 in warm water with approximately 15,000 pounds of vegetation provided per week. He next discussed the water report for the southern lagoon which included the inflows and outflows of Lake Okeechobee and mid-estuary and enterococcus. High sea and water levels were also discussed.

## 7. Presentations

- a. Fewer Wetlands, More Ditches: How Knowledge of Land Use Change Can Inform Water Quality Restoration in the Indian River Lagoon

Mark Rains, Professor, University of South Florida and Kai Rains, Research Associate Professor, University of South Florida

Dr. Mark Rains and Kai Rains presented their project timeline, which began in 2011, to map, classify and evaluate wetlands from the 1850's through the 2000's. The focus of this project was to quantify changes to wetland extent and distribution, quantify changes to landscape hydrological connectivity, and to use this and related information in conservation planning. Over 86% of wetland area was lost between the 1850's through the 2000's, and much of it in the western part of St. Lucie County. 77% of wetland loss was due to agricultural conversion. While discussing the changes to landscape hydrological connectivity, they explained the drainage density has increased from over 300% between 1850's to the 2000's. Dr. Kai Rains discussed the goal of having a multimetric toll for restoration and conservation prioritization in the IRL watershed. The finalization of the tool and outreach is underway with a finalization goal of Fall 2023. For more information on this project, please contact [Dr. Mark Rains](#), [Dr. Kai Rains](#) or by visiting their [project website](#).

- b. GeoCollaborate and Additional GIS Project Update  
Kirsten Jo Ayres, GIS Coordinator, IRLNEP

Kirsten Jo "KJ" Ayres presented her GeoCollaborate and additional GIS Project updates including metrics on the GeoCollaborate Instance #2 Webinar Series and outlined the Instance #3 Emergency Response Scenario basic storyline. The Instance #3 storyline will include a focus on the 2016 HAB and fishkill with a simulated emergency response. This webinar is planned for the end of March/beginning of April. Ms. Ayres further discussed the IRLNEP GIS Data HUB and completed maps including public boat ramps

on the IRL, One Lagoon Monitoring Network locations, and the IRLNEP Lagoon boundary maps. Ms. Ayres discussed future projects including additional project maps, storymap of old fishermen tales along the IRL and defining our management conference.

## 8. Old Business

- a. CCMP Concurrence Documents (Duane De Freese)  
One Lagoon Habitat Restoration Plan and One Lagoon Monitoring Plan

Dr. De Freese discussed the EPA concurrence documents and requested for peer-review volunteers. He will arrange for the documents – the One Lagoon Habitat Restoration Plan and the One Lagoon Monitoring Plan to be emailed in PDF and word document format for peer-review from the STEM Advisory Committee.

**Requested Action:** Peer review and comment on draft documents prior to submittal to EPA for concurrence.

NO ACTION REQUIRED.

## 9. New Business

- a. Election of Officers (Duane De Freese)  
**Requested Action:** Elect Chair and Vice Chair for Calendar Year 2022 for the STEM Advisory Committee.

Dr. De Freese reviewed the election of officers. The STEM Advisory Committee would like to see Dr. Charles Jacoby and Chad Truxall to continue in leadership roles. Dr. Charles Jacoby and Chad Truxall will work out who is Chair and who will serve as Vice Chair.

A QUORUM WAS NOT PRESENT; BOB DAY MOTIONED TO ELECT CHAIR AND VICE CHAIR FOR CALENDAR YEAR 2022 FOR THE STEM ADVIOSRY COMMITTEE. MOTION WAS SECONDED BY LISA KRIMSKY. THIS MOTION WAS PASSED UNANIMOULSY BY CONSENSUS OF THOSE PRESENT.

- b. Fiscal Year 2023 RFPs (Daniel Kolodny)

Mr. Kolodny discussed the fiscal year 2023 RFP's including the highest ranked projects in the categories of water quality restoration, habitat restoration, community-based habitat restoration, Science and Innovation and Market Research.

**Requested Action:** Motion to recommend that the IRL Council Board of Directors accept the IRLNEP Management Conference recommendations and

approve the final ranked list of proposals; fund the top proposals contingent and consistent with available funds and budgetary authority; and authorize staff to negotiate and enter into contracts with those applicants.

MOTION WAS MADE BY BOB DAY TO RECOMMEND THAT THE IRL COUNCIL BOARD OF DIRECTORS ACCEPT THE IRLNEP MANAGEMENT CONFERENCE RECOMMENDATIONS AND APPROVE THE FINAL RANKED LIST OF PROPOSALS; FUND THE TOP PROPOSALS CONTINGENT AND CONSISTENT WITH AVAILABLE FUNDS AND BUDGETARY AUTHORITY; AND AUTHORIZE STAFF TO NEGOTIATE AND ENTER INTO CONTRACTS WITH THOSE APPLICANTS. MOTION WAS SECONDED BY BETH POWELL. MOTION PASSED UNANIMOUSLY BY CONSENSUS OF THOSE PRESENT.

c. Fiscal Year EPA Workplan and IRLNEP Business Plan (Daniel Kolodny)

Mr. Kolody discussed the EPA Workplan and how the budget and projects from the category four (Science and Innovation) will be included in the workplan. The deadline is June 1<sup>st</sup> and the IRLNEP is looking to assemble this plan with the projects that were awarded. This workplan goes into the IRLNEP Business Plan.

**Requested Action:** Recommend that the IRL Council Board of Directors to authorize staff to finalize and submit the FY 2023 EPA Workplan and complete the IRLNEP Business Plan.

MOTION WAS MADE BY BOB DAY TO RECOMMEND THAT THE IRL COUNCIL BOARD OF DIRECTORS TO AUTHORIZE STAFF TO FINALIZE AND SUBMIT THE FY 2023 EPA WORKPLAN AND COMPLETE THE IRLNEP BUSINESS PLAN. MOTION WAS SECONDED BY LISA KRIMSKY. MOTION PASSED UNANIMOUSLY BY CONSENSUS OF THOSE PRESENT.

d. Planning for Congressional Infrastructure Investment and Jobs Law (Duane De Freese)

Dr. De Freese summarized the Federal Infrastructure Investment and Jobs Law. The timeline could be a challenge as EPA would like these projects to hit the ground quickly. The IRLNEP has identified five projects, one in each county, that meet the definition. These projects will start this year by allocating \$500K to those five projects. This will be a budgeting change, but not a project change. The IRLNEP plans going into October 2022 with 1.3 million in projects.

**Requested Action:** Discussion of procedures for identifying and funding eligible projects; recommend that the IRL Council Board of Directors

authorize staff to develop and release a Request for Proposal or Request for Qualifications as appropriate.

MOTION WAS MADE BY BETH POWELL RECOMMEND THAT THE IRL BOARD OF DIRECTORS AUTHORIZE STAFF TO DEVELOP AND RELEASE A REQUEST FOR PROPOSAL OR REQUEST FOR QUALIFICATIONS AS APPROPRIATE. MOTION WAS SECONDED BY RICH PAPERNO. MOTION PASSED UNANIMOUSLY BY CONSENSUS OF THOSE PRESENT.

e. Committee Quorum Update (Duane De Freese)

Dr. De Freese summarized several options to improve committee quorums, including ...

**Requested Action:** Review and discuss potential options and recommend that the IRL Council Board of Directors direct staff to make policy changes as directed.

## 10. IRLNEP Staff Reports

a. IRL Project Update (Daniel Kolodny)

Mr. Kolodny highlighted the projects completed at the end of quarter one of fiscal year 2022, which included Coastal Resources: Pelican Island Phase V Restoration, IRLT: Validation of Inexpensive Impoundment Management Strategies to Increase Their Value as Vital Fish Nurseries Phase I, and FAU: Monitoring Prevalence of Microcyston Toxins Using SPATT.

b. Communications Report (Kathy Hill)

Ms. Hill discussed the 2021 Annual Report in her Communications Report, along with metrics from the Guiding Flow Television IRLNEP sponsored episodes. Ms. Hill reviewed the social media metrics for October, November and December of 2021 and highlighted the top performing posts on Facebook, Instagram and Twitter. Also discussed was the IRL Specialty Tag update, which included next steps with the Florida Department of Transportation.

c. Executive Director Report (Duane De Freese)

Dr. De Freese highlighted the Manatee UME update in his Executive Director Report. He additionally discussed the Florida Legislative Sessions and the attached IRL appropriations. Dr. De Freese reviewed upcoming events including the FAU-HBOI IRL Science Symposium, the Bat Area Scientific Symposium, the 8<sup>th</sup> Biennial Water Institute Symposium and the Marine Technology Tech Surge with FAU-HBOI.

## **11. Final Comments (Committee, Staff, Public)**

No Final Comments.

## **12. Adjourn**

Next meeting: Tuesday, May 10, 2022

MEETING WAS ADJOURNED AT 4:36 pm.

*NOTE: If a person decides to appeal any decision made by the Board with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. Section 286.0105, Florida Statutes (2014).*

*Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Ashley Malcolm at (860) 416-3102. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800) 955-8771 (TDD) or 1(800) 955-8770 (Voice). For more information, contact: Ashley Malcolm, IRL Council, 1235 Main St, Sebastian, FL 32958, (860) 416-3102, or by email at [malcolm@irlcouncil.org](mailto:malcolm@irlcouncil.org).*



## SEAGRASS RESTORATION CAPACITY BUILDING

Rank	Applicant	Score (1-100)	Eligible?
1	Florida Atlantic University - Harbor Branch Oceanographic Institute	96	Y
2	Florida Oceanographic Society	89	Y
3	Sea and Shoreline, LLC	82	Y
4	East Coast Zoological Society d./b./a. Brevard Zoo	81	Y
5	Marine Discovery Center	75	Y

SPECIAL CATEGORY:INFRASTRUCTURE INVESTMENTS IN WATER QUALITY OR HABITAT RESTORATION										Note
Rank	Applicant	Project	Requested Funding	Cost Share Match	Match %	Total Project Cost	Score	Above 70%?	Eligible ?	
1	University of Central Florida	Charge On: Habitat Restoration in Mosquito Lagoon, Florida.	\$510,851.00	\$412,727.00	44.7	\$923,578.00	201	91%	Y	\$127,713 per year
2	St. Lucie County	Sheraton Stormwater Treatment Area-Water Quality (D&E)	\$100,000.00	\$398,400.00	79.9	\$498,400.00	183	83%	Y	1yr only, JEDI
3	Riverside Conservancy	Riverside Land Conservation and Supply Chain Infrastructure for Living Shorelines.	\$560,000.00	\$560,000.00	50	\$1,120,000.00	183	83%	Y	over 4yr period
4	Town of Sewall's Point	South Sewall's Point Road Phase III	\$150,000.00	\$4,370,000.00	96.7	\$4,520,000.00	174	79%	Y	1yr only
5	Indian River County	Round Island Parks Step System Installation	\$56,218.00	\$13,580.00	19.5	\$69,798.00	163	74%	Y	1yr only
6	Indian River County	Flavon Shores Water Quality Enhancement Septic to Sewer Project	\$117,041.00	\$504,851.00	81.2	\$621,892.00	157	71%	Y	1yr only
7	Sea and Shoreline, LLC	A Large Scale Multi-phase Restoration of Seagrass in the Indian River Lagoon	\$1,415,000.00	\$0.00	0	\$1,415,000.00	157	71%	Y	over 4yr period
8	Martin County	Indian River Lagoon Hybrid Living Shoreline at Indian Riverside Park (D&E)	\$64,000.00	\$59,000.00	48	\$123,000.00	149	68%	N	
9	City of Port Saint Lucie	Kingsway Basin Pond 3	\$900,000.00	\$0.00	0	\$900,000.00	139	63%	N	over 2-3yr period
10	Florida Institute of Technology	Impacts of causeways on water and habitat quality in the IRL, does human infrastructure promote hypoxia and altered nutrient cycling	\$88,981.00	\$9,000.00	9.2	\$97,981.00	131	59%	N	

## RESOLUTION NO. 2022-02

### A RESOLUTION OF THE BOARD OF DIRECTORS OF THE IRL COUNCIL AMENDING THE FINAL BUDGET FOR THE 2022 FISCAL YEAR

**WHEREAS**, the IRL Council was created via Interlocal Agreement to carry out the goals of the Indian River Lagoon National Estuary Program; and

**WHEREAS**, the IRL Council amended a Budget for Fiscal Year 2022 on August 13, 2021 and November 29, 2021; and

**WHEREAS**, the IRL Council finds it necessary and essential to amend the Budget for the 2022 Fiscal Year as set forth in this Resolution; and

**WHEREAS**, adoption of the 2022 Fiscal Year budget amendments set forth in this Resolution serves a valid public purpose.

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE IRL COUNCIL, THAT:**

**Section 1.** The above recitals are ratified and incorporated into this resolution

**Section 2.** The funds and available resources and revenues that are set out in Exhibit "A" and incorporated herein by reference, are appropriated to provide the monies to be used to pay the necessary operating and other expenses of the IRL Council.

**Section 3.** Except as amended in Exhibit "A" the remainder of the Budget for the 2022 Fiscal Year remains in full force and effect

**Section 4.** This Resolution shall become effective immediately upon passage.

DONE at \_\_\_\_\_, Florida, this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

By: \_\_\_\_\_  
Curt Smith, Chair

ATTEST:

\_\_\_\_\_  
Jeffrey Brower, Secretary

Approved as to legal form and sufficiency:

\_\_\_\_\_  
Glen J. Torcivia  
IRL Council, Legal Counsel

**IRL Council  
FY 2022 Amended Budget  
Exhibit A**

**REVENUES**

Federal EPA Section 320	\$ 700,000
Federal Infrastructure	\$ 909,800
IRL License Plate	\$ 125,000
Member Contributions	\$1,500,000
External Grant	\$ 612,698
<b>TOTAL REVENUES</b>	<b>\$3,847,498</b>

**EXPENDITURES**

Other Expenditures	\$2,916,630
IRL Council Strategic Program, IRLNEP 2022 EPA 320 Work Plan, IRLNEP 2022 Infrastructure Work Plan, Unplanned Contingency Reserve	
Salaries & Benefits	\$ 413,868
Facilities Expenses	\$ 35,500
Rent, Utilities, Equipment Maintenance, Communications	
Administrative Costs	\$ 65,500
Postage, Office Supplies, Insurance, Printing, Travel, Licenses & Subscriptions, Dues, Professional Development	
Administrative Services	\$ 116,000
Legal, Accounting, Auditing, IT Services, Legal Ads	
<b>TOTAL EXPENDITURES</b>	<b>\$3,547,498</b>
Agency Balance Beginning of Year	\$ 0
Fund Balance - Beginning of Year	\$ 750,888
Fund Balance - End of Year	\$ 1,050,888

<b><u>FY 2022 Amended Budget</u></b>	Approved November 29, 2021	<b><u>FY 2022 Amended Budget</u></b>	Pending	Higher Lower	(Notes)
<b>REVENUES</b>		<b>REVENUES</b>			
Federal 320	\$ 700,000	Federal EPA 320	\$ 700,000		
IRL License Plate	\$ 125,000	IRL License Plate	\$ 125,000		
Member Contributions	\$1,500,000	Member Contributions	\$1,500,000		
External Grant	\$ 612,698	External Grant	\$ 612,698		
		Federal Infrastructure	\$ 909,800	\$909,800	(1)
<b>TOTAL REVENUES</b>	<b>\$2,937,698</b>	<b>TOTAL REVENUES</b>	<b>\$3,847,498</b>	<b>\$909,800</b>	<b>(2)</b>
<b>EXPENDITURES</b>		<b>EXPENDITURES</b>			
Other Expenditures	\$2,857,718	Other Expenditures	\$2,916,630	\$58,912	(3)
IRL Council Strategic Program, IRLNEP		IRL Council Strategic Program, IRLNEP			
FY2022 EPA Work Plan, External Grant,		FY2022 EPA 320 Work Plan, External			
Unplanned Contingency Reserve		Grant, IRLNEP FY2022 EPA			
		Infrastructure Work Plan, Unplanned			
		Contingency Reserve			
Salaries & Benefits	\$ 413,868	Salaries & Benefits	\$ 413,868		
Facilities Expenses	\$ 35,500	Facilities Expenses	\$ 35,500		
Rent, Utilities, Equipment Maintenance,		Rent, Utilities, Equipment Maintenance,			
Communications		Communications			
Administrative Costs	\$ 65,500	Administrative Costs	\$ 65,500		
Postage, Office Supplies, Insurance,		Postage, Office Supplies, Insurance,			
Printing, Travel, Licenses & Subscriptions,		Printing, Travel, Licenses & Subscriptions,			
Dues, Professional Development		Dues, Professional Development			
Administrative Services	\$ 116,000	Administrative Services	\$ 116,000		
Legal, Accounting, Auditing, IT Services,		Legal, Accounting, Auditing, IT Services,			
Legal Ads		Legal Ads			
<b>TOTAL EXPENDITURES</b>	<b>\$ 3,488,586</b>	<b>TOTAL EXPENDITURES</b>	<b>\$ 3,547,498</b>	<b>\$58,912</b>	<b>(4)</b>
Agency Balance Beginning of Year	\$ 0	Agency Balance Beginning of Year	\$ 0		
Fund Balance Beginning of Year	\$ 550,888	Fund Balance Beginning of Year	\$ 750,888	\$200,000	(5)
Fund Balance – End of Year	\$ 0	Fund Balance – End of Year	\$ 1,050,888	\$1,050,888	(6)

## **FY 2022 Budget Amendment Detail (Narrative)**

- (1) Add “Federal Infrastructure” to REVENUES and increase from \$0 to \$909,800.  
This is the amount to be received annually for FY 2022 through FY 2026 from the Infrastructure and Investments Job Law.
- (2) Increase “TOTAL REVENUES” by \$909,800 from \$2,937,698 to \$3,847,498  
This increase reflects the additional revenue from the Federal Infrastructure listed in 1 above.
- (3) Increase “OTHER EXPENDITURES” by \$58,912 from \$2,857,718 to \$2,916,630  
“OTHER EXPENDITURES” now comprises the following:
  1. IRL Council Strategic Program - \$673,781 (a reduction of \$300,000 due to reallocation of projects to the Infrastructure Workplan)
  2. IRLNEP FY2022 EPA 320 Workplan - \$700,000 (no change)
  3. External Grant - \$612,698 (no change)
  4. IRLNEP Infrastructure Workplan \$909,800 (includes \$200,000 reallocated from active projects in prior FYs and \$300,000 reallocated from Strategic Program projects. That \$500,000 is placed into the Fund Balance End of Year and to FY 2023)
  5. Unplanned Contingency Reserve - \$20,351.16
- (4) Increase “TOTAL EXPENDITURES” by \$58,912 from \$3,488,586 to \$3,547,498  
This increase reflects the increase in OTHER EXPENDITURES listed in 3 above.
- (5) Increase “Fund Balance Beginning of Year” by \$200,000 from \$550,888 to \$750,888.  
This increase reflects the \$200,000 being reallocated from prior FY projects still in progress to the FY2022 Infrastructure Workplan.
- (6) Increase “Fund Balance End of Year” by \$1,050,888 from \$0 to \$1,050,888.  
This increase reflects the original Fund Balance Beginning of Year of \$550,888 being passed through FY2022 to FY2023 and includes the \$500,000 that was returned to the Fund Balance after reallocation of project funding under the Infrastructure Workplan.

**RESOLUTION NO. 2022-03**

**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE IRL COUNCIL ADOPTING THE FINAL BUDGET FOR THE 2023 FISCAL YEAR**

**WHEREAS**, the IRL Council was created via Interlocal Agreement to carry out the goals of the Indian River Lagoon National Estuary Program; and

**WHEREAS**, the IRL Council held a public hearing on February 11, 2022 and adopted a Tentative Budget for Fiscal Year 2023;

**WHEREAS**, the IRL Council held a public meeting on May 13, 2022 to consider the Final Budget for Fiscal Year 2023.

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE IRL COUNCIL, THAT:**

**Section 1.** The Fiscal Year 2023 Final Budget is attached as Exhibit "A".

**Section 2.** The Fiscal Year 2023 Final Budget is hereby adopted.

**Section 3.** This Resolution shall become effective immediately upon passage.

DONE at \_\_\_\_\_, Florida, this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

By: \_\_\_\_\_  
Curt Smith, Chair

ATTEST:

\_\_\_\_\_  
Jeffrey Brower

Approved as to legal form and sufficiency:

\_\_\_\_\_  
Glen J. Torcivia  
IRL Council, Legal Counsel



**IRL Council  
FY 2023 Tentative Budget  
Exhibit A**

**REVENUES**

Federal Section 320	\$ 750,000
Federal Infrastructure Investment and Jobs Law	\$ 909,800
IRL License Plate	\$ 125,000
Member Contributions	\$1,500,000
<b>TOTAL REVENUES</b>	<b>\$3,284,800</b>

**EXPENDITURES**

Other Expenditures	\$3,202,043
IRL Council Strategic Program, IRLNEP 2023 EPA Work Plan, IRLNEP 2023 Infrastructure Work Plan, Unplanned Contingency Reserve	
Salaries & Benefits	\$ 567,759
Facilities Expenses	\$ 38,500
Rent, Utilities, Equipment Maintenance, Communications	
Administrative Costs	\$ 66,500
Postage, Office Supplies, Insurance, Printing, Travel, Licenses & Subscriptions, Dues, Professional Development	
Administrative Services	\$ 118,025
Legal, Accounting, Auditing, IT Services, Legal Ads	
<b>TOTAL EXPENDITURES</b>	<b>\$3,992,827</b>
Agency Balance Beginning of Year	\$ 0
Fund Balance - Beginning of Year	\$ 1,050,888
Fund Balance – End of Year	\$ 342,861

<b><u>FY 2023 Tentative Budget</u></b>	2/11/2022	<b><u>FY 2023 Final Budget</u></b>	Pending	Higher Lower	(Notes)
<b>REVENUES</b>		<b>REVENUES</b>			
Federal EPA 320	\$ 750,000	Federal EPA 320	\$ 700,000		
IRL License Plate	\$ 125,000	IRL License Plate	\$ 125,000		
Member Contributions	\$1,500,000	Member Contributions	\$1,500,000		
Federal Infrastructure	\$ 914,000	Federal Infrastructure	\$ 909,800	\$4,200	(1)
<b>TOTAL REVENUES</b>	<b>\$3,289,000</b>	<b>TOTAL REVENUES</b>	<b>\$3,284,800</b>	<b>\$4,200</b>	<b>(2)</b>
<b>EXPENDITURES</b>		<b>EXPENDITURES</b>			
Other Expenditures	\$2,806,243	Other Expenditures	\$3,202,043	\$395,800	(3)
IRL Council Strategic Program, IRLNEP		IRL Council Strategic Program, IRLNEP			
FY2023 EPA 320 Work Plan, IRLNEP		FY2023 EPA 320 Work Plan, IRLNEP			
FY2023 EPA Infrastructure Work Plan,		FY2023 EPA Infrastructure Work Plan,			
Unplanned Contingency Reserve		Unplanned Contingency Reserve			
Salaries & Benefits	\$ 567,759	Salaries & Benefits	\$ 567,759		
Facilities Expenses	\$ 38,500	Facilities Expenses	\$ 38,500		
Rent, Utilities, Equipment Maintenance,		Rent, Utilities, Equipment Maintenance,			
Communications		Communications			
Administrative Costs	\$ 66,500	Administrative Costs	\$ 66,500		
Postage, Office Supplies, Insurance,		Postage, Office Supplies, Insurance,			
Printing, Travel, Licenses & Subscriptions,		Printing, Travel, Licenses & Subscriptions,			
Dues, Professional Development		Dues, Professional Development			
Administrative Services	\$ 118,025	Administrative Services	\$ 118,025		
Legal, Accounting, Auditing, IT Services,		Legal, Accounting, Auditing, IT Services,			
Legal Ads		Legal Ads			
<b>TOTAL EXPENDITURES</b>	<b>\$ 3,597,027</b>	<b>TOTAL EXPENDITURES</b>	<b>\$ 3,992,827</b>	<b>\$395,800</b>	<b>(4)</b>
Agency Balance Beginning of Year	\$ 0	Agency Balance Beginning of Year	\$ 0		
Fund Balance Beginning of Year	\$ 550,888	Fund Balance Beginning of Year	\$ 1,050,888	\$500,000	(5)
Fund Balance – End of Year	\$ 242,861	Fund Balance – End of Year	\$ 342,861	\$100,000	(6)

## **FY 2023 Final Budget Detail (Narrative)**

- (1) Decrease “Federal Infrastructure” Revenue by \$4,200 from \$914,000 to \$909,800.  
This is the amount confirmed by USEPA on March 10, 2022. The original figure was an estimate.
- (2) Decrease “TOTAL REVENUES” by \$4,200 from \$3,289,000 to \$3,284,800.  
This decrease reflects the decrease in the Federal Infrastructure Line item as referenced in (1) above.
- (3) Increase “OTHER EXPENDITURES” by \$395,800 from \$2,806,243 to \$3,202,043.  
This increase reflects changes to the IRL Strategic Program as part of the decisions made by the IRL Council on February 11, 2022 as it relates to the IRL Council Strategic Program. Other Expenditures now includes the following:
  1. IRL Council Strategic Program (\$1,219,622) includes the following:
    - a. Water Quality Restoration Projects - \$421,365
    - b. Habitat Restoration -\$365,392
    - c. Community-Based Restoration - \$159,000
    - d. Small grants program - \$25,000
    - e. IRLNEP Technical Support of Conferences and Workshops - \$25,000
    - f. Cost share match for IRL Council Economic Update Grant Opportunities - \$20,000
    - g. Remainder to fund the FIT Hypoxia project - \$3,937
    - h. Projects eligible under the science and innovation category - \$199,928
  2. IRLNEP FY2023 EPA Workplan (\$750,000) no change
  3. IRLNEP FEDERAL INFRASTRUCTURE INVESTMENT AND JOBS LAW Workplan (\$909,800)
    - a. Infrastructure Projects and Seagrass Capacity Building TBD - \$909,800
  4. Unplanned Contingency Reserve - \$322,621
- (4) Increase “TOTAL EXPENDITURES” by \$395,800 from \$3,597,027 to \$3,992,827.  
This increase represents the changes to OTHER EXPENDITURES as listed in (3) above.
- (5) Increase “Fund Balance Beginning of Year” by \$500,000 from \$550,888 from to \$1,050,888.  
This increase represents the changes made in FY 2022 that reallocated funds from IRL Council Strategic projects to the FY 2022 Infrastructure Workplan. Those funds are brought into FY 2023 through this line.
- (6) Increase “Fund Balance End of Year” by \$100,000. Part of the reallocation to infrastructure moved restricted license plate funds back to general fund and will be passed through FY 2023 for use in future FYs.