BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: Application for certificate to provide wastewater service in Charlotte County, by Environmental Utilities, LLC
_____/

DOCKET NO. 20200226-WS

PALM ISLAND ESTATES ASSOCIATION, INC.'S RESPONSE TO ENVIRONMENTAL UTILITIES, LLC'S MOTION FOR PARTIAL SUMMARY FINAL ORDER

Party of Record, PALM ISLAND ESTATES ASSOCIATION, INC., requests denial of ENVIRONMENTAL UTILITIES, LLC's Motion for Partial Summary Final Order, and states as follows:

1. As a preliminary matter, ENVIRONMENTAL UTILITIES, LLC's ("EU") Motion for Partial Summary Final Order should be denied as there was no consultation with the undersigned prior to the filing of the motion. F.A.C. 28-106.204(3) states: "Motions, other than a motion to dismiss, shall include a statement that the movant has conferred with all other parties of record and shall state as to each party whether the party has any objection to the motion." As no such certification exists, the motion should be summarily denied.

2. As to the merits, § 120.57(1)(h), Fla. Stat., states: "Any party to a proceeding in which an administrative law judge has final order authority may move for a summary final order where there is no genuine issue as to any material fact. A summary final order shall be rendered if the administrative law judge determines from the pleadings, depositions, answers to interrogatories, and admissions on file, together with supporting and opposing affidavits, if any, that no genuine issue as to any material fact exists."

3. In terms of a standard for granting a dispositive motion, Respondent does not quarrel with EU's recitation of the extremely high threshold for EU to meet before summary relief can be awarded:

> Section 120.57(1)(h), F.S., requires that, in order to grant a motion for summary final order, it must be determined from the "pleadings, depositions, answers to interrogatories, and admissions on file, together with affidavits, if any, that no genuine issue as to any material fact exists and that the moving party is entitled as a matter of law to the entry of a final order." This commission has previously stated that "the standard for granting a summary final order is very high." (footnote omitted)
>
> In general, "a summary judgment should not be granted unless the facts are so crystalized that nothing remains but questions of law," and "must show conclusively the absence of any genuine issue of material fact and the court must draw every possible inference in favor of the party against whom a summary judgment is sought." *Moore v. Morris (Moore),* 475 So. 2d 666, 668 (Fla. 1985); see also *City of Clermont, Fla. v. Lake City Util. Servs., Inc.,* 760 So. 2d 1123, 1124 (Fla. 5th DCA 2000), and *Wills v. Sears, Roebuck & Co.,* 351 So. 2d 29 (Fla. 1977). If the record "raises even the slightest doubt" that an issue of material fact may exist, a summary final order is not appropriate. *Albelo v. S. Bell (Albelo),* 682 So. 2d 1126, 1129 (Fla. 4th DCA 1996). Even if the parties agree as to the facts, "the remedy of summary judgment is not available if different inferences can be reasonably drawn from the uncontroverted facts. *Albelo*, 682 So. 2d at 1129. We have previously found that "it is premature to decide whether a genuine issue of material fact exists when [a party] has not had the opportunity to complete discovery and file testimony." (footnote omitted). (at p. 4-5).

4. EU claims that its motion does not require the resolution of "fact" but only requests that the PSC will follow and accept Charlotte County's Sewer Master Plan ("SMP"). In other words, EU is banking on the PSC to determine that the SMP is gospel. EU, however, cites the proposition that, "We have previously found that "it is premature to decide whether a genuine issue of material fact exists when [a party] has not had the opportunity to complete discovery and file testimony." (footnote omitted). (at p. 4-5)." *EU motion at Paragraph 5.* Respondent agrees with

this position; there has not been enough time for Respondent to complete discovery and file testimony thereby rendering summary final disposition premature. Indeed, the Order Establishing Procedure was just issued on August 24, 2021—two days prior to service of this Response.

5. Separately, however, the SMP is a flawed document, making untrue assumptions, inappropriately designating the barrier islands within the Urban Service Area and making recommendations that are inconsistent with Charlotte County's Comprehensive Plan. *See affidavit of Ellen Hardgrove, attached hereto as Exhibit "A.*"

6. Per Ms. Hardgrove's affidavit, the Urban Service Area "is the geographical limits where public facilities and services, such as centralized sewage disposal systems, are provided." Ms. Hardgrove opines, "The area to be served by the proposed utility is **not** within the Urban Service Area" (emphasis added). *Affidavit of Ellen Hardgrove, Paragraph 11.*[1] She maintains that Future Land Use ("FLU") Policy 3.2.4 of Charlotte County's Comprehensive Plan "explicitly prohibits the provision of sewer infrastructure outside the Urban Service Area unless there is clear and convincing evidence that a health problem exists in a built but unserved area for which there is no other feasible solution." *Affidavit of Ellen Hardgrove, Paragraph 12.* The record is devoid of any clear and convincing evidence that a health problem exists in a built but unserved area.

7. According to Ms. Hardgrove, per FLU Policy 3.2.4, "the County will continue to primarily rely upon individual on-site septic systems as the method of wastewater disposal in areas outside the Urban Service Area." *Affidavit of Ellen Hardgrove, Paragraph 14.*

8. Without repeating all the opinions held by Ms. Hardgrove (as they are fully set forth in Exhibit "A"), it is important to note that WSW Policy 2.1.4 of the Comprehensive Plan

[1] This is critical because the SMP designates Palm Island as being *within* the Urban Services Area which is clearly contrary to the Comprehensive Plan and exposes the flaws in the SMP that the PSC is being asked to designate as "accurate."

establishes that Charlotte County "explicitly prohibits sewer extension into the Barrier Island Overlay District" ("BIOD"). The Policy says, "the County shall not expand the scope of potable water or sanitary sewer service to the bridgeless barrier islands." "The BIOD consists of Charlotte County's barrier islands including Manasota and Sandpiper Key and Gasparilla Island as well as the bridgeless barrier island chain which includes Don Pedro Island, Knight Island, Thornton Key, and Little Gasparilla Island." *Affidavit of Ellen Hardgrove, Paragraph 19.* Thus, the proposed utility service is within the BIOD. *Affidavit of Ellen Hardgrove, Paragraph 20.*

9. Ms. Hardgrove notes, "the [SMP's] five, ten and 15 year priorities did not include the conversation of the septic tanks on the barrier islands." *Affidavit of Ellen Hardgrove, Paragraph 24.*

10. Thus, based upon the affidavit of Ellen Hardgrove, there are genuine issues of material fact establishing flaws with the SMP itself, including the wrong designation of the bridgeless barrier islands as being within the Urban Service Area and not the Rural Service Area. Thus, accepting the SMP as definitive and dispositive would be to allow infrastructure in violation of the Charlotte County Comprehensive Plan. As a result, the SMP is not authoritative since its premise is flawed. For this reason, the motion should be denied.

11. Separately, Party of Record, PALM ISLAND ESTATES ASSOCIATION, INC., submits the affidavit of Robert H. Weisberg, Ph.D., Distinguished University Professor and Professor of Physical Oceanography in the College of Marine Science, University of South Florida, attached hereto as Exhibit "B."

12. Dr. Weisberg notes that there is no evidence in the SMP that septic tanks contribute to the degradation of water quality, exacerbating red tide and algae outbreaks that are "well documented."

13. Dr. Weisberg has published on the topic of "red tide" and opines that "red tide originates at mid-shelf under oligotrophic conditions and manifests as a nuisance bloom once transmitted to the near shore. The *ocean circulation* is what generally determines the water conditions at mid shelf; hence whether or those these are conducive to a [red tide] bloom, and the circulation also determines the [red tide] transport to the shoreline" (emphasis added). Thus, he opines, physical oceanography is important to the red tide ecology. *Dr. Weisberg affidavit at Paragraph 6.*

14. According to Dr. Weisberg, the EU contention that "the exacerbation of red tides and algae outbreaks are well documented" is "unsubstantiated conjecture, and not based on scientific evidence" (emphasis added). He continues by saying that "there is no evidence that human-induced pollution is affecting the areas at issue." *Dr. Weisberg affidavit at Paragraph 8.*

15. In fact, Dr. Weisberg correlates the 2016 red tide to a major sewage spill about two weeks after same occurred "that was attributed to very heavy rainfall causing an exceedance in municipal sewage capacity at several locations." *Dr. Weisberg affidavit at Paragraph 9.*

16. When compared to low density septic systems such as in the subject barrier islands, he is more "concerned regarding a sewer system failure than leakage from a very limited number of well-designed and up-to-code septic systems, especially given that such failures of public sewer systems are known to occur." *Dr. Weisberg affidavit at Paragraph 11.*

17. Dr. Weisberg, based upon the foregoing and the remainder of the contents of his affidavit, concludes that "EU's application cites no scientific or other data which would amount to a 'Need for Service' on any environmental basis." *Dr. Weisberg affidavit at Paragraph 15.*

18. The affidavits of Ellen Hardgrove and Dr. Weisberg stand for the proposition that there is no "need for service" that would compel the issuance of a certificate to EU. Given the

high threshold for summary relief – as conceded by EU—there are clearly genuine issues of material fact on the very topic of "need." EU has not demonstrated an absence of any genuine issue of material fact; to the contrary, the evidence is overwhelming per the attached affidavits that there is, in fact, no need for sewer service. Given the diametrically opposed positions of EU and PALM ISLAND ESTATES ASSOCIATION, INC., the partial summary final relief claimed by EU must be rejected as consideration of EU's motion would require an impermissible weighing of the evidence.

19. Finally, it is premature to grant summary final relief as discovery has not sufficiently been developed for a determination to be made that no genuine issue of material fact exists. "As a general rule, 'a court should not enter summary judgment when the opposing party has not completed discovery.'" *Anson Street, LLC v. Rosado*, 100 So. 3d 1270, 1271 (Fla. 4th DCA 2012). EU has conceded this point in its motion (Paragraph 5, page 2-3 of the motion). Here, the record has not been developed enough for there to be a ruling that no genuine issue of material fact exists. Even so, the affidavits of Ellen Hardgrove and Dr. Weisberg establish fact issues on EU's contention of need based upon the SMP. Party of Record, PALM ISLAND ESTATES ASSOCIATION, INC., merely notes that no meaningful discovery has been established, and no testimony filed, such that EU's motion is premature at this time.

20. For the foregoing reasons, EU's motion should be denied.

WHEREFORE, Party of Record, PALM ISLAND ESTATES ASSOCIATION, INC., respectfully requests denial of EU's Motion for Partial Summary Final Order and requests any other relief that is just, equitable and proper.

Dated this 26th day of August 2021.

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was emailed this 26th day of August 2021 to:

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IN THE PUBLIC SERVICE COMMISSION
STATE OF FLORIDA
DOCKET NUMBER 20200226

AFFIDAVIT OF ELLEN S. HARDGROVE

STATE OF FLORIDA

COUNTY OF ORANGE

BEFORE ME, the undersigned authority, personally appeared Ellen S. Hardgrove, who is personally known to me and who, after first being duly sworn, deposes and states as follows:

1. I am over 18 years of age and am competent to testify and have personal knowledge as to the matters attested here.

2. I am a certified planner, with a Master's degree in Urban and Regional Planning and 39 years of land planning experience, the last 26 years as a consultant specializing in areas of land use/development potential analysis, local government planning, and eminent domain issues, which has resulted in my extensive knowledge and understanding of comprehensive planning and land development regulations.

3. On October 13, 2020, Environmental Utilities, LLC. (EU or Utility) filed its application for an original wastewater certificate in Charlotte County, known as 20200226-SU (Application for certificate to provide wastewater service in Charlotte County, by Environmental Utilities, LLC).

4. An amendment was filed March 8, 2021 adjusting the boundaries of the proposed wastewater service.

5. If approved, the Certificate will authorize Environmental Utilities, LLC. to provide wastewater service to an area, as amended, in Sections 28, 29, 32 and 33, Township 41 South, Range 20 East, in Sections 3, 4, 10, 15, 16, 21, 22 and 27 in Township 42 South, Range

20 East, which consists of the barrier islands of portions of Knight Island, Don Pedro Island, and Little Gasparilla Island. The area is depicted in Exhibit 1 of this affidavit.

6. Provision of central sewer service as proposed by EU is inconsistent with the Charlotte County's comprehensive plan.

7. The comprehensive plan proffers the County's growth management goals and implementation strategies, through policies, so that public development decisions can be "predictable, fair and cost effective," as stated in Future Land Use Element Policy (FLU) 1.1.1.

8. FLU Policy 1.2.3 establishes the County's primary growth management tool: the Urban Service Area, which is depicted on Future Land Use Map (FLUM) Series Map #3 and copied to Exhibits 2A & B of this affidavit.

9. The Urban Service Area, as defined in Future Land Use Element Appendix III, is the geographical limits where public facilities and services, such as a centralized sewage disposal system, are provided.

10. Per FLU Policy 1.2.4, the use of the Urban Service Area, among other benefits, establishes the priority locations for extension of the public facilities and services.

11. The area to be served by the proposed utility is not within the Urban Service Area.

12. FLU Policy 3.2.4 explicitly prohibits the provision of sewer infrastructure outside the Urban Service Area. The exception to this is when there is clear and convincing evidence that a health problem exists in a built but unserved area for which there is no other feasible solution.

13. Such clear and convincing evidence has not been discovered related to the proposed service area to override the comprehensive plan policy of prohibiting extension of sewer infrastructure outside the Urban Service Area.

14. As stated in FLU Policy 3.2.4, the County will continue to primarily rely upon individual on-site septic systems as the method of wastewater disposal in areas outside the Urban Service Area.

15. The County has adopted policies to ensure continued effective functioning of on-site sewage disposal systems. For example, Infrastructure Element Potable Water and Sanitary Sewer (WSW) Policies 5.1.1 and 5.1.2 direct the County to assist the Charlotte County Health Department (CCHD) Environmental Health Unit (EHU) in developing a schedule of septic system inspection and maintenance in order to safeguard the public health, safety, and welfare. WSW Policy 5.1.3 requires that all on-site septic systems, whether new or replacement, meet or exceed the treatment standard for onsite disposal systems within Chapter 64E-6, Florida Administrative Code, or local ordinance, whichever standard is higher. WSW Policy 5.2.1 provides for County assistance to the CCHD in collecting water and soil samples from various locations within the County to be analyzed for pollutant loadings, and WSW Policy 5.2.3 requires septic tanks to be repaired or replaced when analysis indicates the system is adversely impacting the environment according to State water quality standards (Chapter 62-302, F.A.C., for surface water, Chapter 62-520, F.A.C., for ground water, and Chapter 64E-9, F.A.C., for bathing places) or when public health is endangered.

16. In addition to County policies, strict regulations for septic tank use were established by the State's Water Quality Assurance Act of 1983. As stated in the Data and Analysis support of the Comprehensive Plan's Infrastructure Element, the Department of Health's programs have improved the functionality of septic systems by requiring larger areas for installation, maintaining strict separation between drainfields and seasonal high water tables, and requiring inspections on alternative aerobic systems required on projects with more intensive wastewater handling needs.

17. The existing septic tanks on the barrier islands would be expected to meet these strict regulations given that the typical design life of an on-site sewage disposal system has been estimated at 15 to 20 years (Proposed Surface and Groundwater Quality Monitoring Program for Charlotte County, Florida, Mote Marine Laboratory, Technical Report #433, July 28, 1995) with some studies indicating the maximum life of a septic tank is 40 years (NewTechBio 2012; InspectApedia.com, 2017a; InspectApedia.com, 2017b). It has been 38 years since the strict regulations were established.

18. Furthermore, Charlotte County Code of Ordinances Section 3-8-256 requires all non-Aerobic Treatment Unit (ATU) on-site sewage systems located within three hundred (300) feet, as measured from the closest point of the drainfield to a canal or other surface waters to be inspected by a representative of the Charlotte County Health Department at least once every five (5) years, and all non-ATU on-site sewage systems located within three hundred (300) feet, as measured from the closest point of the drainfield to a canal or other surface waters to be pumped empty at least once every five (5) years by a licensed septic tank contractor or plumber equipped and certified to pump on-site sewage systems. ATUs must be inspected by an approved maintenance entity at least every six (6) months.

19. Whereas (WSW) Policy 2.1.4 appears to provide an exception to expansion outside the Urban Service Area for utilities that are regulated by the Florida Public Service Commission, the County explicitly prohibits sewer extension into the Barrier Island Overlay District (BIOD) as stated in Future Land Use Element Appendix I: "The County shall not expand the scope of potable water or sanitary sewer service to the bridgeless barrier islands."

20. Coastal Policy 3.2.7 makes the prohibition of expanding the scope of sanitary sewer service an adopted policy: "Infrastructure and services to the Bridgeless Barrier Islands,

depicted in FLUM Series Map #9, are addressed in the Barrier Island Overlay in the FLU Appendix I."

21. FLUM Series Map #9, as copied to Exhibit 3 of this affidavit, shows the BIOD consists of Charlotte County's barrier islands including Manasota and Sandpiper Key and Gasparilla Island as well as the bridgeless barrier island chain. The bridgeless island chain includes Palm Island, Knight Island, Don Pedro Island, Thornton Key, and Little Gasparilla Island. The proposed utility service area is within the BIOD and thus, inconsistent with the adopted policy.

22. In addition to the above inconsistencies with the comprehensive plan, the proposed utility does not align with the County's expenditure priorities for urban service provision as stated in FLU policies 4.1.8 and 5.1.1. None of these priorities are applicable to the proposed service area.

> **FLU Policy 4.1.8:** Priority for the Provision of Urban Services
>
> The County shall establish the priority for the extension of urban services and facilities including, but not limited to, potable water and sanitary sewer services in residential areas as follows:
>
> 1. First priority: Revitalizing Neighborhoods.
> 2. Second priority: Maturing Neighborhoods.
> 3. Third priority: Emerging Neighborhoods with completed Emerging Area Plans.
> 4. Fourth priority: Emerging Neighborhoods without completed Emerging Area Plans.
>
> **FLU Policy 5.1.1:** Priority for the Provision of Urban Services
>
> The County shall establish the priority for the extension of urban services and facilities in Economic areas as follows:
>
> 1. First priority: Economic Districts.

2. Second priority: Economic Centers with completed Special Area Plans, Community Redevelopment Areas (CRAs) and Economic Corridors.
3. Third priority: Economic Centers and Corridors supporting Emerging Neighborhoods with completed Special Area Plans.
4. Fourth priority: Economic Centers and Corridors supporting Emerging Neighborhoods without completed Special Area Plans.

23. County infrastructure expenditure priorities are within the Urban Service Area. As stated in the data and analysis supporting the comprehensive plan, there are many areas within the Urban Service Area that do not have access to sewer.

24. The Charlotte County Sewer Master Plan includes five, ten, and 15 year priorities for the County's limited financial resources. The only listed priorities related to the bridgeless barrier islands were the conversion of existing private wastewater treatment plants on Knight and Little Gasparilla Islands to pump stations and conveyance to an existing system.

25. The selected priorities for conversion of septic tanks to central sewer stated in the Master Plan were in the Urban Service Area. The priority was to reduced nitrogen loading in Charlotte Harbor, Peace River and Myakka River. The Master Plan's five, ten, and 15 year priorities did not include the conversion of the septic tanks on the bridgeless barrier islands.

26. With the approval of the EU proposal, public monies will be redirected from the stated priorities. Whereas the subject expansion is a private entity, it is likely that the County will still incur costs associated with the proposal. This would include, but is not necessarily limited to, the ongoing operation and maintenance costs of the transmission line from the connection point to the County's water reclamation facility, maintenance of the flow meter at the connection point to the EU collection system, and funding capital improvements required to address new regulations.

27. In addition to the above listed inconsistencies, there has been insufficient information submitted to determine consistency with other policies of the comprehensive plan, including a plan for archeological resources preservation; such preservation is required by FLU Policy 6.2.12. As shown in Exhibits 4A and B, significant historic resources have been identified on the barrier bridgeless islands, and Exhibits 5A and B show a high propensity for archaeological resources within the proposed service area. FLU Policy 1.3.2 also calls for protection of Historical and Archaeological Resources. Construction of the proposed sewer system has the potential to destroy these resources; the potential impacts should be analyzed prior to approval.

28. Similarly, the bridgeless barrier islands are home to rare and imperiled communities as identified on Supporting Policy and Analysis Map Series Map #50, as copied to Exhibits 6A and B of this affidavit. Natural Resource Element (ENV) Policy 2.3.3 requires avoidance, minimization and proper mitigation of the effects of development on rare and imperiled natural communities, with one method of implementing this policy being the set- aside of land required by the Open Space/Habitat Reservation Land Development Regulation for preservation. Insufficient information has been submitted to analyze the impact of the proposed sewer system construction on these communities and necessary mitigation techniques for any impact that may be identified.

29. The financial capability of the private utility to meet the adopted level of service also has not been documented, which is required per WSW Policy 1.1.3: "The County shall require all sanitary sewer utilities to provide for the collection and treatment of 190 gallons of sanitary sewage per day per ERC." Per WSW Policy 1.1.1, this level of service applies to all utilities serving the unincorporated areas of Charlotte County, public or private.

30. Any financial capability documentation needs to take into account the County policy that does not require connection of existing developed properties to the system. Whereas County Code Section 3-8-41 states all developed property must connect the plumbing system for any structure on the property to an available public or private sewer system within three hundred sixty-five (365) days after written notification by the public or private sewer system that the system is available for connection, such mandatory connection is only required for properties within the Urban Service Area or for new development per WSW Policies 3.1.2 and 3.1.3.

> "**WSW Policy 3.1.2: Connection of Developed Property** In the Urban Service Area, whenever centralized potable water or sanitary sewer service is made available to any developed property, the constructing utility shall require the landowner to connect to the utility upon written notification by the utility provider that service is available for the property. "Available" means that the utility has adequate permitted capacity to serve the development and that a utility line is within the distance from the property as specified by County ordinance or State Statute."
>
> **WSW Policy 3.1.3: Connection of Property under Development** The County shall require that whenever central potable water or sanitary sewer service is made available, as established in WSW Policy 3.1.2, to any property with a new structure under construction, the landowner shall connect the structure to the utility system prior to receiving a certificate of occupancy or its functional equivalent.

Per FLU Policy 1.1.6, which states "all County regulations are subordinate to the Plan…," the above policies would take precedence over the regulation.

31. Forcing the connection appears to violate private property owner rights which are protected by FLU Objective 1.4. The significance of private property owner rights has been re-emphasized by the State's recent legislation. With the 2021 legislative session, the State has proclaimed that a property owner has the right to physically possess and control his or her interests in the property, including easements, leases, or mineral rights, has the right to use, maintain his or her property for personal use, and to exclude others from the property to protect the owner's possessions and property.

32. Given all residential structures are not required to be connected, the adopted level of service may not be able to be maintained, as is the case in two sanitary sewer utilities in Charlotte County: Burnt Store and Mid-County service areas according to the Infrastructure – Data and Analysis – Potable Water and Sanitary Sewer of the comprehensive plan.

33. New development connections should not be relied upon for level of service compliance or financial forecasting given the County's policy to limit density on the bridgeless barrier islands to one dwelling unit per gross acre (Coastal Policy 3.2.3) as well as incentivizing transfer of development rights out of Coastal High Hazard Areas (FLU Policy 1.2.7). The proposed service area is within a Coastal High Hazard Area.

34. Another inconsistency with the comprehensive plan is the missing line items in the Capital Improvements Element/Plan (CIE/CIP) related to the capital expenditures for this project. As explained in the Data and Analysis support for the Infrastructure Element, due to requirements for concurrency, all sewer system projects are to be included in the CIE/CIP, regardless of whether the County will complete them or whether the utility completing the project is publicly or privately owned. Since CIE Policy 1.1.8 requires the five year CIP to be financially feasible, documentation as to the financial feasibility of EU's, as well as the County's, financial commitments should be submitted prior to approval.

35. It should be noted that it is the County's policy (CIE Policy 1.5.1) to deny the use of public funding for capital improvements in CHHA, unless such expenditures replace deficient or worn-out facilities; provide open space or recreational facilities; address a public health, safety, or welfare issue; or the project can only be located in such area due to its intrinsic nature. None of these reasons has been documented.

36. Finally, this proposal's foundation; i.e., the approval of Bulk Sewer Treatment Agreement on July 14, 2020, appears to not have considered the County's comprehensive plan, which is required per WSW Policy 3.2.1. This policy requires the County is to review all proposed new certificated utility areas to ensure that any such new certificated area is consistent with and advances the comprehensive plan's goals, objectives, and policies. Analysis and a finding of comprehensive plan consistency for this action were not found. With this affidavit's demonstration that the proposal is inconsistent with the comprehensive plan, it is evident that the Board of County Commissioners' action granting a Bulk Sewer Treatment Agreement for EU was contrary to the comprehensive plan.

FURTHER AFFIANT SAYETH NAUGHT.

Ellen Hardgrove
ELLEN S. HARDGROVE

STATE OF FLORIDA

COUNTY OF ORANGE

Sworn to and subscribed before me this 23rd day of August 2021, by Ellen S Hardgrove, who, is personally known to me/ provided FLDL

Signature of Notary Public

[Notary Seal]

KAMEEL LETTSOME
Notary Public - State of Florida
Commission # GG 192579
My Comm. Expires Mar 5, 2022
Bonded through National Notary Assn.

Kameel Lettsome
Print name of Notary Public

My commission expires: March 5th 2022

Exhibit 1

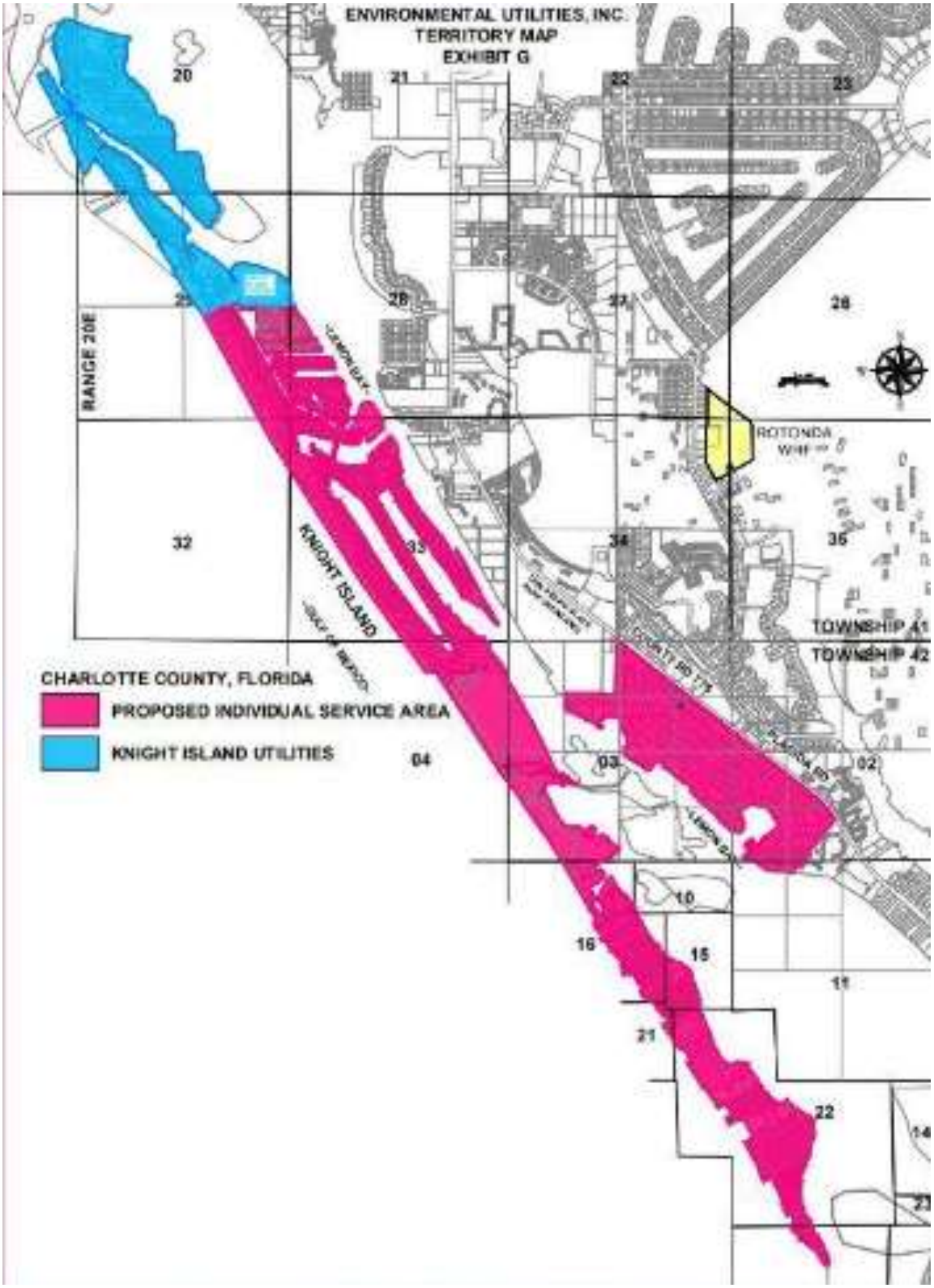
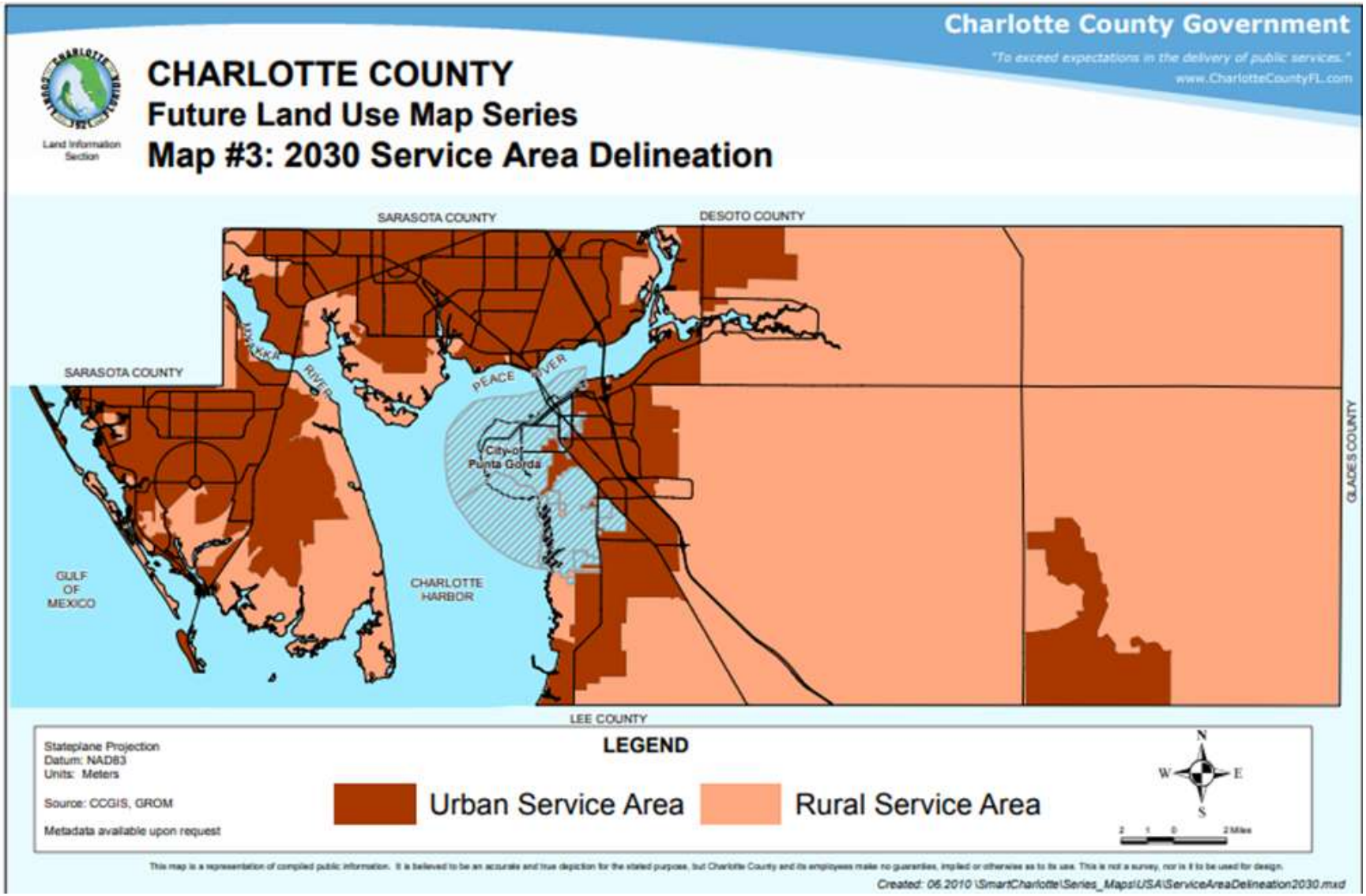

ENVIRONMENTAL UTILITIES, INC.
TERRITORY MAP
EXHIBIT G
RANGE 20E
KNIGHT ISLAND
ROTONDA
TOWNSHIP 41
TOWNSHIP 42
CHARLOTTE COUNTY, FLORIDA
PROPOSED INDIVIDUAL SERVICE AREA
KNIGHT ISLAND UTILITIES

Exhibit 2A


Charlotte County Government
"To exceed expectations in the delivery of public services."
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Land Information Section
CHARLOTTE COUNTY
Future Land Use Map Series
Map #3: 2030 Service Area Delineation
SARASOTA COUNTY
DESOTO COUNTY
SARASOTA COUNTY
PEACE RIVER
City of Punta Gorda
GULF OF MEXICO
CHARLOTTE HARBOR
GLADES COUNTY
LEE COUNTY
LEGEND
Urban Service Area
Rural Service Area
Stateplane Projection
Datum: NAD83
Units: Meters
Source: CCGIS, GROM
Metadata available upon request
N
W
E
S
2 Miles
This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guarantees, implied or otherwise as to its use. This is not a survey, nor is it to be used for design.
Created: 06.2010 \SmartCharlotte\Series_Maps\USA\ServiceAreaDelineation2030.mxd

Exhibit 2B– Exhibit 2A Enlarged

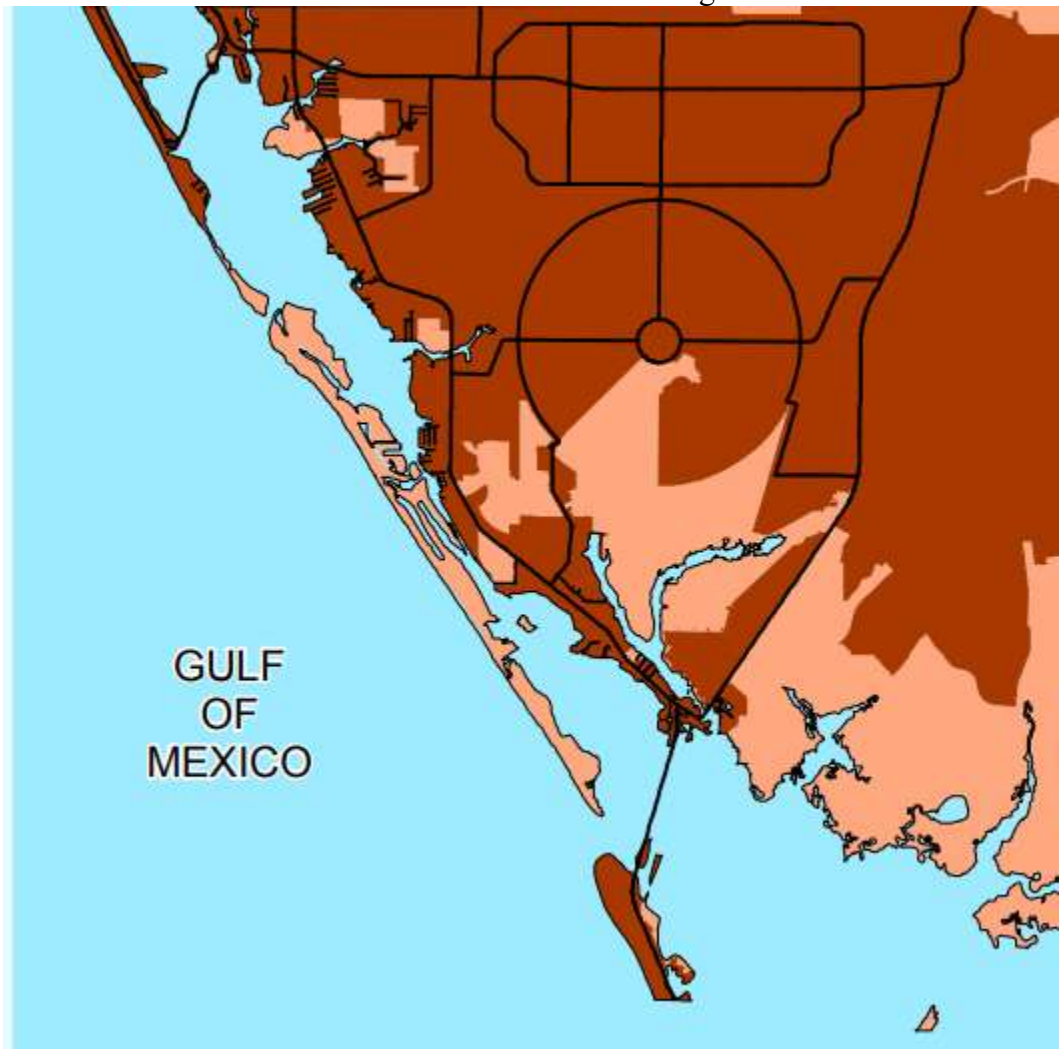


Exhibit 3


Charlotte County Government
CHARLOTTE COUNTY
Future Land Use Map Series
Map #9: Barrier Island Overlay District
Land Information Section
SARASOTA COUNTY
776
776
775
GULF OF MEXICO
Stateplane Projection
Datum: NAD83
Units: Meters
Source: GROM, CCGIS
Metadata available upon request
LEGEND
Manasota and Sandpiper Key
Palm Island
Knight Island/Thornton Key
Don Pedro Island
Little Gasparilla Island
Boca Grande

Exhibit 4A

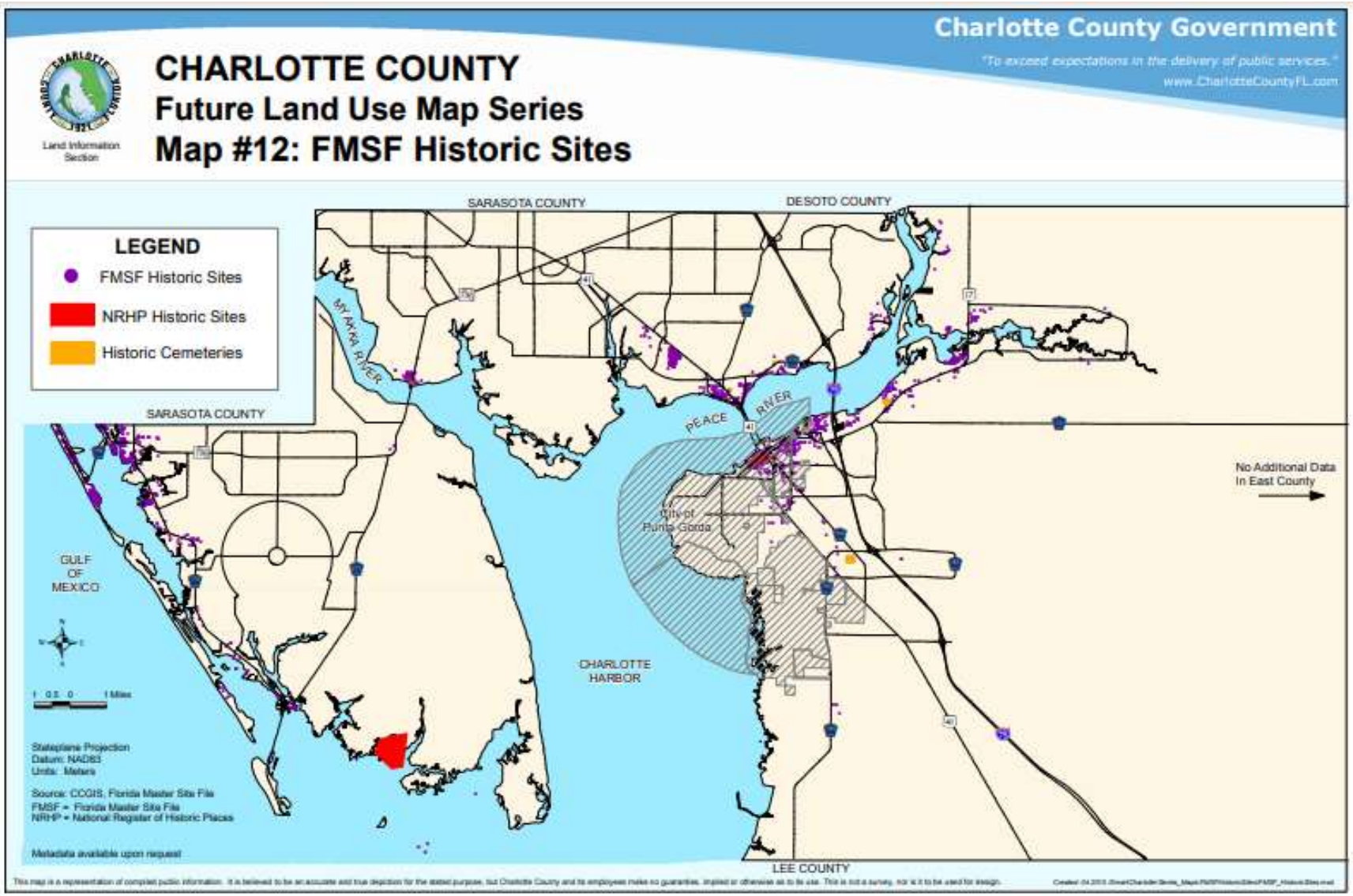

Charlotte County Government
"To exceed expectations in the delivery of public services."
www.CharlotteCountyFL.com
CHARLOTTE COUNTY
Future Land Use Map Series
Map #12: FMSF Historic Sites
Land Information Section
LEGEND
FMSF Historic Sites
NRHP Historic Sites
Historic Cemeteries
SARASOTA COUNTY
DESOTO COUNTY
SARASOTA COUNTY
MYAKKA RIVER
PEACE RIVER
No Additional Data In East County
City of Punta Gorda
GULF OF MEXICO
CHARLOTTE HARBOR
LEE COUNTY
Stateplane Projection
Datum: NAD83
Units: Meters
Source: CCGIS, Florida Master Site File
FMSF = Florida Master Site File
NRHP = National Register of Historic Places
Metadata available upon request

Exhibit 4B – Exhibit 4A Enlarged

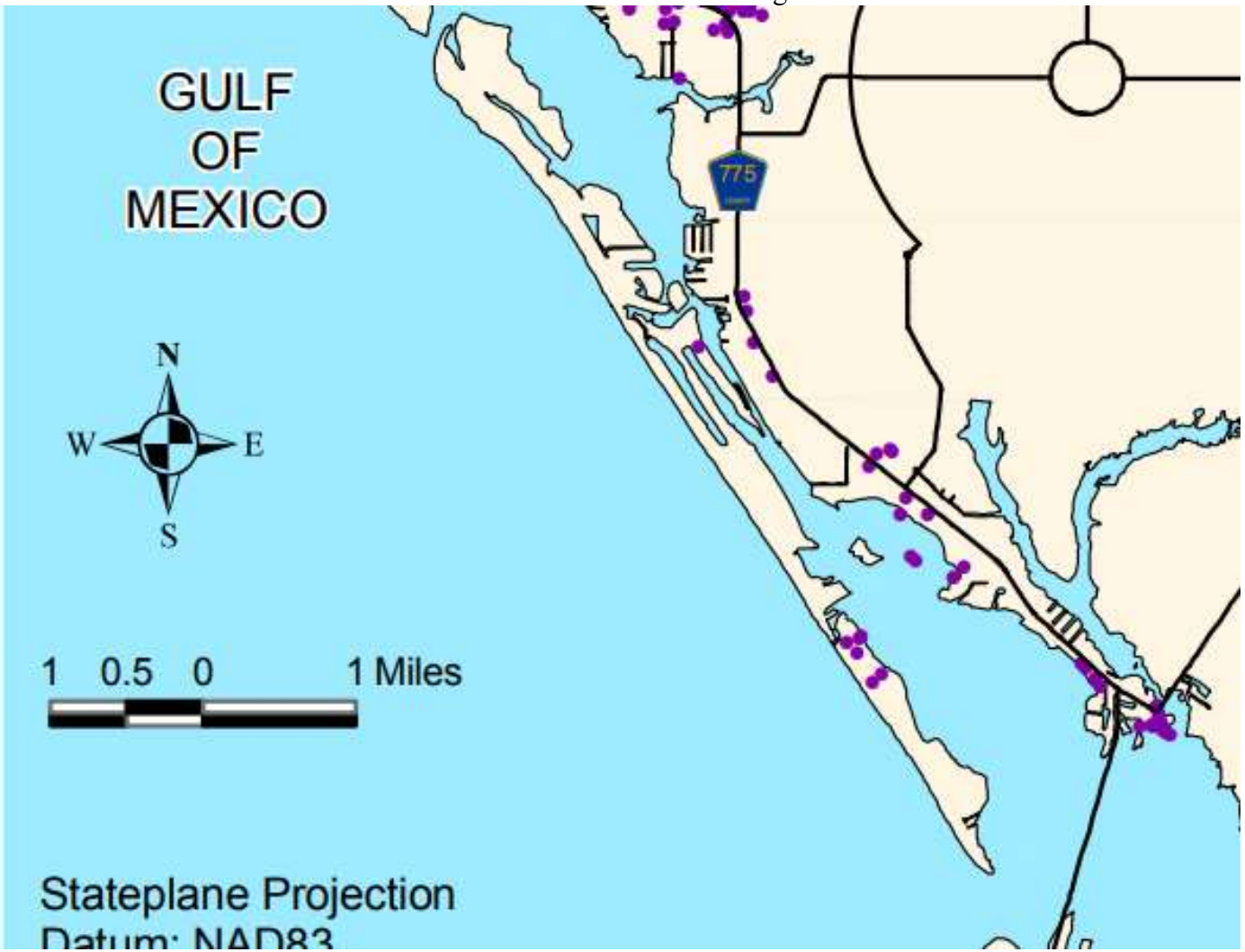
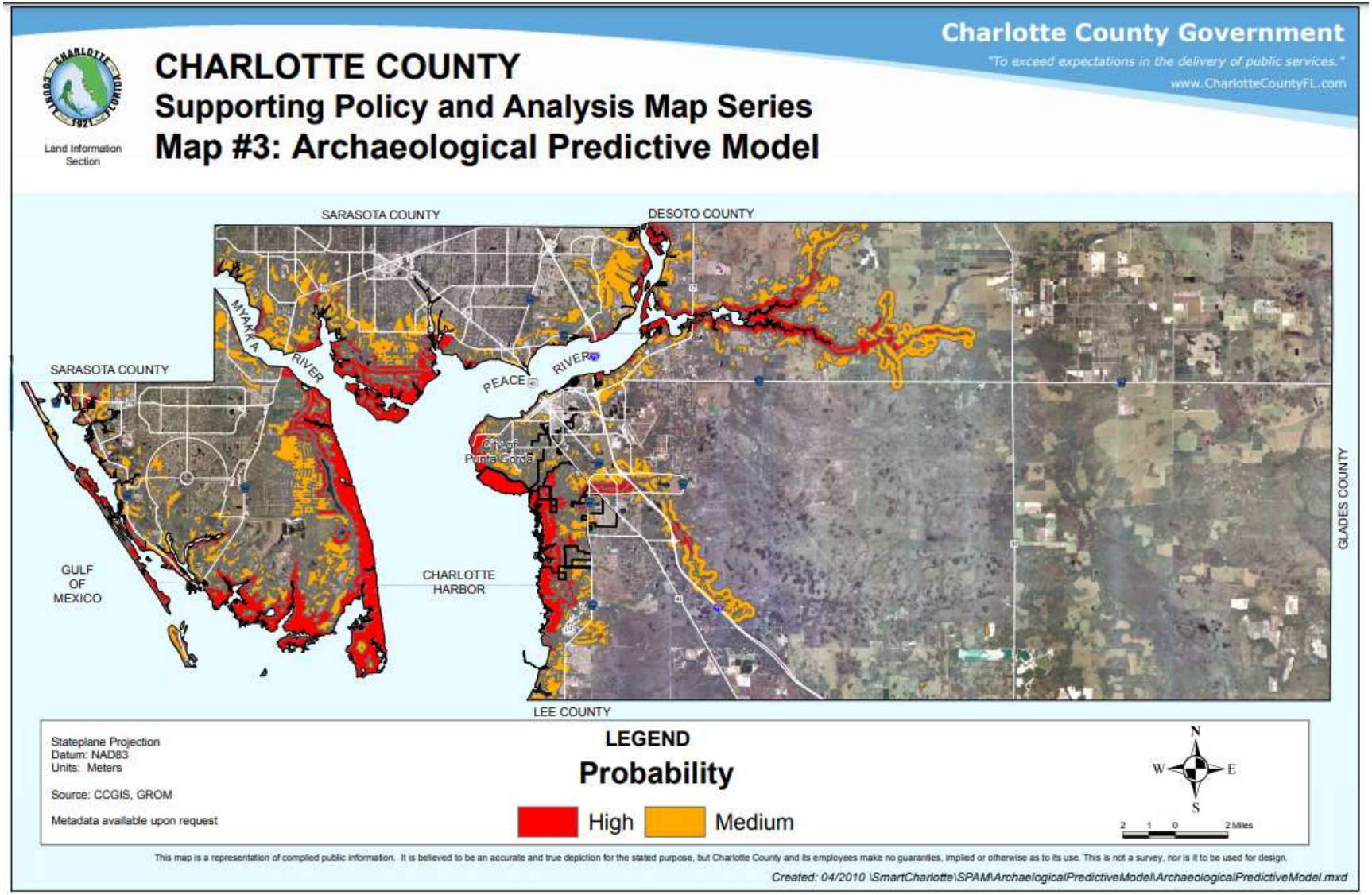


Exhibit 5A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CHARLOTTE COUNTY
Supporting Policy and Analysis Map Series
Map #3: Archaeological Predictive Model
Land Information Section
SARASOTA COUNTY
DESOTO COUNTY
SARASOTA COUNTY
MYAKKA RIVER
PEACE RIVER
City of Punta Gorda
GULF OF MEXICO
CHARLOTTE HARBOR
GLADES COUNTY
LEE COUNTY
Stateplane Projection
Datum: NAD83
Units: Meters
Source: CCGIS, GROM
Metadata available upon request
LEGEND
Probability
High
Medium
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This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guaranties, implied or otherwise as to its use. This is not a survey, nor is it to be used for design.
Created: 04/2010 \SmartCharlotte\SPAM\ArchaeologicalPredictiveModel\ArchaeologicalPredictiveModel.mxd

Exhibit 5B– Exhibit 5A Enlarged

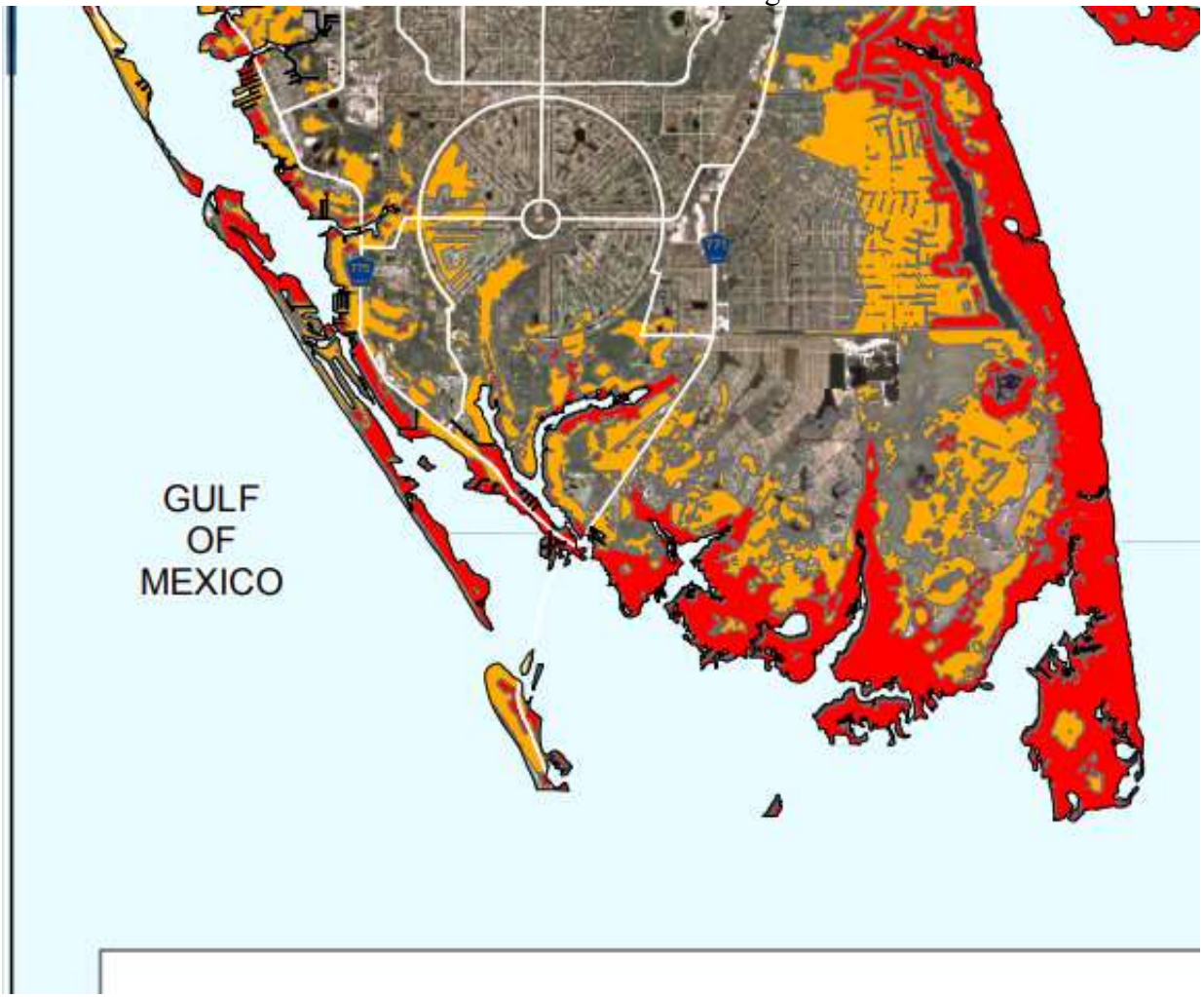
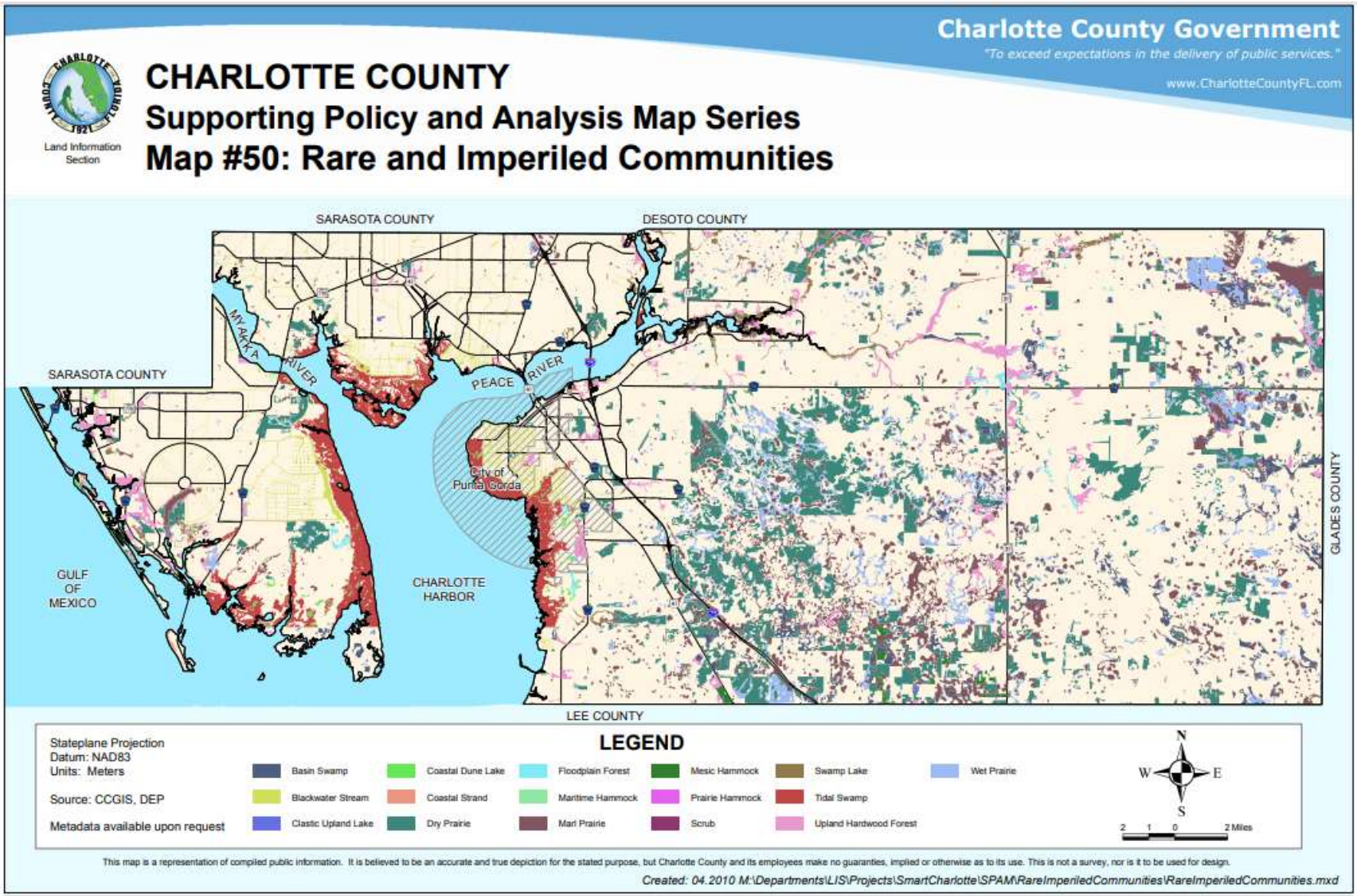


Exhibit 6A


Charlotte County Government
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CHARLOTTE COUNTY
Supporting Policy and Analysis Map Series
Map #50: Rare and Imperiled Communities
Land Information Section
SARASOTA COUNTY
DESOTO COUNTY
SARASOTA COUNTY
MYAKKA RIVER
PEACE RIVER
City of Punta Gorda
GULF OF MEXICO
CHARLOTTE HARBOR
GLADES COUNTY
LEE COUNTY
LEGEND
Stateplane Projection
Datum: NAD83
Units: Meters
Source: CCGIS, DEP
Metadata available upon request
Basin Swamp
Blackwater Stream
Clastic Upland Lake
Coastal Dune Lake
Coastal Strand
Dry Prairie
Floodplain Forest
Maritime Hammock
Marl Prairie
Mesic Hammock
Prairie Hammock
Scrub
Swamp Lake
Tidal Swamp
Upland Hardwood Forest
Wet Prairie
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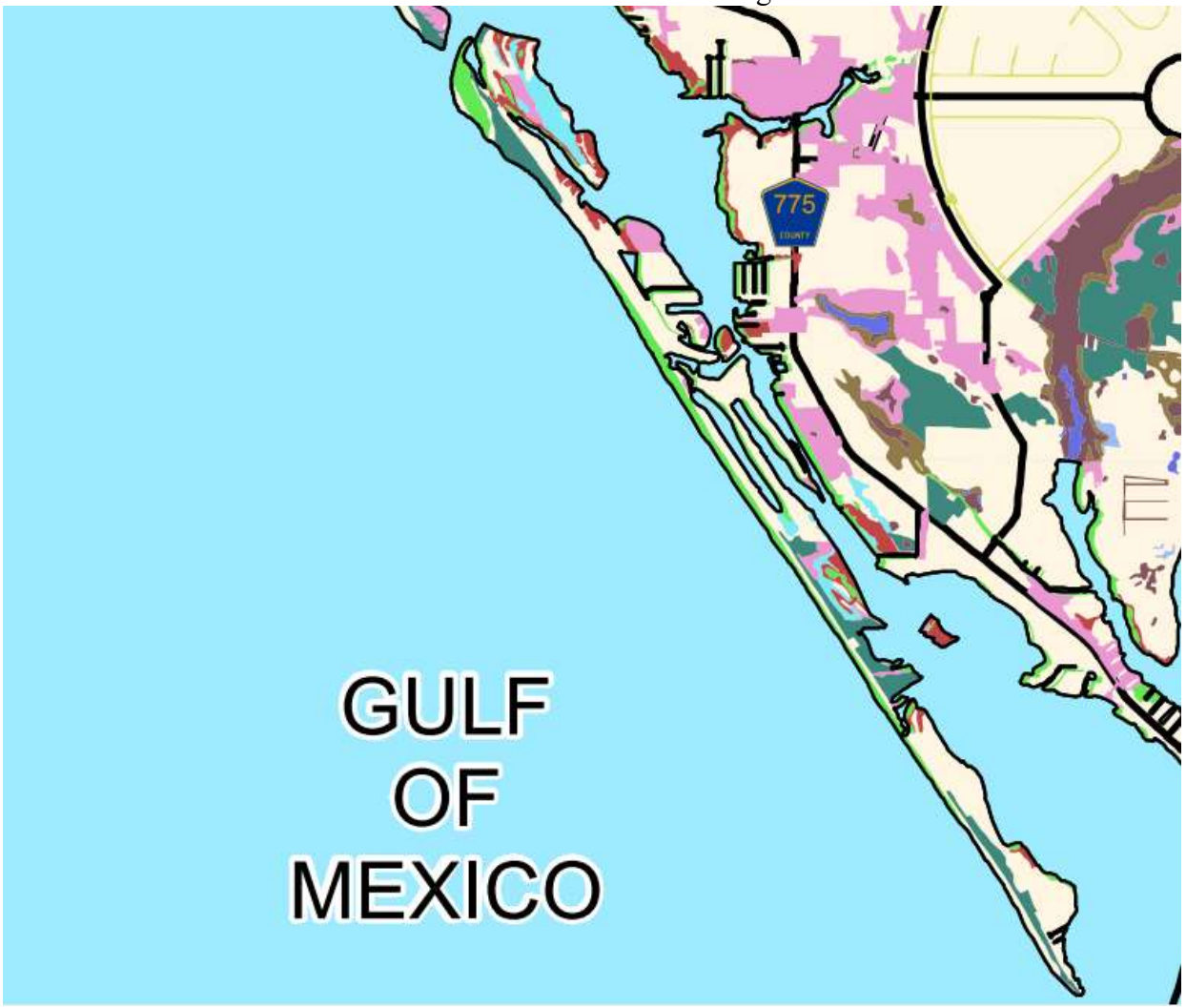
This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guaranties, implied or otherwise as to its use. This is not a survey, nor is it to be used for design.
Created: 04.2010 M:\Departments\LIS\Projects\SmartCharlotte\SPAM\RareImperiledCommunities\RareImperiledCommunities.mxd

Exhibit 6B – Exhibit 6A Enlarged



IN THE PUBLIC SERVICE COMMISSION

STATE OF FLORIDA

DOCKET NUMBER 20200226

AFFIDAVIT OF ROBERT H. WEISBERG

STATE OF FLORIDA

COUNTY OF PINELLAS

BEFORE ME, the undersigned authority, personally appeared Robert H. Weisberg, who is personally known to me and who, after first being duly sworn, deposes and states as follows:

1. I am over 18 years of age and am competent to testify and have personal knowledge as to the matters attested here.

2. My professional title is Distinguished University Professor, and I am a Professor of Physical Oceanography in the College of Marine Science, University of South Florida, St. Petersburg FL, 33701. My academic credentials include a PhD in Physical Oceanography and 46 years of experience in ocean circulation, ocean-atmosphere interaction and how the circulation impacts various aspects of ocean ecology such as red tide and other matters of societal concern [my CVs is provided as Exhibits 1 (short version) and 4 (full version)].

3. The application by Environmental Utilities, LLC. (EU or Utility), filed on October 13, to provide wastewater services to the areas of Cape Haze, Little Gasparilla Island, Don Pedro Island, and Knight Island bases its Need for Service on two factors, 3a and 3b as follows. 3a. "These properties are all being served by septic tanks which contributes to the degradation of water quality of Lemon Bay and the Gulf of Mexico, exacerbating red tide and algae outbreaks that are well documented." 3b. "…….. the areas of Cape Haze, Little Gasparilla Island, Don Pedro Island, and Knight Island scored the highest impact level of 4.0 to 5.0. ……. Thus the environmental benefits of the Utility providing central wastewater service to eliminate septic tanks and the need for wastewater service should be unquestioned."

4. As regards 3a, no evidence is provided in support of the statement that septic tanks, as located within the referenced areas, adversely affects Lemon Bay and Gulf of Mexico water quality. Additionally, there is no reasonable scientific support, nor am I aware of evidence presented by Charlotte County, which would support the need to convert on-site septic tanks to public sewer in these areas. Thus, the exacerbation of red tides and algae outbreaks, as claimed in the EU application, is undocumented.

5. Red tides, or more specifically, harmful algae blooms of the toxic dinoflagellate, *Karenia brevis* have a lengthy historical basis that precedes any modern development along the Gulf of Mexico shoreline. Earliest written indications of red tide date back to chronicles from DeSoto's 16th century Gulf of Mexico exploration (e.g., Walsh et al., 2006). The modern record

for Florida, which (including anecdotal information) spans 1878 through the present time, is available from the Florida Wildlife Commission (a synopsis of which is provided as Exhibit 2). Whereas agriculture, mining and population growth has steadily increased, there has not been a related increase in *K. brevis* red tide occurrence. What may look like such an increase after 1995 from Exhibit 2 is actually a reflection of increased sampling associated in part with federally and state funded research programs. Red tide is generally present at some low level of concentration. Other than for shellfish consumption, only upon medium (10^5 cells/L) to high (10^6 cells/L) concentrations is a *K. brevis* bloom considered to be problematic. Over time, sampling and microscopy techniques were refined and the sampling frequency and locations were increased so there is no statistical significance to the increase on shaded boxes of Exhibit 2.

6. Our present understanding of *K. brevis* red tide is that it occurs naturally under oligotrophic (nutrient deplete) conditions. As a slow growing organism, it is generally outcompeted by other benign phytoplankton when adequate nutrient levels are available, as is generally the case both nearshore and along the continental shelf break. Being that the West Florida Continental Shelf (WFS) is very wide (as wide as the State of Florida), there exists a mid-shelf region that is generally oligotrophic and hence a region conducive to *K. brevis* bloom development. Exceptions to mid-shelf oligotrophic conditions exist when the Gulf of Mexico Loop Current interacts with the WFS in a way that brings new waters of deeper ocean origin (with higher nutrient loads) onto and across the WFS. Various studies, beginning with the companion papers of Weisberg and He (2003) and Walsh et al. (2003) demonstrate this. On this basis, Weisberg et al. (2010) explained why there was no red tide in 1998, Weisberg et al. (2013) explained why the 2013 red tide was nominal relative to the 2012 occurrence, and Weisberg et al. (2019) explained why the 2018 red tide was so severe. By comparing all of the WFS red tide events with Gulf of Mexico Loop Current behaviors from 1993 through 2015, Liu et al. (2016) formulated a seasonal prediction scheme, which now accounts for the occurrence, or lack of occurrence, of a major red tide in 22 out of 28 years for which joint Loop Current and red tide data exist. While there are notable exceptions to any simplistic scheme when dealing with complex phenomena, it is now generally accepted in the relevant scientific community that *K. brevis* red tide originates at mid-shelf under oligotrophic conditions and manifests as a nuisance bloom once transported to the near shore. The ocean circulation is what generally determines the water conditions at mid shelf; hence, whether or not these are conducive to a *K. brevis* bloom, and the circulation also determines the *K. brevis* transport to the shoreline. Further concentration occurs both by shoaling water depth and density fronts (due to salinity differences). Thus, the physical oceanography is as important to *K. brevis* ecology as the organism biology.

7. It is noted that citations in 6. and elsewhere are provided in Exhibit 3.

8. Based on paragraphs 5. and 6. above, the EU assertion in paragraph 4 that "the exacerbation of red tides and algae outbreaks are well documented" is unsubstantiated conjecture, and not based on scientific evidence. There is a reason why the region encompassing the Tampa Bay to Charlotte Harbor estuaries is the epicenter for WFS red tides, and this has more to do with the offshore generation region for red tide blooms and the transport pathway from that region to the nearshore (e.g., Weisberg et al., 2019) than the estuaries themselves. It is further noted that on the rare occasions when *K. brevis* red tide outbreaks occur along the Florida Panhandle and east coasts, the origin is also from the mid-shelf region of the WFS. While local,

human-induced pollution could add to what occurs naturally, there would be red tide outbreaks along the barrier islands from Tampa Bay to Charlotte Harbor regardless of agriculture, mining and population growth. While adverse events can occur, as will be described in later paragraphs, there is no evidence that human-induced pollution is affecting the areas at issue here.

9. There are exceptions to the simplistic scheme of Liu et al. (2016). The red tide that initiated in fall of 2016 provides an example. It was surmised that there would not be a major red tide in that year when, in fact, there was. Coincidentally, that red tide bloom started nearshore in September 2016 about two weeks after a major sewage spill that was attributed to very heavy rainfall causing an exceedance in municipal sewage capacity at several locations. This was not associated with septic tanks or leaching fields, but rather with direct dumping of partially treated (and possibly untreated) effluent. Once the bloom occurred, the insidious nature of *K. brevis* red tide is that it kills fish (e.g., Walsh et al., 2009), thereby providing a continued nutrient source as the dead fish decay.

10. The present red tide is also an anomaly. It began in December 2020 in the nearshore region of the Charlotte Harbor estuary. *K. brevis* cells were systematically driven northward along the shore toward Tampa Bay from March through May by persistent southerly winds. Coincidentally, effluent from the former Piney Point phosphate stack was dumped into Tampa Bay at Port Manatee in early April 2021. This caused a massive phytoplankton bloom quite visible by eye. Then, a month or so later, after the initial bloom dissipated, a major *K. brevis* bloom formed, which grew in size both in Tampa Bay and the adjacent Gulf of Mexico region. While not substantiated, recycled organic nutrients from the initial Piney Point effluent bloom may have caused the rapidly forming *K. brevis* bloom. This is mentioned because large scale, environmental perturbations, e.g., large releases of nutrient rich Lake Okeechobee water, Piney Point phosphate stack water and municipal sewage overflows can indeed result in *K. brevis* and other undesirable phytoplankton blooms. But these are on a scale much larger than the limited leaching fields designed for a limited number of residences on the bridgeless barrier islands.

11. Scale is an operant word. Relative to the Charlotte County Sewer Master Plan, the Service Area: Cape Haze, Little Gasparilla Island, Don Pedro Island, and Knight Island with 1164 existing and 1683 potential ERCs (as per the EU application) is a miniscule fraction of the County. Even if the 4 to 5 scoring were correct (this is undocumented so there is no reason to believe that these are correct), to say that " …. the environmental benefits of the Utility providing central wastewater service to eliminate septic tanks and the need for wastewater service should be unquestioned" is an overstatement at best. Charlotte County, just like other west Florida counties must be concerned about growing demands on aging sewer systems with documented leaky pipes subject to filling with ground water and hence overloading sewer system capacity. As a resident, I would be much more concerned regarding a sewer system failure than leakage from a very limited number of well-designed and up-to-code septic systems, especially given that such failures of public sewer systems are known to occur.

12. It is further noted that the EU application is for sewer lines and delivery to a Charlotte County connection, versus a complete sewer system. Thus, a failure of the County

system could be exacerbated by the flow from EU. Further burdening the County system prior to upgrading may be counterproductive with respect to the Sewer Master Plan.

13. Red tide and water quality are but two of the environmental concerns. Coastal planning must also consider hazards owing to secular sea level rise and hurricane storm surge and wave impacts. Population density on the bridgeless barrier islands are relatively low, making timely evacuation a possibility. Increasing population density, as may be anticipated by adding a sewer system connectivity, will complicate emergency preparedness. Whereas the west coast of Florida has been largely spared major hurricane impacts, these are known to occur. Hurricane Charley provides a recent (2004) example. While compact in storm radius, where it hit, it caused major damage, even cutting a new inlet on N. Captiva Island (e.g., Weisberg and Zheng, 2006). Had this occurred on a more populated barrier island the result would have been much worse, and with new inlets being cut, the increased and significant risk of sewer lines being severed, potentially rendering the entire service area non-functional, cannot be overlooked.

14. Secular sea level rise is also a concern for any long-range plan. The present documented rate of rise of about 3 mm per year, amounting to about one foot in 100 years. However, the projections by the IPCC are larger, with maximum uncertainty having to do with Greenland and the Antarctic. A recent credible (and conservative) analysis (Nerem et al., 2018) suggests about 2 to 3 feet by 2100, although some are suggesting much larger numbers. Regardless of the uncertainty, sea level is rising, so we should be more cautious about encouraging further barrier island development, especially given bridgeless barrier islands with limited emergency access.

15. EU's application cites no scientific or other data which would amount to a "Need for Service" on any environmental basis as I have explained above.

FURTHER AFFIANT SAYETH NAUGHT.

ROBERT H. WEISBERG

STATE OF FLORIDA
COUNTY OF _PINELLAS_____
Sworn to and subscribed before me this _____ day of August 2021, by _____, who, is personally known to me.

_____
Signature of Notary Public
[Notary Seal]

Print name of Notary Public:

My commission expires:

FL Jurat Notary Certificate

Document Name: _____AFFIDAVIT OF ROBERT H. WEISBERG_____

STATE OF FLORIDA
COUNTY OF_____PINELLAS_____
(County where notarization occurred)

Sworn to (or affirmed) and subscribed by personally appearing before me by physical presence this ___26TH_____ day of ____AUGUST____, 20_21_, by, _____ROBERT H. WEISBERG_____ (name of signer(s)).

Johanna Watts Clarke
(Signature of notary public)

JOHANNA WATTS CLARKE
Notary Public. State of Florida
Commission# GG 252591
My comm. expires Aug. 26. 2022

JOHANNA WATTS CLARKE
(Name of notary public)

My commission expires: 08/26/2022_____

Official Seal

Personally known _____ OR
Produced identification ____X__ Type of identification produced: _FLORIDA DRIVERS LICENSE_____

Robert H. Weisberg

Distinguished University Professor
Physical Oceanography
College of Marine Science, University of South Florida
140 7th Ave. S., St. Petersburg, FL. 33701
727-421-7888 (C)
weisberg@usf.edu
http://ocgweb.marine.usf.edu

Date of Birth:

May 20th 1947

Education:

1969	B.S.	Cornell University, Materials Science and Engineering
1972	M.S.	University of Rhode Island, Physical Oceanography
1975	Ph.D.	University of Rhode Island, Physical Oceanography

Professional Experience:

2007-present	Distinguished University Professor, University of South Florida
1988-present	Professor, University of South Florida
1984-1988	Associate Professor, University of South Florida
1981-1986	Associate Professor, North Carolina State University
1976-1981	Assistant Professor, North Carolina State University
1976-1982	Adjunct Professor, University of Rhode Island
1969-1976	Graduate Assistant, University of Rhode Island
1969-1977	U.S. Army Reserve (Rank 03)

Honors/Awards:

SURA Fellow, 2011
Phi Kappa Phi Honor Society and USF Chapter Scholar of the Year, 2011
USF Distinguished University Professor, 2007
NOPP Excellence in Partnering Award (shared with other P.I.s), 2007
USF President's Award for Excellence, 2003
USF Professorial Excellence Award, 1998
Editor's citation for excellence in refereeing, Geophys. Res. Lett., 1995
Sigma Xi

Professional Service Highlights

NASEM Committee on Understanding and Predicting the Gulf of Mexico Loop Current, 2016-2018
Editor, JGR-Oceans, 2006-2010
NAE-NRC Committee on New Orleans Regional Hurricane Protection Projects, 2005-2010
Testimony, 6/15/10, House Committee on Nature Resources, Subcommittee on Insular Affairs, the Oceans and Wildlife.
Testimony, 12/7/11, House Transportation and Infrastructure Committee.

Community Service Highlights

President, Congregation B'nai Israel, 1994-1996
Board Chairman, Menorah Manor Incorporated, Non-profit Skilled Nursing and Assisted Living, 2018-2020

Exhibit 1

Member:

AGU

Advisors:

Ph.D., Dr. J. Knauss; M.S., Dr. W. Sturges

Narrative:

Dr. Weisberg is a physical oceanographer engaged in ocean circulation and ocean-atmosphere interaction studies in the tropics, on continental shelves, and in estuaries. His research presently emphasizes the West Florida Continental Shelf (WFS) and the interactions that occur between the shelf and the deep ocean and between the shelf and the estuaries. He maintains a coordinated program of real-time, *in-situ* measurements, analyses, and numerical circulation models aimed at describing and understanding the processes that determine WFS water properties. Applications include harmful algal blooms, fisheries, hurricane storm surge, waves, tracking of oil and other spilled substances, forensic science, expert testimony and other topics of societal concern.

Recent Selected Publications:

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Weisberg, R.H., L. Zheng and Y. Liu (2015). Basic tenets for coastal ocean ecosystems monitoring, in *Coastal Ocean Observing Systems*, Y. Liu, H. Kerkering and R.H. Weisberg, eds., Elsevier, London, ISBN: 978-0-12-802022-7, 461pp.

Weisberg, R.H., L.Y. Zheng, Y. Liu, A. Corcoran, C. Lembke, C. Hu, J. Lenes, and J. Walsh (2016). *Kerenia brevis* blooms on the west Florida shelf: A comparative study of the robust 2012 bloom and the nearly null 2013 event. *Cont. Shelf Res.*, 120, 106-121, http://dx.doi.org/10.1016/j.csr.2016.03.011

Weisberg, R.H, L. Zheng, Y. Liu, S. Murawski, C. Hu, and J. Paul (2016), Did Deepwater Horizon Hydrocarbons Transit to the West Florida Continental Shelf? *Deep-Sea Res., Part II*, 129, 259-272, doi:10.1016/j.dsr2.2014.02.002.

Liu, Y., R.H. Weisberg, J.M. Lenes, L. Zheng, K. Hubbard, and J.J Walsh (2016), Offshore forcing on the "pressure point" of the West Florida Shelf: Anomalous upwelling and its influence on harmful algal blooms, *J. Geophys. Res.-Oceans*, 121, doi:10.1002/2016JC011938.

Weisberg, R.H., L. Zheng, and Y. Liu (2016), West Florida Shelf upwelling: Origins and pathways, *J. Geophys. Res.-Oceans*, 121, 5672–5681, doi:10.1002/2015JC011384.

Weisberg, R.H., L. Zheng, and Y. Liu (2017), On the Movement of Deepwater Horizon Oil to Northern Gulf Beaches, Ocean Modelling, 111, 81-97, doi:10.1016/j.ocemod.2017.02.002.

Weisberg, R.H. and Y. Liu (2017), On the Loop current penetration into the Gulf of Mexico, *J. Geophys. Res.: Oceans*, 122, 9679-9694, doi:10.1002/2017JC013330.

Chen, J, R.H. Weisberg, Y. Liu and L. Zheng (2018), The Tampa Bay Coastal Ocean Model Performance for Hurricane Irma, *Mar. Tech. Soc. Jour*., 52, 33-42.

Liu, Y., Weisberg, R.H., Law, J., & Huang, B. (2018), Evaluation of satellite-derived SST products in identifying the rapid temperature drop on the West Florida Shelf associated with hurricane Irma, *MTS Journal*, 52(3), 43-50, doi:10.4031/MTSJ.52.3.7.

Weisberg, R.H., Y. Liu, C. Lembke, C. Hu, K. Hubbard, M. Garratt (2019), The Coastal Ocean Circulation Influence on the 2018 West Florida Shelf *K. brevis* Red Tide Bloom, *J. Geophys. Res.: Oceans*, 124, doi:10.1029/2018JC014887.

Testimony, Depositions, Affidavits:

Helen Davis v State Farm Fire & Casualty Company, Cause No.: 1:06-cv-574 in the United States District Court for the Southern District of Mississippi, Southern Division, deposed on July 6, 2007

Lydia Schultz v State Farm Fire & Casualty Company, Cause No.: 1:06-cv-449 in the United States District Court for the Southern District of Mississippi, Southern Division, deposed on July 6, 2007

Reginald Edwin Bossier v State Farm Fire & Casualty Company, Cause No.: 1:08-cv-00408 in the United States District Court for the Southern District of Mississippi, Southern Division, Testimony on November 9, 2009.

Dairy America, Inc. v New York Marine and General Insurance Company; Crump Insurance Services; Southern Marine and Aviation Underwriters; Arthur J. Gallagher and Company; Hartford Casualty Insurance Company, Dist, Ct. No.: 1:07-cv-00537-LJO-SMS, United States District Court for the Eastern District of California, deposed on February 22, 2010.

Al Cossey v State Farm Fire & Casualty Company, Cause No.: 05-0381, in the Circuit Court of Hancock County Mississippi, Testimony on July 21, 2010.

Written and oral testimony before the US House of Representatives, Committee on Natural Resources, Subcommittee on the Oceans, Wildlife and Insular Affairs, Washington DC, June 15th 2010, as pertaining to the Deepwater Horizon Oil Spill.

Written and oral testimony before the US House of Representatives, Committee on Transportation and Infrastructure, Washington DC, December 7th 2011, as pertaining to H.R. 3096, the Restore Act.

Karen Pickett, Robbie Pickett and Archie Pickett Individually and as heirs at law of The Estate of Thomas Pickett, Plaintiffs. v. Blue Sea Adventures, Inc., SCUBA Toys Enterprises, L.L.C., and HEAD USA, Inc., Defendant, Cause No. CC-11-05941-E In The County Court at Law Number 5, Dallas County, Texas; Affidavit provided 2/23/12.

Florida Wildlife Federation, Inc.; Sierra Club, Inc.; Conservancy of Southwest Florida, Inc.; Environmental Confederation of Southwest Florida, Inc.; and St. Johns

Riverkeeper, Inc., Petitioners *v. Department of Environmental Protection,* Respondent, *and Florida League of cities; James Sartori; Clay County Utility Authority; Florida Pulp & Paper Association Environmental Affairs, Inc.; Destin Water Users, Inc.; South Walton County Utility Co., Inc.; Emerald Coast Utilities Authority; South Florida Water Management District; The Florida Electric Power Coordinating Group, Inc.; Florida Fruit and Vegetable Association; Florida Sugar Cane League; and Florida Stormwater Association, Inc.,* Intervenors, Case Nos. 11-6137RP and 12-0157RP, hearing before Bram D. E. Canter, Administrative Law Judge of the Division of Administrative Hearings in Tallahassee, Florida, March 2, 2012.

Deposition for the above referenced cases held at Sierra Club Inc., Headquarters, St. Petersburg, FL., February 23, 2012.

United States of America v Lenin Lugo, Case # 8:17-cr-222-T-27JSS, in the United States District Court, Middle District of Florida, Tampa Division, Testimony on 1/9/18.

Red tide (MEDIUM levels or greater; >100,000 cells/L

Suspected continuance of red tide not confirmed by water samples

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1878												
1879	Reports of fishkills ; no duration											
1880												
1882												
1883	Reports of fishkills ; no duration											
1884	Reports of fishkills ; no duration											
1885												
1908	Reports of fishkills ; no duration											
1916												
1935	Reports of fishkills ; no duration											
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1948	Reports of fishkills ; no duration											
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2021												

Exhibit "2"

References Cited

Nerem, R.S., B.D. Beckley, J.T. Fasullo, B.D. Hamlington, D. Masters and G.T. Mitchum (2018) Climate-change–driven accelerated sea-level rise detected in the altimeter era. PNAS, 115, 9, 2020-2025, doi/10.1073/pnas.1717312115.

Walsh, J.J., R.H. Weisberg, D.A. Dieterle, R. He, B.P. Darrow, J.K. Jolliff, K.M. Lester, G.A. Vargo, G.J. Kirkpatrick, K.A. Fanning, T.T. Sutton, A.E. Jochens, D.C. Briggs, B. Nababan, C. Hu, and F. Muller-Karger (2003). The phytoplankton response to intrusions of slope water on the West Florida Shelf: models and observations. *J. Geophys. Res.*, 108, C6, 15, doi:10.1029/2002JC001406.

Walsh, J.J., J.K. Jolliff, B.P. Darrow, J.M. Lenes, S.P Milroy, A Remsen, D.A. Dieterle, K.L. Carder, F.R. Chen, G.A.Vargo, R.H. Weisberg, K.A. Fanning, F. Muller-Karger, K.A. Steidinger, C.A. Heil, C.R. Tomas, J.S. Prospero, T.N. Lee, G.J. Kirkpatrick, T.E. Witledge, D.A. Stockwell, T.A. Villareal, A.E. Jochens, and P.S. Bontempi (2006). Red tides in the Gulf of Mexico: Where, when, and why? *J. Geophys. Res*., 111, C11003, doi:10.1029/2004JC002813.

Walsh, J.J, R.H. Weisberg, J.M. Lenes F.R. Chen D.A. Dieterle, L. Zheng, K.L. Carder, G.A. Vargo, J.A. Havens, E. Peebles, D.J. Hollander, R. He, C.A. Heil, B. Mahmoudi, and J.H. Landsberg, (2009). Isotopic evidence for dead fish maintenance of Florida red tides, with implications for coastal fisheries over both source regions of the West Florida Shelf and within downstream waters of the South Atlantic Bight., *Progr. in Oceanogr*., 80, 51-73.

Weisberg, R.H. and R. He (2003). Local and deep-ocean forcing contributions to anomalous water properties on the West Florida Shelf. *J. Geophys. Res.,* 108, C6, 15, doi:10.1029/2002JC001407.

Weisberg, R.H. and L. Zheng (2006). A simulation of the hurricane Charley storm surge and its breach of North Captiva Island, *Florida Scientist*, 69, 152-165.

Weisberg, R.H., L. Zheng, Y. Liu, C. Lembke, J.M. Lenes and J.J. Walsh (2014), Why a red tide was not observed on the West Florida Continental Shelf in 2010. *Harmful Algae*, 38, 119-126, doi:10.1016/j.hal.2014.04.010.

Weisberg, R.H., L.Y. Zheng, Y. Liu, A. Corcoran, C. Lembke, C. Hu, J. Lenes, and J. Walsh (2016). *Kerenia brevis* blooms on the west Florida shelf: A comparative study of the robust 2012 bloom and the nearly null 2013 event. *Cont. Shelf Res.*, 120, 106-121, http://dx.doi.org/10.1016/j.csr.2016.03.011

Liu, Y., R.H. Weisberg, J.M. Lenes, L. Zheng, K. Hubbard, and J.J Walsh (2016), Offshore forcing on the "pressure point" of the West Florida Shelf: Anomalous upwelling and its influence on harmful algal blooms, *J. Geophys. Res.-Oceans*, 121, doi:10.1002/2016JC011938.

Weisberg, R.H., Y. Liu, C. Lembke, C. Hu, K. Hubbard, M. Garratt (2019), The Coastal Ocean Circulation Influence on the 2018 West Florida Shelf *K. brevis* Red Tide Bloom, *J. Geophys. Res.: Oceans*, 124, doi:10.1029/2018JC014887.

VITAE

NAME: Robert H. Weisberg

DATE OF BIRTH: May 20, 1947

PRESENT POSITION: Distinguished University Professor
College of Marine Science
University of South Florida
140 Seventh Avenue South
St. Petersburg, Florida 33701
727-553-1568
weisberg@usf.edu

EDUCATION:

Cornell University: B.S. (Material Science & Engineering) 1969
University of Rhode Island: M.S. (Physical Oceanography) 1972
University of Rhode Island: Ph.D. (Physical Oceanography) 1975

PROFESSIONAL EXPERIENCE:

08/88-05/07	Professor, College of Marine Science, USF
12/86-08/88	Associate Professor, Department of Marine Science, USF
08/84-08/85	Associate Professor, Department of Marine Science, USF
12/86-05/90	Adjunct Professor, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, Raleigh NC
08/81-12/86	Associate Professor, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, Raleigh, NC
08/76-08/81	Assistant Professor, Department of Marine Science and Engineering, North Carolina State University, Raleigh, NC
11/76-08/82	Adjunct Professor, Graduate School of Oceanography, University of Rhode Island, Kingston, RI
05/74-08/76	Research Associate, Graduate School of Oceanography, University of Rhode Island, Kingston, RI
09/69-05/74	Research Assistant, Graduate School of Oceanography, University of Rhode Island, Kingston, RI
06/71-08/71	Instructor, St. Georges School, Newport, RI
08/69-08/77	U.S. Army Reserve, rank O3

HONORS:

Wiley Publishers Certificate: Top 10% downloaded papers in J. Geophys. Res.- Oceans for 12 mo. following publication, 2020

Fellow, SURA
Phi Kappa Phi Honor Society and USF Chapter Scholar of the Year, 2011
NOPP Excellence in Partnering Award, 2007
Distinguished University Professor, 2007
President's award for excellence, USF, 2003
Professorial Excellence Award, USF, 1998
American Geophysical Union Editor's citation for excellence in refereeing for Geophysical Research Letters, 1995
Sigma Xi

PROFESSIONAL AFFILATIONS:

Oceanography Society
American Geophysical Union
American Meteorological Society

TEACHING:

Introductory Physical Oceanography
Gravity Waves
Long Waves
Analysis of Oceanographic Time Series
Ocean Circulation Dynamics I & II
Readings in Ocean Circulation
Equatorial Dynamics
Readings in Descriptive Physical Oceanography
Seminar
Environmental Fluid Mechanics
Readings in Climate Modeling
Ocean Mixed Layer
Lectures in Introduction to Oceanography

GRADUATE STUDENT COMMITTEE CHAIRMANSHIPS:

R. Chao	M.S.	05/80	NCSU
M. Purba	M.S.	05/82	NCSU
C.K. Wu	M.S.	05/82	NCSU
A. Horigan	Ph.D.	05/82	URI (Co-Chairman)
T.Y. Tang	Ph.D.	05/84	NCSU
C.K. Wu	Ph.D.	05/85	NCSU
T.J. Weingartner	Ph.D.	05/90	NCSU
Zhen Li	M.S.	12/93	USF
M.R. Zhang	M.S.	08/94	USF
C. Wang	Ph.D.	08/95	USF
L. Qiao	Ph.D.	05/96	USF

Zhenjiang Li	Ph.D.	05/98	USF
B. Black	M.S.	08/98	USF
E. Siegel	M.S.	5/99	USF
R. He	Ph.D.	5/02	USF
R. Helber	Ph.D.	5/03	USF
J. Virmani	Ph.D.	5/05	USF
Y. Liu	Ph.D.	5/06	USF
J. Zhu	Ph.D.	6/15	OU, PRC
A. Reinert	M.S.	5/16	USF
B. O'Loughlin	M.S.	12/16	USF

Summary: PhDs awarded, 12 total, 8 at USF
MSs awarded, 9 total, 6 at USF

Note: two of my former students are designated Distinguished University Professors, Ruoying He at North Carolina State University and Chunzai Wang at the Chinese Academy of Sciences.

OTHER CURRENT GRADUATE STUDENT COMMITTEES:

I presently supervise 4 graduate students and I serve on the committees of 1 other graduate student.

OTHER PERSONNEL SUPERVISION:

I presently supervise 4.5 professional research staff (3 with PhD).

Mentoring of 11 post-doctoral associates, 5 outside of my pool of students.

EDITOR:

Editor, Journal of Geophysical Research – Oceans, 2006-2010.
International Advisory Board, Terrestrial, Atmosphere & Ocean Sciences, Chinese Geoscience Union, Taipei, Taiwan, 1998-2007.
Guest editor, Geophysical Research Letters, special issue, SEQUAL/FOCAL: First Year Results on the Circulation in the Equatorial Atlantic, 11 August 1984.
Co-editor, with Y. Liu, A. MacFadyen and Z.-G. Ji, Monitoring and Modeling the Deepwater Horizon Oil Spill: A Record-Breaking Enterprise, Geophysical Monograph Series, Vol. 195, 271 PP., ISSN: 0065-8448, ISBN 978-0-87590-485-6. AGU/geopress, 2011, Washington D.C.
Co-editor, with Y. Liu and H. Kerkering *Coastal Ocean Observing Systems*, Elsevier, London, ISBN: 978-0-12-802022-7, 2015, 461pp.

REFEREE:

National Science Foundation
NOAA-Sea Grant
NOAA-ERL
NOAA-OGP
Journal of Physical Oceanography
Geophysical Research Letters
Journal of Marine Research
Deep-Sea Research
Science
Nature
Journal of Geophysical Research
Oceanologia Acta
Progress in Oceanography
Journal of Climate
Marine Technology Society
EOS
Dynamics of the Atmosphere and Ocean
MTS Journal
Hudson River Foundation
WHOI Sea Grant
Georgia Sea Grant
NOPP
NASEM
Schmidt Ocean

CONSULTING:

EG&G Environmental Consultants, 1975-1976
Harbridge House, 1976-1977
Earth Resources & Technology, 1977
Jaycor, 1978-1980
Science Applications Inc., 1982
Research Triangle Institute, 1984
Florida Dept. of Environmental Regulation, 1985-1989
Town of Redington Beach (pro bono), 1988
Shore Acres Citizens (pro bono), 1989
Northwest Florida Water Management District, 1991-1994
State Attorney, 1991, 1994, 1997
Consultant to US Army Corps of Engineers, 1992-1993, 1995-1996
Consultant to King Engineering, 1992
Environmental Permitting Inc., 1994
St. Petersburg Police Dept., 1994
Coastal Planning and Engineering, 1996
Ocean Farming, 1998
City of Gulfport, FL., 2000

Ft. DeSoto Boat Storage, 2000
NOVA Southeastern Univ., 1998-2004
CORE/JOI/SURA, 2006
Research Planning Inc., 2006-2007
Manatee Co. Emergency Management, 2007
LIST Group/WoodsConsulting, 2008
Williams Pipeline, 2010
Expert Witness Testimony/Investigations for various law firms, 1990-present
Lighthouse Technical Consultants Inc., 2019-2020.

CIVIC SERVICE:

Youth Soccer Coach, Capital Area Soccer League, Raleigh, NC., 1982-1983.
Assistant Youth Soccer Coach, Southside Soccer League, St. Petersburg, FL. 1987.
Board of Trustees, Congregation B'nai Israel, St. Petersburg, FL., 1988-1996
3rd Vice Pres., Congregation B'nai Israel, St. Petersburg, FL., 1989-1990
2nd Vice Pres., Congregation B'nai Israel, St. Petersburg, FL., 1991
1st Vice Pres., Congregation B'nai Israel, St. Petersburg, FL., 1992-1993
President, Congregation B'nai Israel, St. Petersburg, FL., 1994-1996
Exec. Comm., Congregation B'nai Israel (as immediate past president), 1996-1999
Televised interview, WUSF Science Adventures series, 11/97 and 3/98.
Televised interview, Ch. 8 with Bob Hite, on El Nino 11/97; on WFS 2/02.
National Public Radio interview on El Nino with B. O'Brien, 3/98.
Televised interview on storm surge, Ch. 8, 2/98 and 8/00.
Newspaper article on storm surge (St. Pete. Times, J. Klinkenberg), 7/98.
Newspaper article on oil spills (Ft. Myers. News, K. Lawlor), 11/01.
Televised interview on coastal upwelling, Ch. 9 with Berardelli, 8/98.
Lectures on El Nino at St. Petersburg High School, 11/95, 11/97, 11/98.
Lectures on oceanography at John Hopkins Middle School, 11/00, 11/01, 11/02, 11/03, 11/04.
Public availability on the internet of real time monitored and delayed mode data and a model circulation nowcast/forecast for the west Florida continental shelf via http://COMPS.marine.usf.edu and http://ocgweb.marine.usf.edu.
Public availability on the internet of a power point hurricane storm surge simulation at http://ocgweb.marine.usf.edu.
Hurricane storm surge briefing at the NWS, Ruskin FL, 6/00
Hurricane storm surge briefing at the USGS, St. Petersburg FL, 9/02
Hurricane storm surge briefing at FEMA mtg, Redington Be. FL, 9/02
Hurricane storm surge briefing at Pinellas Co, Clearwater FL, 10/03
Numerous media hurricane storm surge interviews, summer/fall 2004
Numerous Tsunami media interviews, winter 2004
Numerous media (TV and print) hurricane storm surge interviews, summer/fall 2005
Numerous media (TV and print) hurricane storm surge interviews, summer/fall 2006
Invited keynote speaker, Town hall meeting of Congressman J. Davis, Tampa FL, 4/3/06
Letters to Senators, Congressmen, and Governor regarding oil drilling, spring 2006.

Invited panelist at showing of "An Inconvenient Truth," Tampa FL, spring 2006.
Keynote speaker, WFAMS Annual Banquet (Worst case hurricane for TB), 6/06
Keynote speaker, Manatee Co. Hurricane Awareness Meeting 6/07
Numerous media (TV, print, radio) hurricane storm surge interviews, 2007
Pro-bono consultant, Pinellas Co. property appraiser's office hurricane storm surge, 2007
Numerous media (TV, print, radio) hurricane storm surge/coastal ocean interviews, 2008
Meeting with Congresswoman K. Castor regarding oil drilling, fall 2008.
Keynote speaker, SPB Hurricane Awareness Meeting, 6/09
Numerous media (TV, print, radio) hurricane storm surge/coastal ocean interviews, 2009
Board of Trustees, Menorah Manor Foundation, elderly care through nursing home and assisted living. 2003-2010
Countless TV, radio, and print interviews on Deepwater Horizon oil spill, 2010.
Numerous invited public presentations on Deepwater Horizon oil spill, 2010.
Oil spill tracking forecasts used by NOAA Hazmat in their daily briefings, 2010.
Numerous oil spill briefings to area Representatives (Young, Castor, Bilirakis) and Senator Nelson, 2010.
Board of Trustees, Menorah Manor, elderly care through nursing home and assisted living. 2010-present; Treasurer 2012-2014.
Florida Bar, Pinellas County Grievance Committee, 2010-2012.
Testimony before House Committee on Natural Resources, Subcommittee on Insular Affairs, the Oceans and Wildlife, 6/15/10
Invited op-ed. piece on oil spill, St. Petersburg Times, 6/5/11
Testimony before House Transportation Committee, 12/7/11
Invited op-ed. piece on oil spill, St. Petersburg Times, 1/31/12
Board of Trustees, Menorah Manor, elderly care through nursing home and assisted living. Chairman of the Board Elect 2015-2018.
Numerous red tide interviews
Numerous Hurricane storm surge interviews
National and local TV, radio, and newspaper interviews regarding the 2018 red tide.
Several public speaking engagements regarding the 2018 red tide (see presentations).
Chairman of the Board, Menorah Manor Incorporated, skilled nursing and senior living, 2018-2020

UNIVERSITY SERVICE:

Duke/UNC Oceanographic Consortium ship scheduling Committee 1982-1983, Chairman, 1983.
UNC Representative to UNOLS: 1981-1984.
University Computer Committee for Teaching and Research, 1987.
University Research Council, 1987-1990.
Faculty Advisory Committee for Research and Technology, 1989-1991.
Graduate Research Professor Review Committee, 1990.
University Task Force on Future Academic Frontiers, 1990, 1991.
CAS Strategic Planning Committee.
SACS committee on academic computing, 1993-1994.

Ocean Engineering Institute Steering Committee, 1993-1994.
Chairman, Dept. Faculty Recruiting Committee, 1989-1990.
Chairman, Dept. Computing Committee, 1986-1989.
Chairman, Department Budget Committee, 1991-1993.
Plus additional Dept. committee memberships not listed.
Senior thesis advisor to Ms. E. Lipp, New College, S93
Undergraduate student summer intern host for 2 New College juniors, 1990.
Undergraduate student summer intern host for 1 Eckerd College junior, 1995.
Undergraduate summer intern host, 1996.
Director, USF Global Change Research Center (through 7/02)
CAS Faculty Development Committee, 2000
CAS 2010 Committee, 1999-2000
CMS transition committee 2000, co-authored Mission Statement and Governance Docs.
CMS Dean's Advisory Committee 2000-2002
USF representative on the SFOMC Board of Directors
Faculty mentor for G. Mitchum (T/P awarded 7/02), P. Howd, and M. Howell
Co-author (with J.J. Walsh and P.R. Betzer) of QUEST FL., a joint institute for the Quantitative Ecology of the west Florida shelf.
USF DUP Discipline committee, 2002, 2003, 2021
USF Representative to the SURA Coastal Ocean Committee, 2003-2007
Co-author (with J.J. Walsh) of COAR, a Center for Ocean Applied Research.
Eminent Scholar Lecture Series committee and host, 2003-2008
Chairman, CMS ad-hoc committee on additional compensation, 2003-2005.
Faculty Senate 2005-2008
USF committee on committees 2005-2008
Ad-hoc committee on Dean search – drafted points of reference with A. Hine, spring-summer, 2006
USF Budget Advisory Task Force, summer/fall 2007
President's CMS Liaison Committee, Chairman, 2007
Ad-hoc committee for World Class Scholar recruitment, 2007
CMS tenure and promotion, admissions/awards committees, 2007-present
Seminar speaker host, 2007
USF Budget Working Group, 2008-2009
USF Research Advisory Board, 2009-2014
USF High Performance computer Comm., 2008-present
Authored (with A. Hine) the successful FIO AISO proposal, 2009
USF FESC, 2009-present.
Application for Honorary Degree Preparation
Faculty mentor for D. Chambers
Seminar speaker host, 3/23/18
Chem. Oceanogr. Search Committee co-Chair, 2018
CMS DUP Discipline Committee, 2019-2020

OTHER PROFESSIONAL SERVICE:

Visiting Scientist Host, C. Colin, visiting scientist from ORSTOM, Paris: 1/85-5/86.
NSF Review panel member, 1980, 1989, 1993.
NOAA review panel member, 1990.
U.S. WOCE Moored Measurement Implementation Panel, 1988, 1989.
U.S. WOCE Process Studies Implementation Panel, 1988-1990.
Session convener at the Fall 1994 Annual Meeting of the American Geophysical Union.
Chairman, Science Advisory Committee, Tropical Ocean-Global Atmosphere (TOGA), Tropical Atmosphere Ocean (TAO) array, NOAA/PMEL, Dr. S. Hayes, Director, 1991.
Technical Working Group, Apalachicola Bay, FL., NWFWMD, 1990-1995.
USACOE, Biological review advisory panel on New York Bight, 1992-1993 and New York Harbor, 1994-1996.
Science advisor to National Taiwan University Coastal Oceanography Program 1991-2001.
Member, TOGA-TAO array implementation panel,1992-1995.
Panel member, UNOLS intermediate vessel mid-life refit committee, 1992-1993.
Tampa Bay National Estuary Program, Technical Advisory Committee, 1991-1992.
Member, NOAA-OGP PACS Implementation panel 1996-1998.
Member, NOAA-OGP, NAME, SSG 2000
SURA SCOOP Leadership Group 2001-2003
SE-COOS science steering committee 2001
Organizing committee, IASI-IOCARIBE-RODAE workshop, Barbados W.I., 2002
OCEAN.US Coastal Ocean Observing System summit resolution signatory, April, 2003
Invited Juror, PhD defense for A. Barth, University of Liege, Liege, Belgium, 10/11/04.
Invited Juror, PhD defense for A. Alvera, University of Liege, Liege, Belgium, 10/13/04.
Chairman, SEACOOS Observational Working Group, 2002-2008.
Member, SEACOOS Modeling Working Group, 2002-2008.
Executive Committee member, SEACOOS, 2002-2008.
AMS, STACS Coastal Environments Committee, 2002-2010.
NOAA-Science Advisory Board, NCEP Ocean Modeling Review Comm., 2003-2009.
Session Convener for the AGU 2007 joint assembly in Acapulco, MX.
FL COOS Caucus member and contributor
SURA SCOOP Leadership Group 2007-2010
National Academies, National Research Council Committee on New Orleans Regional Hurricane Protection Projects, January 2006-2010.
Team Leader, NRL (Stennis, MS) Battlespace Environments site review, 2009
SURA CERC member, 2011-present
SURA Fellow, 2011-present
SECOORA BOD member, 2009-2014; 2016-present
Pinellas Co. Technical Advisory Committee, Inlet Study, 2016-present.
NAS Gulf Research Program Committee on Gulf of Mexico Loop Current Dynamics, 2016-2018
Acknowledged Reviewer, NASEM: The Future of the US Gulf Coast, 2018

LETTERS OF REFERENCE:

Promotion/tenure considerations
Government appointments
Assisted with a nomination citation for the 1988 AGU Ocean Science Award.
Assisted with USF DUP nominations.
Graduate Student applications
Chaired Macelwane award nomination for R. He
Reference letter for 2015 Vetlesen award application
Reference letter for 2017 Vetlesen award application
Nomination letter for USF honorary PhD.
Reference letter for AGU Fellow, 2020, 2021

BIBLIOGRAPHY

REFEREED PUBLICATIONS:

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107. Weisberg, R.H. Insights from a coordinated observing and modeling system for the West Florida Shelf. INVITED presentation at the 2004 Fall Annual Meeting of the American Geophysical Union, San Fransisco CA., 12/04.

108. Kirkpatrick. G. et al. Recent results from the BreveBuster: has *Karenia brevis* lost the element of surprise? Presented at HAB2004.

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129. Alvera-Azcárate, A., A. Barth, and R.H. Weisberg. A nested hydrodynamic model of the Cariaco Basin (Venezuela): study of the basin interactions with the Caribbean Sea. Gordon Research Conference on Coastal Ocean Modeling 17 - 22 June 2007,

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130. Barth, A., A. Alvera-Azcárate, and R.H. Weisberg. Ensemble-based simulation of HF-radar currents in a West Florida shelf ROMS model nested in HYCOM., Gordon Research Conference on Coastal Ocean Modeling 17 - 22 June 2007, Colby-Sawyer College, New London, NH.

131. Zheng, L. and R.H. Weisberg. A Storm Surge Simulation for an Ivan-like Hurricane Making Landfall within the Tampa Bay Region., Gordon Research Conference on Coastal Ocean Modeling 17 - 22 June 2007, Colby-Sawyer College, New London, NH.

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135. Weisberg, R.H. (2008), Comparisons between 2-D and 3-D simulations of Hurricane storm surge based on an Ivan-like storm for Tampa Bay, Coastal Summit Conference, St. Pete Beach, FL

136. Zheng, L.Y. and R.H. Weisberg. Rookery Bay and Naples Bay estuarine circulation simulations: applications to tides and fresh water regulations. Presented on 11/19/08, Coastal Cities Summit, St. Pete Beach, Florida.

137. Weisberg, R.H. (2008), Lessons learned from a coordinated observing and modeling program on the West Florida Shelf, 2008 Fall Annual Meeting of the American Geophysical Union, San Fransisco, CA, invited presentation.

138. Liu, Y., C.R. Merz, and R.H. Weisberg (2008), HF-radar performance on a low energy enviroment as found using CODAR SeaSonde on the West Florida Shelf., 2008 Fall Annual Meeting of the American Geophysical Union, San Fransisco, CA.

139. Zheng, L.Y. and R.H. Weisberg. The application of FVCOM to estimate the flushing time for Snug Harbor project in Tampa Bay, Florida. Presented on 6/12/08 at

Third Institute of Oceanography, State Oceanic Administration, Xiamen, Fujian, China.

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141. Zheng, L.Y., R.H. Wiesberg, A. Barth, and A. Alvera (2008), Circulation influences on west Florida shelf red-tide events: Finite volume model applications to shelf-estuary interactions, Poster on 3/3/08 at 2008 Ocean Science Meeting, Orlando, FL.

142. Weisberg, R.H., L. Zheng and Y. Huang, Storm surge of Ivan-like Hurricane making landfall near Tampa Bay. Presented at the TAMPA BASIS 5 mtg, St. Petersburg, FL., 10/20/09.

143. Weisberg, R.H. and L. Zheng, Tampa Bay circulation driven by rivers, tides and winds, and its connection with the Gulf of Mexico: How the bay flushes. Presented at the TAMPA BASIS 5 mtg, St. Petersburg, FL., 10/20/09.

144. Liu, Y., R.H. Weisberg, and D.A. Mayer: Climatology of West Florida Shelf Circulation Observed with long-Term Moorings. The 15th Ocean Sciences Meeting, Portland, Oregon, February 22-26, 2010.

145. Liu, Y., R.H. Weisberg, L. Zheng, and C. Hu: Tracking Gulf of Mexico Oil Spill with Numerical Models and Satellite Imagery. Southeast Coastal Ocean Observing Regional Association (SECOORA) 2010 Annual Board & Member Meeting, Savanna, Georgia, USA, April 12-13, 2010 *(Invited Keynote Talk).*

146. Liu, Y.**,** and R.H. Weisberg: Lessons learned from an integrated coastal ocean observing system on the West Florida Shelf. 38th COSPAR Scientific Assembly, Bremen, Germany, July 18-25, 2010 (*Invited*).

147. Weisberg, R.H., Y. Liu, L. Zheng, and C. Hu: The Oil Trajectory: How it behaved in the Gulf of Mexico and why, and where might residual oil be heading? CSDMS Meeting, San Antonio, Texas, USA, October 14-17, 2010 *(Invited Keynote Talk).*

148. Liu, Y., R.H. Weisberg, C. Hu, and L. Zheng: Trajectory Forecasts Based on Numerical Ocean Circulation Models and Satellite Observations: A Rapid Response to Deepwater Horizon Oil Spill, AGU Fall Meeting, San Francisco, California, USA, December 13-17, 2010.

149. Weisberg, R.H., Y. Liu, L. Zheng, C. Hu, and C. Lembke: Rapid Response to Deepwater Horizon Oil Spill from University of South Florida: Numerical Models, Remote Sensing, and In-situ Observations, AGU Fall Meeting, San Francisco, California, USA, December 13-17, 2010 *(Invited).*

150. R.H. Weisberg, Invited speaker: Commentary on Ocean pollution, water quality and ecology, Marine Technical Society TECHSURGE Meeting, 2011 Ocean Pollution: From Technology to Management and Policy, April 13-14, 2011, Sarasota, FL.

151. Weisberg, R.H., and Y. Liu, Invited speaker: Response to the Deepwater Horizon oil spill by the USF Ocean Circulation Group: A review, Deepwater Horizon Oil Spill Principal Investigator Conference, Sponsored by the NSTC Subcommittee on Ocean Science and Technology, St. Petersburg, FL October 25-26, 2011.

152. Liu, Y., R.H. Weisberg, S. Vignudelli, L. Roblou, and C. Merz: Altimetry on the West Florida Shelf, The 5th Coastal Altimetry Workshop, San Diego, California, October, 16-18, 2011.

153. Liu, Y., R.H. Weisberg, C. Hu, and L. Zheng, Invited speaker: Combining numerical ocean circulation models with satellite observations in a trajectory forecast system: a rapid response to the Deepwater Horizon oil spill, SPIE Conference 8030 - Ocean Sensing and Monitoring, Orlando, Florida, April 25-29, 2011.

154. Zheng, L.Y., R.H. Weisberg, R. Luettich, J. Westerink and P.C. Kerr, Implications of 2D vs 3D model formulation on Hurricane Ike storm surge, 10th Symposium on the Coastal Environment, 92nd Annual American Meteorological Society Meeting, 24 January 24, 2012

155. Zheng, L. and R.H. Weisberg, Modeling the west Florida coastal ocean by downscaling from the deep ocean, across the continental shelf and into the estuaries. Ocean Science Meeting, Salt Lake City, Utah, 2/23/2012 .

156. Liu, Y., and R.H. Weisberg, Seasonal variation of currents and sea level on the West Florida Shelf as revealed by long-term moorings, 2012 Ocean Sciences Meeting, Salt Lake City, 2/23/2012.

157. Lembke, C., R.H. Weisberg, Y. Liu, and D. English, Glider and other observations of anomalous upwelling on the West Florid Shelf in spring/summer 2010, 2012 Ocean Sciences Meeting, Salt Lake City, 2/22/2012 (poster presentation).

158. Merz, C.R., R.H. Weisberg, Y. Liu, Evolution of the USF/CMS CODAR and WERA HF Radar Network, Oceans'12 MTS/IEEE, Hampton Roads, Virginia, 14-19 Oct. 2012.

159. Jochens, A., M. Howard, L. Campbell, R. Mullins-Perry, G. Kirkpatrick, B. Kirkpatrick, C. Simoniello, C. Hu, R. Weisberg, C. Lembke, A. Corcoran, J. Ivey, S. Wolf, Integrating Observing Systems to Benefit Stakeholders: A Case Study in the Gulf of Mexico, Oceans' 12 MTS/IEEE, Hampton Roads, Virginia, 14-19 Oct. 2012.
160. Koch, A.O., R.W. Helber, J.G. Richman, C.N. Barron, Y. Liu, C. Lembke, R.H. Weisberg, Horizontal density compensation in the Gulf of Mexico, AGU Fall Meeting, San Francisco, CA. Dec. 3-7, 2012 (poster presentation)

161. Huang, Y., R.H. Weisberg, and L. Zheng (2012), Gulf of Mexico hurricane wave simulations using SWAN: Bulk formula based drag coefficient sensitivity for Hurricane Ike. 2012 American Geophysical Union (AGU) Fall Meeting, December 3-7, 2012, Moscone Center, San Francisco, California, USA.

162. Kerr, P.C., A.S. Donahue, J.J. Westerink, R.A. Luettich Jr., L.Y. Zheng, R.H. Weisberg, Y. Huang, H.V. Wang, Y. Teng, D. Forrest, A. Roland, A. T. Haase, A. Kramer, A. Taylor, J.R. Rhome, J. Feyen, R.P. Signell, J. Hanson, M.E. Hope, R. Estes, R. Dunbar, L. Semeraro, H.J. Westerink, A. Kennedy, J.M. Smith, M.D. Powell, V.J. Cardone, A.T. Cox: Coastal Inundation Testbed Inter-Model Evaluation of Tides, Waves, and Hurricane Surge in the Gulf of Mexico, AGU Fall Meeting, San Francisco, California, USA, December, 2012.

163. Weisberg, R.H. and L. Zheng. Did dissolved hydrocarbons impact the west Florida continental shelf? GoMRI meeting in New Orleans, 1/21/13.

164. Weisberg, R.H. and L. Zheng. West Florida continental shelf circulation in 2010. GoMRI meeting in New Orleans, 1/22/13.

165. Liu, Y., R.H. Weisberg, and S. Vignudelli: Valuation of altimetry-derived surface current products using Lagrangian drifter trajectories in the Eastern Gulf of Mexico , The 7th Coastal Altimetry Workshop, Boulder, CO, October, 7-8, 2013.

166. Weisberg, R.H., L. Zheng, and Y. Liu. West Florida Coastal Ocean Model: Downscaling from deep-ocean, across the continental shelf and into estuaries by nesting FVCOM into GOM HYCOM. GODAE mtg. in Baltimore, MD, 11/4/13

167. Weisberg, R.H., L.Y. Zheng and E. Peebles, Gag Grouper Larvae Pathways on the West Florida Shelf**,** 2014 Gulf of Mexico Oil Spill and Ecosystem Conference, Mobile, AL., 1/14

168. Weisberg, R.H., L.Y. Zheng and Y. Liu Basic tenets for coastal ocean ecosystems monitoring, 2014 Gulf of Mexico Oil Spill and Ecosystem Conference, Mobile, AL., 1/14

169. Weisberg, R.H., L.Y. Zheng, Y. Liu, S. Murawski, C. Hu, J. Paul and D. Hollander Did Deepwater Horizon Hydrocarbons Transit to the West Florida Continental Shelf?, 2014 Gulf of Mexico Oil Spill and Ecosystem Conference, Mobile, AL., 1/14.

170. Zheng, L.Y. and R.H. Weisberg A Northeast Gulf of Mexico Coastal Ocean Model: FVCOM Nested in GOM HYCOM, with Application to 2010, 2014 Gulf of Mexico Oil Spill and Ecosystem Conference, Mobile, AL., 1/14.

171. Locker, S., N. Wienders, I. MacDonald, K. Speer, P. Hamilton, R. Weisberg, L. Zheng, A.Hine Interaction Between Geomorphology, Sedimentary Processes, And Circulation - Northeastern Gulf Of Mexico, 2014 Gulf of Mexico Oil Spill and Ecosystem Conference, Mobile, AL., 1/14.

172. Dzvonkovskaya, A., C. R. Merz, Y. Liu, R. H. Weisberg, T. Helzel, and L. Petersen, 2014: Initial surface current measurements on the West Florida Shelf using WERA HF ocean radar with multiple input multiple output (MIMO) synthetic aperture, Proc. of MTS/IEEE Int. Conf. OCEANS'14, St. John's, Canada, 9/14.

173. Dzvonkovskaya, A., T. Helzel, L. Petersen, C. R. Merz, Y. Liu, and R. H. Weisberg, 2014: Initial results of ship detection and tracking using WERA HF ocean radar with MIMO configuration, Proc. of Int. Radar Symposium IRS-2014, Gdansk, Poland, 6/14, pp. 317-319.

174. Gomez, R., T. Helzel, L. Petersen, M. Kniephoff, C.R. Merz, Y. Liu, and R.H. Weisberg, 2014: Real-time quality control of current velocity data on individual grid cells in WERA HF radar, MTS/IEEE 2014, Taipei Taiwan, 4/14.

175. Liu, Y., R.H. Weisberg, and C.R. Merz, 2014: Assessment of CODAR and WERA HF radars in mapping currents on the West Florida Shelf, 2014 Ocean Sciences Meeting, Honolulu, Hawaii, 2/14.

176. Zheng, L.Y., R.H. Weisberg and Y. Liu. West Florida Coastal Ocean Model: Downscaling from deep-ocean, across the continental shelf and into estuaries by nesting FVCOM into GOM HYCOM. Presented on 06/05/2015 in Gordon Research Conference: Coastal Ocean Modeling in University of New England, Biddeford, ME.

177. Zheng, L.Y., J. Zhu and R.H. Weisberg. On the salt balance of Tampa Bay, Florida. Presented on 06/05/2015 in Gordon Research Conference: Coastal Ocean Modeling in University of New England, Biddeford, ME.

178. Zheng, L.Y. and R.H. Weisberg. Has There Been a Trend in Eastern Gulf of Mexico Temperature in Recent Decades? Presented on 09/28/2015 at BASIS6 in St. Petersburg, Florida.

179. Weisberg, R.H. and L.Y. Zheng. A West Florida Coastal Ocean Model (WFCOM). Presented on 10/20/2015 at 2015 FVCOM workshop in Bedford Institute of Oceanography, Dartmouth, Canada.

180. Zheng, L.Y. and R.H. Weisberg. A High Resolution Tampa Bay and Vicinity Circulation Model with Applications to Flushing and Salt Balance. Presented on 10/21/2015 at 2015 FVCOM workshop in Bedford Institute of Oceanography, Dartmouth, Canada.

181. Liu, Y., R.H. Weisberg, S. Vignudelli (2015), Patterns of the Loop Current System and Regions of Sea Surface Height Variability in the Eastern Gulf of Mexico Revealed by Self-Organizing Maps, The 9th Coastal Altimetry Workshop, 18-19 October 2015, Reston, Virginia, USA.

182. Liu, Y. (on behalf of all the PIs) (2015), Accomplishments SECOORA IOOS Award 2010-2015: In- situ observations – buoys, shore stations, SECOORA Annual Meeting, May 2015, Jacksonville, FL.

183. Weisberg, R.H., C.R. Merz, Y. Liu, and L. Zheng (2015), A Coordinated Coastal Ocean Observing and Modeling System on the West Florida Shelf, SECOORA Annual Meeting, May 2015, Jacksonville, FL.

184. Abascal, A.J., S. Castanedo, R. Mínguez, R. Medina, Y. Liu, and R.H. Weisberg (2015), Stochastic Lagrangian trajectory modeling of surface drifters deployed during the Deepwater Horizon oil spill, The 38th AMOP Technical Seminar on Environmental Contamination and Response, June 2-4, 2015, Environment and Climate Change Canada, Ottawa, ON, Canada.

185. Liu, Y and R.H. Weisberg (2016), Gulf of Mexico Loop Current Interactions with the West Florida Shelf and its Influence on Harmful Algae Blooms, Ocean Sciecnes Mtg, New Orleans, LA, 2/21/2/26, presentation EC33A-08.

186. Weisberg, R.H, Y. Liu and L. Zheng (2016), The Control of West Florida Continental Shelf Material Property Distributions by a Combination of Deep-Ocean and Local Forcing, Ocean Sciences Mtg, New Orleans, LA, 2/21/2/26, presentation PO24D-2980.

187. Hu, C., B. Barnes, B. Murch, P. Carlson, R. Weisberg, L. Zheng, K. Atwood, and J. Lenes (2017). Satellite-based decision-support tools to monitor algal blooms and assess water quality in near real-time. *2017 Gulf of Mexico Oil Spill and Ecosystem Conference*, New Orleans, LA. Feb 6-9, 2017.

188. Liu, Y., R.H. Weisberg, J.M. Lenes, L. Zheng, K. Hubbard, and J.J. Walsh (2017), An altimetry-derived index of the offshore forcing on the "pressure point" of the

West Florida Shelf: Anomalous upwelling and its influence on harmful algal blooms, invited talk, AGU Fall Meeting, New Orleans, Dec. 2017.

189. Liu, Y., R.H. Weisberg (2017), A skill score of trajectory model evaluation using reinitialized series of normalized cumulative Lagrangian separation, oral presentation, AGU Fall Meeting, New Orleans, Dec. 2017.

190. Liu, Y., R.H. Weisberg, J. Chen, C.R. Merz, J. Law, and L. Zheng (2017), West Florida Shelf response to hurricane Irma, poster presentation, AGU Fall Meeting, New Orleans, Dec. 2017.

191. Liu, Y., R.H. Weisberg, C.R. Merz, J. Law, L. Zheng, and J. Chen (2018), West Florida Shelf response to hurricane Irma, Ocean Sciences Meeting, Portland Oregon, Feb 2018 (oral presentation).

192. Chen, J., R.H. Weisberg, Y. Liu, and L. Zheng (2018), Tampa Bay response to Hurricane Irma. Ocean Sciences Meeting, Portland Oregon, Feb 2018 (lightning poster).

193. Chen, J., R.H. Weisberg, Y. Liu, and L. Zheng (2018), On the momentum balance of Tampa Bay. Ocean Sciences Meeting, Portland Oregon, Feb 2018 (poster presentation).

194. Liu, Y., R.H. Weisberg, J. Chen, C.R. Merz, J. Law, and L. Zheng (2018), West Florida Shelf response to Hurricane Irma, AGU Fall Meeting, Washington DC, Dec 2018 (poster presentation).

195. Liu, Y., R.H. Weisberg, S. Vignudelli, and G.T. Mitchum (2018), Dual Self-Organizing Map (SOM) and joint SOM-wavelet analyses: An application in the Gulf of Mexico Loop Current system, 2018 AGU Fall Meeting, Washington DC, Dec 2018 (poster presentation).

196. Liu, Y., R.H. Weisberg, K. Hubbard, M. Garrett, and L. Zheng (2018), Short-Term and Seasonal Forecasts of Harmful Algal Blooms on the West Florida Shelf, 2018 AGU Fall Meeting, Washington DC, Dec 2018 (poster presentation).

197. Liu, Y., R.H. Weisberg, and L. Zheng (2018), Northeastern Gulf of Mexico coastal ocean response to Hurricane Michael, 2018 AGU Fall Meeting, Washington DC, December 2018 (poster presentation).

198. Chen, J., R.H. Weisberg, Y. Liu, and L. Zheng (2018) The Tampa Bay Coastal Ocean Model (TBCOM) performance for Hurricane Irma. AGU Fall Meeting, Washington, D.C., Dec 2018 (oral presentation).

199. Weisberg, R.H., Liu, Y. (2019), The coastal ocean circulation influence on the 2018 West Florida Shelf K. brevis red tide bloom, AGU Fall Meeting, San Francisco, December 2019 (poster).

200. Liu, Y., Weisberg, R.H. (2019), Deep ocean interactions with the West Florida Shelf: the role of the "Pressure Point" on both across shelf transport and the penetration of the Loop Current into the Gulf of Mexico, AGU Fall Meeting, San Francisco, December 2019 (poster).

201. Singhofen, P.J, Liu, Y., Weisberg, R.H. (2019), Automated Hyper-Resolution Flood Forecasting in a Coastal Urban Setting, AGU Fall Meeting, San Francisco, December 2019 (oral).

202. Yang, Y., Weisberg, R.H., Liu, Y. Liang, X.S. (2019), Instabilities and multiscale interactions underlying the Loop Current eddy shedding in the Gulf of Mexico, AGU Fall Meeting, San Francisco, December 2019 (poster).

203. Liu, Y., Weisberg, R.H., Hubbard, K, Garret, M., Chen, J. Zheng, L. (2019), Short-Term and Seasonal Forecast of Harmful Algal Blooms on the Eastern Gulf of Mexico Coast, GoMOSES, New Orleans, LA, Feb 2019 (poster).

204. Vasbinder, K., C. Ainsworth, G. Zapfe, R.H. Weisberg, and Y. Liu. "Gulf of Mexico Larval Trajectories" American Fisheries Society and The Wildlife Society 2019 Joint Annual Meeting, Reno, NV, October 2019.

205. Vasbinder, K., C. Ainsworth, G., R.H. Weisberg, and Y. Liu. "Larval Vertical Migration Patterns and Their Impact on Larval Dispersal in the Gulf of Mexico" American Fisheries Society Florida Chapter Meeting, Haines City, FL, April 2019.

206. Liu, Y., Weisberg, R.H., Zheng, L. (2020), Termination of the 2017-2018 Florida red tide – A tracer model perspective, AGU Fall Meeting (Virtual), 7 December 2020 (talk).

207. Liu, Y., Merz, C.R., Weisberg, R.H., Shay, L.K., Glenn, S., Smith, M. (2020), Comparisons of Altimetry and Model Products with High-Frequency Radar Observed Radial Currents in the Straits of Florida, Ocean Surface Topography Science and Technology (OSTST) Virtual Meeting, 19–23 October 2020 (online PPT).

208. Vasbinder, K., C. Ainsworth, G. Zapfe, R.H. Weisberg, and Y. Liu (2020), Larval Dispersal and Ecosystem Management: Using larval trajectories to identify key habitats in the Gulf of Mexico, American Fisheries Society Virtual Annual Meeting, September 2020 (talk).

209. Yang, Y., R.H. Weisberg, Y. Liu, and X.S. Liang (2020), Instabilities and multiscale interactions underlying the Loop Current eddy shedding in the Gulf of Mexico, GoMOSES, Tampa, February 2020 (talk).

210. Liu, Y., and R.H. Weisberg (2020), Deep ocean interactions with the West Florida Shelf: the role of the "Pressure Point" on both across shelf transport and the penetration of the Loop Current into the Gulf of Mexico, Ocean Sciences Meeting, San Diego, February 2020 (talk).

211. Chen, J., R.H. Weisberg, Y. Liu, and L. Zheng (2020), The Tampa Bay Coastal Ocean Model Nowcast/Forecast System with Ecological Applications, Ocean Sciences Meeting, San Diego, February 2020 (poster).

212. Yang, Y., R.H. Weisberg, Y. Liu, and X.S. Liang (2020), Instabilities and multiscale interactions underlying the Loop Current eddy shedding in the Gulf of Mexico, Ocean Sciences Meeting, San Diego, February 2020 (poster).

213. Zhang, Y., C. Hu, Y. Liu, R.H. Weisberg, and V. Kourafalou (2020), Submesoscale and mesoscale eddies in the Florida Straits: Observations from satellite ocean color measurements, Ocean Sciences Meeting, San Diego, February 2020 (poster).

214. Vasbinder, K., C. Ainsworth, G. Zapfe, R. Weisberg, and Y. Liu (2020), Larval Dynamics in the Gulf of Mexico: Using Ontogentic Vertical Migration Patterns to Inform Larval Trajectories and Assess Ecosystem Impacts, Ocean Sciences Meeting, San Diego, February 2020 (poster).

PRESENTATION AT WORKSHOP/SEMINARS:

Scholarly Presentations and Workshops in addition to society meetings with published abstracts.

1. March 23-30, 1974, Leningrad, USSR: GARP Atlantic Tropical Experiment (GATE) - Oceanographic Subprogram planning workshop. Invited.

2. August 13-25, 1975, Geneva, Switzerland: GATE Oceanography Symposium. Invited.

3. December 16, 1975, Woods Hole, MA: Invited seminar at the Woods Hole Oceanographic Institute.

4. May 19-22, 1976, Georgetown, SC: Transport Processes in Estuarine Environments, Belle W, Baruch Institute for Marine Biology and Coastal Research Symposium sponsored by ONR.

5. November 10-14, 1976, Stony Brook, NY: Estuarine Transport Processes, Marine Sciences Research Center, State University of New York. Invited.

6. February 18 - March 11, 1977, Miami, FL: GATE Oceanographic Workshop. Invited.

7. January, 1978, Fort Lauderdale, FL: INDEX Workshop.

8. April 2-6, 1979, Boulder, CO: Physics of the Equatorial Oceans Workshop.

9. April 28-30, 1980, Tallahassee, FL: Equatorial Theoretical Panel Meeting.

10. April 27-30, 1981, Venice, Italy: SCOR Working Group 47 Meeting.

11. October 28-30, 1981, Palisades, NY: Equatorial Theoretical Panel Meeting.

12. November 3-4, 1983, AOML, Miami, FL: ENSO Data Display Workshop.

13. September 4, 1984, Princeton, NJ: Invited seminar at GFDL, Princeton Univ.

14. October 25, 1984, Tallahassee, FL: Invited seminar at Florida State University.

15. November 15, 1984, Queens, NY: Convened an Ad Hoc Meeting for the planning of a U.S. TOGA Atlantic Program. Report submitted to NSF.

16. January 23-24, 1985, Princeton, NJ: SEQUAL Experiment Principal Investigators Meeting at GFDL, Princeton University for drafting a cover document to accompany data analysis proposals to NSF.

17. February 27, 1985, St. Petersburg, FL: Invited seminar at St. Petersburg Junior College.

18. June 19-21, 1985, New York, NY: U.S./French SEQUAL/FOCAL Program Workshop at Columbia University, Three talks presented.

19. July 29-30, 1985, Palisades, NY: SEQUAL Experiment Principal Investigators Meeting at LDGO, Columbia University.

20. September 6-15, 1985, Rio de Janeiro, Brazil: Invitee to the 4th session of the CCCO Tropical Atlantic Climate Studies Panel and Workshop. I organized the U.S. invitee participation (10 participants) by authoring a letter proposal to the U.S. TOGA Project Office/NOAA/NSF for travel support. A paper was presented and a contribution was made to the workshop report.

21. October 14, 1985, Miami, FL: Invitee to the Indo/U.S. Bilateral Program Meeting on

the Arabian Sea cooling at RSMAS, University of Miami., Dr. T. Y. Tang attended and presented a paper.

22. October 16-18, 1985, Boulder, CO: Invitee to NOAA Equatorial Circulation Workshop held at NCAR. A presentation and a written contribution were given.

23. November 5, 1985, Beaufort, NC: Duke/UNC Oceanographic Consortium Workshop. Three talks were given along with my associate and student T.Y. Tang and T.J. Weingartner.

24. December 10, 1985, Tallahassee, FL: FDER workshop on the Apalachicola Bay. Invited.

25. December 15-18, 1985, Seattle, WA: Invited seminar at JISAO, University of Washington and NOAA/PMEL. (a position was subsequently offered).

26. May 28, 1986, Atlanta, GA: COE/FDER Meeting on the Apalachicola Bay. Invited.

27. August 11-15, 1986, Honolulu, HI: Invitee to the U.S. TOGA Workshop on the Dynamics of the Equatorial Oceans held at the University of Hawaii. A review article entitled "Observations pertinent to instability waves in the equatorial oceans" was given and subsequently published.

28. October 29-30, 1986, Woods Hole, MA: North Brazil Current Experiment (NOBREX) initial organizational meeting at Woods Hole Oceanographic Institution, paper presented.

29. January 20, 1987, Washington, DC: NOBREX briefing delivered to the Oceanography Section, National Science Foundation.

30. February 19, 1987, New York, NY: NOBREX Principal Investigator Meeting at Columbia University.

31. March 26, 1987, Miami, FL: Invited seminar at RSMAS, University of Miami.

32. June 15-19, 1987, Paris, France: U.S./French SEQUAL/FOCAL Program Workshop, three papers presented.

33. June 23-23, 1987, Paris, France: Invitee to the 5th session of the CCCO Tropical Atlantic Climate Studies Panel. Presentation given and contribution made to the workshop report.

34. August 3-5, 1987, Durham, NH: Invitee to the U.S./Brazil Physical Oceanography Workshop held at the University of New Hampshire. A presentation was given.

35. September 21-23, 1987, Honolulu, HI: Invitee to an NSF sponsored World Ocean Circulation Experiment (WOCE) Workshop on the Tropical Oceans.

36. October 6-8, 1987, Seattle, WA: Invitee to NSF sponsored WOCE Workshop on on direct velocity measurements.

37. December 1987, Washington, DC: NOBREX P.I. meeting at NSF.

38. January 5, 1988, Tallahassee, FL: Meeting with FDER and COE on Apalachicola Bay. Invited.

39. April 14, 1988, Princeton, NJ: Invited seminar at GFDL, Princeton University.

40. April 27-29, 1988, Miami, FL: WOCE Core 3 workshop invitee and speaker.

41. September 27-29, 1988, Dallas, TX: WOCE Moored Measurements Implementation Panel Meeting. Invited.

42. October 19-20, 1988, Miami, FL: Invited seminar at NOAA AOML.

43. October 21, 1988, Boston, MA: WOCE Process Studies Implementation Panel Meeting. I presented a straw position for a Tropical Atlantic Program. Invited.

44. November 16, 1988, Miami FL: NOAA STACS Program Workshop attendee.

45. January 24-25, 1989, Washington, DC: NSF review panel member

46. February 7-9, 1989, Miami, FL: Invited participant at NOAA-EPOCS mid-term review.

47. March 8-10, 1989, Honolulu, HI: Invited participant and speaker at U.S. TOGA Program (NOAA) mid-term review, abstract to appear.

48. March 22, 1989: Invited seminar on Ocean Circulation at New College.

49. November 6, 1989, Palisades, NY: Invited seminar at Lamont-Doherty Geological Observatory of Columbia University.

50. January 10-11,1990, Miami, FL: Invited presentation and workshop participant at NOAA/AMOL (Tropical Atlantic Climate Studies Meeting).

51. January 17-19, 1990, Miami, FL: Invited presentation and workshop participant at NOAA/AOML (Equatorial Pacific Ocean Climate Studies Meeting).

52. February 20, 1990, Raleigh, NC: Presided over the Ph.D. thesis defense of Thomas

Weingartner as major professor and thesis committee chairman at NCSU.

53. February 25-28, 1990, Honolulu, HI: Invited presentation and workshop participant at University of Hawaii, NAS TOGA Panal Ad Hoc Committee on the tropical Pacific Monitoring Array.

54. March 17-25, 1990, Taipei, Taiwan, ROC: Invited visiting scientist, National Taiwan University. Three lectures given plus a presentation at the National Research Council.

55. March 28, 1990, Tallahassee, FL: NWFWMD advisory panel meeting.

56. June 18-20, 1990, Washington, D.C.: NOAA review panel member.

57. July 15-20, 1990, Honolulu, HI: International TOGA Science Conference, presentation given with published abstract.

58. October 1-5, 1990, Fortaleza, Brazil: Invitee and presentor at a Workshop on the Relationship of the Atlantic Ocean to Regional and Global Climate Variations - U.S. Brazil Science and Technology Initiative.

59. January 22-24, 1991, Miami, FL: Invited Participant. NOAA-EPOCS Annual Review

60. February 13, 1991, M. S. Department Seminar on Tampa Bay Circulation

61. April 8-9, 1991, Panelist, Northwest Florida Water Management District, Technical Working Group on Apalachicola Bay. Apalachicola, FL.

62. April 23, 1991, LDGO, Columbia University, Palisades, NY., proposal development.

63. June 20-21, 1991, Tallahassee, FL.: Invited speaker at NWFWMD workshop on Apalachicola Bay.

64. October 8, 1991, New York, NY., Invited workshop participant on USACOE, New York district workshop on New York Bight.

65. March 4, 1992, (Tampa, FL.) and March 24, 1992 (Clearwater, FL.). Invited speaker, USF/CAS "Lunch with a genius" program, Oceanographic processes associated with the El Nino-Southern Oscillation (ENSO) phenomenon.

66. March 11-13, 1992 WES, Vicksburg, MS., Invited Panelist, USACOE.

67. March 30 - April 1, 1992, Honolulu, HI., Invited participant and speaker, NSF Tropical Instability Wave Experiment (TIWE) workshop

68. May 4-8, 1992, Co-Convener and speaker, TOGA Program Conference in Taipei, Taiwan, ROC.

69. July 14-16, 1992, Stonybrook, NY., Invited Panelist, USACOE.

70. September 22, 1992, Oceanographic Center, NOVA University, Dania, FL., Committee member, Ph.D. Thesis Defense, Z. Yu.

71. November 9-11, 1992, Honolulu, HI., Invited implementation panel member, TOGA TAO array workshop.

72. December 2, 1992, St. Petersburg, FL., Invited seminar speaker at Eckerd College.

73. December 9-10, 1992, St. Petersburg, FL., Invited Panelist, USACOE.

74. January 22, 1993, Mote Marine Lab, Sarasota, FL., Attendee, EPA Gulf of Mexico Program Meeting.

75. January 27-29, 1993, Miami, FL., Invited participant, NOAA EPOCS Annual Review.

76. March 1-3, 1993, Honolulu, HI., Invited participant and presenter, National Academy of Sciences sponsored Global Ocean Atmosphere Land System Workshop.

77. March 30-31, 1993, Stennis Space Center, MI., Invited Florida Delegation Leader to Southeast Space Grant Consortium Meeting.

78. May 11, 1993, AMOL/RSMAS, Miami, FL., Invited seminar speaker.

79. June 29-30, 1993, Havana, FL., Invited participant, NWFWMD Technical Working Group Meeting.

80. July 8, 1993, Ithaca, NY., Invited speaker at Cornell University.

81. July 14-16, 1993, Seattle WA., Invited speaker, JGOFS Workshop.

82. July 19-20, 1993, Woods Hole MA., Invited Panelist, USACOE.

83. July 26-28, 1993, Washington, D.C., Invited NSF Panelist.

84. September 3, 1993, St. Petersburg, FL: Seminar presented at the Marine Science Department - USF.

85. November 18-19, 1993, Havana, FL., Invited participant, NWFWMD Technical Working Group Meeting.

86. January 11-14, 1994, Miami, FL., Invited participant at NOAA/EPOCS Meeting.

87. April 5-7, 1994, Tallahassee, FL., MMS workshop on northwest Florida shelf.

88. April 21-22, 1994, Miami, FL., Invited speaker at Florida Coastal Science Symposium, RSMAS.

89. May 11-13, 1994, Princeton, NJ., Invited speaker at WOCE (NSF)/ACCP (NOAA) workshop on Atlantic Climate Variability.

90. July 19-22, 1994, Honolulu, HI., Invited speaker at The Oceanography Society Meeting.

91. August 22-25, 1994, Seattle, WA., Invited speaker at NOAA-OGP PACS Workshop.

92. September 23, 1994, Stony Brook, NY, Invited panelist, USACOE.

93. October 25-26, 1994, Project leader (non-participant), R/V SUNCOASTER, West Florida Shelf Deployment.

94. November 14, 1994, Havana, FL., Invited participant, NWFWMD Technical Working Group Meeting.

95. December 5-9, 1994, San Francisco, CA., Session Convener/Chair, Fall Annual Meeting of the American Geophysical Union.

96. January 30, 1995, Tallahassee, FL., Evolution of the three-dimensional circulation about the equator in the central equatorial Pacific. Seminar presented at the Florida State University.

97. February 8-10, 1995, Miami, FL., Invited participant, PACS implementation panel workshop.

98. April 2-7, 1995, Melbourne, Australia, TOGA 95 Conference.

99. April 24, 1995, St. Petersburg, FL., USGS WFS workshop, participant and presenter of 4 talks on in-situ measurements, satellite remote sensing and numerical modeling of the west Florida continental shelf circulation.

100. May 8-10, 1995, Baltimore, MD., Invited participant COE HBRAG.

101. May 23-24, 1995, Boulder, CO., Invited participant, PACS implementation panel workshop.

102. July 20-21, 1995, Seattle, WA., Invited participant, PACS implementation panel workshop.

103. August 14-15, 1995, Tuckerton, NJ., Invited participant COE HBRAG.

104. October 13, 1995, Miami, FL., Invited seminar at AOML/RSMAS on "Slow interannual variability in the equatorial west-central pacific in relation to ENSO."

105. October 14, 1995, St. Petersburg, FL., Lectures at SPHS, IB Program.

106. December 7-8, 1995, Stony Brook, NY., Invited participant COE HBRAG.

107. April 10, 1996, Vero Beach, FL., Invited seminar Harbor Branch Oceanographic Institute on "in-situ measurements and modeling of West Florida continental shelf circulation."

108. June 7, 1996, St. Petersburg, FL., USGS WFS workshop, participant and presenter of 4 talks on in-situ measurements, satellite remote sensing and numerical modeling of the west Florida continental shelf circulation.

109. July 9, 1996, St. Petersburg, FL., Taped interview for WUSF Science Adventures series.

110. July 22, 1996, St. Petersburg, FL., Invited seminar at FMRI on "West Florida continental shelf circulation."

111. August 8, 1996, Miami, FL., Invited seminar at AOML/RSMAS on "A new mechanism for ENSO."

112. August 27-29, 1996, France, Invited presenter and contributor at PIRATA workshop at centre ORSTOM.

113. September 11, 1996, St. Petersburg, FL., DMS seminar in the El Nino-Southern Oscillation.

114. September 18, 1996, Seattle, WA., Presentation on upper ocean variability in the western equatorial Pacific during a principal investigators meeting for TOGA/COARE.

115. October 5, 1996, St. Petersburg, FL., Appeared in a WUSF Science Adventures television presentation.

116. October 25, 1996, Tallahassee, FL., Two seminars presented at the Department of Oceanography, FSU.

117. November 6-7, 1996, St. Petersburg, FL., Invited participant, FMRI redtide workshop.

118. November 18-20, 1996, Miami, FL., Invited panelist, NOAA/COP Technical Advisory Panel Meeting and Workshop.

119. December 5-6, 1996, Vicksburg, MS., Invited panelist, COE near field modeling.

120. January 6-7, 1997, Tallahassee, FL., Three presentation at MMS quality review board meeting on west Florida continental shelf modeling.

121. May 1-2, 1997, St. Petersburg, FL., USGS West Florida Coastal Workshop, four oral presentations and two posters.

122. May 7-8, 1997, Steinhatchee, FL., Florida Bend Coastal Research Workshop, Participant and speaker: Some observational and modeling perspectives on the circulation of the Florida Big Bend.

123. August 7, 1997, Fairbanks, AK. On the role the western Pacific in the El Nino-Southern Oscillation. Seminar presented at University of Alaska, Fairbanks, AK.

124. August 8, 1997, Fairbanks, AK. Observations and modeling studies of the West Florida continental shelf circulation. Seminar presented at University of Alaska, Fairbanks, AK.

125. August 29, 1997, St. Petersburg, FL., Storm-induced sea level variations on the West Florida Shelf. Tutorial presented for the National Weather Service and Florida emergency planners.

126. October 16-27, 1997, Shanghai, Qingdao, and Beijing China. 14 lectures presented at 6 institutions on topics concerning the El Nino-Southern Oscillation, the Equatorial Undercurrent in the central pacific, and the West Florida continental shelf circulation.

127. January 12-14, 1998, Tallahassee, FL., Three presentations at MMS Quality Review Board Meeting on the West Florida continental shelf modeling project.

128. February 5, 1998, St. Petersburg, FL., Physical factors affecting West Florida sea level and circulation. Presentation at the National Conference on Beach Preservation Technology.

129. February 7-8, 1998, San Diego, CA. Meso-scale features of the continental shelf circulation. Presentation at the ONR HYCODE workshop.

130. February 26-27, 1998, Miami FL. Poster presentation (R. Weisberg, C. Wang, J. Virmani, and D. Mayer) at the NOAA/AOML silver anniversary.

131. April 14, 1998, St. Petersburg, FL. Guest lecture on Tropical Instability Waves.

132. May 16, 1998, St. Petersburg, FL. Public lecture on El Nino, FDEP Marine Marine Quest.

133. June 18, 1998, St. Petersburg, FL El Nino-Southern Oscillation, seminar (C. Wang and R.H. Weisberg) at the USGS Center for Coastal Geology.

134. July 7-14, 1998, Boulder, CO. Large scale variability during COARE. Paper with published abstract at the NSF-sponsored COARE98 conference by R.H. Weisberg et al.

135. July 7-14, 1998, Boulder, CO. Western pacific interannual variability associated with ENSO. Paper with published abstract at the NSF-sponsored COARE98 conference by C. Wang et al.

136. July 7-14, 1998, Boulder, CO. Upwelling in the western Pacific warm pool. Paper with published abstract at the NSF-sponsored COARE98 conference by R. Helber et al.

137. July 7-14, 1998, Boulder, CO. Wave kinematics in the western Pacific warm pool. Poster with published abstract at the NSF-sponsored COARE98 conference by R. Helber et al.

138. July 7-14, 1998, Boulder CO. Energy balances in the upper western equatorial Pacific ocean during a westerly wind burst. Paper with published abstract at NSF-SPONSORED COARE98 conference by H. Wiejesekera et al.

139. July 7-14, 1998, Boulder, CO. Observations of low lattitude near inertial internal gravity waves forced by westerly wind bursts. Paper with published abstract at the NSF-sponsored COARE98 conference by C. Eriksen et al.

140. July 14-16, 1998, San Diego, CA. Observations and models of the West Florida Shelf circulation, workshop report presented by H. Yang et al.

141. August 27-28, 1998, St. Petersburg, FL. ECOHAB P.I. meeting presenter.

142. October 6-8, 1998, Tuscon, AZ. PACS/EPIC P.I. meeting. (Presentation by J. Virmani).

143 October 21, 1998, Tampa FL. Invited presentation to the USF Leadership Council on WFS research.

144. October 26-29, 1998, Miami FL. Annual NOAA Climate Analysis Workshop, 2 presentations given (with C. Wang).

145. November 24, 1998, Dania FL. ONR site visit participant. Presentation with M. Luther.

146. November 30, 1998, St. Petersburg, FL. ONR (HyCODE) site visit. Presentation on WFS research.

147. January 12-13, 1999, St. Pete Beach, FL. Three presentations at MMS Quality Review Board meeting on the West Florida continental shelf modeling project.

148. January 18-21, 1999, Baltimore MD. Physical Oceanography studies on the west Florida continental shelf. Presentation at the ONR HyCODE P.I. meeting.

149. February 24-26, 1999, Dania Beach, FL. Physical Oceanography studies on the west Florida continental shelf. Presentation at an NSF sponsored SFOMC workshop.

150. April 28, 1999, St. Petersburg FL. Presentation at an ECOHAB P.I. meeting.

151. May 4-7/99, Miami, FL. Working Group Leader, NOAA Tropical Atlantic Observing system Workshop

152. May 25, 1999, Dania Beach, FL. SFOMC Board of Directors meeting.

153. June 20-25 1999, New London, New Hampshire, Invited presenter, Gordon Res. Conference on Coastal Ocean Modeling.

154. July 12, 1999, Cambridge MD, PhD defense for Ms. Z. Li

155. August 13,1999, St. Petersburg, FL. ECOHAB P.I. meeting presenter.

156. August 27, 1999, St. Petersburg, FL. DMS seminar: Inner shelf circulation studies on Florida's west coast.

157. September 8, 1999, St. Petersburg, FL. Invited presenter at NWS meeting on coastal ocean monitoring

158. October 19-21, 1999. Mobile AL. Workshop attendee and presenter at the MMS workshop on the Northeast Gulf of Mexico.

159. November 16,1999. Tampa FL. Invited lecturer on El Nino, Geography Dept.

160. November 18, 1999. St. Petersburg, FL. Invited presenter at the FMRI bait fish

conference.

161. November 29-December 1, 1999. New Brunswick, NJ. Invited participant and speaker at the ONR HyCODE workshop.

162. December 2, 1999. New Orleans, LA. Invited speaker at the MMS annual Information Transfer Meeting.

163. February 17, 2000. St. Petersburg, FL. HyCODE/FSLE meeting presentor.

164. May 8, 2000. Miami, FL. Invited seminar, NOAA/AOML. West Florida shelf response to local wind forcing: April 1998.

165. September 5, 2000. Ruskin FL. Hurricane storm surge presentation at the NWS.

166. September 13, 2000. St. Petersburg, FL. HyCODE/FSLE meeting presentor.

167. September 22, 2000. Narragansett R.I. Invited seminar at URI for the J.A. Knauss 75th birthday symposium. An observers view of the equatorial current system.

168. October 17, 2000. St. Petersburg, FL. Participation (poster) at Project Access meeting

169. October 27, 2000. Palisades N.Y. Participant and speaker at NAME conference held at the LDEO, Columbia Univ. IRI.

170. November15, 2000. St. Petersburg, FL. Taught classes at John Hopkins Middle School.

171. November 27, 2000. Gulf Breeze, FL. Invited participant at the EPA/NOAA HABSOS meeting.

172. December 5, 2000. Woods Hole MA. Invited speaker at the HAB symposium.

173. January 8-11, 2001 St. Pete Beach FL. presentation at ONR HyCODE P.I. meeting

174. March 15-16, 2001 Miami, FL. Invited presentation at RSMAS/AOML.

175. March 28-30, 2001 Dania, FL Invited participant, CECOOS workshop.

176. May 21-24, 2001 Washington D.C. WCRP/SCOR Workshop, presentation by J. Virmani.

177. July, 2001 Miami, FL, RSMAS, SE-COOS meeting, presentation by R. He.

178. July 7-8, 2001 Corpus Christi TX., Invited presentation at TAMU-CC.

179. August 9-10, 2001 St. Petersburg, FL., Invited presentation at SURA SCOOP mtg.

180. August 24, 2001 St. Petersburg FL., presentation at ECOHAB P.I. meeting.

181. November 1-2, 2001 Newport News, VA., Invited presentation at SURA-SCOOP mtg.

182. November 14, 2001 St. Petersburg FL., Great American teach-in (J. Hopkins middle school).

183. November 15, 2001 St. Petersburg FL., Seminar at USGS.

184. November 26, 2001 Sarasota, FL. Seminar at MOTE Marine Lab.

185. January 6-9, 2002 Santa Barbara, CA., HyCODE P.I. mtg., presentation on WFS.

186. January 17, 2002 St. Petersburg, FL. ECOHAB P.I. mtg. presentation on WFS.

187. February 14, 2002 St. Petersburg, FL. SWFWMD mtg. presentation on WFS and the Charlotte Harbor estuary.

188. February 21, 2002 Dania, FL. Presentation to the Ocean Commission on coastal ocean monitoring.

189. February 28, 2002 Atlanta, GA. SEA-COOS P.I. mtg.

190. April 2-3, 2002 Panama City, FL. ONR P.I. mtg., presentation on BSOP project.

191. April 29-30, 2002 Nashville, TN., SURA mtg., 2 presentations to SURA coastal committee

192. May 3, 2002 St. Petersburg, FL. presentation to NOAA visitors.

193. May 29, 2002 St. Petersburg, FL. presentation at ECOHAB P.I. meeting

194. August 5, 2002 Dartmouth, MA. Seminar at SMAST, UMass, Dartmouth

195. September 18, 2002 St. Petersburg, FL. Presentation at USGS Tampa Bay modeling meeting.

196. September 30-October 2, 2002 Chapel Hill N.C., 3 presentations at SEA-COOS P.I. meeting.

197. October 9, 2002 Sarasota FL, invited talk at Mote Marine Lab on Charlotte Harbor estuary

198. October 11, 2002 Stony Brook, N.Y., invited seminar at Mar. Sci. Res. Cen., SUNY, Stony Brook.

199. November 6-9, 2002 Barbados W.I., invited talk at IASI-IOCARIBE-RODAE workshop.

200. November 20, 2002 St. Petersburg, FL., oceanography talks at J. Hopkins Middle School.

201. January 16-17, 2003 Miami, FL, presentation at HYCODE P.I. mtg.

202. March 14, 2003 Atlanta GA., SEA-COOS P.I. mtg.

203. March 31, 2003 Washington D.C., OCEAN.US summit participant.

204. April 10, 2003 St. Petersburg, FL. guest lecture on estuarine circulation.

205. May 27-29, 2003 Jacksonville, FL. SEA-COOS P.I. mtg.

206. 6/22-6/27/03 New London, NH, Gordon Res. Confr. on Coastal Ocean Modeling, 4 posters presented.

207. 8/19-8/21/03 Washington D.C., HYCOM mtg., presentation on WFS modeling.

208. 10/1/03, Chapel Hill NC, SEACOOS EXCOMM meeting.

209. 10/7/03, Sarasota FL, invited talk at Mote Marine Lab on Charlotte Harbor estuary

210 10/23-10/24/03, Stennis Space Center, MS, invited seminar at USM.

211. 10/31/03, Clearwater FL, Hurricane storm surge presentation to Pinellas Co.

212. 11/3-11/5/03, Savannah GA, SEACOOS workshop, 2 presentations and moderator.

213. 11/11-11/13/03, Washington D.C., NCEP ocean model review comm.

214. 11/14/03, Chapel Hill, NC, SEACOOS EXCOMM mtg.

215. 11/19/03, St. Petersburg FL, Great American Teach-in at J. Hopkins Middle School.

216. 1/19/04, Atlanta GA., SEACOOS EXCOMM mtg.

217. 1/20/04, Ruskin, FL, poster presentation at USGS Tampa Bay conference.

218. 3/8-10/04, St. Petersburg, FL, presentation at MTS Buoy wrkshp: A Coastal Ocean Observing System for the WFS - COMPS/SEACOOS.

219. 3/10/04, Wash. DC, SEACOOS House/Senate briefings.

220. 3/11/04, Chapel Hill, NC, SEACOOS BoD mtg.

221. 3/15-16/04, St. Petersburg, FL, ACT radar mtg.

222. 4/12-15/04, St. Petersburg, FL, EPA-GCOOS HAB mtg.

223. 5/10-12/04, St Petersburg, FL, presentation at ONR site visit.

224. 5/13/04, Ft. Myers, FL, presentation on the CH estuary at SFWMD mtg. at ECC.

225. 5/16-19/04, Miami. FL, SEACOOS sp wrkshp, 3 oral presentations and 4 posters.

226. 5/21-24/04, Margarita Venezuela, presentation at CARIACO PI mtg.

227. 5/26/04, Venice, FL, presentation to Coast Guard aux.

228. 6/7/04, St. Petersburg, FL, presentation to Pinellas Co. teachers.

229. 6/14-16/04, New Bedford, MA, presentation at FVCOM wrkshp at UMASSD.

230. 7/10/04, St. Petersburg, FL, guest sermon at Congr. B'nai Israel.

231. 8/4/04, Atlanta, GA, SEACOOS PI mtg.

232. 8/16-17/04, Atlanta, GA, SEACOOS EXCOMM mtg.

233. 8/18/04, Miami, FL, seminar at AOML (by R. Helber).

234. 8/24/04, St. Petersburg, FL, presentation to MOSI exhibitors.

235. 8/26/04, St. Petersburg, FL, seminar on hurricane storm surge.

236. 9/27/04, St. Petersburg, FL, guest lecture in Intro P.O. course.

237. 9/29/04, Atlanta GA, SEACOOS MWG mtg.

238. 10/5/04, Sarasota, FL, H. Charley simulation at MML (by L. Zheng).

239. 10/11/04, Liege, BE., juror, PhD defense for A. Barth.

240. 10/13/04, Liege, BE., juror, PhD defense for A. Alvera-Azcarate.

241. 10/27/04, Miami, FL, presentation at HYCOM meeting.

242. 11/10&11/04, Charleston, SC, presentation at SEACOOS fall workshop.

243. 11/16&17/04, Charleston SC, participation at NOAA COTS workshop.

244. 12/20/04, Naples, FL, SFWMD presentation of estuary/shelf interaction (by L.Zheng).

245. 1/17-19/05, St. Petersburg, FL, SEACOOS External Review, OWG summary presentation as chairman.

246. 2/11/05, Washington DC, SEACOOS presentation to legislative aides.

247. 2/16/05, Office, – teleconference re: NOPP panel.

248. 3/2-3/05, Miami, FL, SEACOOS BoD mtg., OWG Chair presentation.

249. 3/11-13/05, Steinhatchee, FL, CMS faculty retreat.

250. 3/?/05, San Diego, CA, "Wireless Waves" presented by R. Cole at RD-Instruments, ADCPs in Action.

251. 4/5/05, Ruskin, FL, Hurricane Charley simulation seminar at local AMS mtg.

252. 4/9/05, St. Petersburg, FL, Public lecture on Hurricane Charley simulation at the FWRI Ocean Day.

253. 4/11/05, St. Petersburg, FL, presentation to COE scientists on WFS.

254. 4/28/05, St. Petersburg, FL, presentation on WFS/GOM currents at the SPYC.

255. 6/2/05, St. Petersburg, FL, seminar on Tampa Bay circulation.

256. 6/3/05, St. Petersburg, FL, seminar on hurricane storm surge.

257. 6/7/05, Orlando, FL, presentation to FL COOS Caucus.

258. 6/16/05, Naples, FL, Rookery Bay discussions/Tampa Bay presentation.

259. July/August, St. Petersburg, FL, several TV interviews on hurricane storm surge.

260. 7/25-28/05, Jacksonville, FL, 4 presentations at SEACOOS/SECOORA workshop.

261. 8/23, St. Petersburg, FL, participant GofM Alliance mtg.

262. 10/14, St. Petersburg, FL, presentation at FWRI meeting.

263. 10/17-20, Norfolk VA, ERF Conference participant on several town hall meetings.

264. 11/2-4, Houston TX, GCOOS Industry workshop.

265. 11/8, Washington DC, SURA Coastal Ocean Committee.

266. 11/15-18, Columbia SC, SEACOOS fall workshop.

267. 12/2, St. Petersburg, FL, Patel Center meeting.

268. 1/5, St. Petersburg, FL, FWRI meeting.

269. 1/17-19, New Orleans, NAS-NRC Committee on NO RHPP

270. 2/14-16, Jacksonville, FL, NOAA coastal inundation workshop.

271. 2/20-24, Honolulu HI, several P.I. meetings at AGU/ASLO OS

272. 3/7, St. Petersburg, FL, MERHAB P.I. meeting.

273. 3/19-21, New Orleans, NAS-NRC Committee on NO HPS

274. 3/23, Naples, FL, Rookery Bay model presentation at RBNERR (L. Zheng).

276. 4/3, Tampa, invited speaker by Congr. Davis, Town Hall mtg.

277. 4/3, Sarasota, FL, FL COOS Caucus mtg

278. 4/5, St. Petersburg, FL, invited speaker TBNEP, Tampa Bay circulation.

279. 4/27, St. Petersburg, FL, invited speaker SPYC.

280. 5/8-9, Washington DC, invited participant CORE/JOI/SURA.

281. 5/9, Tampa, FL, invited speaker, Hurricane storm surge potential at Tampa Bay Insurance management chapter mtg. (L. Zheng)

282. 5/17, Tampa, FL, Storm surge presentation at RIMS (by L.Zheng).

283. 5/15-17, New Orleans, NAS-NRC Committee on NO RHPP

284. 5/?, Margarita Is., Venezuela, CARICO progress report (by R. Cole).

285. 6/6, Tampa, FL, Invited speaker, local AMS Chapter annual banquet.

286. 6/16, Tampa, FL, Invited public forum panelist at "An inconvenient truth."

287. 6/?, New Bedford, MA, Applications of FVCOM to the west Florida continental shelf and its estuaries, 2nd FVCOM workshop at UMass-Dartmouth (L. Zheng)

288. 7/11, Woods Hole, MA., Invited seminar at WHOI

289. 7/12, Woods Hole, MA., Invited seminar at WHOI

290. 7/17, Sarasota, FL., Invited lecture at NOAA/Mote/FWRI red tide workshop, plus two posters presented.

291. 7/27-28, New Orleans, LA., NRC Comm. on N.O. Hurricane Protection System.

292. 9/11-14, Jacksonville, FL, SEACOOS/SECOORA workshops.

293. 9/25, Clearwater, FL., PC Property Appraiser's Office, hurricane storm surge

294. 10/28, St Petersburg, FL., TB Estuary Academy (presented by L. Zheng).

295. 11/?, St. Johns River Water Management District, estuary modeling (L.Zheng).

296. 12/29/06, Xiamen China, Hurricane storm surge simulation for Tampa Bay, Third Institute of Oceanography, SOA (L. Zheng).

297. 1/22-23/07, Washington, DC, NRC Comm. on N.O. Hurricane Protection System.

298. 2/6, Gainesville, FL, FLCOOS mtg. participant

299. 2/28, Herndon, VA, MMS mtg., participant

300. 4/23-26, Stennis MS, NOPP GODAE mtg., 2 presentations

301. 4/27, St Petersburg, FL, Tampa Bay workshop co-convener

302. 5/7, Clearwater, FL, property appraiser mtg. re: storm surge presentation

303. 6/1, Bradenton, FL, Manatee Co. hurricane conference keynote speaker

304. 6/17-21, Gordon Research Conference, Colby College, New Hampshire, 3 posters

305. 6/26-28, New Orleans, LA, MMS GOM workshop, exec comm./session leader

306. 7/8-11, Chapel Hill NC, SEACOOS EXCOM mtg.

307. 7/12, St. Petersburg, FL, TPRPC hurricane storm surge presentation.

308. 8/28, Washington, DC, SURA Coastal Committee

309. 10/9, New Orleans, LA, NRC Comm. on N. O. Hurricane Protection System.

310. 10/22-24, St. Pete Beach, FL, SEACOOS/SECOORA workshops.

311. 10/31, Naples, FL., Rookery Bay presentation to SFWMD

312. 11/15, Tampa, FL., SWFWMD presentation on TB modeling

313. 12/3-4/07, New Orleans, LA, NRC Comm. on N.O. Hurricane Protection System.

314. 1/23/08, Sarasota, FL. Invited presentation at "Islands in the Stream" Conference.

315. 1/28, Gainesville, FL., presenter at Hurricane Storm surge inundation P.I. meeting.

316. 4/10, Raleigh NC, Invited seminar at NCSU

317. 4/30, Tampa, FL., Invited DUP lecture.

318. 6/5, Washington, DC, Award recipient, NOPP Excellence in Partnering.

319. 6/23-24, Gainesville, FL., Invited presentation at P.I. workshop on storm surge

320. 7/22-24, Arlington VA., Invited talk at MAST mtg.

321. 9/3-5, Washington D.C., NRC/NAE meeting on NOHPS

322. 10/31/08, Stonybrook N.Y., Invited seminar at SUNY, Stonybrook

323. 1/20/09, Tampa, FL. Coastal Ocean Circulation Modeling with Applications to Red tide and Storm Surge, USF Symposium on High Performance Computing.

324. 2/11, St. Pete Be., FL. Presentation of USF-NOAA-FEMA storm surge workshop.

325. 5/13, Jacksonville, FL. Presentations at the SECOORA spring mtg.

326. 5/21, Norfolk VA. Why red tide was mild on the WFS in 2008. NOAA ECOHAB mtg. (presented by Y. Liu).

327. 5/29, St. Petersburg, FL. Presentation to FWC fisheries workshop on COMPS observations/models

328. 6/16, St. Pete Be., FL. Keynote address at SPB Hurricane awareness workshop.

329. 7/13, Stennis, MS. Team leader for NRL, Battlespace Environments site review.

330. 8/17, Raleigh NC. WFS mean circulation observed by long-term moorings. MABPOM-SECOM conference (presented by Y. Liu)

331. 9/10, St. Petersburg, FL. Eastern Gulf of Mexico circulation. Invited presentation Agency on Bay Management oil drilling public symposium.

332. 9/18, Fascati, Italy. Validation of X-TRACK coastal altimetry on the West Florida Shelf by LY. Liu, R.H. Weisberg, S. Vignudelli, L. Roblou. Presentation at "The 3rd Coastal Altimetry Workshop," Frascati, Italy (presented by S. Vignudelli).

333. 9/14, Raleigh, NC. SECOORA Board mtg.

334. 10/5, St. Petersburg, FL. Presentation to Century Committee, RE: oil drilling.

335. 10/15, St. Petersburg, FL. Presentation to CARA-GCOOS ecological modeling workshop.

336. 10/12, St. Petersburg, FL. Presentation to TBRPC, RE: oil drilling.

337. 10/20, Tampa, FL. USF Unstoppable Campaign (six different topical PPTs provided for display).

338. 12/2, St. Petersburg, FL. Presentation to USACE, RE: Tampa Bay.

339. 1/20/10, Tampa, FL. Coastal Ocean Circulation Modeling with Applications to Red tide and Storm Surge, USF Symposium on High Performance Computing.

340. 1/25&6, Baltimore, MD. Invited presentation at interagency Water Quality Workshop

341. 2/4, St. Petersburg, FL. Invited presentation, FDEP Estuarine Nutrient criteria workshop

342. 2/11, Tampa, FL. Invited panelist for USF School of Sustainability event.

343. 5/7, St. Petersburg, FL. Invited briefing of Sen. Nelson on oil spill.

344. 5/12,13, Savanna GA. Liu, Y., R.H. Weisberg, L. Zheng, and C. Hu. Tracking Gulf of Mexico Oil Spill with Numerical Models and Satellite Imagery. Southeast Coastal Ocean Observing Regional Association (SECOORA) 2010 Annual Board & Membership Meeting.

345. 5/20, St. Petersburg, FL. Zheng, L, Y. Liu and R.H. Weisberg. WFS circulation relative to the red-tide bloom evolution for 2001. ECOHAB PI meeting.

346. 5/26, Washington, DC. Invited (by Chancellor Brogan) briefing of the Florida delegation on the oil spill.

347. 5/26, St. Petersburg, FL. Zheng, LY. and R.H. Weisberg. Invited presentation. What may have happened here had Hurricane Ivan visited us instead of Pensacola? Presented at Greater Tampa Bay ACP meeting. (presented by Zheng)

348. 5/27, Tallahassee, FL. Fourth Annual SouthEast Coastal Oceanography and Meteorology (SECOM) Conference. Presentation on wave modeling by Y. Huang.

349. 6/2, Shanghai, China. Zheng, LY. and R.H. Weisberg. Tampa Bay circulation driven by rivers, tides and winds, and its connection with the Gulf of Mexico: How the bay flushes? Invited presention at East China Normal University.

350. 6/7, Xiamen, China. Zheng, LY. and R.H. Weisberg. Automated Deepwater Horizon oil spill trajectory prediction. Invited presentation, Third Institute of Oceanography, State Oceanic Administration, Xiamen, China.

351. 6/9, Plant City, FL. Liu, Y., R.H. Weisberg, Lianyuan Zheng, and Chuanmin Hu: Gulf Oil Spill Ramifications, *Contact Breakfast* hosted by the Greater Plant City Chamber of Commerce and sponsored by Tampa Electric, (*invited speaker*).

352. 6/11, St. Petersburg, FL. Invited briefing of Sen. Nelson on oil spill.

353. 6/15, Washington, DC. Testify before House Committee on Natural Resources, Subcommittee on Insular Affairs the Oceans and Wildlife; followed by a briefing of the Florida delegation invited by Congresswoman Castor.

354. 6/17, St. Petersburg, FL. Invited briefing of City Council on oil spill.

355. 6/18, St. Petersburg, FL. Liu, Y., R.H. Weisberg, Chuanmin Hu, and Lianyuan Zheng. Tracking/predicting the oil spill trajectory in the Gulf of Mexico using numerical models and satellite imagery. USF/CMS Postdoctoral Fellow and Research Staff Summer Colloquium.

356. 6/23&4Washington, DC. Invited presenter at SURA model test-bed workshop.

357. 7/14, Seminole, FL. Invited speaker, St. Petersburg College Inst. For Public Policy. Impact of the oil crisis in the Gulf on Tampa Bay

358. 8/2, Tampa, FL. Invited briefing of Sen. Nelson on oil spill.

359. 8/16, St. Petersburg, FL. Invited briefing of Florida Century Committee on oil spill.

360. 8/19, Homosassa Springs, FL. Invited presentation on Deepwater Horizon oil spill given to Withlacoochee Area Residents, Inc.

361. 8/26, Tampa, FL. Invited presentation on Deepwater Horizon oil spill given to Florida Bar Association.

362. 9/16, Orlando, FL. A coordinated modeling approach in support of oil spill tracking. Weisberg, R.H., L.Y. Zheng, V.H. Kourafalou, E.P. Chassignet. Presented by L.Y. Zheng at FIO PI Coordination Workshop.

363. 10/5, St. Pete Be, FL. Invited participant, JSOST oil spill workshop.

364. 10/6, Tampa, FL. Where did the oil go and why? Invited presentation (by USACE-Jacksonville Office) at the Western Dredging Assoc. Mtg.

365. 10/11, Tampa, FL. Modeling the location of the Gulf oil spill. USF Research I invited presentation.

366. 10/16, San Antonio, TX. The Gulf Oil spill. Weisberg, R.H., Y. Liu, L.Y. Zheng and C. Hu. Keynote address at CSDMS meeting. Presented by Y. Liu.

367. 11/3, Palm Be. Gardens, FL. Invited presentation, FAU Conference on: Sustainable Ocean Energy and the Marine Environment.

368. 11/16, St. Petersburg, FL. Invited presentation at Sierra Club et al. sponsored public forum on the Gulf of Mexco oil spill.

369. 11/19, Tampa, FL. Invited seminar on renewable energy for Florida, USF Geography Dept.

370. 11/22, Tampa, FL. Invited presentation at Congresswoman Castor press conference.

2011

371. 1/21, St Petersburg, FL. Invited presentation on Deepwater Horizon oil spill

given to Town and Gown.

372. 1/21, St Petersburg, FL. Invited seminar on Alternative power generation for Florida given to USFSP Environmental Policy and Geography.

373. 3/7&8,Chapel Hill, NC. Inundation Model Testbed workshop, presentation on USF Progress.

374. 3/16, St Petersburg, FL. Invited seminar at Eckerd College on Alternative power generation for Florida

375. 4/7, St Petersburg, FL. Invited seminar at USF College of Engineering on Alternative power generation for Florida.

376. 4/8, St Petersburg, FL. Invited seminar at USF FIO workshop on oil spill restoration

377. 4/10, Tampa, FL. Invited seminar at Phi Kappa Phi honor society induction.

378. 4/13, Sarasota, FL. Invited seminar at MTS Techsurge workshop on ocean pollution.

379. 4/15, St Petersburg, FL. Invited speaker at CMS Eminent Scholar Lecture Series.

380. 5/16-18, Jacksonville, FL. Presentationsat the SECOORA annual meeting.

381. 5/18-19, Norfolk VA. Presentation (by L. Zheng) at ECOHAB meeting.

382. 5/25-26, Orlando, FL Presentation at FIO BP PI meeting

383. 6/22-23, Washington DC., Presentation at SURA IOS Model Testbed Mtg.

384. 9/7-8, Savannah GA. Presentation at SECORA mtg.

385. 10/14, Shanghai, PRC. Invited lecture at East China Normal University.

386. 10/17, Beijing, PRC. Invited lecture at SOA Forecast Center.

387. 10/21, Xiamen, PRC, Invited lecture at Third Institute for Oceanography.

388. 10/24, Xiamen, PRC, Invited lecture at Third Institute for Oceanography.

389. 11/1-2, Tallahassee, FL, DEEP-C mtg.

390. 11/8-9, Washington DC., SURA mtg

391. 12/6-7, Washington DC, Mtgs/ Caster and Markee; Invited testimony before House Committee on Transportation.

2012
392. 1/12 St. Petersburg, FL, C-Image Meeting.

393. 3/37, Pensacola FL, HABIOS mtg.

394. 4/4, Tampa FL, Invited speaker at annual FWCAMS banquet.

395. 5/1, Usseppa Is., FL, Invited speaker Usseppa Library

396. 5/8, Miami, FL, SECOORA mtg.

397. 5/16. Yankeetown FL, invited speaker, Withlacoochee River Community Center.

398 8/21, 22, Tallahassee FL. Deep-C mtg.

399. 10/23, Miami FL, USCG mtg.

400. 11/13-15, Boulder CO., Invited speaker, ESPC mtg.

2013
401. 2/26-2/28, Tallahassee FL., Deep-C mtg.

402. 4/4-4/5, College Park, MD. SURA CERC mtg.

403. 4/19, Houston TX, GOMURC mtg.

404. 5/13-15, Jacksonville FL., SECOORA Board and PI mtg.

405. 6/25, Tampa, FL, GOMURC mtg.

406. 9/9-8/11, Tallahassee FL., Deep-C mtg.

407. 9/16, Pasco Co., FL., Restore Act presentation.

408. 10/24, FGCU, invited seminar.

409. 11/4-11/6, Baltimore MD., GODAE Workshop

2014
410. 4/2, St. Petersburg, FL, FIO/USCG mtg presentation

411. 5/1, Pasco Co. FL, RESTORE Act presentation

412. 8/7, Boothbay Harbor Me., Invited seminar at Bigelow Lab

413. 8/19, Narragansett RI., Invited seminar at GSO-URI

414. 9/5, St. Petersburg, FL., faculty seminar.

2015

415. 3/36, Invited seminar speaker, Princeton University.

416. 4/15 SP Waterfront Committee, invited presentation.

417. 4/22 Useppa Is. Community Assn., invited presentation.

418. 5/14 San Jose Elementary School, Gifted (Oceanography) Program, invited presentation.

419. 10/26-10/28 Fisheries Workshop, invited participant, SPB.

420. 11/9 SP Waterfront Committee, invited presentation.

421. 12/2-12/4 SECOORA Board of Directors mtg., Charleston, SC

2016

422. 1/26, SECOORA PI seminar.

423. 2/1-2, Tampa FL., Invited presenter, GoMRI townhall meeting.

424. 4/21, Tierra Verde, FL, invited presenter, Shell Key Mtg, Tampa Bay Watch.

425. 5/18-20, Raleigh, NC, SECOORA Bd mtg and PI/membership mtg. presentations.

426. 5/25, Pinellas Co. TAC mtg on inlet study.

427. 7/26, Tierra Verde, FL, invited presenter, Shell Key Mtg, Tampa Bay Watch.

427. 9/9, Invited seminar at GSO-URI.

428. 10/13, Presentation at Pasco County RA meeting.

429. 10/18-20, Halifax, NS, Presentation at FVCOM Users Workshop.

430. 11/3-4, Washington, DC, SURA meeting.

431. 12/7-9, Charleston, SC, SECORA Bd Mtg.

2017

432. 1/5, Marco Is., FL, Invited speaker at Marco Island Shell Club.

433. 2/28, SECOORA Webinar presenter.

434. 3/22-3/24, Wash DC, NAS GRP mtg.

435. 4/17, Clearwater, FL, PC TAC mtg.

436. 4/18-4/20, NY, NY, Vetlesen award banquet invitee.

437. 5/16-5/17, Melbourne FL, SECOORA meeting.

438. 5/17-5/19, Wash DC, NAS GRP mtg.

439. 6/14, Tampa, FL, Radio Interview on storm surge, WMNF

440. 6/23, Tampa FL, Chaired PhD defense.

441. 7/1-8/2, Wash DC, NAS GRP mtg.

442. 10/25, St. Petersburg, FL, Invited talk on Hurricane Irma

443. 11/9, Jerusalem, Israel, From Climate to a Grouper Sandwich: Why we Study the Ocean Circulation, Invited lecture at Hebrew University.

444. 11/10, Haifa, Israel, From Climate to a Grouper Sandwich: Why we Study the Ocean Circulation, Invited Plenary Lecture at Israel Aquatic Science Conference.

445. 11/15, Eilat, Israel, Equatorial Ocean Dynamics: Observations and Analyses, Invited lecture at Joint University Marine Science Facility.

446. 11/17, Eilat, Israel, Coastal Ocean Dynamics: Observations and Analyses, Invited lecture at Joint University Marine Science Facility.

447. 11/20, Tel Aviv, Israel, On the Movement of Deepwater Horizon Oil to Northern Gulf Beaches, Invited talk at Tel Aviv University.

448. 11/21, Sde Bokor, Israel, Power Generation Potential for Florida by Mechanical and Solar Means, Invited talk at Ben Gurion University.

2018

449. Chen, J., R.H. Weisberg, Y. Liu, and L. Zheng (2018), A Tampa Bay circulation

nowcast/forecast system with application to Hurricane Irma. 2018 Graduate Student Symposium, USF-CMS, St. Petersburg. Jan 12, 2018 (oral presentation).

450. 2/13, Invited SECOORA Webinar

451. 4/4, Dania, FL., invited talk on Hurricane Irma effects on the south Florida reef track

452. 4/11, St. Petersburg, FL, invited presentation on red tide to A. Busch III.

453. 6/20, Invited NOAA NOS Webinar on red tide.

454. 6/27, Invited NOAA webinar on coastal ocean modeling

455. 6/28, New Port Richie, FL, Invited talk to the Calusa Boat Club ($1000 honorarium donated to CMS).

456. 7/10, Palmetto, FL, Invited presentation to fisheries group, SeaGrant outreach.

457. 8/15, Tierra Verde, FL, Tampa Bay Watch presentation.

458. 10/30, St. Petersburg, FL, Invited ICAR confr. Presentation.

459. 11/16, Boca Grande, FL., Invited presentation on red tide to Barrier Is Parks Society.

460. Chen, J., R.H. Weisberg, Y. Liu, and L. Zheng (2018), Tampa Bay Coastal Ocean Model natural hazards modeling. The inaugural event of the Joint Institute for the Gulf of Mexico Studies. St. Petersburg, Oct 2018 (poster presentation).

2019

461. 1/15, Tallahassee, FL, How oil arrived on northern Gulf beaches, presentation at GoMRI workshop.

462. 1/20, St. Petersburg, FL, Public outreach lecture on sea level at Congr. B'nai Israel.

463. 3/28, Clearwater Be., FL, Invited presentation, Pinellas Co. Red Tide Summit.

464. 4/17, Tampa, FL, Invited keynote presentation at FWEA Utility Council Annual Mtg.

465. 5/28, Tierra Verde, FL, Invited presentation to Tierra Verde community Association

466. 6/12, Nokomos, FL, Invited presentation on red tide at Nokomos Community Center.

467. 6/17, Houston TX, Invited presentation at Industry meeting on the NASEM GRP.

468. 6/19, Wilmington NC, Presentation at annual SECOORA meeting

469. 8/20, St. Petersburg, FL, Invited presentation at FL SeaGrant HAB Symposium.

470. 9/17, St. Petersburg, FL, Invited presentation at Ocean Team Mtg.

471. 11/19, St. Petersburg, FL, Invited red tide presentation at Dali Museum Sci Café

2020
472. 1/30, Washington DC, NASEM UGOS mtg presentation.

473. 2/18, St. Petersburg, FL., Invited red-tide presentation at SPYC.

474. 3/25, Tampa, FL. Tampa Bay Water presentation.

475. 4/17, Home, Webinar to CHNEP.

476. 5/18-19., Home, SECOORA mtg and presentation.

477. 8/25, Home, SECOORA Webinar

ACTIVE GRANTS:

1) State of Florida: A real-time oceanographic data system for Florida, P.R. Betzer, A.C. Hine, M. Luther and R.H. Weisberg, P.I.'s, continuing award=300,000 for annually occurring E&G funds supporting 5.3 positions beginning 7/1/97. Positions now reduced to 3 and actual amounts are in question.

2) State of Florida**:** I-4 Corridor funding for the Coastal Ocean Modeling and Prediction System (COMPS), P.R. Betzer, M.E. Luther, and R.H. Weisberg, Co-P.I.s, continuing award=69,276.00 per year for an engineer position and 78,520.50 for expenses beginning 7/1/98. Expense money is no longer available.

3) SC SEAGRANT, federal pass through from NOAA, NA16NOS0120028, Maintaining moored observations and WFS modeling for SECOORA, R.H. Weisberg and Y. Liu, PIs, 1,010,380 for the period 6/1/16-5/31/21 (255,000 new for the present FY).

4) SC SEAGRANT, federal pass through from NOAA, NA16NOS0120028, Maintaining high-frequency radars for SECOORA, R.H. Weisberg and C. Merz, PIs, 474,520 for the period 6/1/16-5/31/21 (156,000 new for the present FY).

5) Pinellas Co., FL, A Very High Resolution Estuary Circulation Nowcast/Forecast Model for Tampa Bay and Vicinity, R.H. Weisberg, P.I., 479,492 for the period 8/1/16-7/31/19; NCE through 12/31/20.

8) NSF XSEDE Computer Resource Program. Contract #: OCE130015. Very high resolution, baroclinic, three-dimensional coastal ocean circulation modeling from XSEDE for computation resource, Y. Liu and R.H. Weisberg, co-PIs 741,042 SUs awarded (no monetary award).

9) NASEM, Understanding Gulf Ocean Systems Grants 1: Taking the Pulse of the West Florida Shelf at a Hypothesized Loop Current Control Point, R.H. Weisberg, Y. Liu and J. Kuehl (UDEL), co-PIs, 937,977 for the period 11/1/18-10/31/20 (457,496 new for the present FY). NCE though 12/31/21.

10) NASEM, Understanding Gulf Ocean Systems Grants 1: Dry Tortugas and Lower Keys High Frequency Radars, C. Merz, R.H. Weisberg and N. Shay (RSMAS), co-PIs, 1,371,027 for the period 11/1/18-10/31/20 (281,576 new for the present FY). NCE though 12/31/21.

11) TBERF, Applications of Tampa Bay Circulation Model for Ocean Acidification, R.H. Weisberg and Y. Liu co-PIs, 76,104 for the period 1/1/19-12/31/20. (The contract was delayed due to a USF matching commitment error, which I think is now remedied. Consequently, work has not commenced, and this award sits in limbo. It is more trouble than it is worth; not because of TBERF, but because of a USF Sponsored Programs misdirection).

12) NOAA Award # NA19NOS0220015, Irma equipment award, 134,037 for the period 4/1/19-3/31/21, R.H. Weisberg, PI.

13) City of Tampa, award # 2018-591, Tampa Augmentation Project – Hillsborough Bay Inflow modification Study, 31,820 for the period 6/25/19 to 6/24/20, R.H. Weisberg and Y. Liu PIs.

14) Mote Marine Lab GRT12392, Federal pass through from NOAA, ECOHAB19: Life and Death of Karenia brevis Blooms in the Eastern Gulf of Mexico, 9/1/19-8/31/24, 141,500 for FY1 (738,675 anticipated for the total five year duration).

15) FWC-FWRI, PO # B609CF, Enhanced Modeling Capabilities for Red Tide on the West Florida Shelf, 285,000 for the period 10/3/19-6/30/20, R.H. Weisberg, PI.

16) FWC-FWRI, PO # B66168, Modeling the 2019 Red Tide on the West Florida Shelf, 30,000 for the period 12/19/19-5/31/20, R.H. Weisberg, PI.

17) FWC-FWRI, FWC Agreement No. 20035. New interdisciplinary approaches to red tide tracking and forecasting on the West Florida Shelf, 130,103 for the period 9/14/20-6/30/21, sub award to R.H. Weisberg and Y. Liu, co-PIs (K. Buck, overall project PI).

PREVIOUS GRANTS:

NSF Grant #OCE74-01739 "Equatorial Currents and hydrographic observations during the GARP Atlantic Tropical Experiment (GATE)." Total Award = $300,300 for the period 1/1/74 -11/30/76. Principal Investigators: J.A. Knauss, L. Miller, and R.H. Weisberg.

NSF Grant #OCE76-09786 "GATE Oceanographic Program Equatorial Current & Hydrographic Observations." Total Award + $282,000 for the period 04/01/76 - 03/31/79. Principal Investigator: R.H. Weisberg.

NSF Grant #ATM77-11297, GATE Oceanographic Program Equatorial Current Analyses." Total Award = $25,851 for the period 06/15/77 - 11/30/78. Principal Investigator: R.H. Weisberg (URI subcontract).

UNC Marine Sciences Council - "Time Dependent Hydrography of the Cape Fear River Estuary." Total Award = $4,000 for the period 07/01/77 - 06/30/78. Principal Investigators: R.H. Weisberg & L.J. Pietrafesa.

NOAA Sea Grant, "Physical Studies of Pamlico Sound N.C." Total Award = $166,433 for the period 01/01/78 - 12/31/80. Principal Investigators: R.H. Weisberg, G.S. Janowitz and L.J. Pietrafesa.

NSF Grant #OCE-7820396, "Time Dependent Motions in the Equatorial Atlantic. Total Award = $129, 639 for the period 11/15/78 - 08/31/81. Principal Investigator: R.H. Weisberg.

NOAA Sea Grant, "Analysis and Prediction of Ocean Surface Gravity Waves on the N.C. Coast." Total Award = $82, 162 for the period 01/01/79 - 12/31/81. Principal Investigators: C.E. Knowles and R.H. Weisberg.

NOAA-ERL Contract #NA80RAC00026, "Deep Ocean Variability During EPOCS. Total Award = $270,756 for the period 10/79 - 09/30/82. Principal Investigator: R.H. Weisberg.

NSF Grant #OCE-7923335, "Seasonal Variability in the Equatorial Atlantic." Total Award = $587,826 for the period 05/15/80 - 01/31/83. Principal Investigator: R.H. Weisberg.

NOAA-ERL Contract #NA83RAC00021, "EPOCS Deep Ocean Variability Analysis." Total Award = $45,000 for the period 10/01/82 - 09/30/83. Principal Investigator:

R.H. Weisberg.

WHOI Grant #P016878, Subcontract for SEQUAL Mooring Purchases." Total Award = $60,035 for the period 01/01/83 - 04/30/83. Principal Investigator: R.H. Weisberg.

NOAA-ERL Contract #NA84RAC00021, "EPOCS Deep Ocean Variability Analysis." Total Award = $25,000 for the period 04/01/84 - 09/30/84. Principal Investigator: R.H. Weisberg.

NSF Grant #OCE-8211848, "The Seasonal Equatorial Atlantic Experiment (SEQUAL): Response of the upper ocean circulation to the annual wind cycle." Total Award = $1,169,463 for the period 04/01/82 - 03/21/86. Principal Investigator: R.H. Weisberg

NSF Grant #OCE-8515869, " The Seasonal Response of the Equatorial Atlantic Experiment (SEQUAL): Upper ocean current and temperature analysis from moored current meter." Total award = $209,739 for the period 01/01/86 – 6/30/87. Principal Investigators: R.H. Weisberg and T.Y. Tang.

NSF Grant #OCE-8740380, "The Seasonal Response of the Equatorial Atlantic Experiment (SEQUAL): Upper ocean current temperature analysis from moored current meters." Total award = $171,445 for the period 01/01/87 - 12/31/97. Principal Investigators: T.Y. Tang and R.H. Weisberg.

NSF Grant #OCE-8813378, Equatorial Pacific Ocean Current instabilities, R.H. Weisberg, Principal Investigator, $438,703 for the period 3/15/89 - 11/30/89, Total award for the 4-year continuing period 3/15/89 - 11/30/92 = $914,746.

NSF Grant #OCE-8841927, The SEQUAL Experiment: Upper Ocean current and temperature analyses, R.H. Weisberg, Principal Investigator, $115,000 for the period 02/01/89 - 01/31/90, Total cumulative award for the 2-year period 02/01/88 - 01/31/90 = $240,000.

NOAA Grant #NA87AA-D-AC120, Upper ocean current and temperature monitoring at the equator, 170^0W. R.H. Weisberg, Principal Investigator, $231,428 for the period 02/01/90 - 01/31/91, Total cumulative award for the 4-year period 09/01/87 - 01/31/90 = $697, 772.

USGS Grant #14008-0001-A0577, Physical factors affecting salinity intrusion in wetlands, Principal Investigators: R.H. Weisberg and A.C. Hine. Total award = $81,430 for the period 09/22/90 - 09/30/91.

NATIONAL TAIWAN UNIVERSITY, Preparation of a turnkey acoustic Doppler current profiling mooring. R H Weisberg, Principal Investigator. Total award =

$119,304 for the period 12/01/90 - 07/31/91.

NOAA Sea Grant R/NOS-1, Physical factors affecting the circulation of Tampa Bay. $24,171 for the period 05/01/91 - 03/31/92. R. H. Weisberg, Principal Investigator.

USGS Contract #1408-0001-A0577. West Florida Shelf Initiative, R.H. Weisberg, A.C. Hine and P.R. Betzer, Principal Investigators, award for FY93 = $18,376 (plus a university equipment match of $112,000). Note that the above P.I.'s agreed to a budget reduction on this contract to allow new P.I. 's to join the west Florida shelf initiative with new projects.

FDNR Contract #C-7957. Acquisition of oceanographic data, R. H. Weisberg, Principal Investigator, Total award = $60,000 for the period 11/16/92 - 11/15/93.

USGS Contract #1408-0001-A0577. Wetlands Project - Physical factors affecting salinity intrusion, R.H. Weisberg and A. C. Hine, Principal Investigators, award for FY93 = $64,279.

NATIONAL TAIWAN UNIVERSITY. Turnkey acoustic doppler current profiler mooring II, R.H. Weisberg, Principal Investigator, Total award = $107,046 for the period 10/05/91 - 04/30/92.

NATIONAL TAIWAN UNIVERSITY. Monitoring of upper ocean currents and temperature at 0, 170^0W in collaboration with the National Taiwan University, FY93, R.H. Weisberg, Principal Investigator, Total award = $28,566 for the period for the period 09/01/92 - 08/31/93.

NSF Grant #OCE-8813378. Equatorial Pacific Ocean current instabilities, R.H. Weisberg, Principal Investigator, Total award for the 3.5 - year continuing period 03/15/89 - 11/30/92 = $985,605.

NSF Grant #OCE-9202737. Dynamics and energetics of the upper equatorial Pacific, Co-PI with E. Johnson, total award = $23,500 for the period 12/92 - 9/23. This was Johnson's grant. I was on it for administrative purposes.

USGS Contract #1408-0001-A0577. West Florida Shelf Initiative, R.H. Weisberg , A.C. Hine and P.R. Betzer, Principal Investigators, award for FY92 = $62,747 (plus a university equipment match of $370,000).

USGS Contract #1408-0001-A0577. Wetlands Project - Physical factors affecting salinity intrusion, R. H. Weisberg and A.C. Hine, Principal Investigators, award for FY92 = $73,287.

USGS Contract #1434-94-A-1185. West Florida Shelf Hydrography and Circulation,

R.H. Weisberg, A.C. Hine and P. R. Betzer, Principal Investigators award for FY94 = $85,000.

USGS Contract #1408-0001-A0577. Wetlands Project - Physical factors affecting salinity intrusion, R.H. Weisberg and A.C. Hine, Principal Investigators, award for FY94 = $64, 279.

NOAA Grant #NA36GP0143-01. Monitoring of upper ocean currents and temperature at 0^0, 170^0W with support of TOGA, R.H. Weisberg, Principal Investigator. Total award for the two-year period 05/1/93 - 04/30/95 = $125,038.

USGS Contract #1434-94-A-1185. West Florida Shelf Hydrography and Circulation. R.H. Weisberg, A.C. Hine and P.R. Betzer, Principal Investigators. (Award for FY95 = $85,000, lmm).

USGS Contract #1434-94-A-1185. Wetlands Project - Physical factors affecting salinity intrusion, R.H. Weisberg and A.C. Hine, Principal Investigators. Award for FY95 = $40,981.

NWFWMD Effects of Sikes Cut on Apalachicola Bay Salinity. R.H. Weisberg, P.I., Total Award = $34,440 for the period 06/01/93 - 09/30/95.

ONR Sub-Account #1245-191-L3. Omnibus grant for ocean technology center. R.H. Weisberg, Principal Investigator, ($277,645).

MMS Contract #14-34-0001-30767. Northeastern Gulf of Mexico Satellite Oceanography Study Principal Investigators, Kendall Carder, Frank Muller-Karger, and R.H. Weisberg, Total Award = $134,548 for 18 month period starting October 1, 1994.

NSF Grant #OCE-9302811. The Tropical Instability Wave Experiment (TIWE) equatorial array: Analysis and dissemination of results, R.H. Weisberg, Principal Investigator, Total award = $185,000 for the two-year period 05/01/93 - 04/30/95.

NSF Grant #OCE-9100024. TOGA-COARE enhanced monitoring: meridional array for currents along 156E, R.H. Weisberg, Principal Investigator, Total request for the 5-year continuing period 05/15/91 - 04/30/96 = $819,000.

USGS Contract # 1434-94-A-1185. West Florida Shelf Hydrography and Circulation, R.H. Weisberg, A.C. Hine and P.R. Betzer, Principal Investigators, $100,000 for FY96.

NOAA Grant #NA56GP0241. Empirical and monitoring studies on air-sea interactions and SST evolution over the PACS program region. R.H. Weisberg, Principal Investigator, $281,784 for 24 month period beginning 04/01/95.

USGS Contract #1434-94-A-1185. West Florida Shelf Hydrography and Circulation, R.H. Weisberg, A.C. Hine and P.R. Betzer, Principal Investigators. $86,000 for the 1 year period beginning 10/1/97.

FDEP Contract #LE189, A real time oceanographic data system for Florida, Co-P.I. with M. Luther, RH. Weisberg portion =$299,000 for the period 10/29/97 - 9/30/98.

NOAA Contract # NA66GP0119, Diagnostic studies of equatorial central Pacific ocean velocity variations in relation to the TOGA TAO array and ENSO, 301,243 for the 36 mo. period beginning 2/1/96. (grant ended 3/31/99).

NSF Grant # OCE-9525912, TOGA-COARE enhanced monitoring array analysis, R.H. Weisberg, P. I. 345,000 for the three year period beginning 12/12/95 (no-cost-extention for FY00).

MMS (subcontract from FSU) Northeastern Gulf of Mexico circulation study, R.H. Weisberg, P. I. $140,225 for the 3 year period beginning 10/1/95 (no-cost-extention for FY00).

NOAA Contract # NA86GP0030, Empirical and monitoring studies on air-sea interactions and SST evolution over the PACS Program region, $290,253 for the period 10/1/97-12/31/99. (90,459 for FY99, no-cost extension for FY00).

MMS (subcontract from FSU) Northeastern Gulf of Mexico circulation modeling study, R. H. Weisberg, P. I. $753,156 for the four year period beginning 10/1/95 (201,555 for FY99, no cost extension for FY00).

NOAA Grant # NA96GP0462, Interhemisphere and intergyre exchange processes in the upper limb of the meridional overturning circulation, co-P.I. with G. Halliwell, RSMAS, 52,845 for the two year period beginning 10/1/99.

FDCA Grant # 02CP-10-13-00-05-127, West Florida Coastal Monitoring System, C. Merz, R.H. Weisberg, and M. Luther, co-P.I.s, 166,539 for the period 6/19/01-6/30/02.

NOAA Grant # NA76RG0463, ECOHAB: Florida, J. Walsh, G. Vargo, and R. Weisberg, co-P.I.s (USF); K. Steidinger et al., co-P.I.s (FDEP and Mote Marine Lab). The portion under the supervision of R.H. Weisberg is 715,000 for the four year continuing period beginning 3/1/98. (155,000 for FY01; NCE for FY02).

FDEP-FIO PO#S 3700 760668, Piney Point waste water disposal monitoring, R.H. Weisberg, PI, 29,488 for the period 7/1/03-6/30/04.

ONR Grant # N0014-98-1-0158, Observations and modeling of the West Florida continental shelf circulation, R.H. Weisberg and M. Luther, P.I.s, 3,469,965 for

the period 11/1/97-2/28/05.

NSF Grant # OCE-0118566, Collaborative research: Particulate organic carbon fluxes and sediment accumulation in the Cariaco Basin, co-investigator with F. Muller-Karger, R.H. Weisberg portion = 232,816 for the period 10/1/01-9/30/03.

FFWCC/FMRI Grant # S 7701 622006, Refinement of an electronic logbook to support fishing operations by spatially predicting shrimp abundance in relation to environmental conditions off the west coast of Florida, R.H. Weisberg, P.I., 22,500 for the period 3/3/04-6/30/05.

NOAA Grant # NA16GP1571: Diagnostic studies of the equatorial Atlantic cold tongue, R.H. Weisberg, G. Mitchum, and G. Lagerloef (ERS) co-P.I.s, 358,300 for the 3 year period beginning 9/1/01 (NCE for FY05-06).

FFWCC/FMRI Grant #DO138085, Observing and modeling near shore circulation on the inner portion of the WFS in support of red tide studies in relation to Calosahatchee River flow, R.H. Weisberg, P.I., 79,918 for the period 7/20/05-9/8/05.

FFWCC/FMRI Grant #, Hindcasting the West Florida Shelf circulation during the 2005 red-tide, R.H. Weisberg, P.I., 26,250 for the period 2/27/06-6/30/06.

ONR Grant # N0014-00-1-0253, Bottom stationed ocean profiler, R.H. Weisberg, R.H. Byrne, and C. Lembke co-P.I.s, 1,725,478 for the period 12/1/99-7/31/05.

FFWCC/FMRI Grant # S 7701 620071, NOAA/MERHAB Eastern GOMx Sentinal Program, J.J. Walsh, R.H. Weisberg, C. Lembke, and D. Fries, co-P.I.s, 1,150,000 for 5 years. R.H. Weisberg portion is 623,171.

ONR Task Order #:3-12110-10 (administered by Univ. of North Carolina), Southeast Atlantic Coastal Ocean Observing System (SEACOOS), R. H. Weisberg and M. Luther, co-P.I.s, 3,228,578 for the period 9/1/02-8/31/07.

NSF Grant # OCE-0326268, Collaborative research: The Cariaco Basin Oceanographic Time Series Program, co-investigator with F. Muller-Karger, Five year continuing award, R.H. Weisberg portion = 660,092 for the period 10/1/03-9/30/08.

NOAA/COTS Grant # , Enhancements to the Coastal Ocean Monitoring and Prediction System for west Florida, M.E. Luther and R.H. Weisberg, co-P.I.s, 1,938,943 for the period 8/1/04-7/31/06, R.H. Weisberg portion = 1,428,966.

FL-DEP Contract # RM050, Hydrodynamic model of Rookery By and Henderson Creek, R.H. Weisberg and L. Zheng, P.I.s, 70,000 for 8/10/2006-8/9/2007.

FL-DEP Contract # DO329620, Assessing red-tide bloom movement using surface Drifters, R.H. Weisberg, P.I., 18,000 for 8/28/06-5/30/07.

FL-DOH Contract # , Assessing the effects of currents on coastal beaches, R.H. Weisberg, P.I., 39,310 for 11/24/06-7/31/07.

ONR (NOPP) Grant # N00014-04-1-0676, administered through RSMAS, Univ. of Miami, U.S. GODAE: Global ocean prediction with the Hybrid Coordinate Ocean Model (HYCOM), R.H. Weisberg, P.I. (at USF), five year continuing award, 297,203 for the period 6/3/04-9/30/09.

NOPP Grant # N00014-05-1-0892, HYCOM coastal ocean hindcasts and predictions: impact in nesting HYCOM GODAE assimilative hindcasts, G. Halliwell, RSMAS, lead P.I., R.H. Weisberg USF co-P.I., 3-year continuing award 294,545 for the period 8/26/05-7/30/09.

SC SEAGRANT, federal pass through from NOAA, NA07NOS4730219-5032, Maintaining high-frequency radars for SECOORA, R.H. Weisberg, P.I., 75,000 for the period 11/15/07-9/30/08.

SC SEAGRANT, federal pass through from NOAA, NA07NOS4730409, Maintaining high-frequency radars for SECOORA, R.H. Weisberg, P.I., 50,000 for the period 8/1/08-7/31/09.

USF/FWRI Cooperative red tide research program, FWC Contract # 07113, J.J. Walsh and R.H. Weisberg co-P.I.s, five year continuing award in the amount of 1.25M, terminated for lack of funds after 2 years, RHW portion, 250,000 for 7/1/07-12/31/09.

ONR N000014-04-1-0573, Bottom stationed ocean profiler design improvements, C. Lembke, J. Patten, R. Russell, R. Byrne and R.H. Weisberg, P.I.s, 450,000 for the period 5/1/09-4/30/10, RHW portion = 0 (not counted in summaries below).

SC SEAGRANT, federal pass through from NOAA, NA07NOS4730409, Maintaining high-frequency radars for SECOORA, R.H. Weisberg, P.I., 75,000 for the period 8/1/9-7/31/10.

ONR Grant # N00014-05-1-0483, Observations and modeling of the West Florida continental shelf circulation, R.H. Weisberg, P.I., 1,500,000 for the period 4/1/05-4/30/10 (NCE for FY11).

SC SEAGRANT, federal pass through from NOAA, NA07NOS4730409, Maintaining high-frequency radars for SECOORA, R.H. Weisberg, P.I., 95,000 for the period 8/1/10-7/31/11 (NCE for FY12).

SC SEAGRANT, federal pass through from NOAA, NA07NOS4730409, Maintaining moored observations for SECOORA, R.H. Weisberg, P.I., 165,000 for the period 8/1/10-7/31/11 (NCE for FY12).

FL-FWC, federal pass through from NOAA, NA06NOS4780246, ECOHAB nutrient dynamics in the eastern Gulf of Mexico, J.J. Walsh and R.H. Weisberg, co-P.I.s, 1,294,267 for the five year period 5/7/07-8/31/11, R.H. Weisberg portion =750,000 (NCE for FY12)

ONR N000014-10-1-0573, Bottom stationed ocean profiler design improvements, C. Lembke, J. Patten, R. Russell, R. Byrne and R.H. Weisberg, P.I.s, 366,757 for the period 5/1/10-4/30/11 R.H. Weisberg portion = 0 (NCE for FY12).

UF, federal pass through from NOAA, NA07NOS4730211, A regional storm surge and inundation test bed for SECOORA: Applications of the FVCOM, R.H. Weisberg, P.I., 244,000 for the three year period beginning 1/1/08 (NCE for FY12).

ONR Grant # N00014-10-1-0785, Observations and modeling of the West Florida continental shelf circulation, R.H. Weisberg, P.I., $279,000 for the period 4/1/10-4/30/11. (NCE for FY12)

NSF OCE-0741705, The influence of oceanographic and biological processes on the distribution of cetaceans on the West Florida Shelf: a synoptic study based on underwater and space-based remote sensing, D.A. Mann, F. Muller-Karger, and R.H. Weisberg, P.I.s, 1,663,761 for the three year period 8/15/07-7/31/10; Weisberg portion = $301,297 (NCE for FY12).

UNC-CH, subcontract on SURA Super-regional Testbed, Inundation Component, UNC-CH 5-43705, R.H. Weisberg, P.I., $72,500 for the period 6/1/10-5/31/11.

ONR N000014-10-1-0794, Plankton Optical Tracers of Coastal Circulation Models, J.J Walsh and R. H Weisberg co-P.I.s, 299,555 for the period 4/1/10-4/30/11, Weisberg portion = $95,999, (NCE for FY12).

FSU, subcontract on Florida Legislature FS1004-647, Catastrophic storm risk management, R.H. Weisberg, P.I., $153,062 for the period 12/1/9-12/31/11 (NCE for FY12).

BP 4710-1101-05, A coordinated modeling approach to oil spill tracking, R.H. Weisberg, V. Kourafoulu (RSMAS), and E. Chassignet (FSU), co-P.I.s, $660,000 for the period 8/13/10-8/12/12 (Weisberg portion = 220,000).

USF, FESC, 7921-1000-27, Alternative energy potential for Florida by mechanical and solar means, R.H. Weisberg, P.I., $39,363 for the period 2/16/10-6/31/11.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining moored observations for SECOORA, R.H. Weisberg, P.I., 142,500 for the period 6/1/11-5/31/12.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining high-frequency radars for SECOORA, R.H. Weisberg, P.I., 95,000 for the period 6/1/11-5/31/12.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Data Management for SECOORA, R.H. Weisberg, P.I., 16,600 for the period 6/1/11-5/31/12.

SURA Federal pass through from NOAA, NA11NOS0120033, USF contribution to US IOOS Super-regional model testbed, 30,000 for the period 8/1/11-7/31/12**.**

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining moored observations for SECOORA, R.H. Weisberg, P.I., 130,245 for the period 6/1/12-5/31/13.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining high-frequency radars for SECOORA, R.H. Weisberg, P.I., 143,571 for the period 6/1/12-5/31/13.

The Florida State University - Subcontract R01489, pursuant to Ocean Leadership Subaward SA 12-12/GoMRI-008, Deep-C Project Consortium, R.H. Weisberg, P.I., $555,000 for the period 10/1/12 to 12/31/15. (185,000 for FY13**)**

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining moored observations for SECOORA, R.H. Weisberg and Y. Liu, PIs, 162,451 for the period 6/1/13-5/31/14.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining high-frequency radars for SECOORA, R.H. Weisberg and C. Merz, PIs, 143,570 for the period 6/1/13-5/31/14.

The Florida State University - Subcontract R01489, pursuant to Ocean Leadership Subaward SA 12-12/GoMRI-008, Deep-C Project Consortium, R.H. Weisberg, P.I., $555,000 for the period 10/1/12 to 12/31/15. (185,000 for 2013)

Southwest Florida Water Management District. Generation of Water Level, Salinity, and Temperature Data near Charlotte Harbor from the West Florida Shelf Model, L. Zheng and R.H. Weisberg, PIs, Total award = 31,450 for the period 6/25/13 to 12/31/14.

Florida Water Research Institution, Development of a High Resolution Karenia Tracking Tool within the West Florida Coastal Ocean Model, J. Lenes and R.H. Weisberg, PIs, Total award = 100,000 for the period 7/1/13 to 5/31/14 (Weisberg portion = 50,000)

NSF XSEDE Computer Resource Program. Contract #: OCE130015. Very high resolution, baroclinic, three-dimensional coastal ocean circulation modeling from XSEDE for computation resource, L. Zheng and R.H. Weisberg, PIs 741,042 SUs awarded (no monetary award).

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining moored observations for SECOORA, R.H. Weisberg and Y. Liu, PIs, 169,759 for the period 6/1/14-5/31/15.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining high-frequency radars for SECOORA, R.H. Weisberg and C. Merz, PIs, 151,963 for the period 6/1/14-5/31/15.

Florida Water Research Institution, Development of a High Resolution Karenia Tracking Tool within the West Florida Coastal Ocean Model, J. Lenes and R.H. Weisberg, PIs, Total award = 100,000 for the period 7/1/14 to 5/31/15 (Weisberg portion = 50,000)

NSF XSEDE Computer Resource Program. Contract #: OCE130015. Very high resolution, baroclinic, three-dimensional coastal ocean circulation modeling from XSEDE for computation resource, L. Zheng and R.H. Weisberg, PIs 741,042 SUs awarded (no monetary award), award supplemented to July 2015

NOAA/WHOI rapid glider award, total award = 9,642 (for glider use)

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining moored observations for SECOORA, R.H. Weisberg and Y. Liu, PIs, 186,168 for the period 6/1/15-5/31/16.

SC SEAGRANT, federal pass through from NOAA, NA11NOS0120033, Maintaining high-frequency radars for SECOORA, R.H. Weisberg and C. Merz, PIs, 161,452 for the period 6/1/15-5/31/16.

NASA Contract # NNX13AE18G, Satellite Altimetry Products in the Eastern Gulf of Mexico, Veracity Testing and Applications, R.H. Weisberg and Y. Liu, PIs, Total award = 408,942 for the period 1/10/13-1/9/17.

Southwest Florida Water Management District. Generation of Water Level, Salinity, and Temperature Data near Charlotte Harbor from the West Florida Shelf Model, L.

Zheng and R.H. Weisberg, PIs, Total award = 71,975 for the period 6/25/13 to 8/31/15.

The Florida State University - Subcontract R01489, pursuant to Ocean Leadership Subaward SA 12-12/GoMRI-008, Deep-C Project Consortium, R.H. Weisberg, P.I., $555,000 for the period 10/1/12 to 12/31/15.

Pinellas Co., FL, Coastal Ocean Monitoring and Prediction System (COMPS): Publicly Accessible Real Time Winds, Waves and Currents from Pass-a-Grille Channel, R.H. Weisberg, P.I., 233,934 for the period 8/1/16-7/31/18; NCE through 12/31/19.

NAS Award # 2000009327, Irma Equipment Repair Award, 47,165 for the period 4/1/18-3/31/19, R.H. Weisberg, PI.

Summary: Previous cumulative funding as P.I., 32,039,834.
Previous cumulative funding as P.I. while at USF, 28,921,523.

RESEARCH CRUISES:

January 1970, Member of scientific party aboard R/V TRIDENT, North Atlantic Currents Study.

Fall 1970 and Fall 1972, Several estuarine research excursions for Ph.D. and M.S. Dissertation Projects.

April 1972, Member of scientific party aboard R/V TRIDENT, Atlantic Equatorial Undercurrent Study.

July 1974, Chief Scientist, R/V TRIDENT, Cruise 155, Equatorial Currents and Hydrographic Measurements during the GARP Atlantic Tropical Experiment (GATE).

August 1974, Co-Investigator, R/V TRIDENT, Cruise 156, Equatorial Currents and Hydrographic Measurements during the GARP Atlantic Tropical Experiment (GATE).

June 1976, Co-chief Scientist, N/O CAPRICORNE, Observations of Equatorial Trapped Waves in the Gulf of Guinea.

July 1977, Co-chief Scientist, N/O CAPRICORNE, Observations of Equatorial Trapped Waves in the Gulf of Guinea.

January 1978, Co-chief Scientist, N/O NIZERY Observations of Equatorial Trapped

Waves in the Gulf of Guinea.

February 1981, Chief Scientist, R/V ENDEAVOR, Seasonal Variability in the Equatorial Atlantic.

November 1981, Chief Scientist, R/V GYRE, Seasonal Variability in the Equatorial Atlantic.

February 1983, Co-Investigator, R/V CONRAD, Seasonal Response of the Equatorial Atlantic (SEQUAL).

March 1984, Chief Scientist, R/V KNORR, Seasonal Response of the Equatorial Atlantic (SEQUAL).

June 1989, Principal Investigator, N/S BALDRIGE, TOGA Monitoring array.

May 1990, Chief Scientist, R/V WECOMA, Tropical Instability Wave Experiment (TIWE).

January 1992, Chief Scientist, R/V MOANA WAVE, equatorial Pacific NSF/NOAA TOGA-COARE Program.

October 1993, Chief Scientist, R/V SUNCOASTER, west Florida shelf.

November, 1993, Chief Scientist, R/V SUNCOASTER, west Florida shelf.

November/December 1997, Co-Investigator, R/V THOMPSON, equatorial Pacific (NOAA PACS Program).

March 1998, Chief Scientist, R/V SUNCOASTER, West Florida Shelf.

September 1998, Chief Scientist, R/V SUNCOASTER, West Florida Shelf.

September 2003, Chief Scientist, R/V SUNCOASTER, West Florida Shelf.

September 2004, Chief Scientist, R/V SUNCOASTER, West Florida Shelf.

March 2009, Chief Scientist, R/V Weatherbird II, West Florida Shelf

OTHER CRUISE RESPONSIBILITIES:

Four cruises in the equatorial Pacific during the NOAA-EPOCS experiment from 03/80 - 04/82.

Five additional SEQUAL cruises, in the equatorial Atlantic.

Several Pamlico Sound excursions 1978-1979.

NOAA TOGA Program cruises in the equatorial Pacific 05/88, 04/90, 02/91, 01/92, 03/93, 03/94, 03/95.

NSF TIWE Project 06/91.

NSF/NOAA TOGA-COARE Program 03/93.

West Florida shelf deployment, Project Leader (non-participant), R/V GILBERT, 03/09/94.

NSF and NOAA cruise to equatorial Pacific, Project Leader (non-participant), R/V MOANA WAVE, 03/15 - 04/05/94.

West Florida shelf deployment, Project Leader (non-participant), Charter boat 07/16/94, R/V SUNCOASTER 01/95, R/V BELLOWS 07/95.

The COMPS/ECOHAB/ONR Projects have had cruises on a monthly basis since July 1998.

I continue to have responsibility for all cruises on the West Florida Shelf associated with the Coastal Ocean Monitoring and Prediction System (COMPS) Program and the Southeast Coastal Ocean Observing System Regional Association (SECOORA) Program, for which I have primary operations responsibility for at-sea observations and models.

RECENT TESTIMONY, DEPOSITIONS, AFFIDAVITS

Helen Davis v State Farm Fire & Casualty Company, Cause No.: 1:06-cv-574 in the United States District Court for the Southern District of Mississippi, Southern Division, deposed on July 6, 2007

Lydia Schultz v State Farm Fire & Casualty Company, Cause No.: 1:06-cv-449 in the United States District Court for the Southern District of Mississippi, Southern Division, deposed on July 6, 2007

Reginald Edwin Bossier v State Farm Fire & Casualty Company, Cause No.: 1:08-cv-00408 in the United States District Court for the Southern District of Mississippi, Southern Division, Testimony on November 9, 2009.

Dairy America, Inc. v New York Marine and General Insurance Company; Crump Insurance Services; Southern Marine and Aviation Underwriters; Arthur J. Gallagher and Company; Hartford Casualty Insurance Company, Dist, Ct. No.: 1:07-cv-00537-

LJO-SMS, United States District Court for the Eastern District of California, deposed on February 22, 2010.

Al Cossey v State Farm Fire & Casualty Company, Cause No.: 05-0381, in the Circuit Court of Hancock County Mississippi, Testimony on July 21, 2010.

Written and oral testimony before the US House of Representatives, Committee on Natural Resources, Subcommittee on the Oceans, Wildlife and Insular Affairs, Washington DC, June 15th 2010, as pertaining to the Deepwater Horizon Oil Spill.

Written and oral testimony before the US House of Representatives, Committee on Transportation and Infrastructure, Washington DC, December 7th 2011, as pertaining to H.R. 3096, the Restore Act.

Karen Pickett, Robbie Pickett and Archie Pickett Individually and as heirs at law of The Estate of Thomas Pickett, Plaintiffs. v. Blue Sea Adventures, Inc., SCUBA Toys Enterprises, L.L.C., and HEAD USA, Inc., Defendant, Cause No. CC-11-05941-E In The County Court at Law Number 5, Dallas County, Texas; Affidavit provided 2/23/12.

Florida Wildlife Federation, Inc.; Sierra Club, Inc.; Conservancy of Southwest Florida, Inc.; Environmental Confederation of Southwest Florida, Inc.; and St. Johns Riverkeeper, Inc., Petitioners *v. Department of Environmental Protection,* Respondent, *and Florida League of cities; James Sartori; Clay County Utility Authority; Florida Pulp & Paper Association Environmental Affairs, Inc.; Destin Water Users, Inc.; South Walton County Utility Co., Inc.; Emerald Coast Utilities Authority; South Florida Water Management District; The Florida Electric Power Coordinating Group, Inc.; Florida Fruit and Vegetable Association; Florida Sugar Cane League; and Florida Stormwater Association, Inc.,* Intervenors, Case Nos. 11-6137RP and 12-0157RP, hearing before Bram D. E. Canter, Administrative Law Judge of the Division of Administrative Hearings in Tallahassee, Florida, March 2, 2012.

Deposition for the above referenced cases held at Sierra Club Inc., Headquarters, St. Petersburg, FL., February 23, 2012.

United States of America v Lenin Lugo, Case # 8:17-cr-222-T-27JSS, in the United States District Court, Middle District of Florida, Tampa Division, Testimony on 1/9/18.