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# ENVIRONMENTAL CHANGES AND DANGERS TO OUR WATER

## GREATER ESTERO COMMUNITY REPORT

QUARTER 1  
2023

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# ENVIRONMENTAL CHANGES AND THE DANGERS TO OUR WATER

## UNDERSTANDING THE THREATS TO OUR LOCAL COMMUNITY

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*Prepared by Allan Bowditch, ECCL's Chief Communications Officer*

### Introduction

Engage Estero is pleased to provide you with the first of four special reports we prepare each year. The environment and water quality remain at the top of greater Estero's residents' concerns. Many residents attended the January 24<sup>th</sup> Public Forum on Water Quality and the Environment, sponsored by Engage Estero. Because of the compelling nature of the information provided by the expert panel:

- Greg Tolley, Executive Director of The Water School at FGCU
- Bob Moore, Co-Chair of the Sanibel-Captiva Renewable Energy Working Group
- John Cassani, Calusa Waterkeeper Emeritus
- Matt DePaolis, Environmental Policy Director, Sanibel Captiva Conservation Foundation (SCCF)



we felt the need to ensure as many people as possible understand the growing concerns expressed and what actions can reduce their impact on our area.

Greg Tolley commented on the increasing temperatures that we are experiencing, "what we are dealing with as a society, country, and planet is absolutely unprecedented. You cannot use the history of fluctuations in ice ages and warmer climates to say everything will be all right now."

The panel members discussed some disturbing predictions for Southwest Florida and greater Estero:



Sanibel, Marco Island, and Southwest Fort Myers will be <b>underwater</b> by 2100.	Disasters costing more than <b>\$1B a year</b> will increase to 17 - 18 in 2022, from 8 - 9 events in 1980.	The <b>sea level</b> increased every ten years by 1.5” between 1900 and 1921. However, from 2010 to 2021, that rate per 10 years has risen to 3.7”– more than double. So, how that will relate in the next 30 to 40 years becomes a concern.
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Matt DePaolis stated that if we do not seriously consider what our community will look like in 50 years, not just five years, we will not have a livable future here in Southwest Florida! Such views are based on genuine changes that are taking place and is a realistic perspective.

Engage Estero encourages you to read the compelling information in this document, especially the "Call to Action," to see what practical steps can be taken to minimize the predictions.

The Engage Estero team again thanks Greg Tolley, John Cassani, Matt DePaolis, and Bob Moore for their insights and remarkable work in helping optimize our Environment and Water Quality. But they cannot make an impact on their own. We must all take ownership of the problem and act on their recommendations. Please do your part.



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# Part One: Environmental and Climate Change Issues

## Introduction.

On Wednesday, January 25, 2023, at FGCU's Water School, the Public Forum arranged by Engage Estero focused on how environmental changes and factors affecting our local water quality impact our local community. The distinguished panel of experts that addressed these issues and explained what actions could be taken to help alleviate their impact comprised:

- Greg Tolley, Executive Director of The Water School at FGCU
- Bob Moore, Co-Chair of the Sanibel-Captiva Renewable Energy Working Group
- John Cassani, Calusa Waterkeeper Emeritus
- Matt DePaolis, Environmental Policy Director, Sanibel Captiva Conservation Foundation (SCCF)



Engage Estero is indebted to Greg Tolley and his team at the Water School for using the facilities and allowing attendees to examine the many impressive features and facilities in the new Water School building.

The Public Forum was extraordinarily successful. Over 110 people from Bonita Springs, San Carlos, and greater Estero were in attendance. In addition, around 20 listened to the live Zoom meeting, and over 100 viewed the video recording.

With increasing surface temperatures, the possibility of more droughts and increased intensity of storms will likely occur. As more water vapor evaporates into the atmosphere, it becomes fuel for more powerful storms to develop. Yet despite the increasing incidence of hurricanes, tornadoes, floods, fires, and ever-rising monthly average temperatures, some feel such trends are simply due to the historical rise and falls seen on the earth's surface for millennia!



## Global Warming – The Reality.

Greg Tolley, Executive Director of FGCU's Water School, addressed this issue when answering the first of the evening's questions. He said, "temperatures have not been this warm for the last 125,000 years when people were living in Africa and the sea level was 33 feet higher than they are now!" He clarified that the science that explains these phenomena comes from many different lines of evidence.

He said, "what we are dealing with as a society, country, and planet is absolutely unprecedented. You cannot use the history of fluctuations in ice ages and warmer climates to say everything will be all right now." The types of science being examined include:

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*Ocean Temperatures:* Temperatures from the surface to the deep oceans have increased since recording started in the 1980s. Those who felt we did not see higher temperatures from greenhouse gases did not realize that the impact initially occurred with temperature rises in the deep oceans.

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*Glaciers:* Looking globally, glaciers' overall size and thickness are steadily eroding, even though some individual glaciers have not been appreciably impacted.

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*Polar Ice Caps:* These, too, have been significantly reduced in size and volume over recent years.

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*Global Land Temperatures:* It will come as no surprise that recordings show significant increases in monthly temperatures over the last two decades.

The panel concurred that the mechanism was clear. In 1896, a seminal paper by Swedish scientist Svante Arrhenius first predicted that changes in atmospheric carbon dioxide levels could substantially alter the surface temperature through the greenhouse effect. In 1938, Guy Callendar connected carbon dioxide increases in the earth's atmosphere to global warming. Whether it is carbon dioxide, methane, or hydrofluorocarbon, although the latter molecules are less abundant, all impact global warming.

In fact, because the structure of these latter molecules is more complex than carbon dioxide, their impact is far greater. When solar light from the sun bounces off the earth it gets trapped in these molecules in the atmosphere creating the greenhouse effect. The panel members emphasized the need and urgency to turn things around.

Bob Moore, Co-Chair of the Sanibel-Captiva Renewable Energy Working Group, made an impassioned plea to invest in new renewable energy technologies. He said, "Independent of the scientific arguments relating to climate change, from an economic standpoint, addressing the challenges of greenhouse gases, technology allows us to provide energy that does not burn fossil fuels. For example, wind, solar, and transitioning to EVs are now significantly cheaper than any energy source on the planet. Whether or not you believe in climate change, if we do not get on board quickly as a country and invest in these technologies, we will be behind the 8-ball."



It is forecast that clean energy will be the key driver of economic growth over the next 20 years. While critics have justifiably singled out China as the number one contributor to greenhouse gases, they are now investing at a very high rate in renewable technologies, EVs, and battery storage and outspending the rest of the world in

this sector! If the USA doesn't embrace this area, we will be left behind economically, suggests Bob Moore.

### **The Local Impact from Rising Temperatures.**

The discussion then focused on Southwest Florida and the threats we might face over the next 20 years: Not a long timeline!

The items covered can be summarized as follows:



### **CLIMATE CHANGE HAS BECOME MORE SEVERE THAN IT HAS EVER BEEN:**

- The prediction for Sanibel, Marco Island, and Southwest Fort Myers is that by 2100 they will be underwater!
- The number of disasters that cost over \$1B per year had increased from 1980, when there were 8 or 9 events, to 17 to 18 in 2022.
- Hurricanes have become larger and slower, causing increased rain and flooding.
- Hurricanes are increasing in intensity far more rapidly than before because of the increased ocean energy (higher temperatures). Even overnight storms can change from a category 2 to a 4 or 5, as illustrated by hurricane Ian recently.





### **SEA LEVELS ARE RISING.**

- Sea level measurements have been taken at Key West for 100 years, but now that rate of increase has been accelerating. Between 1900 and 1921, the sea level increased every ten years by 1.5 inches. However, from 2010 to 2021, that rate per 10 years has risen to 3.7 inches – more than double. So, how that will relate in the next 30 to 40 years becomes a concern.

### **HIGH TIDES.**

- These have been causing flooding in Miami and other areas in South Florida and are independent of hurricanes or tropical storms.

### **EXTREME HEAT.**

- While many with Air Conditioning may not consider this a severe issue for those in construction and agriculture, the effects of heat stress can be very debilitating and is an environmental health problem.

### **RETREATING COASTLINE.**

- While most may not notice the change looked at from generation to generation, the changes have been dramatic.

### **POPULATION GROWTH**

- In 2021 546,000 people changed their driver's licenses to Florida. That means over 1,000 people per day are moving here.
- This growth is causing considerable stress concerning:
  - Infrastructure
  - Roads
  - Freshwater drinking supplies
  - Pollutants
  - Fossil fuel combustion from more vehicles
  - Alternate land use
  - Wetlands –the 'kidneys of the earth' are also threatened by agriculturalists who wish to sell their land to developers for a lump sum gain which also exacerbates climate change locally, explained Greg Tolley.

Matt DePaolis said that if we do not seriously consider what our community will look like in 50 years, not just five years, we will not have a livable future here in Southwest Florida. This perspective is based on many important observations.

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*"If we don't make significant changes now, as others have said, there will be serious consequences"*  
*Bob Moore*

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Matt stated, "We are not looking honestly at climate change. We need to slow it down, stop it, and build resilience with our population. We seem to believe we can continue doing things the way we have always been, and it will be fine. I see that reflected in the rampant development in this area. I see it in the idea that one more road will solve our traffic issues, and we must think of new solutions. Down the road, it means:

- More public transport
- Avoiding developments in dangerous areas such as developing in coastal high-hazard areas.
- Avoiding adding more septic systems.

Unless we act to protect this area for future generations, we will not have a livable future here."

Bob Moore added, "if we don't make significant changes now, as others have said, there will be serious consequences. I want to underscore the urgency of this for us in this region. While at the regional and state levels, there is a conversation about adaptation; there is no conversation about changing the power source that drives our economy. When people say we cannot afford to address this issue relating to climate change, the view must be we cannot afford not to!"

John Cassani, Calusa Waterkeeper Emeritus, also agreed with the comments made by the other panel members but added that landscape changes and hydrology have been impacting the ecological cascade, which is disturbing. This situation is worrying because the hydrologic cycle is vital. After all, it is how water reaches plants, animals, and us! Besides providing people, animals, and plants with water, it also moves things like nutrients, pathogens, and sediment in and out of aquatic ecosystems.

The disruptions from developments that do not consider the impact of the change to this hydrologic cycle can inflict considerable damage on our local environment. While we need to accept expansion in our area, it must be balanced to account for this impact.





## Part Two: Green House Gases, Water Quality, and Monitoring

### The Concerns relating to Developments on East Corkscrew on the Water Supply and the Ecology

Many residents have expressed their concerns about the developments occurring on East Corkscrew. While many are not against developments per se, their concerns relate to the following:

- How will the water quality be affected?
- Will the aquifer level be affected?
- How will water runoff/flow be managed to avoid flooding?
- What can we do to speed up the road networks to enable those living along East Corkscrew to avoid major traffic hold-ups?
- How will the wildlife be affected, and how can they be protected?
- What supporting infrastructure (schools, healthcare services, banking, policing, major shopping malls, etc.) is planned for the area?

It is the case that LDOT is working hard to ensure the sheet flow happens across Corkscrew Rd. as the widening projects are constructed. There will be a wildlife crossing under Alico Road. The crossings will be dual bridges larger than that on Corkscrew Road, including a drainage channel in the middle with raised "shelves" on either side for the animals to traverse.



There are large box culverts within Wild Blue for animal crossing purposes too. Two additional box culvert-style wildlife crossings are planned for future phases of the Alico Connector to the north. You can find more details of the plans for East Corkscrew on the Engage Estero website

<https://esterotoday.com/east-corkscrew-construction-and-development-updates/>

It is also the case that the Lee County Commissioners and the developers are listening to the East Corkscrew Alliance and the citizens they represent. Several important recommendations will be addressed, which is a step in the right direction. But there is still concern expressed by John Cassani and others that the statewide legislation on growth management has "gone too far."



Although some individuals think that catastrophic hurricanes such as Ian are an act of nature, the panel members have explained, together with other scientists, that the development of super storms is fueled by climate change. But another factor has contributed to this phenomenon – over-development.

The idea that humans could control nature through brute force of engineering, wetland reclamation, and private property development has left people and property more vulnerable, with fewer natural buffers to help reduce storm impact. "Fill-and-build" development, if not carefully managed, can lead to significant flooding issues, as demonstrated in other parts of our state.

John Cassani believes there are measurable declines in our ecosystem and the water supply. With continued growth in the population of this area, the impact can only exacerbate the local environment, as commented on earlier. We must manage growth carefully.

While the current population along East Corkscrew in 2022 is almost 17,000, it seems likely that the total number of residents off East Corkscrew Rd will rise to 35,000 in the next ten years.

But, if the new planned development by Kingston and FFD is built to the maximum allowed, the estimated population will be over 57,000 in around 10 -15 years, almost double the current population within the Estero Village boundaries!

### CURRENT POPULATION STATISTICS ALONG EAST CORKSCREW

CY	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
<b>Estero</b>														
Wildcat Run	946	957	968	968	968	979	990	990	990	990	990			
Grandezaa	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152			
Rivercreek														
Preserve at Corkscrew		198	616	836	970	970	970	979	979	979	979			
Bella Terra	3080	4158	4178	4178	4178	4178	4178	4178	4178	4178	4178			
Stoneybrook	2462	2462	2462	2462	2462	2462	2462	2462	2462	2462	2462			
total	8640	9927	10376	10596	10730	10741	10752	10761	10761	10761	10761			
<b>Outside Estero</b>														
The Place							473	1049	1707	2519	2827			
Verdana										35	469			
Corkscrew Shores				332	664	933	1133	1223	1382	1423	1423			
WildBlue								51	539	1181	1470			
FFD (GL Homes)														
total	0	0	0	332	664	933	1606	2323	3628	5158	6189			
<b>Total</b>	<b>8640</b>	<b>9927</b>	<b>10376</b>	<b>10928</b>	<b>11394</b>	<b>11674</b>	<b>12358</b>	<b>13084</b>	<b>14389</b>	<b>15919</b>	<b>16950</b>			
<b>Annual Increase</b>		1287	449	552	466	280	684	726	1305	1530	1031			
Note: Numbers as of 12/31/22														

### The Importance of Reducing Greenhouse Gases

Transportation and the production of electrical energy are the main cause of greenhouse gas that leads to the higher temperatures the world and Florida has explicitly been experiencing. The panel emphasized the value of converting from gas-driven automobiles to EVs. Hertz is committed to having 50% of the rental fleet that are EVs. Installing solar panels also has a significant impact on carbon emissions.

The cost of solar panel installation is eligible for a 30% reduction in federal taxes. In addition, residents in Lee and Collier counties can learn more about further reducing the cost by joining a cooperative so that the group can secure a reduction in the installation cost.

Imagine walking into a solar company's office with 50 or 100 of your neighbors and saying, "We all want to get solar. What kind of deal can you give us?" That's a solar co-op! Examine the benefit by visiting [www.soarunitedneighbors.org/SWFL](http://www.soarunitedneighbors.org/SWFL).







The Florida Department of Transportation is investing in developing the EV infrastructure to help support the increasing conversion from gas-based vehicles to EVs. Other comments made to help reduce greenhouse gas were:

- Requesting metering laws to allow homeowners and businesses to receive credit for electricity provided to the grid.
- Install storage batteries in the home so that electricity produced from solar panels can be retained and used in times of need.
- Encourage state leaders to adopt renewable energy goals to become carbon neutral by 2050 or earlier.
- Supporting land conservation.
- Incentivizing farmers for the reduction of nutrients they use.
- Encouraging individuals to reduce their waste and increase their use of a plant-based diet.
- **Enforce** the constitutional amendments that would help reduce greenhouse gases
- Oppose further Florida fossil-fuel electricity plants.

### **Water Quality**

All the panel members were highly concerned about the water quality in our area. Matt DePaolis made the point that when the water is clean, there are significant benefits from being able to fish and enjoy our beaches. But we have been experiencing substantial increases in the incidence of red tide and blue-green algae blooms which have blighted peoples' enjoyment and harmed tourism – a key to Florida's economy.

New microalgae species are "eating" the sea grass, which is essential for small fish to flourish and support the local manatee population. Many will have heard that the latter has been significantly depleted over the last 18 months.

Most of our local water is impacted by the nitrogen and phosphate runoff from agricultural use and the over-fertilization of people's landscaping. In Estero and other parts of Lee County, older homes with septic systems that may be damaged can lead to bacterial contamination in our rivers.

Indeed, our own Estero River, monitored by FGCU's Water School in 2022 between April and October, reveals high concentrations of E. coli and other dangerous bacteria that flow into Estero Bay!

It was suggested that there need to be better management practices for farmers and further constitutional amendments to minimize algae blooms, but these also need to be enforced. Sadly, there are no requirements for those with septic systems to check them periodically to ensure they are in good working order and

are not leaking! The public must also be reminded to be more mindful of the dangers caused by over-fertilizing their yards.

### **Many Important Initiatives/Investigations are Underway**

The following items capture some of the critical initiatives already in operation.

- Greg Tolley mentioned the importance of rapid response grants, which allow students and other team members to collect various data to examine the impact on our coastal waterways, especially following hurricane Ian.
- Before and after photos are important, together with radar and laser measurements, to examine elevation levels.
- The Southwest Florida Resiliency Coalition comprises 12 municipalities and three counties and has been established to leverage and adapt to climate change.
- The establishment of a web-based model (The Adaptation of Coastal, Urban, and Ecosystems) to help predict and explain storm surges.
- Sampling of fish and wildlife changes to establish what may be causing the change and identify remedial actions.
- The examination of blue-green algae to determine how it can be reduced. To establish how toxins are transferred to humans and their health risks.



## Part Three: A Call to Action: What You Can Do to Help!

The panel members congratulated all those who attended the Public Forum on January 24. The commitment of those present and those listening to the meeting recording illustrates the concern of residents.

Nothing would happen unless action is taken, said the panelists. The panelists cited many specific issues that they would like residents to implement. A summary includes:

- **Carefully consider who you vote for.** Voting is critical in helping to make a difference.
  - Determine who is supportive of environmental and water quality issues
  - Talk/email legislatures
  - Encourage your neighbors to do the same
- **Join the Florida Right To Clean Water** and sign the petition:
  - <https://www.floridarighttocleanwater.org/>
- **Support the recommendation** of adding "clean water" to the Florida Constitution.
- **Reduce your waste** and recycle what you can
- Switch to a **plant-based diet** (even in part)
- **Drive an EV**, or switch to one when you change your vehicle
- Encourage your non-profit organizations, local council, and those with vehicle fleets to **switch to EVs.**
- Use **energy-saving appliances** and lightbulbs
- **Turn off unnecessary lights** when not in use
- **Reduce your use of fertilizers.**
- **Encourage farmers** to reduce their reliance on nitrogen and phosphate fertilizer.
- Support initiatives to **monitor and enforce** inspections of septic systems and other means of measuring water quality.
- Support steps to **utilize the wetlands** for the natural removal of nutrients in the water, and vote against any attempt to reduce our wetland areas.

The Engage Estero team again thanks Greg Tolley, John Cassani, Matt DePaolis, and Bob Moore for their insights and remarkable work in helping optimize our Environment and Water Quality. But they cannot make an impact on their own. We must all take ownership of the problem and act on their recommendations. Please do your part.





## Additional Information: Eco-Voice Digest News & Views February 26, 2023

Several article relating to the issues covered by the panel members were covered in the February 26<sup>th</sup> edition of Eco-Voice.

You might like to check out the following items

- Nitrate Watch
  - Take the Nitrate Watch Pledge <https://www.iwla.org/water/stream-monitoring/nitrate-watch>
  
- Red tide and dead sea life on SWF beaches
  - <https://myemail.constantcontact.com/Eco-Voice-Digest---News-and-views-related-to-the-south-Florida-environment-in-your-inbox-before-6-am.html?soid=1103447982581&aid=pvQY0LRq-s>
  - FGCU's Professor Barry Rosen, an algae scientist who leads the nation in identifying blooms and toxins, teaches and does research at the Water School in FGCU.
  
- The Toxic Puzzle: A short film that explains the medical concerns arising from blue-green algae
  - <https://www.toxicpuzzle.com/video>
  
- The Book: - Red Tide and Blue Green Algae on Florida's Coast by Nicholas G Penniman IV
  - The book is intended to inform and create a call to action by politicians and regulatory agencies before the problem overwhelms the economy of southwest Florida
  - The book is available from Amazon and Barnes and Noble for \$13.95  
<https://www.barnesandnoble.com/w/a-toxic-inconvenience-nicholas-g-penniman-iv/1136124734>

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*What We do, we do with purpose, passion, and pride in our community.*

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