

**Twelfth Meeting of the Mississippi River/Gulf of Mexico Watershed  
Nutrient Task Force  
Doubletree Hotel Downtown Memphis  
185 Union Avenue, Memphis, Tennessee  
December 1, 2005  
[www.epa.gov/msbasin](http://www.epa.gov/msbasin)**

**Task Force Participants**

**Federal**

**Brent Fewell**, Deputy Assistant Administrator, U.S. Environmental Protection Agency, Office of Water  
**Tara Conrad**, Special Assistant, U.S. Department of the Interior, Office of the Assistant Secretary-Water and Science (sitting in for Mark Limbaugh)  
**Merlyn Carlson**, Deputy Undersecretary for Natural Resources and Environment, U.S. Department of Agriculture  
**George Dunlop**, Deputy Assistant Secretary of the Army, Office of the Assistant Secretary of the Army (Civil Works)  
**Rob Magnien**, National Ocean Service, National Oceanic and Atmospheric Administration (sitting in for Vice Admiral Conrad Lautenbacher)

**State**

**Chuck Burney**, Wisconsin Department of Natural Resources (sitting in for P. Scott Hassett)  
**Charles Chisolm**, Executive Director, Mississippi Department of Environmental Quality  
**Sheryl Corrigan**, Commissioner, Minnesota Pollution Control Agency  
**Charles Hartke**, Director, Illinois Department of Agriculture  
**John Kessler**, Administrator for Streams and Watersheds, Ohio Department of Natural Resources, Division of Soil and Water Conservation (sitting in for Sam Speck)  
**Dean Lemke**, Chief, Iowa Department of Agriculture and Land Stewardship, Water Resources Bureau (sitting in for Patty Judge)  
**John McClurkan**, Administrator, Water Quality Programs, Tennessee Department of Agriculture (sitting in for Larry Maxwell)  
**Dugan Sabins**, Louisiana Department of Environmental Quality, Office of Environmental Assessment (sitting in for Len Bahr)  
**J. Randy Young**, Executive Director, Arkansas Soil and Water Conservation Commission

*Morning Session*

**Brent Fewell:** Welcome to Memphis for the 12<sup>th</sup> meeting of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. My name is Brent Fewell. I am the Deputy Assistant Administrator for the Office of Water at EPA. Since the 11<sup>th</sup> meeting last year in St. Paul there has been a great deal of work done on behalf of the Task Force to develop and proceed with the planned reassessment that was agreed to in September of 2004 with many of the details having been finalized. This has truly been a cooperative process and a coordinated effort by all states and agency partners. I am confident that through the actions of this Task Force, that are based on sound science and a sustained steady progress, that the efforts of this Task Force will be successful in meeting the goals of the hypoxia *Action Plan*. Let me just take a few moments to summarize the goals of today's meeting:

- (1) We want to provide an update and discuss recent activities and progress on achieving the goals contained in the current *Action Plan*.
- (2) We want to continue to develop methods for measuring progress in reaching the goals of the *Action Plan* and items that we will discuss today.
- (3) We want to reach an agreement on appropriate actions and a timeline for the reassessment of the *Action Plan*, and
- (4) We want to adopt a work plan for 2006.

We had a very productive executive session yesterday where the state and federal partners were able to candidly discuss the ongoing activities and efforts of the Task Force and the progress that we are making on the reassessment of the *Action Plan*. The details of our discussions today will be focused on the steps that we agreed to and which we'll take in the next year to year and a half. At the end of the meeting today there will be time to provide public comments should you wish. I want to welcome John McClurkan to provide opening remarks. John is representing Task Force member Larry Maxwell, Assistant Commissioner of the Tennessee Department of Agriculture, and a is member of the coordinating committee. I want to also thank John for the great hospitality here in Memphis.

**John McClurkan:** On behalf of Assistant Commissioner Maxwell and Commissioner Ken Givens with the Tennessee Department of Agriculture, welcome to Memphis, welcome to Tennessee. This city is one of America's great river cities. It's history and culture are tied to this river—all the way back to the Chickasaw nation, the explorers that came here, and the early settlers. All the progress that has been made in the city is really linked and connected to the Mississippi River. All but 124 square miles of Tennessee, drains into the river and flows past Memphis on its way to the Gulf. The success of programs like this and other conservation programs are vitally important to the health not only of the Mississippi but of all the states' rivers of our state. I would covet your involvement today and your frank and candid comments on this process, and I thank you for that in advance.

**Brent Fewell:** Thank you John and Larry for your hospitality and for your continued leadership on this Task Force. Tennessee is a very important partner in this process. I would also like to welcome John Kessler. We were pleased to invite Ohio to join us as the 10<sup>th</sup> and most recent state to join the Task Force. Dr. Sam Speck was not able to be here with us today but we appreciate that John was able to be here in his place.

**John Kessler:** Thank you very much and good morning. I am here today representing Dr. Speck from Ohio Department of Natural Resources (DNR) who sends his regrets. Thanks to the Task Force and U.S. EPA for the invitation to join the coordinating committee, which I have been chosen to be a representative of, and to join the Task Force. We thank you and look forward to working with you.

**Brent Fewell:** I might just mention that John is the chair of the Ohio River Sub-basin Team. I think proper protocol is to allow the Task Force members to provide some opening remarks and report on things we had a chance to discuss yesterday in executive session.

**Charles Hartke:** Thank you very much Mr. Fewell, and I agree it's great to be here in Memphis. [Referring to a states-alone meeting held the previous day] We had a productive meeting yesterday morning prior to the executive session. The 10 states cooperating on the hypoxia issue would like to issue a statement and I will read it now to conclude my comments:

*The 10 states of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force urge the federal agencies to work with the states to develop a comprehensive budget to fully implement the Action Plan for reducing, controlling, and mitigating hypoxia in the Northern Gulf of Mexico. We recognize that accomplishing the three goals of the Action Plan will require a significant level of commitment from state governments as well as increased awareness and action by hundreds of thousands of stakeholders, but if hypoxia in the Northern Gulf of Mexico is truly a national issue, it is critical that the federal government take the lead to adequately fund efforts to address this issue.*

One of the things that was discussed in our state meeting was the fact that most states are strapped for resources to continue this effort and we have put forth a lot of time, money, and effort in the development of plans and meetings. We have contributed a lot and it seems the states are asking the federal government to step up and provide some more resources.

**Brent Fewell:** Before we move on to Dean [Lemke], thank you for that statement. This truly is a national priority. We recognize that the states are a critical partner in this process and we also recognize the hard work they are doing and the money they are putting in. At this time money is tight. Over the last year or so, EPA has contributed upwards of \$500,000 for activities of the sub-basins and other activities of the Task Force. We and the other federal partners here today continue to be committed to finding the money to move forward in sustained steady progress. We are cognizant of the state's concerns about the resources that will be required to move forward and we will continue to work with them in addressing that. As there are no comments at this time, let us continue with Dean.

**Dean Lemke:** Thank you Mr. Chairman. I am Dean Lemke and I am representing Iowa Secretary of Agriculture Patty Judge, who has been a long standing member of this Task Force. Secretary Judge had planned to be here yesterday and today but she is attending to family matters. I will simply comment on a global level. The hypoxia in the Gulf of Mexico is certainly the result of the aggregate decisions over the past 100 years of much of this nation. Nearly two-thirds of the nation drains to the Gulf through the Mississippi. We are dealing with very large ecosystems that are critical and important but do not respond quickly, and the kinds of forces that have led us to the hypoxic zone are not easily or quickly changed. However, it is important we start that process. The Task Force has done that over the past years with the *Action Plan* and we need to continue. It requires change at all levels: citizens and communities, need to examine their behaviors and actions and their willingness to help pay for some of the costs of pollutant reduction; state and local governments need to prioritize limited resources in the importance of nutrient reductions in addition to the other important natural resources issues; and changes at our research institutions could help develop new technologies. We need resources, as Director Hartke has pointed out, to sustain these activities but we need resources to help those people that are in the basin to make changes needed to adopt new technologies and management practices.

We need changes sometimes even in regulatory processes. We have regulatory programs that are directed to hypoxia in Iowa but at the moment we have some regulatory challenges to get those important environmental protection projects built. Those changes, even if made immediately, will not have immediate impact in terms of changing a large ecosystem. It's important we move forward to make those changes and I believe that we are doing so. Thank you Mr. Chairman.

**Rob Magnien:** Good morning, my name is Robert Magnien. I head the Center for Sponsored Coastal Ocean Research at the National Oceanic and Atmospheric Administration (NOAA), and I am NOAA's Coordination Committee member. I am standing in today for Vice Admiral Lautenbacher who is NOAA's Task Force representative. Admiral Lautenbacher sends his regrets at not being able to here, but I can tell you he is very supportive of the Task Force activities and especially our leading role in a lot of the science that is so important to the Task Force activities. We continue that commitment—ongoing since at least 1990—to monitor and understand the causes and consequences of the hypoxic zone and to supply the information, which is particularly important at this time as we are currently undergoing a science reassessment. We hope to play a major role in continuing to support that research. We have provided a fact sheet on NOAA's involvement in hypoxic research both in the Gulf and also across the nation. We recently awarded over 6 million dollars in grants to understand and research how to manage this issue. We are also undertaking a review of the Gulf work right now hoping to fund ongoing programs there later in the fiscal year. Alan Lewitus is here today, and he or I would be happy to answer any of your questions about NOAA's program. Thank you. **See Attachment A.**

**Sheryl Corrigan:** I am here from Minnesota, which is the headwater state for the Mississippi River. Today we are going to share a few common themes. One of them is going to be change and another is going to be resources. I want to tell you what we are doing in Minnesota to help change and to garner resources for this great river.

I want to point out two initiatives that are moving forward in our state. The first is Clean Water Legacy. This essentially focuses on implementation funding for water quality improvement projects; we're looking at a commitment of 40 million dollars on an annual basis going forward for implementation of water quality improvement projects. In the spirit of what Dean Lemke was talking about—how state and local governments need to do their part—we are trying to move forward in Minnesota so that we can leverage any resources that are available at the federal level. We are very hopeful that the Clean Water Legacy initiative will pass in our 2006 legislative session, which begins in March. We believe this type of legislative proposal is a first in the nation.

The other thing I wanted to point out is our Greatest River Initiative with our partners from the Upper Mississippi Basin. Our colleagues from Wisconsin might also want to talk about this. Our governors together have decided that we ought to increase our collaboration on focusing available resources on the Mississippi River. The five states in the upper Mississippi River basin have begun discussions about putting together a measurable reduction goal for nitrogen and phosphorus and are also working together to garner additional federal resources, whether from EPA, USDA, or other agencies. Those are two things that Minnesota is doing as the headwater state to improve the hypoxia situation down in the Gulf. Thank you Mr. Chair.

**John McClurkan:** Thank you Mr. Chair. My name is John McClurkan, and I am the Administrator of Water Resources with the Tennessee Department of Agriculture. I'd like to point out that because both the Tennessee River and the Cumberland River flow into the Ohio River, we are participating not only in the Lower Mississippi Sub-basin Committee but also with the Ohio River Sub-basin Committee in this effort. I will just echo some of the comments that have already made here. I want to touch briefly on a point that I feel strongly about and that is personal responsibility. This phenomenon of hypoxia and resulting problems are I think the result of millions upon millions of individual decisions made throughout the basin that cumulatively impact not only the river and the headwater tributaries but also the Gulf of Mexico. Through programs that we manage, and the nonpoint source program through EPA, we're trying to inform citizens and landowners that their individual actions and decisions do have an impact. They may not think so or be aware of it, but there is that cumulative effect. Another important issue in this discussion is the issue of perspective. The perspective of governmental entities should by nature be long term. Local, county, state, and federal government are perpetual in nature. Therefore we should be thinking in the long term. In my experience, many landowners, citizens and regrettably, some local governments are very short sighted and their planning and perspective is limited to the short-term. The complexity of the hypoxia issues will require us all to focus on the need for a long-term approach to this problem.

**Brent Fewell:** Thank you John [McClurkan]. I would echo your sentiments that the effort before us is not so much a sprint as a marathon. And with steady progress we can reach our ultimate goal. So again, thank you.

**George Dunlop:** Thank you Brent [Fewell]. My name is George Dunlop and I am the Deputy Assistant Secretary of the Army for Civil Works. It is a great privilege for the Department of the Army and the Corps of Engineers to be engaged with all of you in this collaborative enterprise. Reducing the problems and effects of natural economic growth and from the consequences of development in this country over the years make it the most amazing place on the planet. The fact that we're organizing ourselves in this way to deal with these consequences is an important and significant part of the way we put our economy together. I think I'd like to emphasize that President Bush, as you know, has placed a very high priority on this work of coordination and collaboration and in fact issued an Executive Order in April on what he calls cooperative conservation. Last August more than 1600 people gathered in St. Louis for a national conference on collaborative conservation. From the President's perspective, all the federal agencies should be coming up with ways to coordinate their activities that involve matters relating to improving the quality and condition of the environment including these types of issues we're dealing with. Not only should they figure out ways to cooperate and collaborate and coordinate their respective activities that come from different laws and statutes that established these federal agencies, but they should also be more effective and robust in dealing with the states, which are an important part of our federal system. In our private enterprise economy, most of the decisions are made by private land owners and state and local government officials in their respective jurisdictions. It is this concept of collaborative conservation that the President said should be designed to create a new culture of citizen stewardship. Three outcomes come to mind from that cooperative conference:

- (1) A commitment made by all who participated to begin identifying specific ways in which we can develop improved processes for collaborative conservation and cooperative conservation;
- (2) To identify the policies, practices, and maybe even the statutes that stand in the way of collaboration and cooperative efforts, and to begin to take steps to remove those disincentives and unintended consequences of what turns out to be perverse laws, statutes, policies, and practices; and
- (3) To recognize that science does play a very important role in informing public policy, especially relevant to the work at hand.

This Task Force helps to organize the data, the information, and the scientific perspective that can inform policy. All of the issues that we deal with require individuals to make decisions and the President has asked us to lay out options, and then make decisions that move us ahead. We are going to be serious about the types of deliberations we have here. We are determined to have measurable results in order to achieve the outcomes we want, and we will do so boldly and with courage. I am glad to be part of a group that thinks that way and has given evidence of that in everything they've done.

**Brent Fewell:** In August at the Cooperative Conservation Conference, Steve Johnson, the Administrator of the EPA, announced EPA's new initiative, the Good Samaritan Initiative. This does not relate directly to hypoxia but does encourage third parties such as Trout Unlimited and conservation groups, to go in and clean up abandoned mines that causes acid mine drainage in so many watersheds across the country. The idea is to remove the concern of Superfund liability for those who had no involvement in the contamination of those properties. We're excited about working with conservation groups in removing those barriers to progress. Thank you George Dunlop for mentioning cooperative conservation and for your continued leadership.

**Charles Chisolm:** My name is Charles Chisolm and I am the Director of Environmental Programs in state of Mississippi. I'm one of those people that have been with this effort since its beginning. I have had the opportunity to see it progress. Others have talked about the complexity of it; I will not repeat that. I think it's very noteworthy that it has been called a marathon not a sprint. I think when you step back and look at the reality of what we're trying to deal with, we can be pretty pleased with the progress that has been made. It's a problem that took a long time to create and it will take a long time to solve. One thing that I would like to focus on is looking at the connection between hypoxia and the Louisiana land-loss issue. I would hope that it is something we can develop in the coming months and years better than we have been able to in the past.

**Merlyn Carlson:** Thank you Mr. Chairman. I am Merlyn Carlson, Deputy Undersecretary for Natural Resources and Environment at the USDA. I'm a newcomer, having replaced Mack Gray whom you may remember. I am joined by Mike Sullivan and Howard Hankin here at the meeting today. I am honored, privileged and proud to represent agriculture and the USDA work with local, state and other agencies in this endeavor. The Mississippi River Basin is very important to the USDA and to the soil conservation working lands concepts. We use a portfolio approach in our attempt to provide stewardship to about two-thirds of the nation's land, water and air throughout our mission area. We use various tools to do that. The 2002 Farm Bill allowed

a great deal of additional funding as well as focusing for us in agriculture. It is interesting that in the 2002 Farm Bill, the 31 states that are involved in the Mississippi River Basin have spent eight billion dollars for conservation, for stewardship, and for healthy soil, water, and air. All eyes are now focused on the 2007 Farm Bill that is beginning to take shape. The USDA has conducted listening forums in all states in an effort to listen to the needs of agriculture as we go forward in protecting the environment and making a balance with the economy. Some new things have surfaced like credit trading and use of technical service providers, and it all comes down to doing more with less which is what we're doing here in a collaborative, collective, cooperative way. I am very pleased to be at the table and to be a partner. Thank you.

**Dugan Sabins:** I am Dugan Sabins, Senior Environmental Scientist with the Louisiana Department of Environmental Quality. I am here today representing Dr. Len Bahr of our Governor's Office of Coastal Activities. I would also like to mention that in deference to Sheryl Corrigan, we're the state at the bottom and the one that is most in harm's way for Gulf hurricanes. I'm joined today by three Louisiana colleagues: Nancy Rabalais from the Louisiana Universities Marine Consortium (LUMCON) from Cocodrie where she is now director of her research lab; Doug Daigle, who is our Lower Basin Committee chair person from New Orleans; and Deetra Washington from the Governor's Office from Baton Rouge. Each one of us can tell you our hurricane stories but we won't belabor them today. Len asked me to say a few words on his behalf since he wasn't able to be here today. He too would like to build on some of the comments that previous Task Force members have mentioned about the significance of the work we've done. We are interested in looking at the opportunities that may be presented to us in relation to Hurricane Katrina and in particular those that dramatize the interdependence of those who rely on the Mississippi River region. Whether it is to ship grain to markets, or the source of sediment and nutrients to restore the Louisiana coast and our productive ecosystem, it our hope that we can join together with the entire nation to restore Louisiana coastal wetlands. In planning the Lower Basin Nutrient Meeting, we're going to try to outline options to integrate coastal restoration with nutrient management and hypoxia. The state has formed a recovery authority but is also going to realign our coastal restoration task force to include protection programs. It is enlightening and heartening that we are going to try to marry the need for hard structures, such as levees, control structures, and other lines of defenses that will protect human property and life, with the vital task of restoring our coastal wetlands. This might address hypoxia in the Gulf of Mexico. We have a lot of opportunities now that unfortunately come at a time of human tragedy and severe loss of property and income. Louisiana has a severe budget shortfall and we are going to have to pare almost a billion dollars out of our budget in the short term while we deal with a lot of other issues, but we are determined to come out of this.

**See Attachment B.**

**Brent Fewell:** Thank you Dugan [Sabins]. You have been busy over the last several months and again we appreciate your participation. We are sorry Len couldn't be here today. Please pass along our regards and wishes for a speedy recovery.

**Randy Young:** My name is Randy Young. I'm the Director of Arkansas Natural Resources Commission and, along with Charles Chisolm, one of the original members of the Task Force. Our agency in Arkansas plays a significant role in the implementation of action recommendations that come out of this Task Force. In partnership with our local conservation

districts, the USDA and EPA, and sister agencies from the other 30 states we have been interested in ensuring that actions adopted by this Task Force make good sense to land owners. We believe they can be implemented and that we have the resources to implement them. What I am really interested in is hearing the status reports and plans we have for reassessing the 2001 *Action Plan*. Most importantly I am interested to hear what the public has to say about where we are in the process.

**Tara Conrad:** I am Tara Conrad and I am sitting in for new Assistant Secretary for Water and Science, in the Department of the Interior, Mark Limbaugh. He has recently been briefed on the status of the Task Force and is very interested in the activities that have been going on so far. U.S. Geological Survey has been heavily involved with their monitoring and modeling programs and the U.S. Fish and Wildlife Service has numerous programs focused on wetland conservation and restoration. This is my first meeting and I look forward to learning more about the programs and being active in future activities.

**Chuck Burney:** Good morning. My name is Chuck Burney and I am with the Wisconsin Department of Natural Resources. I am on the coordinating committee and am also representing Scott Hassett, the Secretary with our Department. One of the things that Sheryl Corrigan mentioned was the Great Rivers Initiative signed by the governors of Minnesota and Wisconsin. One of the things that we're working on—and hopefully we'll be able to give you more information at our next meeting—is the need for additional resources and for change while recognizing that there are existing resources that we need to decide how to use. We're trying to come up with a better common system of reporting on how we use our resources, what activities have been implemented, and expected outcomes from those activities. The states are in the early stages of trying to come up with a common system of doing this. At the next meeting we'll be better able to give you a report on where we stand with that.

**John Kessler:** I am with the Ohio Department of Natural Resources Division of Soil and Water Conservation. I am very excited about being able to participate and very much appreciate the comments from the Task Force members. I also look forward to hearing the public perspective this afternoon and hopefully the presentation on behalf of the Ohio River Sub-basin Committee in a few minutes here will be supportive of the excellent comments that we've heard.

**Brent Fewell:** Thank you Task Force members for your participation and comments today. Our next item on the agenda is a discussion on the current state of hypoxia in the Gulf. Dr. Nancy Rabalais with Louisiana Universities Marine Consortium is here to discuss the 2005 state of the hypoxic zone. Dr. Rabalais has studied the distribution and dynamics of the hypoxic zone in the Gulf of Mexico since the mid-1980's, and we rely on her annual cruises to understand the effects that our actions are having on reducing the size of the hypoxic zone. We are reminded by the *Action Plan* that our goal is to reduce nutrient discharges in the basin to decrease the five year running average to less than 5,000 square kilometers. Thank you Dr. Rabalais for your presentation this morning.



**Dr. Nancy Rabalais, LUMCON: Current State of Hypoxia in the Gulf, 2005.**  
**See Attachment C.**

**Brent Fewell:** We appreciate that very informative presentation and appreciate the continuous work and the science coming out of this, which is very important in informing our decisions on the Task Force. We will take a few minutes to see if any Task Force members have any questions.

**George Dunlop:** For the purposes of assimilating all of this, it would help to say, “The bottom line is...” and then finish the sentence with a brief summary.

**Nancy Rabalais:** The bottom line is that excess nitrate from the river drives this system.

**George Dunlop:** And that’s been confirmed by all the science?

**Nancy Rabalais:** Yes, and mostly since the 1970’s. There have been major landscape changes beginning in the 1850’s and not just in the last 100 years. These changes include land cover, types of activities, and changes in the river, so there are many landscape changes, but the big change came primarily with more intensified agriculture after World War II. You can see it in the sediment cores and the long-term data. It is an altered landscape that now has excess nutrients applied to it.

**Charles Hartke:** What would you estimate is the total annual economic impact on the shrimp and fishing industry?

**Nancy Rabalais:** In the first assessment that was done to support the integrated assessment and the *Action Plan*, an attempt was made to use the available economic data which was primarily shrimp catch converted to dollars. They did not find a relationship. However, there were not suitable data to find a relationship because there are all sorts of other factors such as price at the dock, fuel, boats in the water, and many other economic factors. In addition, there was no valuation of environmental services in that process because the continental shelf of the U.S. and the Gulf is a major part in the nitrogen cycle in getting rid of extra nitrogen that gets into the oceans. So those environmental services had been disrupted as well. It is very difficult to put a dollar figure on it. This year—and I don’t think it’s because the hypoxia was not back or because we had hurricanes—the boats that still exist and can get out are catching a lot of shrimp. The shrimp crop is a one-year crop and is less likely to be affected in that year because the recruitment, all the larvae, etc, were there before the hypoxia started. There are some indications that there has been a shift in the fishery from organisms that depend mostly on the bottom to those that take advantage of the high algal growth in the surface waters, which means that poagies and menhaden are more common than they used to be and some croaker types on the bottom are less dominant. It is an indication of a eutrophicated system—too many nutrients, too much plankton, too many small fish. Those small fish are a very important component of Louisiana’s economy and the farm economy because it goes into fish meal and fish oil. It is more pounds, but it’s cheap, whereas the benthic fishery, though fewer pounds is much more valuable. You must take all those factors into account. So if that is your question, I can’t give you a number and I am not sure anybody can, but we are catching shrimp in Louisiana.

**Brent Fewell:** We're going to move on to an overview of the activities of the sub-basin teams. The critical component of the *Action Plan* is to have sub-basin teams coordinate the implementation of the *Action Plan*. These teams have shown tremendous leadership and have worked very hard to bring states and small watershed groups together to work towards achieving the long-term goals of the *Action Plan*. The Task Force truly appreciates the work that these teams continue to do and for taking on a very important role in the implementation of the *Action Plan*. Dean Lemke is going to be our first speaker to provide an update of the Upper Mississippi River Sub-basin Team which has facilitated networking and dialogues among the states, industry stakeholders, and local organizations to exchange and promote technologies as well as strategies and programs to reduce nutrient transport into the Gulf from nonpoint sources.

**Dean Lemke, Iowa Department of Agriculture and Land Stewardship (IDALS), Upper Mississippi River Sub-basin Hypoxia Nutrient Committee (UMRSHNC): Status Report. See Attachment D.**

**Brent Fewell:** UMRSHNC is obviously doing a fabulous job. Seeing organizations like Audubon and the Nature Conservancy working together with state and federal agencies epitomizes the President's call for cooperative conservation. If you would make your presentation available to us, I would like to put it on our EPA website and also provide a link to the Department of Interior's Cooperative Conservation Program. Thank you Dean.

Our next presentation is going to be on the Ohio River Sub-basin Team status. This sub-basin team was formed to implement the hypoxia *Action Plan* within seven states: Illinois, Indiana, Ohio, West Virginia, Pennsylvania, Virginia and Kentucky. The Ohio Department of Natural Resources and Ohio River Valley Sanitation Commission (ORSANCO) have led the effort to coordinate nutrient reductions within the basin, and the team is finalizing a nutrient reduction strategy for the sub-basin. There is some exciting progress being made within the sub-basin on water quality trading. I want to recognize Jenny Kibler with EPA. Jenny has a wealth of knowledge and would be happy to assist any states or individuals that may have an interest in establishing a water quality trading program. John [Kessler], thank you for being here today.

**John Kessler, Ohio Department of Natural Resources, Ohio River Sub-basin Team: Status Report. See Attachment E.**

**Brent Fewell:** Thank you John for that informative overview and the activities that your team is undertaking. I do like your idea for an Ohio River Basin Symposium and it's something for the Task Force to consider. I think that would definitely be worth exploring. Are there any questions from the Task Force members?

**Rob Magnien:** Thank you very much for that update. I think it is a wonderful development that Ohio has joined the Task Force, and when you get into the sub-basin level you see the value of it and where the holes are. What are your thoughts on the possible positive and negative aspects of other states joining? That may be a question for all the sub-basins, but I'll start with you first.

**John Kessler:** Other states in other major sub-basins or..?

**Rob Magnien:** You mentioned that there were five states that were part of the Ohio River sub-basin that weren't Task Force members.

**John Kessler:** We think we have all the major states that have significant area within the basin on the committee. There are a few states with very small pieces of the Ohio River basin that have chosen not to participate. But we should have everyone represented with a significant area in the drainage basin.

**Rob Magnien:** But there are some of those states on the team but not on the Task Force?

**John Kessler:** Correct.

**Rob Magnien:** So my question was do you have any perspective on the positive or negative aspects of possibly including other states on the Task Force that are currently part of the sub-basin?

**John Kessler:** I really can't speak for the other states but I think it is critical to have at least one. That's a good question to take back to them rather than have me try to speculate. I would like to pose that question to the representatives on the steering committee.

**George Dunlop:** I have a question and then a series of things that might flow from this question. You mentioned that nutrient trading was one of the challenges you were dealing with. I sensed from the way you presented it that there are complications and different points of view. We are going to keep working to come up with something useful. Is this a correct assumption?

**John Kessler:** Yes.

**George Dunlop:** People ask me what I do for a living. The nature of our work at top policy levels in the federal government is to make decisions. That's what we do for a living: make decisions. The reason we make decisions at that level is because people who are operating—I don't mean to use the word subordinate in the sense that they are less important or lower ranking—those operating at subordinate levels of government like local, or state government, have elevated issues to us that they have not been able to resolve. One of the difficulties that all of us in senior policy positions, whether at the federal, state or local level have, is to encourage those working in the field, working, or scientific level to be willing to identify differences of opinion, different perspectives, different interests to be able to turn them loose so that policy makers can make decisions. This arises from a certain feeling that it might be controversial if we admit that we don't all agree and our principals don't like controversy, and this is true at federal, state, and local levels. Other people think that if we can't come to an agreement or if we identify issues we don't know how to solve, we might be looked upon as incompetent or incapable. I submit that elevation of policy issues is not a sign of failure but is a sign of success of these processes working. In this way I know from various meetings and conferences and symposia that I attend that the innovative tools of nutrient trading and air quality trading are also working. There are whole schools of economics that study this which is why, when we talk about the types of symposia, we need to consider economics as well as science. Economics is a science although not all scientists recognize that. One of the tools we might be able to use is nutrient trading tools.

A lot of people are working on this, so instead of reporting that we have things that we're struggling with, we should be forthright and say that we have four or five issues we are not in agreement on and we are going to try to elevate those issues, give the policy makers some options, and induce the system we are setting up here to actually make some decisions. There are a lot of experiences in nutrient trading. Lots of people have been through these issues in many venues, lots of areas, and there are a lot of records showing how others have resolved these issues. I started by asking a question, but I took the opportunity to give a little speech about the importance of elevating—isolating, identifying, and elevating—policy issues for decision makers so that they can earn their living honestly.

**Brent Fewell:** Why don't we move onto the last sub-basin presentation. I am going to ask Dugan Sabins to provide an overview on the Lower Mississippi Sub-basin activities.

**Dugan Sabins:** I am going to ask our Lower Basin Coordinator, Doug Daigle, to make the presentation for us. We have been around for some time, but I believe the UMRSHNC group has had more meetings. As John mentioned, in Ohio we are working together as a trio—the sub-basin committees—and learning from each other. Dean Lemke and his group have done the first symposium and been able to form a successful core group so we are trying to learn from what they have done in order to enhance what we are doing. We have had several meetings, including one in Mississippi before all the storms, and we're going to have one here tomorrow, so we are moving forward on some of the same issues that Dean and John discussed. So Doug will go over some of those points.

**Doug Daigle, Lower Mississippi Sub-basin Team: Status Report.**  
**See Attachment F.**

**Sheryl Corrigan:** Thanks, Doug, for that very good presentation—short, the way we like it. What is the symposium going to focus on in 2006?

**Dugan Sabins:** I think that's on the agenda later.

-----15 Minute Break-----

**Brent Fewell:** Part of this morning's meeting is an update of the reassessment of the 2001 *Action Plan*: where we are and where we're headed. Item 11 of the *Action Plan* calls for an assessment of progress in achieving the three goals of the *Action Plan* and decisions on a future course of action. The purpose of this reassessment is to ensure that the Task Force periodically re-evaluates the big picture and makes sure that the elements of the *Action Plan* remain viable. The coordinating committee has investigated many options to conduct this reassessment and has developed a plan that the Task Force agreed to in June of 2005. Since then the coordinating committee has refined the process and has begun tasking individual pieces to the leadership for the coordinating committee members. Today Diane Regas, the Director of the Office of Wetlands, Oceans and Watersheds at EPA, is here to discuss this process and the agreements reached by the Task Force.

**Diane Regas, EPA Office of Wetlands, Oceans, and Watersheds: Reassessment Plan and Schedule.**

**See Attachment G.**

**Brent Fewell:** As Diane mentioned there are a number of symposia, one that has already taken place and three more that are in planning stages. The Upper Mississippi Basin Science Symposium, which was held in September, went very well and set a high bar for the other Symposia. On behalf of the Task Force, I want to thank Dean Lemke and the steering committee and to invite Dean to give an overview of the process.

**Dean Lemke, IDALS: Report Out on the Upper Basin Symposium**

**See Attachment H.**

**Brent Fewell:** There is a lot of exciting stuff coming out of that conference; a lot of good science and many questions that we need to follow up on. The EPA and USDA were happy to be a part of that and to help fund that workshop. Before I turn it over to my colleagues for questions, I do have one question for you. Since you talked about translating science to policy in management actions, is there a growing consensus of scientists and also managers on a handful of management practices such as wetlands restoration/creation that can be implemented on farms or in the field that can effectively and efficiently reduce nitrogen and phosphorus?

**Dean Lemke:** We need to translate all this research information and the best science we can define down to what is practical to implement, what is achievable to the growers, at least in the agricultural nonpoint community, and what can be implemented that is workable to the agencies. I am confident that we can do that although I think it is easier to achieve for phosphorus than it is for nitrogen. Nitrogen is hard to manage given the kind of landscapes and the food production infrastructure we have in the Mid-West. We need to identify the best technologies and we need to understand how well we can expect them to perform so that we would be able to reliably numerate that performance. I believe we can do that. I always wish we had better technologies but we need to use the best ones we have.

**Brent Fewell:** Thank you Dean [Lemke]. I am going to ask Rick Greene to provide an update on planning for the Gulf Symposium, which is scheduled for late spring of 2006. Rick is with the EPA's Office of Research and Development. I'd also ask Rick, if this is not part of his presentation, to let folks know how they can learn more about when and where the symposium is going to be so they can participate.

**Rick Greene, EPA: Planning for the Gulf Symposium.**

**See Attachment I.**

**Brent Fewell:** Sounds like a really exciting agenda that you are developing.

**Dean Lemke:** On session five on oceanographic processes on the distribution and extent of the hypoxia zone—at past meetings Dr. Len Bahr talked about the role of how the water is delivered to the Gulf; I think his words were the point injection needle versus the distributed relationship

that previously existed. Do you see that kind of thing being included in session five or is that within the scope of this science review?

**Rick Greene:** I think that it's certainly open for discussion at this point since we haven't finalized the agenda. I think we need to talk a little more with Dugan [Sabins] and the Lower Basin Committee about the content and scope of what they are planning to include in their symposium. The two symposia will be closely related and will involve a lot of the same people. I think we need to have a discussion on that point before we finalize the agenda.

**Brent Fewell:** At this point we're going to move on to discussing the planning for the Lower Basin Symposium.

### **Dugan Sabins, Louisiana Department of Environmental Quality: Lower Basin Symposium Planning.**

**Dugan Sabins:** I am going to say some words here after discussing this with Len [Bahr] and I am going to ask Doug Daigle, our Basin Coordinator who is also helping in planning this to add a few comments. We're working with the Lower Mississippi Sub-basin Committee member states on organizational structure, a prominent topic that we will cover tomorrow for those who want to join us for the Lower Mississippi Sub-basin Committee meeting. Basically, Len has already started the process—as Dean [Lemke] remembers, he's very passionate about a lot of the things going on in the lower delta—and he looks at this workshop as a real opportunity. I am really beginning to see that common thread after listening to Dean and what UMRSHNC has done and the excitement of being able to bring this level of science together really for the first time to looking at a lot of issues that benefit not only the hypoxia *Action Plan* but local issues—certainly we look at that in planning this symposium. As Rick mentioned we will also be working closely with his team; we anticipate that we may indeed be inviting some of the same scientists from the Gulf Science Symposium to participate and we want to coordinate those presentations. What Len has already done is issued a basic tickler invitation to groups of individuals that are working primarily with him on some of the lower distributary issues, but Doug [Daigle] has also been working on the upper parts of the lower basin—defined approximately as from Cairo south to the Gulf.

We are looking at a categorizing our workshop symposium by looking at tributaries as our first series of sessions. We're looking at nutrient reduction in the tributaries in a situation where there are very few opportunities for nutrients to move into the river because the lower basin is well endowed with levees. Tributaries include the Arkansas River (Arkansas), the Yazoo River (Mississippi), some tributaries coming into Tennessee, and of course the Ohio River in the upper river feeding in from the top. We're going pursue the lower basin watershed projects that Doug presented earlier to find other watersheds in the lower basin with tributaries that could carry nutrient loads. One in particular is the Yazoo Basin in which we have the Lake Watershed Project from the Mississippi, and this project has had a lot of intensive research and work over the years. The Mississippi Department of Environmental Quality, in concert with their state agriculture people and local landowner groups, have done a lot of work in the Yazoo Basin on various forms of nonpoint source reduction, which would include nutrients. We're going to try to

tap into all of that and work with our member states to address this, so our first opening session would be nutrient reduction and dealing with tributaries in the lower basin.

The second major area deals with the distributaries—and that would be moving down to the first major distributary, which is the Old River structures. By law the U.S. Army Corps of Engineers is mandated to move a third of the Mississippi River flow through these structures into the Atchafalaya Basin system to the Gulf, and move the remaining two-thirds on down the Mississippi. On top of this is a somewhat complex flood management plan that the Corps is required to implement with the use of spillways to divert waters around and away from the major populated areas in the lower basin, such as New Orleans and Baton Rouge. This comes into play during flood years when specific stages on the river reach certain levels. We're going to invite the Corps to be a major partner and involve them in some of the work that's being planned under the Louisiana Coastal Area initiatives.

A lot of other ideas have been on the table for years but have never been raised in a forum where the scientists and the specialists come together to focus on them. The distributary issues could include a discussion on flows at Old River and the various structures at Old River. It could also involve the outlets that presently exist at the mouth of the Atchafalaya. We presently have a large delta forming out of what we call the Wax Lake Outlet that is separate from the major mouth of the Atchafalaya, which goes by Morgan City and into the Gulf. So there may be opportunities that we can look at in managing water flow through the Atchafalaya Basin and seeing what opportunities are available to utilize nutrients before they go into the Gulf. If you are familiar with some of Nancy's materials, you can see that we do have a large area of hypoxia that forms to the west of the Atchafalaya, so we know the Atchafalaya introduces nutrients into the Gulf and we'll be looking at all aspects of that distribution under this particular sessions.

We also have navigation channels scattered along the coast. One of them is the Mississippi River Gulf Outlet, which many alleged played a prominent role in both funneling storm surge waters and in breaking the levees in New Orleans. That waterway has generated a lot of controversy over the years but it also plays a role in that it is connected to Mississippi through the Intercoastal Waterway. There may be some nutrient exchanges going on through that system. We're going to look at the Mississippi River Gulf Outlet as part of this. The Lake Pontchartrain Basin system is also a complicated system and we've had a problem with spillway openings and high nutrient delivery into that system; we're looking at ways to work with the Corps on diversion issues in the Pontchartrain Basin and the Bonnet Carre Spillway. We're still fleshing out other opportunities to move distributary waters to the west. So the second session will be on distributaries, covering various opportunities in the delta and looking at their role in hypoxia and in moving nutrient rich waters to the Gulf.

A third session area may look at more beneficial uses of the existing structures that we have in place. We all ready have two major fresh water diversion structures in Davis Pond and Caernarvon—one on the west side and one on the east side of the river—and we'll be looking at the management scenarios used there over the years. We'll be trying to move nutrient rich waters in such a manner that they don't cause problems in the estuaries but are directed into the marshlands where they can do the most good in helping to restore the coast. We also have other non-typical diversion structures that serve as conduits to move river water, for example,

navigation channels along the edge of the river. South of New Orleans the Harvey Canal has a lock. The Intercoastal Waterway also locks through the river. Other kinds of navigation channels can also be looked at for beneficial uses.

Another item for topic sessions is sediment budgeting. Len [Bahr] attended a meeting with colleagues in Illinois about the sediment problems they're having in the upper river and whether there is some way we can get these sediments via barges to the lower river, and use them in our delta. We'll try to make an upriver-downriver connection. Sediment budgeting is a critical issue for the coast and in building our coastal restoration program. In so far as this sediment is carrying phosphorus and other attached nutrients it becomes a part of the hypoxia issue.

The last area is modeling. There is a lot of exciting river modeling that Len [Bahr] has seen, and he wants to include some of these scientists in that planning. That's an overview of the session topics that we'll be looking at for our lower river symposium.

**Doug Daigle:** We've always used a very open process to encourage a lot of participation by stakeholders and interested parties. So we've put out a general request for ideas and proposals as we refine the scope of the symposium. We'll do a more formal call for papers and the different topic areas of the symposium later. I did want to reiterate that the Lower Mississippi Sub-basin Committee is meeting here tomorrow and anyone who wants to attend that is certainly welcome to do so. These are open meetings for any interested participants.

**Dugan Sabins:** The last thing I would add is that we are targeting June right now and if we can swing it we are going to see what we have available in New Orleans. The airport is open and hotels are available, so the main thing is transportation to and from the airport. This may offer a good opportunity to tie New Orleans and the coastal area back into the picture after the hurricanes. But we'll also be following up with Rick, EPA, and the contractors to see what options are available in Memphis or wherever we can hold the symposium.

**Brent Fewell:** Thank you Dugan. As the planning process for these symposia continue to unfold, the when's and the where's will be posted on EPA's website on hypoxia and other places. So we'll make sure that the public has plenty of advance notice as to when and where those conferences will be.

-----Lunch Break-----

*Afternoon Session*

**Brent Fewell:** The next portion of today's agenda will be focusing on the update from the Science Reassessment Teams. In St. Paul the Task Force agreed to move forward on the formation of the Management Action Reassessment Team (MART) and the Science Reassessment Team (SRT). These teams have formed and are working through specific data gathering parts of the reassessment.

**Herb Buxton, USGS: Update from the Science Reassessment Team.  
See Attachment J.**



**Katie Flahive, EPA and Mike Sullivan, USDA: Update from the Management Action Reassessment Team (MART).**  
**See Attachment K.**

**Darrell Brown, EPA and Dennis McKenna, Illinois Department of Agriculture: Charge to the EPA Science Advisory Board (SAB).**  
**See Attachment L.**

**Brent Fewell:** Yesterday in the executive session, we had a discussion about this process—the Gulf Science Panel Review as well as the Basin Science Panel Review. I think everyone on this Task Force recognized the importance that this process be done with great transparency and with ample public participation to avoid charges of bias on the end product regarding how the science was reviewed, and action items were developed. It is critically important that we maintain this level of transparency.

**Herb Buxton, USGS: Update on the National Monitoring Network.**  
**See Attachment M.**

**Brent Fewell:** You mentioned remote sensing is being used. For those of us not familiar with remote sensing and how it could be used to develop water quality data could you describe that process and what data is collected?

**Herb Buxton:** There is quite a range. I am a little more familiar with the terrestrial side than with the freshwater side. Rob [Magnien], would you like to say something about the marine side?

**Rob Magnien:** If you define remote sensing broadly, you could be talking about satellites, aircraft capabilities to look at temperature, chlorophyll, algal blooms, and those types of things. There's a whole cadre of new technologies being deployed on buoys and autonomous vehicles that can remotely sense just about anything. There is a real explosion in those technologies to look at all kinds of chemical and biological parameters. Then getting all those technologies working together with modeling. It is a pretty exciting time for these new technologies.

**Herb Buxton:** There is a lot of spectral reflectance type of information largely looking at the way light reflects off the waters and looking at different frequency ranges of the light spectral reflectance and relating them to different constituents in the water. There's quite a wide range of that type of application.

The other thing I would like to add before I leave is to reiterate the connection with the Task Force activities. I think that down the road as this National Water Quality Network gets considered and evaluated, it is potentially a vehicle for what gets done through the Task Force. The type of science and monitoring activities that get done for the Gulf and the Mississippi are a good example of how this works for the biggest inland drainage in the nation.

**Dugan Sabins:** I was trying to read through all the slides and the maps. Is the lower river considered a stream, or is it part of this monitoring—say from New Orleans south to the Gulf. Are any stations considered in that reach of the river?

**Herb Buxton:** I would have to answer that from the standpoint of our discussions on how far south we can practically get. Our discussions have been on the area below New Orleans down to Belle Chase, to be able to look at the lowest downstream measuring sites practical for the lowest downstream loads.

**Dugan Sabins:** We are maintaining three stations on the river, St. Francisville, Plaquemine, and Belle Chase. Since the only station USGS is continuing is at St. Francisville, we kind of duplicate each other there. I want to see if there is any chance to get any more river stations in.

**Herb Buxton:** We've been monitoring Baton Rouge by grab samples. Largely, this is a great example of where we have to put both the monitoring programs together so we get them frequently enough along with depth and integrated samples. It is a classic example of collaboration. At the mouth of the Mississippi we need samples at very high frequencies.

**Nancy Rabalais:** I want to clarify some other things that are going on. We have a nitrate reader in New Orleans. We are trying very hard to keep a functional system recording water quality and nitrates.

**Bryon Griffith, EPA Gulf of Mexico Program Office: Update from the Gulf Alliance. See Attachment N.**

**Brent Fewell:** For those of you who don't know Bryon, he and his wife live in the Mississippi Gulf and they were personally impacted by Hurricanes Katrina and Rita. They were fortunate to not lose their homes, but they were gracious enough to house up to 29 people whom they were clothing, feeding, and providing for their daily needs. Many of them were family but many were complete strangers, and I think you're down to a half-dozen people?

**Bryon Griffith:** 14 plus

**Brent Fewell:** It's a heart-warming story, so thank you Bryon for your good work.

## **Public Comments**

**Lee Moore, Nature Conservancy. Lower Mississippi Program Director**

I thank you for this opportunity to tell you a little about what the Nature Conservancy is doing up and down the Mississippi River and in the Gulf of Mexico. This is my first Task Force meeting and I have been really inspired. I look forward to coming to many more.

For those of you that don't know, the Nature Conservancy is a nonprofit conservation organization whose mission is to preserve the biodiversity of life on earth by protecting the plants and species that represent that biodiversity. It's a daunting task. Because it is such a

daunting task, it has really challenged the organization to approach conservation in a new way. One example of that is about nine years ago we launched a five state program in the upper Mississippi River to address multi-site strategies and multi-site conservation challenges in the upper basin. It's been a very successful in raising funds, engaging partners, and getting on-the-ground projects done.

**Jim Porterfield, American Farm Bureau Federation (Director of Special Research Projects, Economics Division)**

I appreciate the opportunity to visit with you and share some things I have experienced over the last five years that may have some direct bearing on what we do in the future here.

In 1983 we were putting out about 1.3 pounds of commercial nitrogen per bushel of corn produced. We were not on a very good trend. It was going up in the wrong way. In about 1983 things changed. Since then nitrogen use on corn has been going down just as steadily as it went up from 1967 to 1983. Now we are down around 0.96 pounds of commercial nitrogen per bushel produced nationwide on a five-year running average. That is about a 27 percent reduction in the number of pounds of nitrogen per bushel produced. I think we have been having some good successes out there.

I want to share with you the opportunity, I think, that really has not been mentioned yet. There are about nine new nitrogen products and formulations (that I am aware of and there are probably more) under the broad umbrella of enhanced efficiency fertilizers that are very close to being commercially ready. They fall into the categories of slow release, nitrification inhibitors, and ureation inhibitors.

How many of you have heard of Unity Fertilizer? One person... and probably because I talked to him today. How about Nurea or Nitomen (a Georgia Pacific product). Nurea is a product from a smaller company that had formerly focused on turf grass but is now looking at agricultural areas. The two companies are working to put their products together because Nurea has a perlite carrier which is very porous and when put together with steam it will expand and suck in the Nitomen, then the product is covered with hydrogel called corn starch. It is looking very promising. Another one is called Stable U. It was patented in 2003 out of the mind of one individual in the Pacific Northwest. I had a chance to test it over the last five years and everything I have seen on it so far indicates no red flags that this ought to be looked at in the future. Some of you may have heard of ESN by Agrium. This is going to drive the industry pretty quickly in the next year or so because they finally got a production plan on-line starting in January: 150 thousand tons a year up in Canada and it's going to come into the agricultural market for corn. The interesting thing about it is that it is a polymer-coated product. We've had sulfur-coated ureas before, but this is a polymer and it is temperature sensitive to soil temperatures. It breaks down in a pattern that corn is able to use more efficiently. So you are going to put on less product, probably bump your yield a little bit, and maybe even document less atmospheric emissions of nitrates. Thisol is an older product but there is a new use for it with UAN—Agratene Methylene Urea from an Italian company. It is mostly used for turf, but they are looking to go into agriculture with it. Honeywell also has a product that they are looking at from the same standpoint. These are nine exciting new products out there that are going to have an impact on the agriculture landscape, particularly of corn and wheat.

The bottom line, from my experience, is we are looking at a 15–50 percent reduction in nitrogen input, versus the university recommendations on corn; probably a 25–60 percent reduction in nitrate leaking out of the bottom of the root zone; a 5–20 bushel per acre yield increase, and that translates into about 15–55 gallons of extra ethanol; and a 15–25 dollar-per-acre increase in net profit for the farmer.

Like Mr. Dunlop said earlier today, there are some decisions to be made, and I will list four for your consideration.

- (1) We need some multi-state nitrogen rate tests to be done to look at what is coming off in the air quality, ground water quality, and economics of these products.
- (2) We need some paired watershed studies to look at what is coming out of the bottom of the root zone. We also have a new test available—about a four-hour test—that will help us determine some of these factors in advance. For lack of better information, I'll call it Bill Hall's test, because he is the one who is working on it with the Mosaic Chemical Company. He says it should be ready in about February.
- (3) We also maybe need some help from agencies, like USDA and the U.S. Department of Energy, with vouchers and other incentives to encourage farmers to order these fertilizers and encourage the companies to produce it. It is the chicken and the egg syndrome: if it is not there and nobody knows about it, then nobody is going to order it. If there is no incentive to help get the information or products out, then how are you going to do that? In one particular test that I was pretty impressed with, we didn't plant until June 13 down in Southern Illinois. We put the fertilizer down about the same time, about 60 pounds of nitrogen per acre, and we produced a 220-bushel crop out if it that year. Urea, at the same rate was 199.
- (4) I think there are a lot of things that we need to look at. I wish they could have been addressed more at the meeting that was being held at Iowa State on 26–28 September, but the fact of the matter is they have no research to talk about because they haven't researched it yet. Here we are looking at new things, with, I think, a lot of potential.

**Brent Fewell:** Thank you for your comments, and thank you for the Farm Bureau Federation's continued involvement in this import process. I recognize that there have been many contentions issues over the past, and you all are a very important stakeholder in this process. It is great to hear that agro-business is also in the process of developing new products and technologies that will reduce the amount of nitrogen that can potentially get into these waters.

**James Baker, Sierra Club**

I wear several hats with the Sierra Club. Locally, I am the Conservation Chair this year. Statewide and nationally, I'm also with a group called Tennessee Water Sentinels, which is a water quality initiative of the Sierra Club. Also I am on the National Water Committee.

I'll keep it kind of short. I didn't get in for the entire meeting this morning. I had some work I had to take care of before I got here, and I have to go back to work and take care of some more work before I end up.

You all have done a great meeting today, from what I saw of it. I would like to say that for the Gulf Science Symposium that you are going to hold next year, as well as the Lower Basin

Symposium and this meeting again next year, would you consider holding the meetings on either a Friday-Saturday or on the weekends to more benefit people like me that are members of the working public, so that we can get here without taking too many vacation days at our jobs. I wanted to make that point for your edification.

That is all I have at this time. I'm going to make a presentation tomorrow at the Lower River Sub-basin Committee meeting. I hope you are here for that as well.

**Heather Schoonover, Institute for Agriculture and Trade Policy**

We are a non-profit research organization in Minneapolis, Minnesota that focuses on sustainable agriculture and small farms in rural communities. I would like to express a couple of concerns on behalf of a number of NGOs. I brought with me a letter from the Mississippi River Riders Partnership and I put a copy of it outside on the table. I would like to read from that letter a couple of concerns that we have on behalf of a number of us. **See Attachment O.**

First we're concerned that the scope of the reassessment has broadened from what was originally called for in the *Action Plan*. The *Action Plan* says that by 2005, and for every five years thereafter, the Task Force will assess the nutrient load reductions achieved, the response of the hypoxic zone, water quality throughout the basin, and economic and social effects, then based on this, assess the strategy and revise it if necessary.

While we recognize that the science has continued to develop since 2001, and that this should be updated in the *Action Plan*, it seems that the goal has changed. Rather than assessing the actions undertaken since 2001 and their level of effectiveness, the Task Force is now looking at assessing the entire body of science behind hypoxia. If this is the case, we would like to ask that you would make clear to the public why the assessment has expanded beyond the original language called for in the *Action Plan*, especially in light of the conclusions reached by the peer review on the EPA Region 4 report.

The second concern that we have is funding. Someone spoke to funding earlier. There appears to be failure to get funding for implementing the *Action Plan*, and we were wondering where the funding would come from in the future and how the implementation will be funded after the reassessment. Obviously we want this process to move forward, and if there is no funding, the benefits that we will see from the reassessment will be negated.

The third concern is with the timeframe. With the completion date of 2007, we want to make sure that actions to push for funding and to implement the *Action Plan* are not delayed until 2007, but they continue to go on in the meantime.

I would like to add that the NGOs are definitely paying attention to the process and actively engaged. We're excited to be involved. We are also involved in a number of complementary efforts ourselves. My organization, along with a couple of others, are currently launching a project to inventory all the hypoxia related activity in the basin which we will make accessible in a soon to be developed public website that will have a searchable database along with a map of everything that we know is going on. This will hopefully reveal connections for better communication, where people could be working together, enable effective use of resources, and

things like that. That will be publicly accessible. We don't have a URL yet, so I'm not sure where it will be. But we will be more than happy to share that with the Task Force, and we welcome input from everyone here. There is a one-page description out on the tables. **See Attachment P.**

### **Nancy Rabalais**

I listed my affiliation as personal, but I will put on my LUMCON hat first and say a few things. First of all, I would like to apologize to the Gulf Breeze EPA Lab for saying they didn't get offshore this year. They actually did get offshore in the spring and somebody floated their boat post Katrina. So I apologize to them.

The second thing is that there are a lot of complementary things going on and I noticed one of the things in your handouts was the National Research Council (NRC) committee to look at the Mississippi River and the Clean Water Act. I hope you pay attention to that. I am on that NRC panel.

There is an Army Corps of Engineers initiative out of the Institute for Water Resources to pull a group together to look at flood control and restoration. This will be the first time that I know of that someone that actually does hypoxia research will be on such a panel. I think that's important.

I'm on the Ocean Research Advisory Panel (ORAP). Diane Regas is one of the co-chairs of one of the committees that feed into the important aquabox. Those are some acronyms that are kind of hard to say to, so I'm not even going to try.

I'm on the Board of Governors for the Gulf Regional Coastal Observation System. Nutrients, watersheds, and coastal water quality I hope are going to continue to be a focus of many of the things that I do.

*[Walks around speaker's podium to change hats and speak in a personal capacity]*

My name is Nancy Rabalais and I live in Baton Rouge, Louisiana. I'd just like to make a few comments. I wanted to raise my hand all the time today, but that's not my place, it's your meeting. I'd just like to say I am very encouraged with the cooperative and coordinated approach that I think I am seeing. This is very near and dear to my heart and I think it is near and dear to very many people's hearts. I like the idea that Ohio is now on the Task Force. I think that is great. I think if there are states that show specific interest, they should be included as much as possible. I'm very pleased with the comments about long-term versus short-term outlook, because that is the only way we can do this. I'm glad to see that we have progress, despite what is a very complex system and many of the uncertainties that we are faced with. I'm encouraged.

In the vein of cooperation and coordination, I'll repeat something that the last speaker mentioned: an overall plan for funding for this effort that is coordinated and gone after cooperatively, and shared cooperatively. I know that's difficult, but it was one of the things that came out in the Ocean Commission Report was integration of efforts to study various aspects across many agencies.

I know the economics did not become part of the SAB or the MART, but the economics is important both within the watershed and in the Gulf of Mexico, and also the consequences to living resources. I know the reassessment is set up on a certain framework, but those were parts of the original assessment that shouldn't be lost in the flurry of activity.

The watershed does go from Minnesota to the continental shelf of the Gulf of Mexico, and I would extend it into New York and Montana as well. There are many nutrients that affect productivity in various places in the watershed and an integrated, holistic, ecosystem approach for the hugest ecosystem in North America is something that we shouldn't lose sight of. Changes in one part may have effects on other parts. We should try to remain open to all the possibilities that we might be getting ourselves into.

### **Task Force Discussion and Decision**

**Brent Fewell:** Based on the work of the Task Force, the Coordinating Committee has developed some action items and agreements that we would like to share at this point. I will let Diane Regas run through those.

**Diane Regas, EPA, EPA Office of Wetlands, Oceans, and Watersheds: Presentation on Task Force Action Items and Agreements.**  
**See Attachment Q.**

**Brent Fewell:** As a chair, I think that does a pretty good job of capturing the agreements that we have reached. I would ask the Task Force members if they have any edits or suggested changes to that.

*No Task Force member offered changes.*

### **Closing Comments by Task Force Members**

**Dean Lemke:** I think as we work in the upper basin that we need to continue, as we have been, pointing out to people who live a long way from the Gulf that the Gulf of Mexico is not a Louisiana resource or Mississippi resource, although we appreciate the leadership of those states to exercise stewardship in addition to the federal agencies, but it is a national resource. I think that is significant. We are increasingly a global community. I was pleased that at the Upper Mississippi Symposium, there were many expressions of concern about the human tragedy of the storm events that were suffered by those on the south end of the basin.

What I am trying to communicate is that we are starting to function better as a watershed community (even though it is a much larger watershed than those of us in my kind of agency are used to working with). That is a critical step forward to achieving progress in ecosystem management. We will continue to work as an agricultural state in my state of Iowa to do what we can to proceed as expeditiously as we can. I trust that the lower states will also proceed, with regard to the ecosystems that you have that are closer to the Gulf—the Coast Restoration Plan, and those kinds of issues as well.

I am very pleased with the science and *Action Plan* reassessment process. It is a very aggressive undertaking. It is a lot of work and a lot of actions on those little charts and a lot of human resources in dollars, but I think it is a good process. It will help to move us forward and will help to bring both the science to the issues as well as, hopefully, the acceptance by our communities, and that is necessary for success.

**Rob Magnien:** I was particularly pleased at the progress being made by the basin subcommittees. I think that has been one of the major highlights of this meeting. Even though I spend, and my agency spends, most of our time worrying about the science side of this, I know that it will not be used, or we will not get very far, unless the citizens, in this case, understand the science, the problems, and the solutions. It is a daunting challenge we have in terms of stemming the nutrients and other factors that are affecting Gulf water quality and local areas. I am really encouraged to see that. I'll be pressing the Task Force to continue to make sure we have as many opportunities as possible to have public input, stakeholder input, meetings like this, and maybe using new technologies. It is a really difficult challenge to get out to a basin this size. I've done a lot of this work on somewhat smaller basins. I don't think there are anything but smaller basins than this in this country. It is really important to have meetings like this on a regular basis and get as much input from the public as possible. I really appreciate everyone's contributions today.

**Wayne Anderson:** The analogy was made earlier to this being a marathon. Mental models and analogies are often useful when you are developing alliances and collaborative efforts to communicate your views and feelings. I think we can subscribe to that as a useful analogy for this effort. One of the wisdoms of the original framers of the *Action Plan* was to use the adaptive management approach. I think we are seeing that opportunity now to consult with our coaches, with our supporters, on how things are working and how do we use the best information we have so we can finish this job well. In some ways we've just begun, but we need to be looking ahead to make sure that we can finish well. I think you are all critical to that information. We need the scientists, our institutions, our communities and our citizens all to take part in that effort. I think if we do that we will finish better. I think that one of the things that was a driving principal before there was an *Action Plan*, when there was just a discussion on how to approach this thing, was the idea of embracing a win-win-win approach. I think the potential for that is still there as we continue forward in this effort.

**John McClurkan:** My commissioner holds a seat on our state's water quality control board. He has delegated me to take his place on that board. At least twice a year, we have opportunities for citizens to come and address the board about whatever matter is important to them. The idea of citizen involvement in the process is very near and dear to my heart. It is really key to have that point of view expressed. To all of you who took the time to comment to us, I really appreciate that very much. The level of coordination in all of this at the scale that we are talking about is really astounding to me. I work with very small watershed projects in my day-to-day work, 12 and 14 digit HUCs. I see the difficulties at that scale to get anything real accomplished. So when you are talking about the Mississippi River, knowing what we have accomplished—all of us working together, and all the various layers, and all the overarching different points of view and different levels of expertise—it gives me a lot of confidence that we're going to continue to make progress here. I'm also encouraged by the innovative things that we have heard today, particularly from Mr. Porterfield of the American Farm Bureau. There may already be in this



wonderful free-enterprise, capitalism world that we live in here in America, there may already be products being invented and created that may help the farming community address the concern of how much nitrogen is being applied in the watershed. Those types of things really give me a lot of hope that we are ultimately going to be successful, not only in our headwater watersheds, but for the Gulf too.

**George Dunlop:** At the outset, I said that I counted it a privilege to be able to come today and participate. What I've learned not only in the presentations, but also in the other meetings we have had and individual discussions, I wanted to reiterate what a privilege I think it is to be a part of this. What we're experiencing here is something that is more than just the work a day world of trying to solve a problem. We are really living out right here the wonderful American experiment in liberty and democracy.

When Alexis de Tocqueville came to this country in the 1830s and wrote his very famous book, *Democracy in America*, one of the most notable things that he said in his several volumes was that there is something really peculiar about Americans. They have this incredible energy about organizing themselves into all kinds of groups and organizations and associations. Some of them are fraternal, religious, educational, business oriented, silly, futile, or grand in scope. Wherever you turn, Americans belong to all kinds of activities that they undertake to organize themselves to solve problems and to better their communities. In France, whenever there's a problem, people turn to the government. It's the government's problem. The government ought to solve it. They do nothing until the government comes and does something that is usually not very often. In England, he said, nothing is ever accomplished unless a man of rank gets to the head of it. If a duke or baron or such is found to head it up, otherwise it is not going to go anywhere. In America, these Americans just organize themselves. Many of us are associated with government, but in our country we are reflecting the sentiments of the people. Our elected officials who we all ultimately are appointees of (unless we're actually some of us elected, perhaps), we're part of this ongoing American experiment in democracy.

What I have learned here today is that in fact since the 1980s (I believe Charles you said this has been going on) we have in fact begun to make measurable accomplishments. We trust from what we have learned here that we have the processes in place to accomplish these things if we keep at it. People don't really continue with things if they don't think there is going to be success. They get disinterested and they go to something else. I think that one of the outcomes and accomplishments of this meeting and the ongoing plan of work that we have laid out can give evidence to the fact that there is going to be increased effort because we do see that it is having practical effect. Unless we gather at conferences and activities like this to measure whether we believe we are having success or not, then it is just all words and press releases. I do believe that what I have learned here today is something that is bigger than the actual project itself. It is the capacity for us to participate in something that it is a privilege to be a part of. I wanted to share that kind of thinking and appreciate the opportunity to do it.

**Charles Chisolm:** Two quick points. I'm probably more encouraged than I have ever been about progress that we are making. I sense that most of the people in this room feel the same way. I think most all of us recognize that it is a daunting problem to deal with. Here today, probably

more than any other meeting I have attended, it is obvious that we are beginning to make progress on this, progress that can be measured.

The second thing I want to do is to echo something that we have acknowledged earlier, the work of the staff to put this meeting together. I don't take for granted efficient and effective meetings, because my experience probably is the opposite most often. This has been a very well done meeting and I think it contributes to us being able to make substantial progress on what we're dealing with.

**Dugan Sabins:** I guess I just would throw some thoughts and accolades back to my colleagues from up river, being from the bottom down here. I would echo what Dean was talking about with national resources. I think those of us on the Gulf of Mexico also recognize what a national resource the American mid-west is and all the contributions they have made to our culture, history, and economy. The marriage of those two is quite significant. Also, just talking with Wayne [Anderson] over the course of our time here—and Wayne and I go back to almost the beginning, and Charles [Burney] from Wisconsin, and Dean [Lemke] and Dennis [McKenna] from Iowa and Illinois and it is unfortunate that we could not have a representative from the great state of Missouri here today, but certainly Missouri has been a key player as a lynch-pin between upper and lower. They had done a great job in helping us coordinate. The more I talk with my colleagues up river, I just realize how much is going on, and how much progress is being made, as we have all talked about for what we down at the bottom want to see happening. I'm really excited about it also. Following along with the Upper River Sub-basin Committee work and the results of their symposium, I think it is the right thing to happen at the right time and the right place. We look forward to continuing to work with our up-river colleagues so that the river and the resource are truly connected in a way that it has never been connected before. We're all connecting for our own benefits and for the benefits of the river and the Gulf. It's going to be better for all of us in the end. We still have some work to do, but all good efforts take a lot of hard work. I am very much encouraged on the progress we have made on this meeting and with the process. I look forward to keeping it going.

**Randy Young:** I think everyone has echoed their sentiment that they believe a lot of progress has been made and I certainly feel good about the annual plan of work that has been laid out for the re-evaluation. As I think about going back home and explaining to my wife, so that she would understand it, the progress that's been made, I think we have some work that we need to do, to do a better job of capturing in sound bytes the progress that we are making. I think that is a challenge that we have in front of us.

**Tara Conrad:** Of course I was going to say that I am pleased at the progress that is being made with the reassessment. I am particularly impressed with the work that the sub-basin teams have done and the presentations that they made. It seems a lot of work has gone into this, and I am very impressed with that. I am also pleased to see the sensitivity to the timing of the reassessment and the level of commitment that people have expressed to make sure that this process is thorough, inclusive, and done in a timely way.

**Charles Burney:** I'll say that I'm glad we are moving forward. One of the things that I think we have a responsibility to do is to come to these meetings and gather the information, take it back

to our agencies and assimilate it, and put it into our day-to-day activities. I also put forth the belief that you have the same responsibilities to do that and take it back to your groups. One concern I have about this meeting is that if we had people raise their hands if they are not state or federal employees, I don't think there would be too many hands in the air. That is something that we are really trying to work on at the sub-basin level—getting a broad representation of organizations and groups participating. It is something that we have to strive for at all levels. If you are from a NGO or are a private citizen, I would encourage you to encourage other people who are interested to attend these meetings and participate with us.

**John Kessler:** I'd like to say thank you to all the parties involved. I don't think I can add further to the excellent closing comments.

**Brent Fewell:** It has been a privilege to chair yesterday and today's meetings. Being one of the newcomers, I continue to learn a lot. I am encouraged to see the progress that is being made and the science that is developing that will last a long time and will not only help us with hypoxia issues, but also other water quality issues throughout the country. I am very heartened by that. It has been a real pleasure to work with the Task Force members up here. We're consummate professionals and really have a strong commitment to furthering the sound science and continuing to make steady and sustained progress to reducing hypoxia in the Gulf of Mexico and addressing water quality issues in the basin as well. I want to thank your participation in today's meeting. This will not work without your involvement and continued monitoring of our efforts and keeping us honest in what we do. We appreciate the time that you have taken out of your busy schedules to be here.

**Attachment A-** NOAA Fact Sheet on Hypoxia Research

**Attachment B-** Statement of Dr. Len Bahr, Governor's Office of Coastal Activities

**Attachment C-** Presentation by Nancy Rabalais, Louisiana Universities Marine Consortium: Current State of Hypoxia in the Gulf.

**Attachment D-** Presentation by Dean Lemke, Iowa Department of Agriculture and Land Stewardship: Update on the Upper Mississippi River Sub-basin Team

**Attachment E-** Presentation by John Kessler, Ohio Department of Natural Resources: Update on the Ohio River Sub-basin Team

**Attachment F-** Presentation by Doug Daigle, Lower Mississippi River Sub-basin Committee on Hypoxia: Update on the Lower Mississippi River Sub-basin Team

**Attachment G-** Presentation by Diane Regas, EPA Office of Wetlands, Oceans, and Watersheds: Reassessment Plan and Schedule

**Attachment H-** Presentation by Dean Lemke, Iowa Department of Agriculture and Land Stewardship: Report on Upper Basin Symposium

**Attachment I-** Presentation by Rick Greene: Update on the Gulf Science Symposium

**Attachment J-** Presentation by Herb Buxton: Update on the Science Reassessment Team

**Attachment K-** Presentation by Katie Flahive: Update on the Management Action Reassessment Team

**Attachment L-** Presentation by Darrell Brown, EPA and Dennis McKenna, Illinois Department of Agriculture: Charge to the EPA SAB.

**Attachment M-** Presentation by Herb Buxton, USGS: Update on National Monitoring Network

**Attachment N-** Presentation by Bryon Griffith, EPA: Gulf Alliance Update

**Attachment O**- Letter from the Mississippi Riverwise Partnership and the Mississippi River Basin Alliance

**Attachment P**- Description of the Hypoxia Stakeholder Network

**Attachment Q**- Presentation by Diane Regas, EPA, Task Force Action Items and Agreements

**Attachment A**

NOAA Fact Sheet on Hypoxia Research

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## NOAA Research on Hypoxia: Providing Key Information and Tools to Manage Low Oxygen Impacts to Coastal Ecosystems

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### Issue

Hypoxia in aquatic systems is a condition of low dissolved oxygen concentration that can cause stress or even death to resident organisms. Impacts can be severe, causing habitat loss and extensive “dead zones” that affect commercially and recreationally important fish and shellfish. While hypoxia can occur naturally, it is often a symptom of environments stressed by human impact such as from excess nutrient enrichment. Over half of the U.S. estuaries now experience natural or human-induced hypoxic conditions at some time each year and evidence suggests that the frequency and duration of hypoxic events have increased over the last few decades.

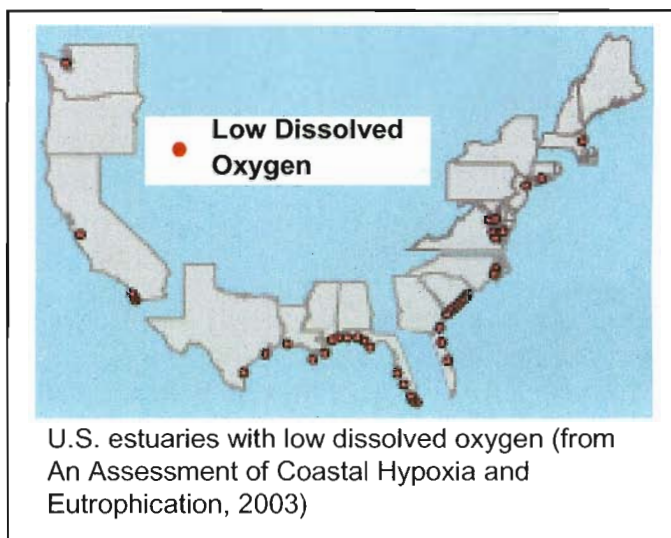
The importance and national scale of hypoxia and nutrient pollution in U.S. waters is evidenced by the passage of the Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA) in 1998 and its reauthorization in 2004. The HABHRCA legislation and recent national reports describe the need and identify priorities for research related to hypoxia and the related issue of nutrient pollution (i.e. eutrophication). Through HABHRCA, NOAA is mandated and authorized to conduct research on this critical National problem. Implementation of HABHRCA is supported by the Administration in the President’s Ocean Action Plan.

### Approach

NOAA is supporting research to improve understanding of this widespread problem and develop forecasting capabilities to predict hypoxia impacts on ecosystem condition in locations experiencing severe hypoxia and related nutrient pollution. The ultimate objective is to provide results

and tools which will enable coastal resource managers to make informed, proactive, and scientifically-based decisions to mitigate or prevent the impact of hypoxia on aquatic resources and economies. In order to assess management alternatives, it is necessary to determine the causes of hypoxia, develop the capability to predict its occurrence in response to anthropogenic stress, and evaluate the subsequent ecological, economic, and social impacts.

NOAA has supported multi-year, interdisciplinary research projects on the Gulf of Mexico hypoxic zone since 1990. The so-called “Dead Zone” has become a focal point for scientific and policy attention because of its enormous size and potential impact to the Gulf’s large commercial fishery, and the management implications related to its extensive watershed (> 40% of the continental U.S.). Employing a combination of field, monitoring and modeling studies within an ecosystem management framework, NOAA research efforts have, and are continuing to, provide key information and tools that coastal and watershed managers require to mitigate the size and impact of the annual hypoxic zone in the region. NOAA’s efforts over the years have been closely coordinated with other Federal agencies and states through the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force.

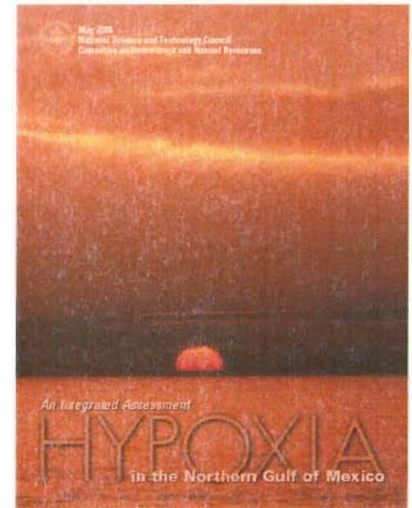




## Accomplishments

NOAA's long-term research investments on hypoxia in the Gulf of Mexico, totaling over \$20 million, have led to numerous advancements, several of which are listed below:

- NOAA, on behalf of the Task Force, led the development of six technical reports in the late 1990s that synthesized the state-of-knowledge regarding causes and consequences of the Gulf's hypoxic zone. This was summarized in the 2000 CENR report – An Integrated Assessment of Hypoxia in the Northern Gulf of Mexico - which led to the first ever Action Plan in 2001 for mitigating and reducing hypoxia in the region.
- NOAA monitoring and observation programs have annually documented the areal extent of the hypoxic zone since 1990 and represent a unique long-term dataset that is critical for ecological forecasting applications. These programs provided the data that was used to develop the key goal of the Action Plan – reduction of the hypoxic zone to 5,000 km<sup>2</sup> – and continue to provide an annual assessment of progress toward that goal.
- NOAA researchers, in conjunction with academic scientists, have developed and are refining a suite of ecological models to predict the size of the hypoxic zone and to evaluate the influence of nutrient loading and other factors. Forecasts are critical to evaluate alternative management strategies to reduce the size of the hypoxic zone in an ecosystem-scale perspective and in the adaptive management approach embodied in the Action Plan.



## Looking to the Future

The recent reauthorization of HABHRCA calls for a second interagency National assessment of hypoxia and a strengthened NOAA research program. NOAA will continue to play a strong role on the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force in its efforts to reassess the Action Plan, especially activities related to the science of hypoxia.

NOAA is continuing to address hypoxia Nationally through its Coastal Hypoxia Research Program, a competitive program that has recently awarded six grants totaling \$6.8M to address hypoxia in Narragansett Bay, the Albemarle Estuary, Puget Sound, the Delaware Coastal Bays, and additional Atlantic Coast estuaries. These studies will focus on retrospective analyses, development of predictive models, understanding estuary susceptibility to nutrient loading and assessing the impact of hypoxia on living resources. Other NOAA scientists and university researchers are also making valuable contributions at local and regional scales toward understanding the causes of this problem and its impact on habitat and fisheries in the Great Lakes and marine coastal areas.

### For additional information:

Contact Robert Magnien at: [rob.magnien@noaa.gov](mailto:rob.magnien@noaa.gov)

CENR Gulf of Mexico Integrated Assessment: [http://www.nos.noaa.gov/products/hypox\\_final.pdf](http://www.nos.noaa.gov/products/hypox_final.pdf)

Gulf of Mexico Hypoxia Action Plan: <http://www.epa.gov/msbasin/taskforce/pdf/actionplan.pdf>

CENR Hypoxia Assessment: <http://www.oceanservice.noaa.gov/outreach/pdfs/coastalhypoxia.pdf>

HABHRCA Legislation: <http://www.cop.noaa.gov/stressors/extremeevents/hab/habhrca/>

NOAA Extramural Hypoxia Programs: <http://www.cop.noaa.gov/stressors/pollution/welcome.html>

NOAA Hypoxia Watch: <http://www.ncddc.noaa.gov/ecosystems/hypoxia>

NOAA International Field Years on Lake Erie program: <http://www.glerl.noaa.gov/ifyle/>

**Attachment B**

Statement of Dr. Len Bahr, Governor's Office  
of Coastal Activities



## Comments for Hypoxia Task Force meeting November/December 2005 in Memphis

Greetings, Chairman Grumbles and my other colleagues. As Louisiana's representative on the task force I offer my very best wishes for a productive meeting and the following written comments for the record.

As you all know, since our last meeting in St. Paul, Louisiana's domain at the mouth of the river system has been devastated by back-to-back storms of very high intensity. These storms underlined the conclusions of two recent scholarly studies that project an increase in intensity of tropical cyclones on a global scale, in sync with rising sea surface temperatures resulting from climate change. Among other things, Hurricanes Katrina and Rita served to dramatize the interdependence of all who depend on the Mississippi River system to ship grain to market and as a source of sediment and nutrients to restore an extremely productive ecosystem that also formerly helped protect New Orleans and its vital port system.

On a positive note, the states of Illinois and Louisiana have recognized that we suffer converse problems related to riverborne sediments – the Illinois River basin is choking to death with a surplus of mud and the deltaic plain of Louisiana is dying for lack of the same. Representatives of both states are currently discussing plans for a demonstration project in which Illinois River sediment would be dredged and barged downstream to be used beneficially to restore former wetlands. This project would allow us to realistically appraise the benefits and costs of such a venture and its feasibility on a large scale. It would also dramatize the need to treat the Mississippi, its tributaries *and its distributaries* as a very large integrated system in which both nutrient and sediment budgets are a prerequisite to meeting the needs of the watershed and the Gulf of Mexico.

Finally, we in Louisiana are very pleased to help plan for an important symposium on the lower river sometime this summer. This symposium/workshop, implemented by the Lower River Sub-basin Committee, will follow the very successful meeting in Ames, Iowa last September that was sponsored by EPA and implemented by the Upper River Sub-basin Committee. At this time we plan for the lower river workshop to address two principal themes: (I) nutrient reduction potential in the lower river (believed to be of somewhat limited significance in terms of Gulf loading rates); and (II) potential major “plumbing” changes to the Red River, Old River, Mississippi River and Atchafalaya Rivers that could sustain the delta, enhance navigation and significantly reduce offshore hypoxia.

Len Bahr

## **Attachment C**

Presentation by Nancy Rabalais, Louisiana Universities Marine Consortium: Current State of Hypoxia in the Gulf.

# Update on Hypoxia for 2005

Nancy N. Rabalais  
Louisiana Universities Marine Consortium  
[nrabalais@lumcon.edu](mailto:nrabalais@lumcon.edu)  
and others

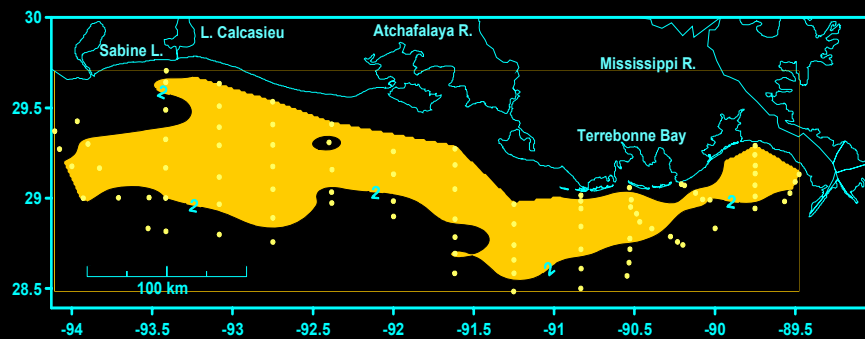


<http://www.gulfhypoxia.net>  
(much construction left)



Center for Sponsored Coastal Ocean Research, Coastal  
Ocean Program, NGOMEX Hypoxia Studies

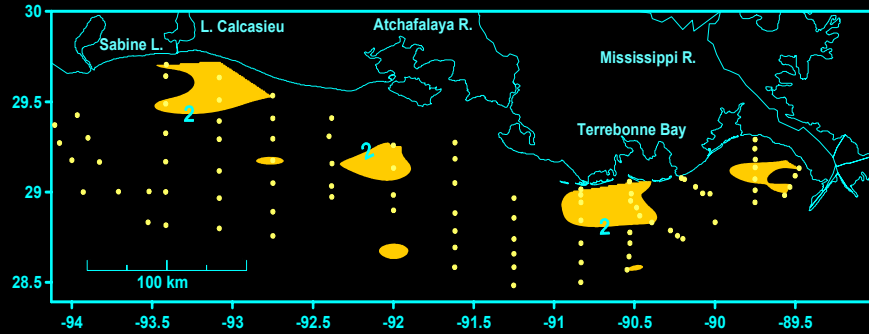
## Bottom-Water Hypoxia July 21-26, 2002



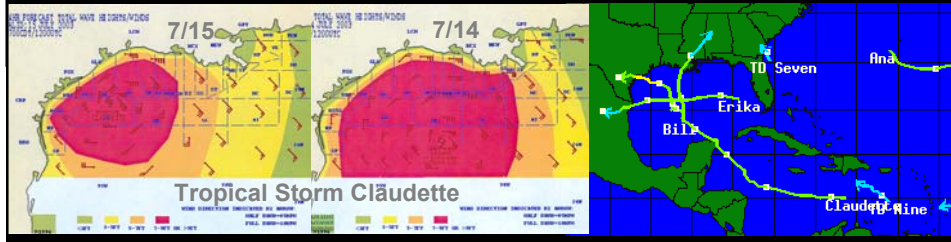
■ Dissolved oxygen less than 2 (mg/L)

Rabalais, Turner and Wiseman

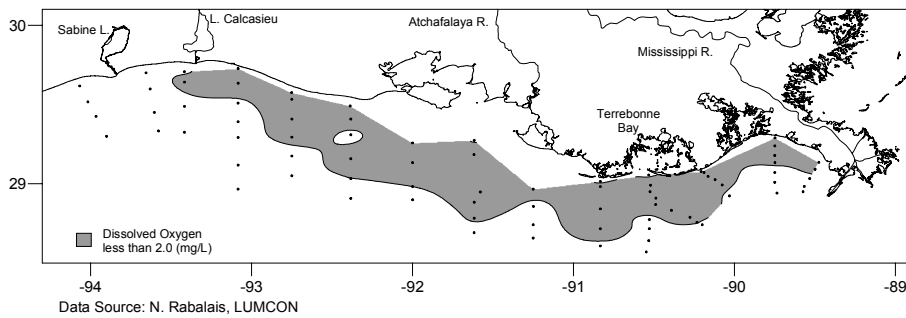
# Bottom-Water Hypoxia July 23-28, 2003

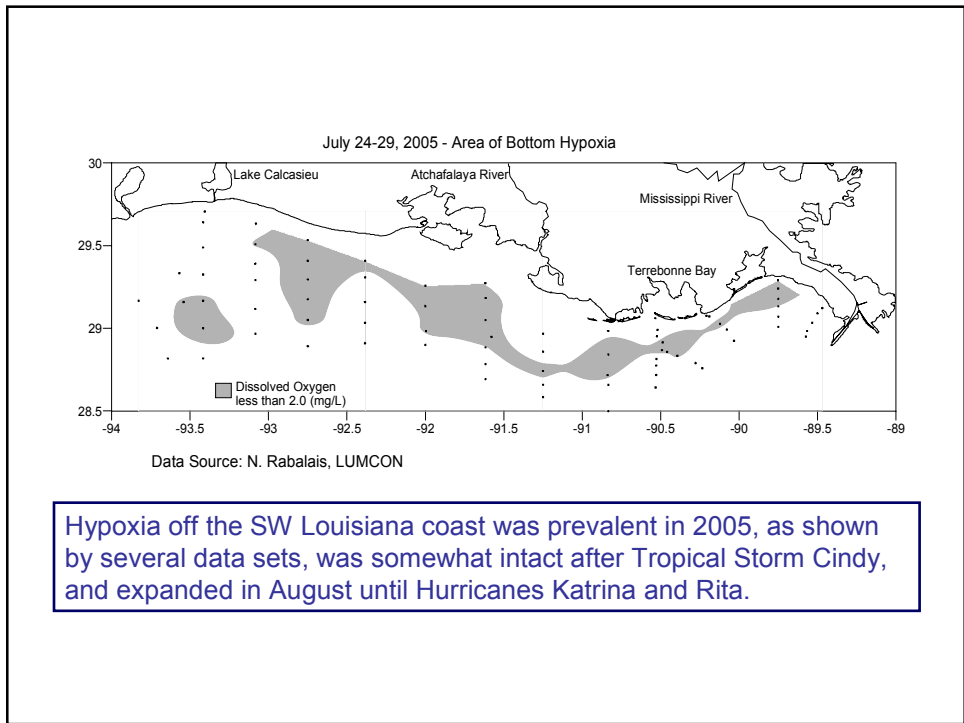
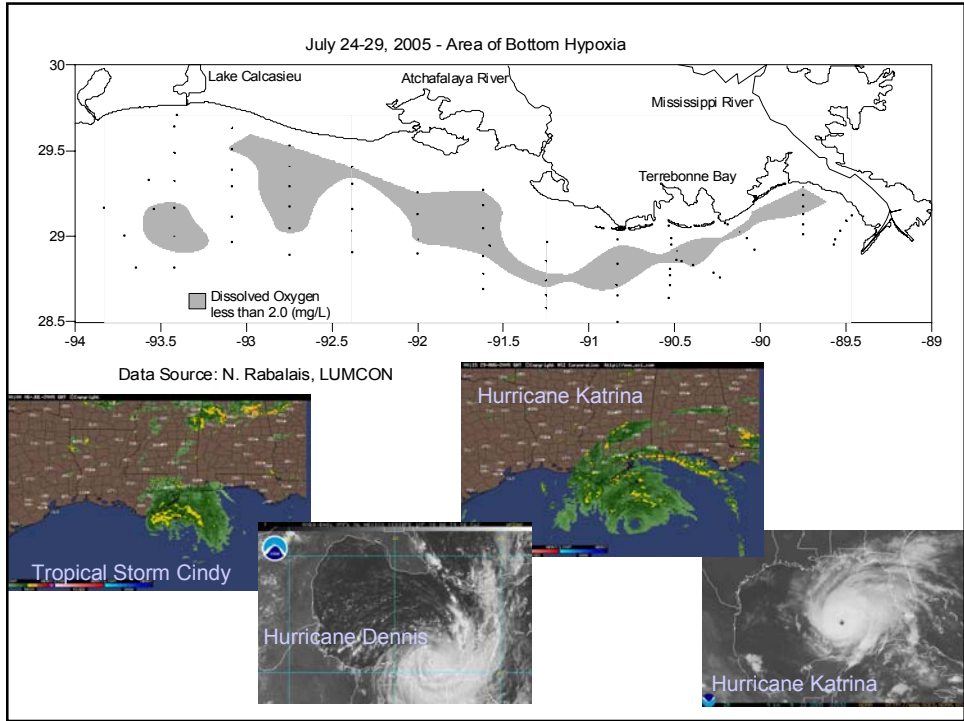


Rabalais, Turner and Wiseman

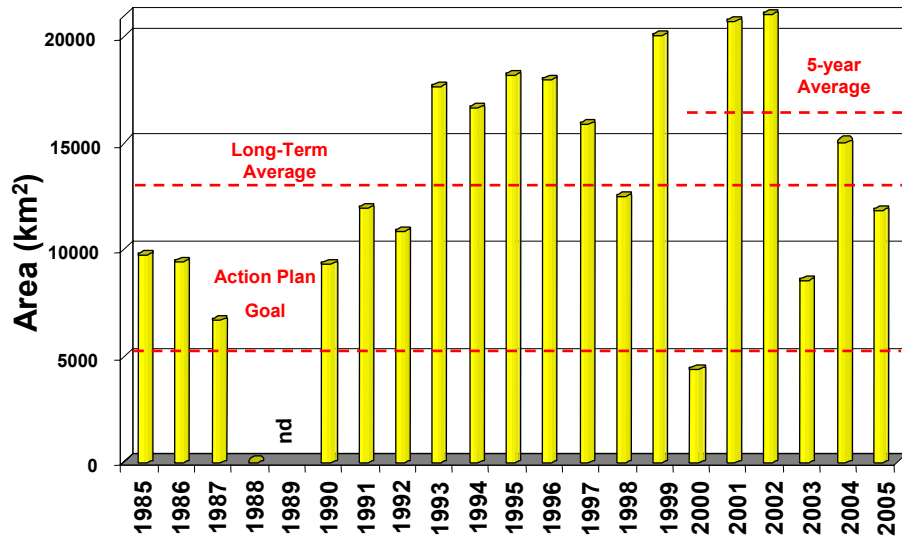


July 21-25, 2004 - Area of Bottom Hypoxia

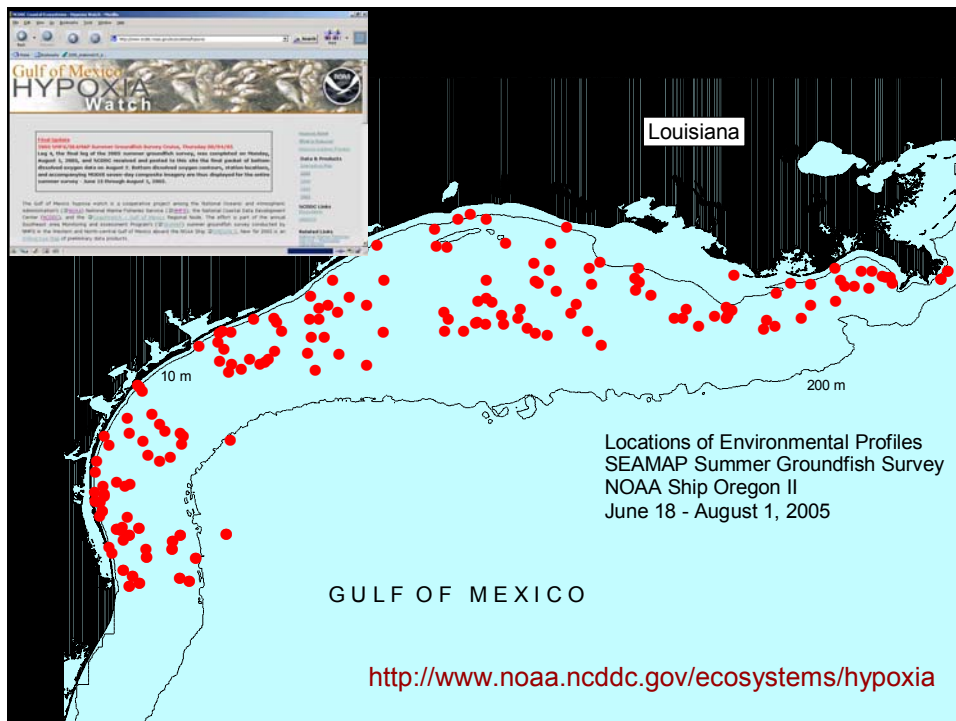


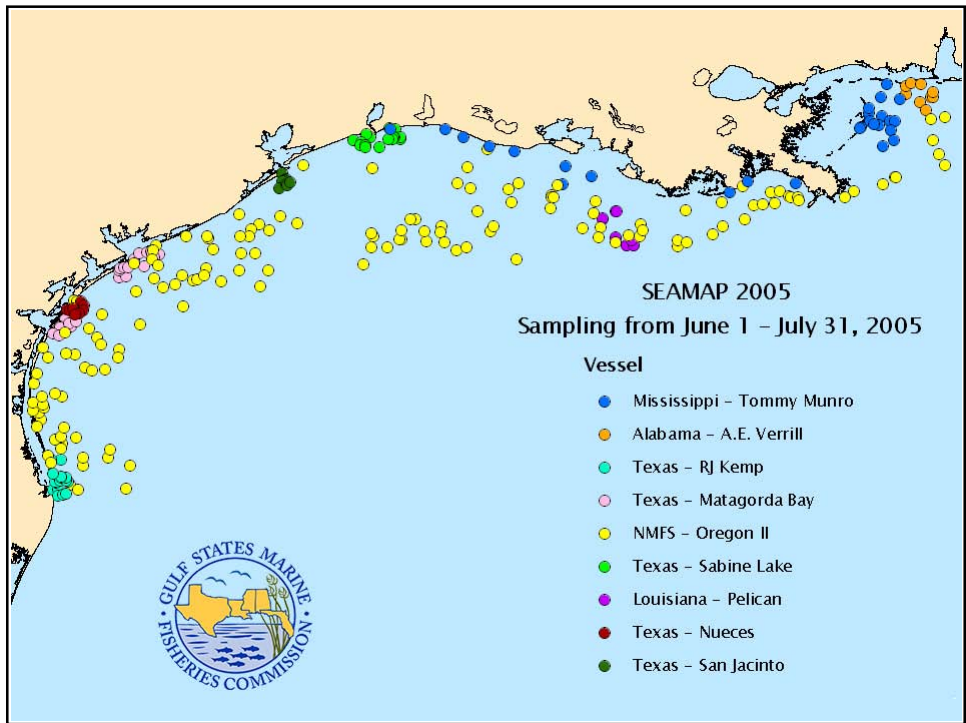
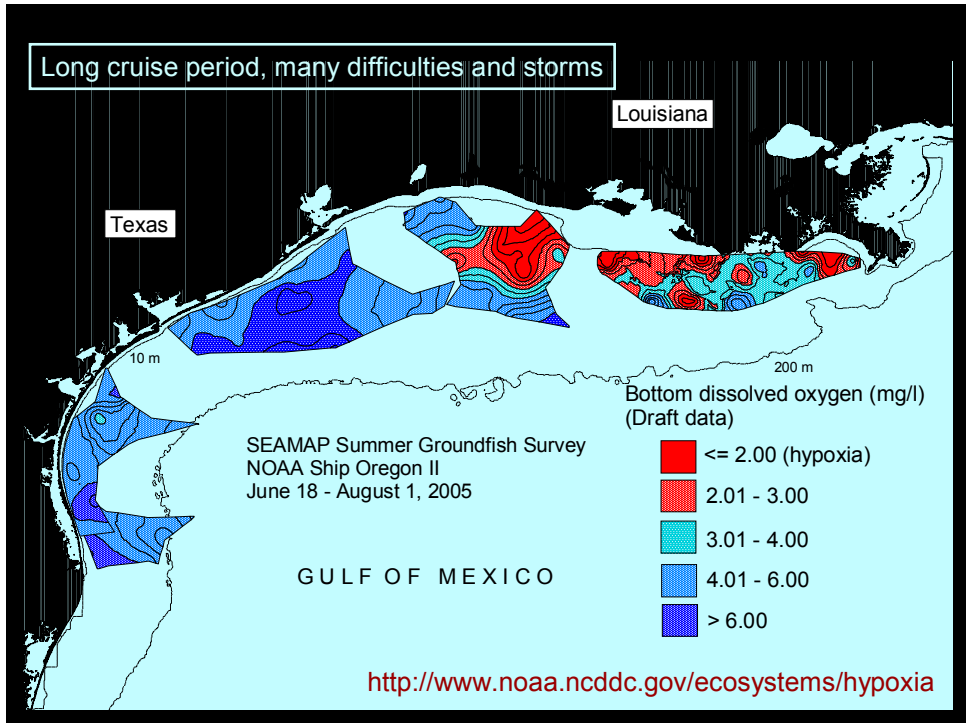


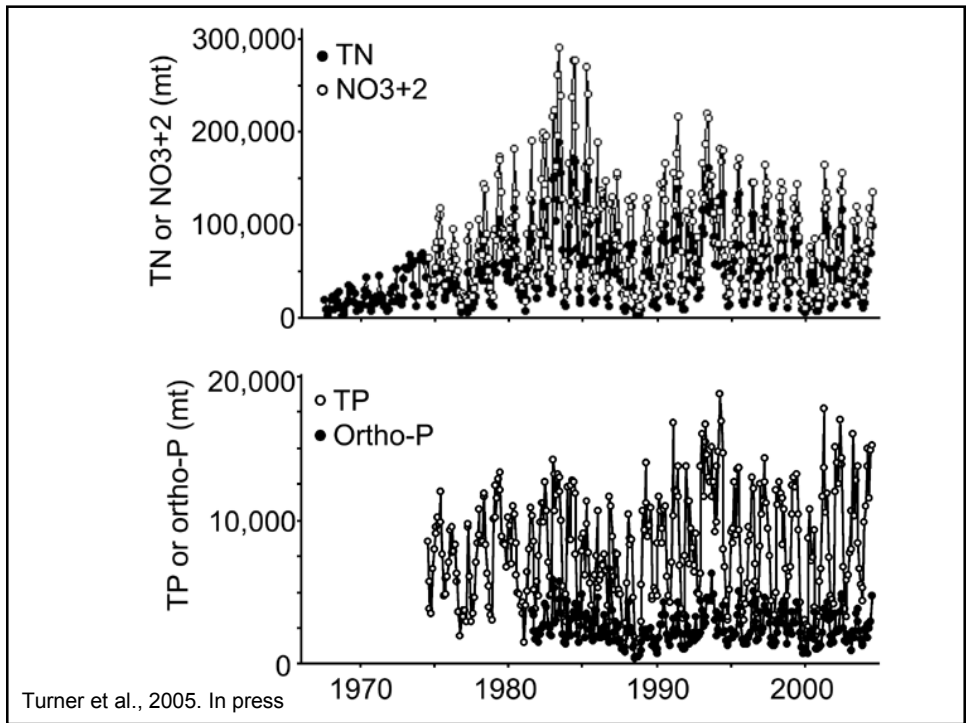
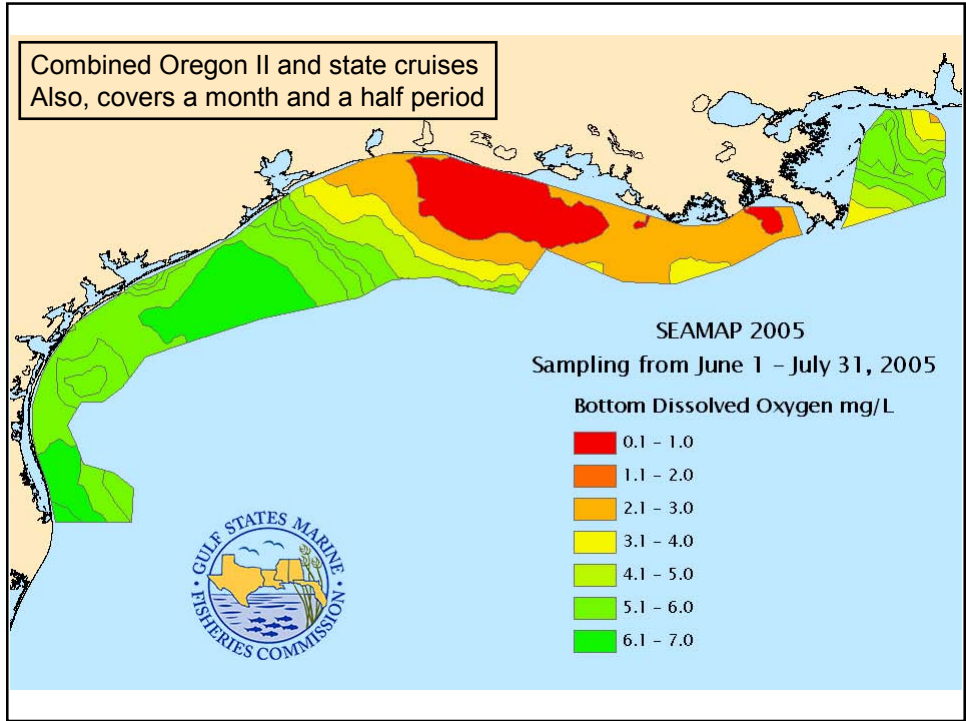
## Estimated Size of Bottom-Water Hypoxia in Mid-Summer



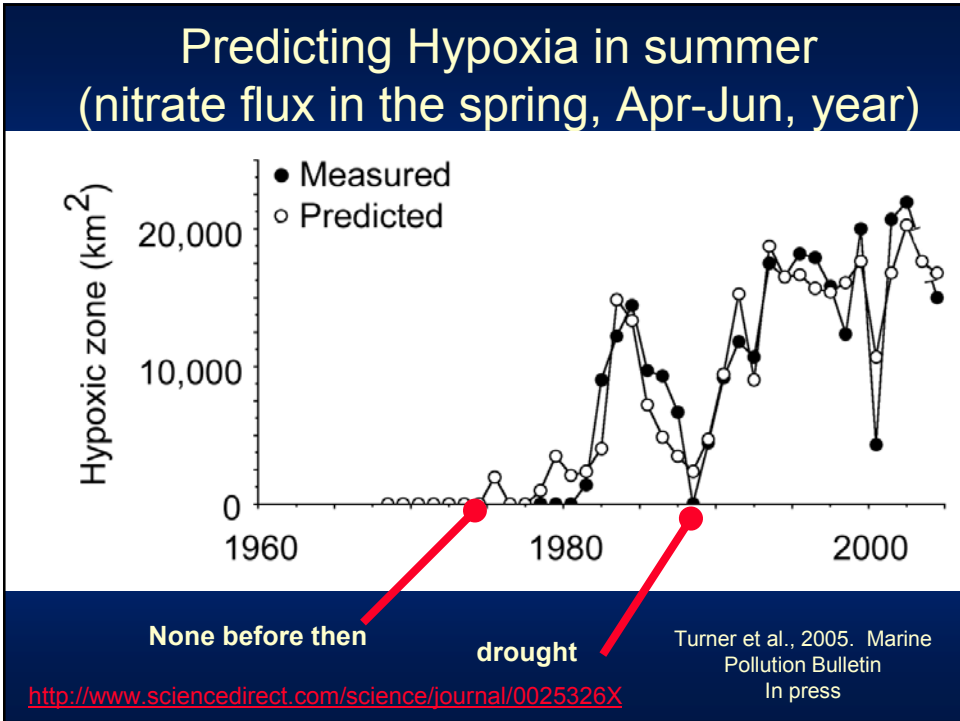
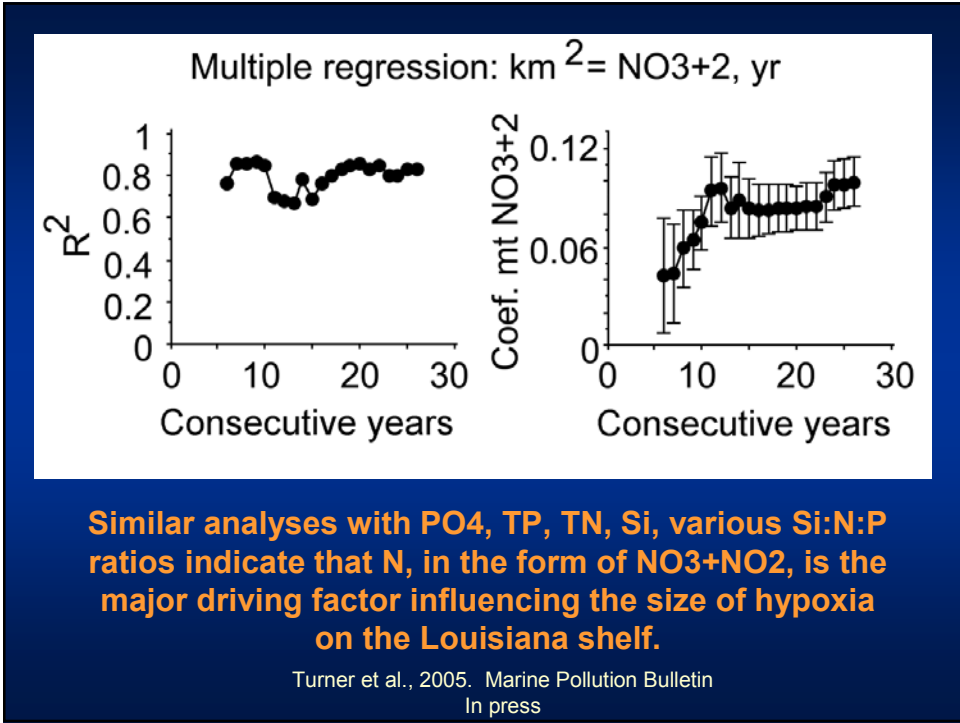
(updated from Rabalais et al. 2002)











## Isotope Research

- Isotopic composition expressed in terms of delta ( $\delta$ ) values, which in turn is measured as parts per thousand (‰) relative to a standard.
  - $\delta = [(R_{\text{sample}} / R_{\text{standard}}) - 1] \times 1000$
- $\delta$  indicates the ratio of heavy to light isotope in a sample.
  - increase in  $\delta$  denotes increase in the amount of heavy isotope with reciprocal decrease in the light isotope
- Fractionation – change in isotopic ratio due to physical, biological and/or chemical processes.

Zoraida J. Quiñones-Rivera, Dubravko Justić, Brian Fry

## Oxygen Dynamics

Preliminary box model, processes, fractionation, and values

Figure removed, unpublished data

Zoraida J. Quiñones-Rivera, Dubravko Justić, Brian Fry

July 2002 - Bottom  
 $\delta^{18}\text{O}$  (‰)

July 2003 - Bottom  
 $\delta^{18}\text{O}$  (‰)

Figures removed, unpublished data

$\text{O}_2$  saturation (%)

$\text{O}_2$  saturation (%)

$\text{O}_2$  concentration ( $\text{mg L}^{-1}$ )

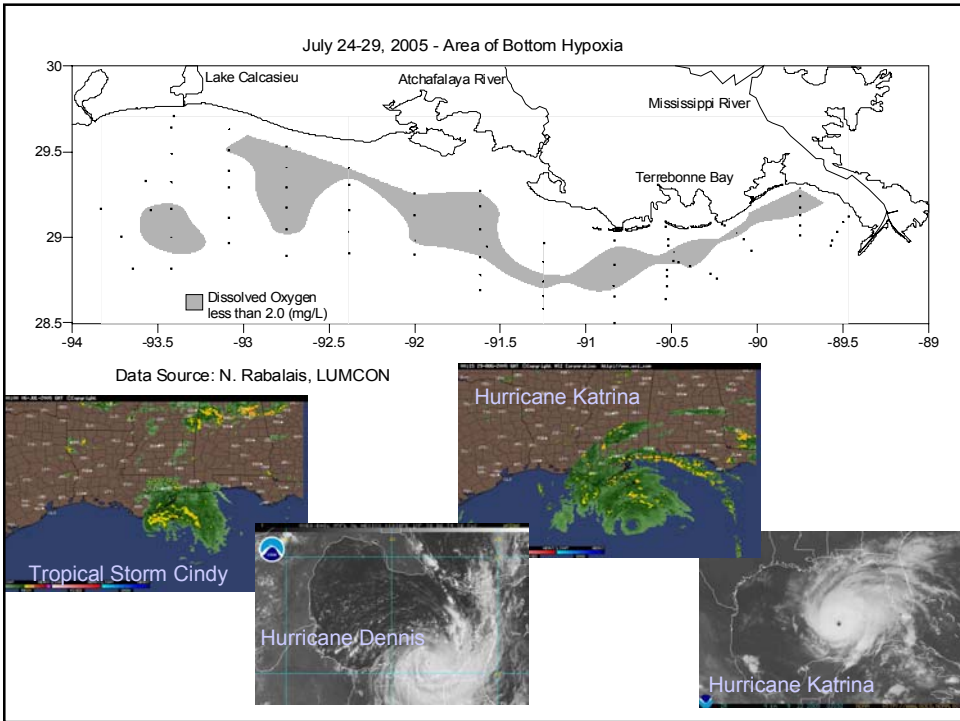
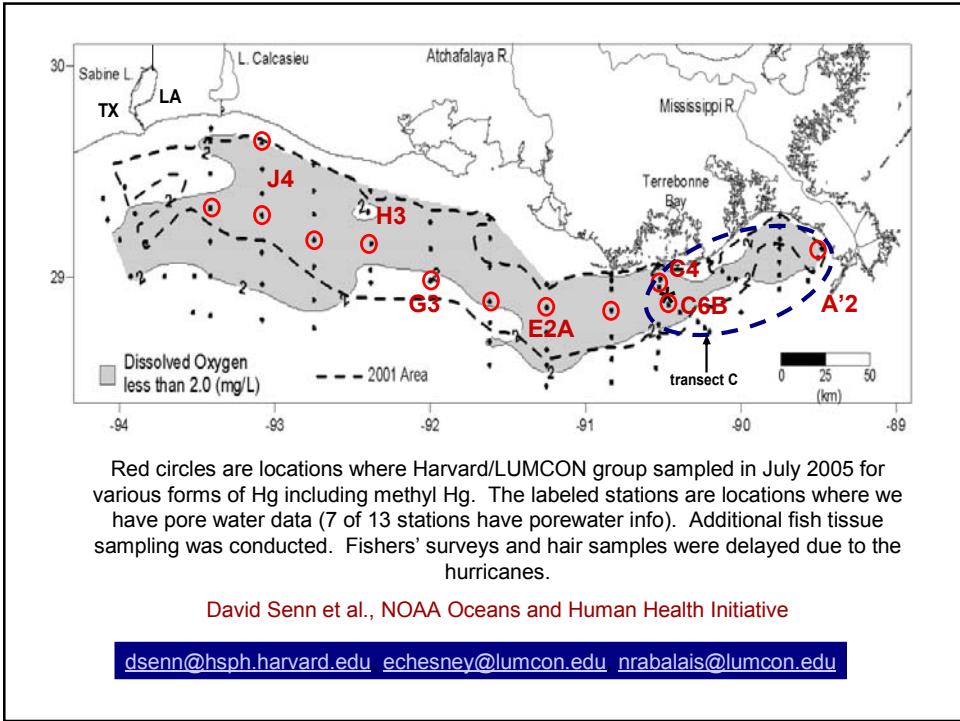
$\text{O}_2$  concentration ( $\text{mg L}^{-1}$ )

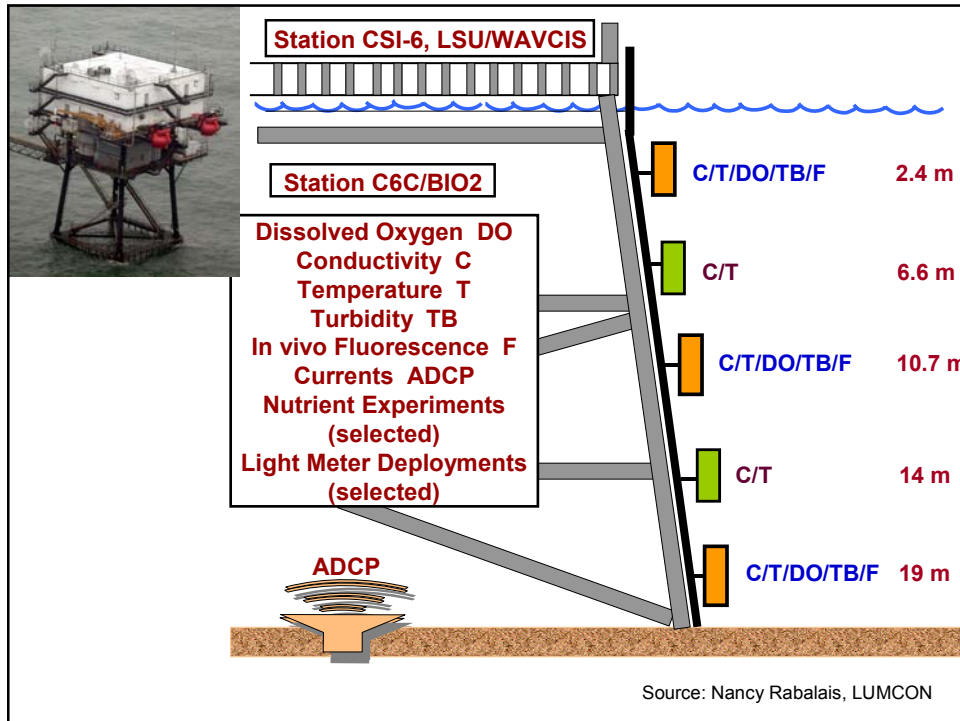
Zoraida J. Quiñones-Rivera, Dubravko Justić, Brian Fry

Relative proportion of benthic respiration and water column respiration changes temporally, i.e. summer 2002 vs. summer 2003, by dissolved oxygen values, and in measure of fraction.

Figures removed, unpublished data

Zoraida J. Quiñones-Rivera,  
Dubravko Justić, Brian Fry





Coastal Studies Institute, Louisiana State University  
 Program Director: Dr. Gregory W. Stone  
**WAVCIS** Wave-Current-Surge Information System for Coastal Louisiana  
 218 Howe-Russell Geoscience Complex, Baton Rouge, Louisiana 70803

displaced marsh resident

ADCP ✓

C/T/DO/TB/F X

C/T X

C/T/DO/TB/F ✓

Nutrients X

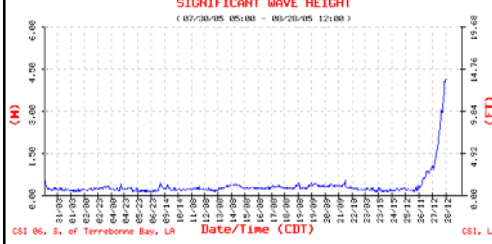
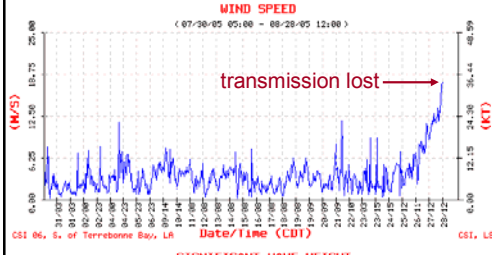
Light X

C/T X

C/T/DO/TB/F X

Source: Nancy Rabalais, LUMCON; Photos: Lora Pride

**Station C6C offshore 20 m**

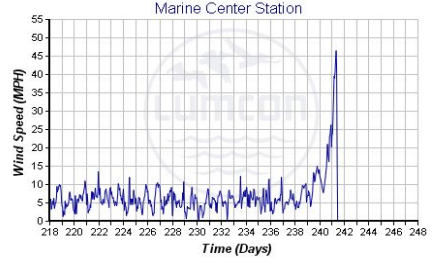


Winds in Cocodrie up to 126 mph

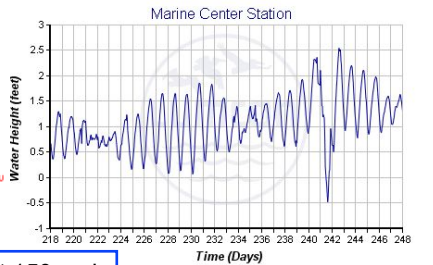
Winds in Mississippi River Bight sustained at 150 mph

**LUMCON in Cocodrie**

**Average Hourly Wind Speed 30 Days**



**Average Hourly Water Height 30 Days**

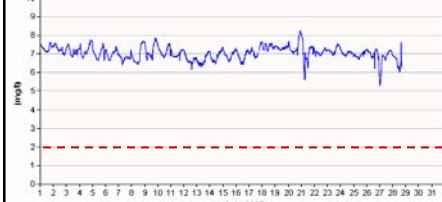


Source: Nancy Rabalais, LUMCON  
www.wavcis.lumcon.edu, weather.lumcon.edu

**Dissolved Oxygen**

**Surface**

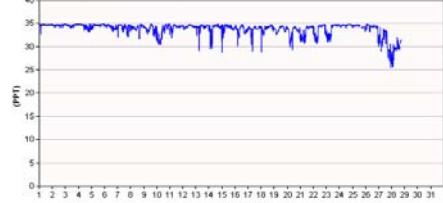
**Salinity**



**Dissolved Oxygen at Middle Level at Station 6**

**Middle**

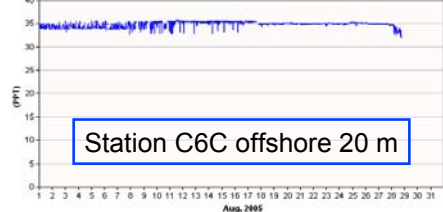
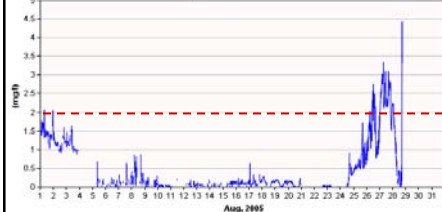
**Salinity at Middle Level at Station 6**



**Dissolved Oxygen at Bottom Level at Station 6**

**Bottom**

**Salinity at Bottom Level at Station 6**

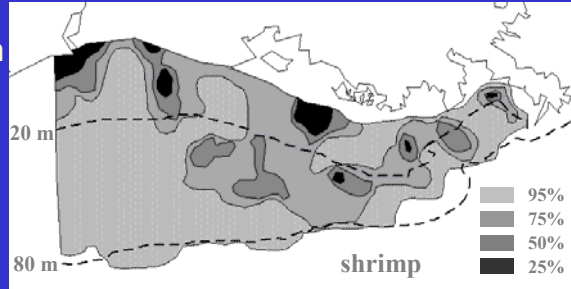
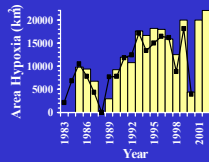


Station C6C offshore 20 m

Source: Nancy Rabalais, LUMCON  
www.wavcis.lsu.edu

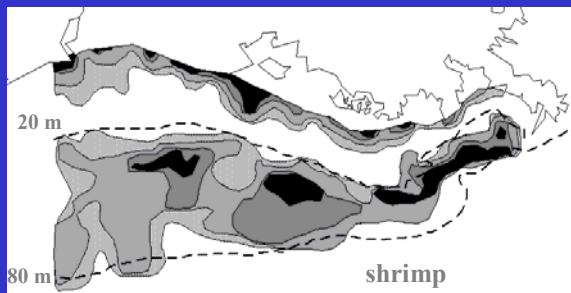
# Shrimp Distribution

**Moderate Hypoxia**  
(1983, 1987, 1988, 2000)



**Severe Hypoxia**  
(1993, 1995, 1996, 1997)

~20-30% habitat loss

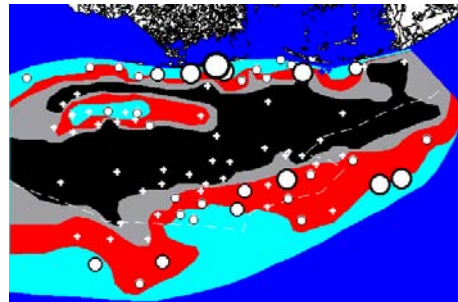
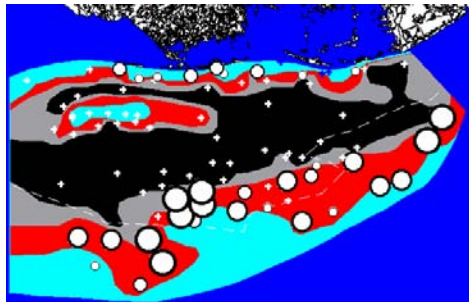


From J.K. Craig

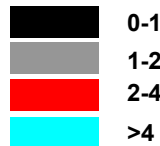
## NGOMEX 2002 Cruise

Atlantic croaker

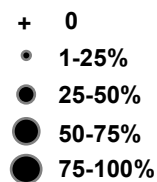
Brown shrimp



Dissolved oxygen (mg/l)



Catch percentiles



From J.K. Craig

## **NGOMEX 2003 & 2004 Cruises**

Atlantic croaker

Brown shrimp

2003: Atlantic croaker and brown shrimp more scattered than in previous years. Less persistent low oxygen and distributed hypoxia in 2003.

2004: surveys off Atchafalaya Bay and Terrebonne Bay. Less hypoxia off Atchafalaya, more off Terrebonne Bay. Shrimp more evenly distributed off Atchafalaya, concentrated primarily offshore off Terrebonne Bay, and some inshore.

Figures removed, unpublished.

From J.K. Craig

## **Hypoxia Edge Effects**

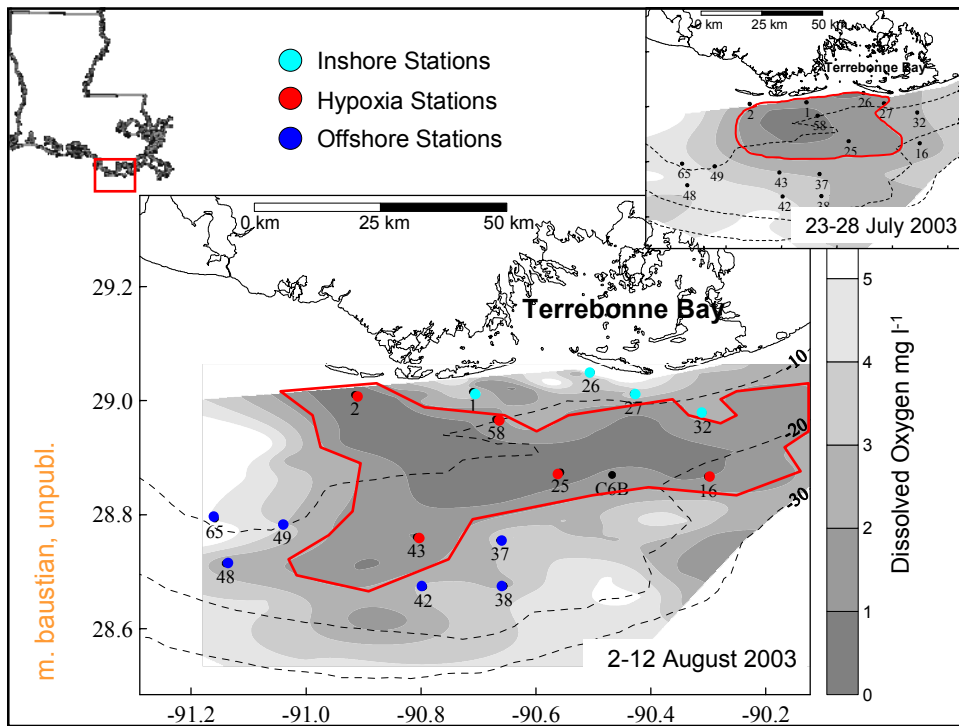
### **Hepatopancreas Lipids in Brown Shrimp vs. DO** (2002 & 2003)

Figures removed, unpublished data

[kevin.craig@duke.edu](mailto:kevin.craig@duke.edu)

(Kevin Craig, unpubl. data)





Macroinfauna studies in collaboration with Kevin Craig  
croaker and shrimp studies in 2003  
Melissa Baustian, LSU graduate student

Less severe hypoxia.  
Inshore, hypoxic area, offshore abundances similar.  
Hypoxic area less diverse than offshore, which was similar to inshore.  
Good comparison with year with severe hypoxia.  
Preliminary comparison of croaker stomach contents with macroinfaunal data indicate that the croaker are selective foragers compared with the benthic community composition and abundance.

Figures removed.

Melissa Baustian, unpubl. data

mmlman@lumcon.edu

## **Attachment D**

Presentation by Dean Lemke, Iowa Department of Agriculture and Land Stewardship: Update on the Upper Mississippi River Sub-basin Team

# UPPER MISSISSIPPI RIVER SUB-BASIN HYPOXIA NUTRIENT COMMITTEE

## UMRSHNC



## WORKGROUP SPONSORED BY FIVE STATE AGENCIES OF THE HYPOXIA TASK FORCE

- Illinois
- Iowa
- Minnesota
- Missouri
- Wisconsin

## FACILITATION

- Iowa Dept of Agriculture and Land Stewardship

## UMRSHNC ORGANIZATONAL FRAMEWORK

- Tier 1 State Agencies of the Task Force
- Tier 2 30 Member Appointed Stakeholder Group
- Tier 3 Open Invitation Stakeholder & Public Input Meetings

## UMRSHNC Tier 1

- Illinois Department of Agriculture
- Iowa Department of Agriculture and Land Stewardship
- Minnesota Pollution Control Agency
- Missouri Department of Natural Resources
- Wisconsin Department of Natural Resources

## UMRSHNC Tier 2 Stakeholder Group

- 5 Tier 1 State Agencies
- 5 State Agencies – Ag, Conservation, Environmental Protection
- 5 Land Grant Universities
- 5 Ag Stakeholder Organizations
- 5 Environmental, Consumer, City Utility Organizations
- 5 Federal Agencies – NRCS, ARS, USGS, EPA V & VII

## UMRSHNC Tier 2

Illinois Environmental Protection Agency	Iowa Farm Bureau Federation
Iowa Department of Natural Resources	Minnesota Soybean Association
Minnesota Department of Agriculture	Missouri Corn Growers Association
Missouri Department of Agriculture	Professional Dairy Producers of Wisconsin
Wisconsin Department of Agriculture, Trade and Consumer Protection	Prairie Rivers Network
University of Illinois	Metropolitan Water Reclamation District of Greater Chicago
Iowa State University	Cedar Rapids Water Department
University of Minnesota	The Nature Conservancy
University of Missouri	Audubon
University of Wisconsin	USDA NRCS
Illinois Fertilizer and Chemical Association	USDA ARS
	U.S. Geological Survey
	EPA Regions 5 and 7 (ex-officio)
	Tier 1 State Agencies (5)

## Tier 1 Meetings

- Initial Organizational Meeting
  - August 20, 2004
- 17 Meetings to Date

## Tier 2 Meetings

- April 12-13, 2005     Moline, Illinois
  - Background
  - Mission/Goals
  - Future Vision
  - Input on Technical Workshop
- September 27, 2005
  - Update on Science & Action Plan Reassessment
  - Feedback on UMRSHNC Workshop
- March 2006 – Next Meeting

## UMRSHNC Role - Facilitate Networking & Dialogue

- Concerning goals of the Action Plan
- Between and within 5 states
- Agencies
- NGO's
- Stakeholders

### Goals

1. Technical Networking
2. Publications & Outreach
3. Policy & Legislation

## TECHNICAL NETWORKING Exchange Technologies/Programs

- Nitrogen & phosphorous fertility recommendations by state
- Existing/planned state-level programs targeted to reduction of nutrient discharge & transport
- Research underway/needed for reducing nutrient discharge & transport

## Gulf Hypoxia and Local Water Quality Concerns



www.umshnc.org

**A workshop assessing tools to reduce agricultural nutrient losses to water resources in the Corn Belt.**

**September 26 – 28, 2005**  
Iowa State Center • Iowa State University  
Ames, Iowa

A workshop with a 'decidedly different' approach to encourage interaction and the exchange of information on tools to reduce nutrient losses to water resources in the Corn Belt. Sessions feature a short, introductory presentation followed by a panel discussion. Session topics include:

- Fate and transport of nutrients
- Water management
- Wetlands
- Buffer and vegetative filter strips
- Nitrogen rates
- Nitrogen application timing, forms, and additives
- Phosphorus fertilizers
- Animal manures
- Erosion control practices to reduce sediment and nutrients
- Alternative cropping and cover crops
- Field-scale tools
- Watershed-scale tools
- Evaluating nutrient loss reduction effects
- Soil organic matter content

Early registration for this program is \$175 and includes meals, workshop materials and a copy of the workshop proceedings. Registration also includes admission to Iowa State University's Reiman Gardens for an evening reception and social.

Visit [www.umshnc.org](http://www.umshnc.org) to complete your registration today.

For more information:

Visit our Web site at [www.umshnc.org](http://www.umshnc.org) for additional information. If you have additional questions regarding this workshop please contact the Iowa State University Agribusiness Education Program by calling (515) 432-7648 or e-mail us at [aeep@iastate.edu](mailto:aeep@iastate.edu).

Sponsored by:

- Upper Mississippi River Sub-basin Hypoxia Nutrient Committee (UMSHNC)
- Iowa State University College of Agriculture
- U. S. Environmental Protection Agency Regions 5 and 7, and the Office of Wetlands, Oceans and Watersheds
- USDA - Agricultural Research Service

IOWA STATE UNIVERSITY  
University Extension

## PUBLICATIONS & OUTREACH

### Inventory Existing Programs and Activities

- Within the Upper Mississippi states
- Nutrient transport from point & nonpoint sources
- Resources for Upper Mississippi states
- Develop outreach & public information strategy



## POLICY & LEGISLATION

### Network to Identify Common Positions Among Upper Mississippi States

- Policy Matters
- Funding Decisions
- Facilitate individual states informing decision-makers about funding & policy decisions targeted to the Upper Mississippi region

For More Information

[WWW.UMRSHNC.ORG](http://WWW.UMRSHNC.ORG)



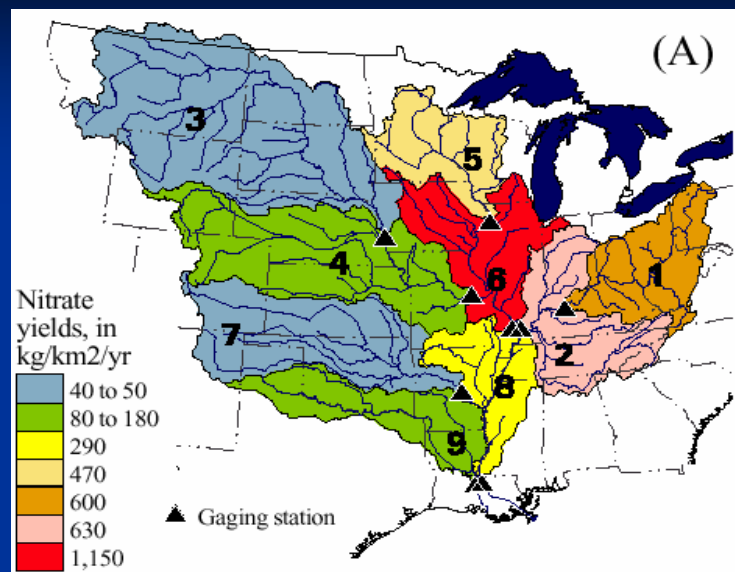
## **Attachment E**

Presentation by John Kessler, Ohio Department of Natural Resources:  
Update on the Ohio River Sub-basin Team

# Report of the Ohio River Sub Basin Committee

December 1, 2005

## Nitrogen Source Distribution



Goolsby, et al

# The Ohio River Basin



# The Ohio River

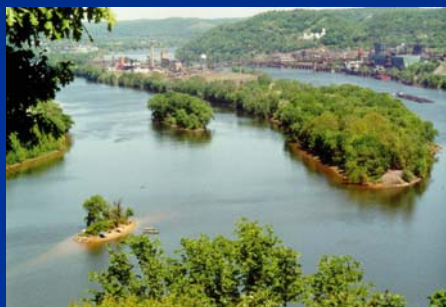


Pittsburgh, Pennsylvania



Paducah, Kentucky

# The Ohio River

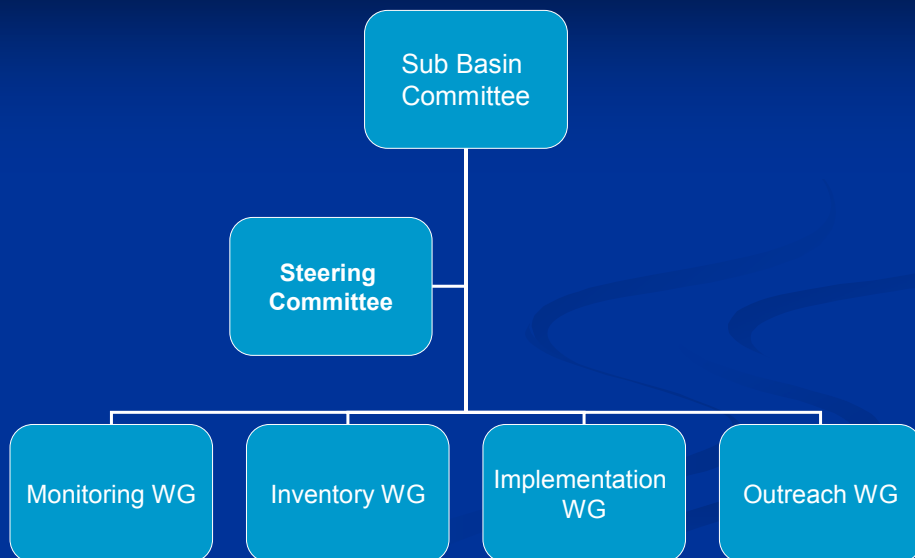


Weirton, WV



Cincinnati, OH

## Sub Basin Committee Structure



**Sub Basin Committee will include states plus stakeholder representatives.**

**Steering Committee consists of state agencies.**

## **Steering Committee Members**

- Illinois Dept of Agriculture
- Indiana Dept of Environmental Management
- Kentucky Dept of Environmental Protection
- Kentucky Division of Conservation
- Ohio Dept of Natural Resources
- Ohio EPA
- Pennsylvania Conservation Commission
- Tennessee Dept of Environmental Cons
- West Virginia Conservation Agency
- West Virginia Dept of Agriculture
- West Virginia Dept of Environmental Protection
- ORSANCO

## Funding Support

- US EPA provided grant support in 2004.
- Current project is scheduled for completion at the end of 2005.
- Steering Committee has directed ORSANCO to apply for a no cost extension.

## Progress to Date

- Four Steering Committee meetings.
- Briefings on Gulf Hypoxia.  
(five participating states have not been Task Force members)
- Presentations on Nutrient Reduction efforts.
- Framework for Nutrient Reduction Strategy under development.
- Ohio elected chair state and invited to join the Task Force.

## Framework for Development of a Nutrient Reduction Strategy

1. The current situation
2. Sources of nutrients
3. Nutrient reduction targets and goals
4. Available tools for nutrient reduction
5. Identifying and involving stakeholders in strategy development and implementation
6. Next Steps

## Concept of Framework Document

- Reduction targets for Mississippi River and Gulf of Mexico will not be available for several years.
- Initial Nutrient Reduction Strategy will focus on protecting local waters per Action Plan Goal 2.
- Strategy should be adaptable to address emerging targets.



## Steering Committee Initiatives

- Require effluent monitoring of total N and total P at major POTWs and appropriate industrial discharges.
- Add total N and total P at ambient monitoring sites as indicated by MMR strategy.
- Monitor Ohio River and major tributary sites per MMR Strategy
  - Cross sectional composites
  - 15 samples per year

## Upcoming Activities

- Assess available treatment techniques for meeting stringent N and P limits.
- Identify stakeholder groups that need to be involved.
- Develop outreach materials – brochures, presentations, web site.
- Develop draft of Framework Strategy document.
- Follow development of Miami Conservancy District Trading program.

## Ohio River Basin Symposium

- Possible topic – nutrient management in urban areas.
- Could include point source control, wet weather sources.
- Role of trading might also be explored.
- Timing – 2007?

Questions?

## **Attachment F**

Presentation by Doug Daigle, Lower Mississippi River  
Sub-basin Committee on Hypoxia: Update on the Lower  
Mississippi River Sub-basin Team

# Lower Mississippi River Sub-basin Committee

Report to Mississippi River/Gulf of Mexico  
Watershed Nutrient Task Force

*December 1, 2005*

## Events Since Last Task Force Meeting (September 2004)

- *Meeting in Memphis, TN – November 2004*
  - Formalized Sub-basin Committee Structure: States as primary members, Federal Task Force Agencies Ex-Officio members, Industry-Led Solutions – Supporting Member
  
- *Lower Miss. River Sub-basin Coordinator – May 2005*
  - Regional Wetlands Conference, Corpus Christi – May
  - Corps of Engineers Workshop on Nitrogen in Mississippi River, New Orleans – August
  - EPA Workshop on Nutrients in large rivers, St. Louis – October

## Events Since Last Task Force Meeting (September 2004)

- *Meeting in Tunica, MS – June 2005*
  - Discussion of nutrient reduction strategies for lower river (Action Plan Short-Term #6)
  - Discussion of Lower River Nutrient Symposium (set for Summer 2006)
  
- *Hurricanes Katrina and Rita*

## Updates on Focus Watershed Projects

- **Arkansas – Bayou Bartholomew – Arkansas Natural Resources Commission**
  - 9-element watershed plan
  - Increased stream monitoring
  - Stream bank restoration

## Updates on Focus Watershed Projects

### ■ Louisiana – Cabin Teele – USDA NRCS/ARS

- NRCS suspended activity due to lack of funding
- ARS completed GIS mapping; field, crop, and fertilizer information for past 10 years; beginning collection of background data

### ■ Vermillion Watershed – NRCS, Industry-Led Solutions (TIAER)

- New micro-watershed targeted
- Monitoring group formed, focus on major land uses (residential, pasture, sugar cane, rice)  
Hurricane impacts

## Updates on Focus Watershed Projects

### ■ Mississippi – Lake Washington – Mississippi DEQ

- On-going monitoring, mapping, assessment
- Stakeholder meetings – education & outreach
- Development of Watershed Implementation Plan and Team

### ■ Missouri – St. Francis River – NRCS/Missouri DNR

- NRCS working with local landowners on fertilizer application, irrigation timing in watershed

## Updates on Focus Watershed Projects

- **Tennessee – Hatchie River – Tennessee Dept. of Agriculture**
  - Hatchie River Alliance formed – federal & state agencies, SWCDs, local governments
  - Stakeholder education on agriculture practices
  - Greater focus on small tributaries

## Plan for 2006

- Planning for Lower Mississippi River Symposium underway (Summer 2006)
- Working with other Sub-basin Committees on securing funding for state and SBC activity

## SBC Workplan 2005

- Task 1. Complete Formalized structure to meet the full set of goals necessary to implement the Action Plan within the lower Mississippi River Basin.
- Task Objectives:
  - 1) establish an Executive Committee, consisting of representative of state governments and partner agencies;
  - 2) appoint a full-time Coordinator to work with the Executive Committee and the Sub-basin Committee to carry out its goals.
  - 3) set up workgroup structure to develop strategies for nutrient reduction, outreach activities and for identification of funding opportunities
- Task 2. With Sub-basin Committee, develop specific objectives and workgroups for implementation of Action Plan:
  - 1) coordinate two meetings of Sub-basin Committee per year;

- 2) hold one coordinating meeting in each state per year;
- 3) coordinate information from states' focus watershed projects on a yearly basis;
- 4) pursue additional sources of funding and in-kind resources for Sub-basin Committee;
- 5) coordinate preparation of annual report to Mississippi River/Gulf of Mexico Watershed Nutrient Task Force.
  
- Milestones: Establishment of Executive Committee; two Sub-basin Committee meetings; state coordinating meetings; funds and support raised for second year operations; annual report.



- Deliverables:

- Meeting presentation materials

  - A Report summarizing recommendations for methods and approaches

  - Quarterly reports

  - Annual Report to the Task Force

  - Final Report

- 

### Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico

- Goals of Action Plan Strategy (p.9):

- Encourage actions that are voluntary, practical, and cost-effective;

- Utilize existing programs, including existing State and Federal regulatory mechanisms;

- Follow adaptive management;

## Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico

- Identify additional funding needs and sources...
- Provide measurable outcomes as outlined [in] the three goals and strategies...
- **Coastal Goal:** [Reduce 5-year running average areal extent of Gulf hypoxic zone to less than 5000 square kilometers by 2015];
- **Within Basin Goal:** [Restore and protect the waters of the 31 States and Tribal lands within the Mississippi/Atchafalaya River Basin through implementation of nutrient and sediment reduction actions...];
- **Quality of Life Goal:** [Improve the communities and economic conditions across the basin... through cooperative, incentive-based approach.]

## Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico

- Short-Term Actions and Time Frames:
- 2) By Summer 2001, states and tribes in the basin, in consultation with the Task Force, will establish sub-basin committees to coordinate implementation of the Action Plan by major sub-basins, including coordination among smaller watersheds, tribes, and states in each of those sub-basins.
- Major Sub-basins Identified in the Action Plan (map on p.4):
- Upper Mississippi Missouri
- Ohio Tennessee
- Arkansas-Red-White
- Lower Mississippi

Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico

- 6) By Fall 2002, States, Tribes, and Federal agencies within the Mississippi and Atchafalaya River Basin, using available data and tools, local partnerships, and coordination through sub-basin committees... will develop strategies for nutrient reduction. These strategies will include setting reduction targets for nitrogen losses to surface waters, establishing a baseline of existing efforts for nutrient management, identifying opportunities to restore floodplain wetlands (including restoration of river inflows) along and adjacent to the Mississippi River, detailing needs for additional assistance to meet their goals, and promoting additional funding;

Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico

- 8) By January 2003, or on a time frame established by the sub-basin committees, Clean Water Act permitting authorities within the Mississippi and Atchafalaya River Basin will identify point source dischargers with significant discharge those loadings, consistent with action #6;

Action Plan for Reducing, Mitigating, and Controlling  
Hypoxia in the Northern Gulf of Mexico

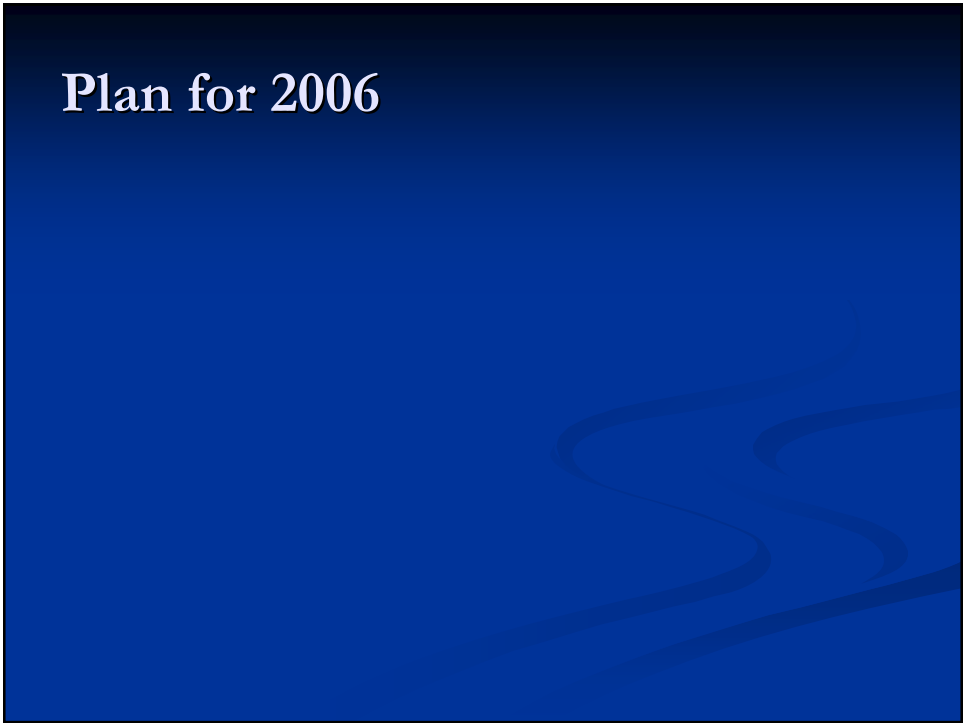
- 9) By Spring 2003, or on a time frame established by the sub-basin committees, States and Tribes within the Mississippi and Atchafalaya River Basin, with support from Federal agencies, will increase assistance to landowners for voluntary actions to restore, enhance, or create wetlands and vegetative or forested buffers along rivers and streams within priority watersheds consistent with action #6;

Action Plan for Reducing, Mitigating, and Controlling  
Hypoxia in the Northern Gulf of Mexico

- 10) By Spring 2003, or on a time frame established by the sub-basin committees, States and Tribes within the Mississippi and Atchafalaya River Basin, with support from Federal agencies, will increase assistance to agricultural producers, other landowners, and businesses for the voluntary implementation of best management practices... which are effective in addressing loss of nitrogen to waterbodies, consistent with action #6;



**Plan for 2006**



# Plan for 2006

## **Attachment G**

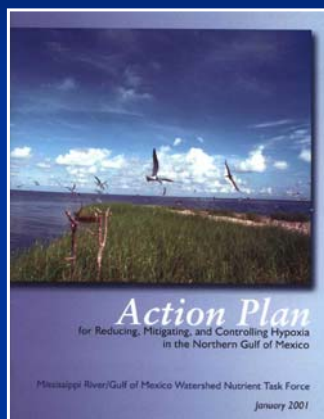
Presentation by Diane Regas, EPA Office of Wetlands, Oceans, and  
Watersheds: Reassessment Plan and Schedule

# Reassessment Status

Gulf of Mexico  
Hypoxia Task Force Meeting  
Memphis, Tennessee  
December 1, 2005  
Diane Regas



## Goals of the *Action Plan*

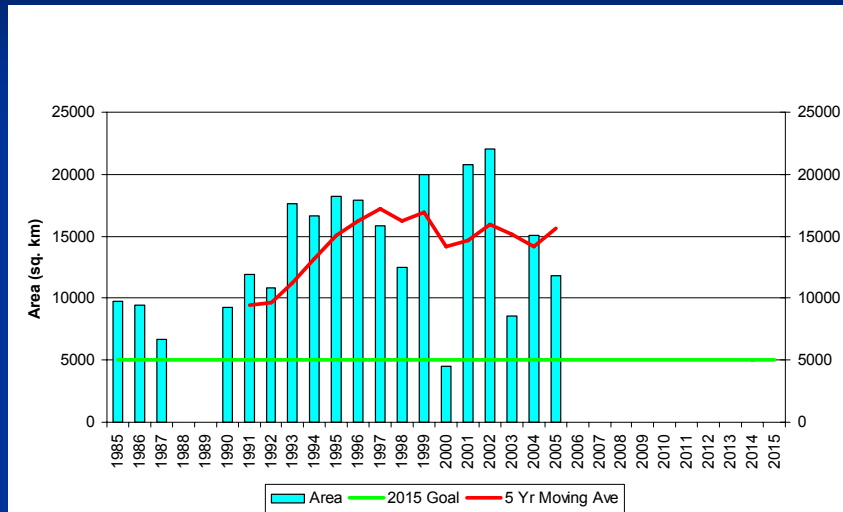


January 2001

- **Coastal Goal:** Reduce zone to less than 5,000 sq. kilometers by 2015
- **Within Basin Goal:** Implement actions to restore & protect the waters of the Basin
- **Quality of Life Goal:** Improve communities & economic conditions in Basin.



## Size of Gulf Hypoxic Zone 1985-2005



## Overview

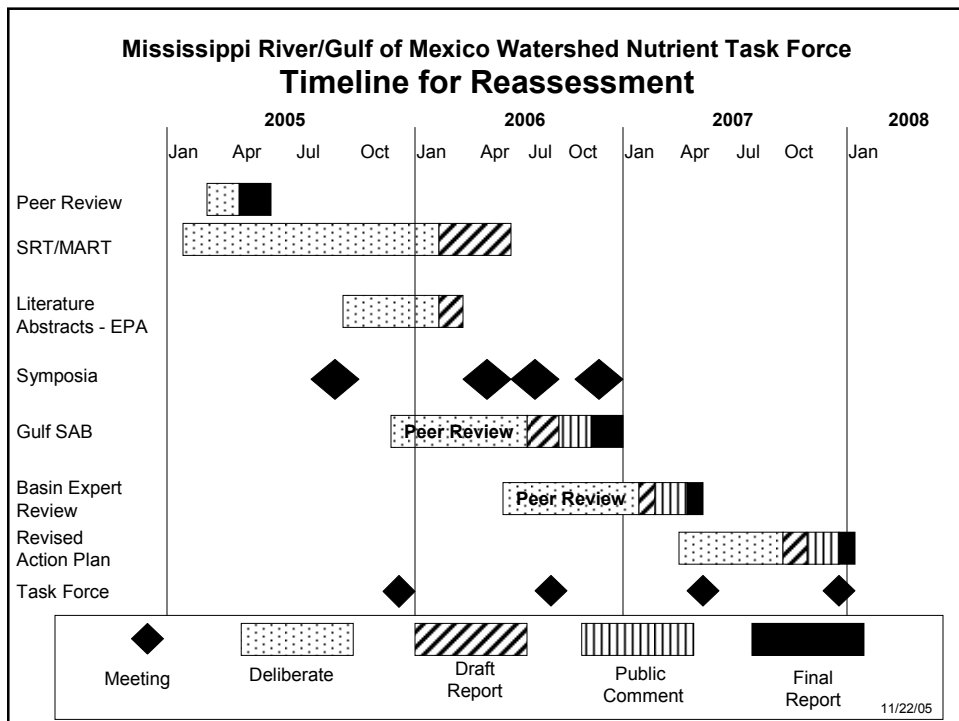
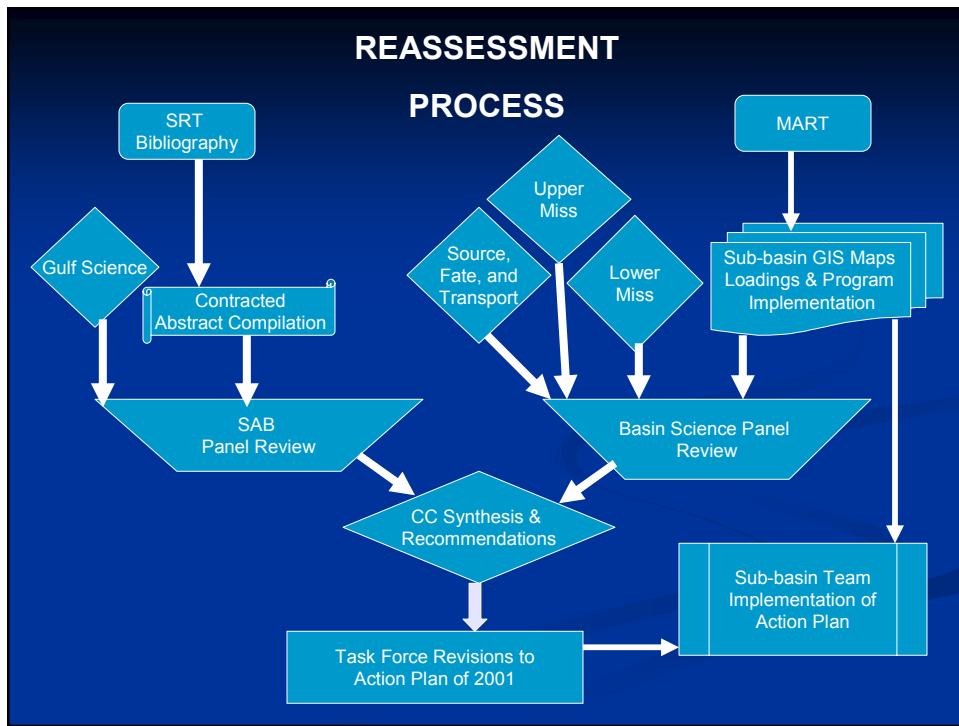
- Steady progress on *Action Plan* reassessment
- Sub-basin teams making significant progress
  - Lower Mississippi
  - Upper Mississippi
  - Ohio River
- Resources for reassessment and sub-basin teams is a top priority

## Reassessment Status

- *Action Plan* calls for periodic reassessments
  - Adaptive management reflecting progress and new science
- Coordinating Committee developed plan over the past year
  - Task Force reviewed at last two meetings
- Most steps in place

## Reassessment Outline

- Independent peer review of EPA Region IV White Paper
- Science and management update conducted by:
  - Science Reassessment Team (SRT) and
  - Management Action Reassessment Team (MART)
- Public science symposia
  - Upper Basin Science and Management
  - Gulf Science
  - Lower Basin Science and Management
  - Source, Fate and Transport of Nutrients in the Basin
- EPA's SAB Independent Review of Gulf Science
- Independent Review of Basin Science and Management
  - Exploring working with EPA's SAB
- Revise the *Action Plan*



## Reassessment Status

ACTION	STATUS
Independent peer review of EPA White Paper	Completed (5/05)
MART and SRT reviews	Ongoing
EPA SAB review of Gulf science	Ongoing
Upper Basin symposium	Completed (9/05)
Gulf science symposium	In planning
Lower Basin symposium	In planning
Sources, fate & transport symposium	In planning
Basin science review panel	In planning
Revision of <i>Action Plan</i>	December 2007

## Assessment Steps Moving Forward

ITEM	ACTIVITY	LEAD AGENCIES
R4 White Paper	Peer Review	EPA
SRT	Bibliography	NOAA & USGS
MART	Inventory of Management Actions	USDA
	Inventory of Point Sources	EPA
Gulf Science Symposia	Public Symposium	NOAA & EPA
Upper Basin Science Symposium	Public Symposium	Upper Sub-Basin Committee
Lower Basin Science Symposium	Public Symposium	Lower Sub-Basin Comm. & GOMP & Corps of Eng.
Sources, Fate, and Transport Synthesis Symposium	Public Symposium	USGS & Corps of Eng.
Peer Review of Gulf Science	EPA SAB Committee to convene	EPA
Peer review of Basin Science	Possible EPA SAB Committee	Coord. Comm. & EPA
Public Comment Response, Gulf and Basin	Formal public input	EPA

## Sub-basin Teams

- Active Teams
  - Lower Mississippi Team
  - Upper Mississippi Team
  - Ohio River Team
- Others
  - Tennessee
  - Arkansas-Red-White
  - Missouri



## Summary

- Commitment from States and Federal agencies to proceed with *Action Plan* reassessment
- Sub-basin teams making significant progress
  - Lower Mississippi
  - Upper Mississippi
  - Ohio River

## **Attachment H**

Presentation by Dean Lemke, Iowa Department of Agriculture and Land  
Stewardship: Report on Upper Basin Symposium

# UPPER MISSISSIPPI RIVER SUB-BASIN HYPOXIA NUTRIENT COMMITTEE UMRSHNC



## Gulf Hypoxia and Local Water Quality Concerns



[www.umrshnc.org](http://www.umrshnc.org)

**A workshop assessing tools to reduce agricultural nutrient losses to water resources in the Corn Belt.**

**September 26 – 28, 2005**  
Iowa State Center • Iowa State University  
Ames, Iowa

A workshop with a 'decidedly different' approach to encourage interaction and the exchange of information on tools to reduce nutrient losses to water resources in the Corn Belt. Sessions feature a short, introductory presentation followed by a panel discussion. Session topics include:

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- Water management
- Wetlands
- Buffer and vegetative filter strips
- Nitrogen rates
- Nitrogen application timing, forms, and additives
- Phosphorus fertilizers
- Animal manures
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- Field-scale tools
- Watershed-scale tools
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Early registration for this program is \$175 and includes meals, workshop materials and a copy of the workshop proceedings. Registration also includes admission to Iowa State University's Reiman Gardens for an evening reception and social.

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For more information:

Visit our Web site at [www.umrshnc.org](http://www.umrshnc.org) for additional information. If you have additional questions regarding this workshop please contact the Iowa State University Agribusiness Education Program by calling (515) 432-9648 or e-mail us at [asp@iastate.edu](mailto:asp@iastate.edu).

Sponsored by:

- Upper Mississippi River Sub-basin Hypoxia Nutrient Committee (UMRSHNC)
- Iowa State University College of Agriculture
- U. S. Environmental Protection Agency Regions 5 and 7, and the Office of Wetlands, Oceans and Watersheds
- USDA - Agricultural Research Service

IOWA STATE UNIVERSITY  
University Extension

## GOAL - TECHNICAL NETWORKING Exchange Technologies/Programs

- Nitrogen & phosphorous fertility recommendations by state
- Existing/planned state-level programs targeted to reduction of nutrient discharge & transport
- Research underway/needed for reducing nutrient discharge & transport





## Workshop Purpose/Goals

- Facilitate Interstate Dialogue Between Research Science Community on Ag NPS
- Gather Together Available Knowledge of Tools/Solutions to Nutrient Transport
- Inform Implementation Agencies & Policymakers on the Science
- Increase Interstate Cooperation & Synergism
- Identify Research Gaps

## Intended Audience

- Land-grant Universities – Research & Extension
- State Agencies – Ag & Environmental
- Federal Agencies – EPA, ARS, NRCS, ERS, FSA, others
- Legislative Policy Staff
- Ag & Environmental Groups & Public

## WORKSHOP PLANNING COMMITTEE

James Baker, Ph.D., Iowa State University (retired), Chair  
Dean Lemke, Iowa Department of Agriculture and Land  
Stewardship

Dennis McKenna, Illinois Department of Agriculture

John Sawyer, Ph.D., Iowa State University

Dan Jaynes, Ph.D., National Soil Tilth Lab, ARS-USDA

Gyles Randall, Ph.D., University of Minnesota

Mark David, Ph.D., University of Illinois

George Czapar, Ph.D., University of Illinois

Larry Bundy, Ph.D., University of Wisconsin

Tom Hunt, Ph.D., University of Wisconsin

Newell Kitchen, Ph.D., ARS-USDA, University of Missouri

Eileen Kladvko, Ph.D., Purdue University

Brent Pringnitz, Iowa State University

## “Decidedly Different” Approach

- Direct content with series of critical questions
- Identify authors & panel of leading research scientists for each question
- Authors review & summarize entire research literature base for each question
- Panel members dialogue/critique papers
- Questions from the audience

Understanding Nutrient Fate and Transport,  
Including the Importance of Hydrology in  
Determining Losses, and Potential Implications  
on Management Systems to Reduce Those  
Losses

Authors:

*James Baker, Iowa State University*

*Mark David, University of Illinois*

*Dean Lemke, Iowa Department of Agriculture and Land  
Stewardship*

Panelists:

*Gyles Randall, University of Minnesota*

*Dan Jaynes, USDA National Soil Tilth Laboratory*

Drainage Water Management: A Practice for  
Reducing Nitrate Loads From Subsurface  
Drainage Systems

Authors:

*Richard Cooke, University of Illinois*

*Larry Brown, Ohio State University*

*Gary Sands, University of Minnesota*

Panelists:

*Norman Fausey, USDA Agricultural Research Service*

*Don Pitts, Illinois Natural Resources Conservation Service*

## Potential of Wetlands to Reduce Agricultural Nutrient Export to Water Resources in the Corn Belt

Author:

*William Crumpton, Iowa State University*

Panelists:

*David Kovacic, University of Illinois*

*Don Hey, The Wetlands Initiative*

*Mary Skopec, Iowa Geological Survey Bureau*

*Gary Sands, University of Minnesota*

## Buffers and Vegetative Filter Strips

Authors:

*Matt Helmers, Iowa State University*

*Jeff Strock, University of Minnesota*

*Tom Isenhardt, Iowa State University*

Panelists:

*Mike Dosskey, USDA National Agroforestry Center*

*Seth Dabney, USDA Agricultural Research Service*

## Nitrogen Rates

Authors:

*John Sawyer, Iowa State University  
Gyles Randall, University of Minnesota*

Panelists:

*Robert Hoef, University of Illinois  
Peter Scharf, University of Missouri  
Sylvie Brouder, Purdue University  
Eileen Kladvko, Purdue University  
Larry Bundy, University of Wisconsin  
James Baker, Iowa State University*

## Nitrogen Application Timing, Forms and Additives

Authors:

*John Sawyer, Iowa State University  
Gyles Randall, University of Minnesota*

Panelists:

*Robert Hoef, University of Illinois  
Peter Scharf, University of Missouri  
Sylvie Brouder, Purdue University  
Eileen Kladvko, Purdue University  
Larry Bundy, University of Wisconsin  
James Baker, Iowa State University*

## Agronomic and Environmental Implication of Phosphorous Management Practices

Authors:

*Antonio Mallarino, Iowa State University  
Larry Bundy, University of Wisconsin*

Panelists:

*Brad Joern, Purdue University  
Robert Hoeft, University of Illinois  
Peter Scharf, University of Missouri*

## Potential and Limitations of Cover Crops, Living Mulches and Perennials to Reduce Nutrient Losses to Water Sources from Agricultural Fields

Authors:

*Tom Kaspar, USDA National Soil Tilth Laboratory  
Eileen Kladvko, Purdue University  
Jeremy Singer, USDA National Soil Tilth Laboratory*

Panelists:

*Dale Mutch, Michigan State University  
Steve Morse, University of Minnesota*

## Sustaining Soil Resources While Managing Nutrients

Authors:

*Dan Jaynes, USDA National Soil Tilth Laboratory  
Doug Karlen, USDA National Soil Tilth Laboratory*

Panelists:

*William Crumpton, Iowa State University  
Michael Russelle, USDA Agricultural Research Service  
Lowell Gentry, University of Illinois*

## Evaluating the Effectiveness of Agricultural Management Practices at Reducing Nutrient Losses to Surface Waters

Authors:

*David Mulla, University of Minnesota  
Newell Kitchen, USDA Agricultural Research Service  
Mark David, University of Illinois*

Panelists:

*Bernie Engel, Purdue University  
Greg McIsaac, University of Illinois*

## Where Do We Go From Here?

Authors:

*Dean Lemke, Iowa Department of Agriculture and  
Land Stewardship  
Dennis McKenna, Illinois Department of Agriculture*

Panelists:

*Mike Sullivan, National Resources Conservation Service  
Jim Gulliford, U.S. Environmental Protection Agency  
Wayne Anderson, Minnesota Pollution Control Agency  
Charles Burney, Wisconsin Department of Natural Resources  
Joe Engeln, Missouri Department of Natural Resources*

## Agron.-Ag. Eng. Research Center 8 miles west of Ames





## Over-Arching Findings

Example – Nutrient Fate/Transport &  
Sustaining Soil Resources Panels

### “Excess nutrients”

- Often it is written that nutrients in our water resources are the result of the loss of “excess nutrients” (implying if we did not have “excess nutrients” in the soil we would have no losses).
- BUT:
  - For optimum crop production, significant amount of nutrients must be present in the soil.
  - Precipitation that results in excess water (and surface runoff and subsurface drainage) can and does come at any time.
  - When that happens some nutrients are bound to be lost.

<u>N (NO<sub>3</sub>) uptake/corn</u>	lb/ac N
grain (160 bu/ac)	136
above ground stover	70
roots	<u>34</u>
	240 lb/ac

Water transpiration/corn  
18" equals 4 million lb/ac

➔ ratio NO<sub>3</sub>-N/water = 60 ppm (mg/L)

## N/corn-soybean sustainability issue

### Corn inputs -

min. 60; fert. 147; manure 36; depos. 34; TOTAL 277

### Corn outputs (165 bu/ac) -

NH<sub>4</sub>-N: volatil. 25; runoff 0.5; subsur. drain. 0.1

NO<sub>3</sub>-N: im. 60; grain 120; denit. 35; runoff 4; subsur. drain. 15

INPUTS – OUTPUTS = 277 – 260 = +17 lb N/ac/yr

### Soybean inputs -

min. 60; fert. 1; depos. 34; fixed 100; TOTAL 195

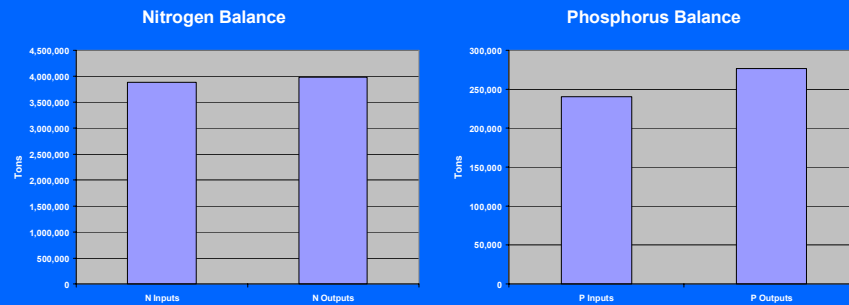
### Soybean outputs (50 bu/ac) -

NH<sub>4</sub>-N: volatil. 25; runoff 0.5; subsur. drain. 0.1

NO<sub>3</sub>-N: im. 60; grain 168; denit. 11; runoff 4; subsur. drain. 15

INPUTS – OUTPUTS = 195 – 284 = -89 lb N/ac/yr

## Iowa's state-wide nutrient budget



## SUMMARY

Current water quality problems due to nutrients do not result primarily from the mismanagement of fertilizers and manures (although some improvement can and should be made), but are mostly due to landscape and land-use changes (with associated changes in hydrology and economic inputs of nutrients).











## Final Proceedings

- Publish 15 Papers in Single Publication  
“whole is greater than the sum of the parts”
- Negotiating Publication Through ASABE as Technical Reference Text, CD & Web Versions
- Release Spring 2006
- Executive Summary, Potentially Policy White Paper & Fact Sheets

## UMRSHNC Workshop 2

??

- Policy Needed to Achieve Implementation of Science-Based Solutions
- Networking to Share Successful Implementation Programs
- New Program Approaches Needed
- Spring 2007? – After Gulf Science Reassessment is Completed



## Sponsors & Funding Partners

UMRSHNC

Iowa State University College of Agriculture

EPA – OWOW, Regions VII & V

USDA – Agricultural Research Service

## For More Information

[www.umarshnc.org](http://www.umarshnc.org)

- Workshop Detailed Information
- Proceedings - Draft Papers
- COMING SOON - Detailed Information
  - All UMRSHNC Activities & Meetings
  - Hypoxia Resource Info For Research Scientists
  - Links

## **Attachment I**

Presentation by Rick Greene: Update on the Gulf Science Symposium

## Hypoxia in the Northern Gulf of Mexico

Assessing the State of the Science

**A symposium to assess the current scientific understanding of the processes regulating the development, persistence and areal extent of hypoxic waters in the northern Gulf of Mexico.**

The symposium will focus on hypoxia in the Gulf of Mexico including:

- physical, chemical and biological oceanographic processes occurring in the Mississippi River plume and along the continental shelf that regulate hypoxia
- temporal and spatial characterization of nutrient loads, speciation, concentrations, and biogeochemical recycling processes
- relationships between nutrient loadings, primary production, algal biomass, and hypoxia
- the long term climatic and anthropogenic changes that affect hypoxia
- modeling applications, limitations and uncertainties

Presentations of prior and ongoing monitoring, modeling and research efforts from government, academia, industry and environmental organizations will help formulate the state-of-the-science assessment, identify gaps in our understanding of hypoxia in the Gulf, and provide key information for the reassessment effort.



## Hypoxia in the Northern Gulf of Mexico

Assessing the State of the Science

### Draft Symposium Agenda

#### **Session 1 - History and Long-Term Trends of Hypoxia in the Northern Gulf of Mexico**

This session will examine temporal and spatial characteristics of hypoxia including the seasonal and interannual variability in the development of bottom water hypoxia, its maximum areal extent, and timing of dissipation.

#### **Session 2 - Causes of Hypoxia I: Characterization of Nutrient Loads, Speciation, Concentrations and Biogeochemical Cycling**

This session will examine the delivery pathways of nutrients (organic and inorganic) from various sources, the seasonality and interannual variability of freshwater flow and nutrient loads, and natural and anthropogenic factors influencing nutrients loads, speciation and concentrations.

#### **Session 3 - Causes of Hypoxia II: Relationships between Nutrient Loads, Primary Production, Algal Biomass and Hypoxia**

This session will examine nutrient-enhanced primary production, the temporal and spatial distribution of primary production and phytoplankton biomass, nutrient limitation of phytoplankton growth and primary production, the fate of primary production, and the linkages between nutrients loads, primary production and bottom water hypoxia.



## Hypoxia in the Northern Gulf of Mexico

Assessing the State of the Science

### Draft Symposium Agenda – cont

#### **Session 4 - Causes of Hypoxia III: Benthic-Pelagic Coupling of Oxygen and Nutrient Dynamics**

This session will examine the processes regulating oxygen and nutrient metabolism in the benthos and water column, and temporal and spatial variability in these processes, the coupling between benthic and water column processes, and the linkages to surface water production and nutrient loads

#### **Session 5 - Causes of Hypoxia IV: Influence of Physical Oceanographic Processes on the Distribution and Extent of the Hypoxic Zone**

This session will examine the physical setting along the northern Gulf continental shelf, including hydrodynamic circulation, the influence of wind stress, surface waves, and freshwater flow on salinity and density distributions, sediment transport and resuspension.

#### **Session 6 - Modeling Applications**

This session will examine the various models developed to understand the causes of hypoxia, to predict the size of the hypoxic zone, to estimate nutrient load reductions necessary to achieve Action Plan goals, or to support water quality management decisions, and the limitations and uncertainties of the models.

#### **Session 7 - Next Steps**

## **Attachment J**

Presentation by Herb Buxton: Update on the Science  
Reassessment Team

## Major Task Force Work Group Areas

Science  
(Env. &  
Soc/eco)



Science  
Reassess.  
Team (SRT)

Mngmt  
Actions



Mngmt Action  
Reassess.  
Team (MART)

## Last Product of Science Workgroup

Provided a  
framework for  
agencies  
developing science  
products useful to  
the Action Plan  
Update.

 science for a changing world

A Science Strategy to Support Management Decisions  
Related to Hypoxia in the Northern Gulf of Mexico and  
Excess Nutrients in the Mississippi River Basin



Circular 1270

**MMR: Monitoring,  
Modeling & Research**

U.S. Department of the Interior  
U.S. Geological Survey

## Current SRT Activities

- Gulf Science Review
- Developing Bibliography for Gulf Science Review
- Gulf Science Workshop
- Basin Science Review
- Basin Science Workshop (with MART)

## **Attachment K**

Presentation by Katie Flahive: Update on the Management Action  
Reassessment Team



# Management Action Reassessment Team

Mississippi River/Gulf of Mexico Watershed  
Nutrient Task Force 12<sup>th</sup> Meeting

Memphis, TN  
December 1, 2005

Wayne Anderson, MN PCA  
Katie Flahive, US EPA  
Mike Sullivan, USDA

## Action Plan

- The 2001 Action Plan notes:  
“The strategy must include periodic data analysis, interpretation, and reporting to all stakeholders that are involved with the design and implementation of management, remediation, and restoration actions.” (p. 25)
- Task Force formed the MART at 11<sup>th</sup> Meeting in St. Paul, to generate the inventory of actions taken
- Coordinating Committee identified leadership and charge at the August 2005 meeting

## MART Charge

- Charge:
  - Geographically inventory federal, state, and local program opportunities throughout the Basin
  - Coordinate with existing and planned watershed groups to work through Basin/Gulf issues and document the progress towards Action Plan goals through management activities
  - Report on programmatic indicators identified in the 2001 Action Plan
  - Overlay program distribution, integrating federal and state programs, and recommend refinements in programmatic indicators to improve ongoing retrospective reporting of nutrient reductions
  - Work to inform the Basin Science Review

## MART Workplan

- Currently:
  - Identifying outside data partners in Task Force agencies as well as others
  - Developing inventory of implementation activities through EPA and USDA programs to create guidelines for others
  - Generating geographic overlay of point sources within the basin
  - Understanding distribution of federal and state programs for nutrient reduction

# MART Workplan

- Next steps:
  - Work with other partners to assist inventories
  - Develop a methodology to understand changes in three groups of Action Plan programmatic indicators as a result of management actions (p. 28 in 2001 Action Plan)
  - Look to success stories in the basin at a variety of watershed sizes to understand the effect of integrating the management programs

## **Attachment L**

Presentation by Darrell Brown, EPA and Dennis McKenna, Illinois  
Department of Agriculture: Charge to the EPA SAB.

# Causes of Gulf Hypoxia: Charge to the EPA Science Advisory Board (SAB)

Dennis McKenna  
Illinois Department of Agriculture

Darrell Brown  
US EPA

## Gulf Science Review

- ◆ Assessment of Gulf science will be separate from the Basin science and management review
- ◆ Coordinating Committee Subcommittee of representatives from EPA, NOAA, USGS, Illinois, and Iowa analyzed several options
- ◆ Detailed process information was solicited from EPA's Science Advisory Board (SAB) and the National Academy of Sciences (NAS)

## Criteria for Selection

- ◆ Independent panel of experts
- ◆ Transparent process
- ◆ Opportunities for public input and comment
- ◆ Capable of assessing the current state of the science.

## The SAB Process: Timeframe

- ◆ Initial consultation with SAB conducted November 28, 2005
  - Official start of review
- ◆ Three months to seat panel
  - First meeting ≈ March 2006
- ◆ 9 months to produce final report
  - Draft ≈ September 2006
  - Final ≈ December 2006

## The SAB Process: Panel Selection

- ◆ Chair of panel selected from Executive Committee of SAB
- ◆ Request for nominations posted in Federal Register
- ◆ Conflict of interest vetted and public comment on nominees considered
- ◆ Appropriate balance and breadth of expertise selected by SAB chair and staff

## The SAB Process: Charge Development

- ◆ Draft charge developed by sub-committee of Coordinating Committee
- ◆ Charge officially negotiated between chair of SAB panel and EPA Office of Water (requesting office)
- ◆ Task Force members may provide input into negotiations via EPA Office of Water staff

## The SAB Process: Meeting Format

- ◆ All meetings strictly follow the provisions of the Federal Advisory Committee Act (FACA)
- ◆ Meetings are open to the public
  - Public may make statements or submit relevant scientific information
- ◆ Deliberations among panel members occur only at public meetings

## The SAB Process: Draft Reports

- ◆ Draft reports posted on SAB website
  - Public may submit comments
- ◆ Additional clarifying questions may be submitted by EPA Office of Water at Task Force request
  - Panel not obligated to answer follow-up questions



## The SAB Process: Final Report

- ◆ Quality Review Committee of SAB members determines soundness of final report
- ◆ QRC assessment published as part of final report

## Overview of SAB charge

- ◆ Evaluate:
  - The current scientific understanding of the processes that regulate the development, persistence and areal extent of hypoxia in the northern Gulf of Mexico.
  - The causal relationships between Mississippi River Basin water quality, watershed nutrient loading and hypoxia, and the relative importance of other causal factors.

## Overview of SAB charge

- ◆ Provide a final scientific synthesis report to the Task Force that addresses the questions regarding the causes of hypoxia
- ◆ NOTE: The sources of causal agents within the Basin and the effectiveness of management practices will be addressed in the Basin science and management review

## Draft Charge Topics

- ◆ Causes of hypoxia in the Gulf of Mexico
- ◆ Effects of nutrients
- ◆ Changes in climate and changes in Mississippi River hydrology
- ◆ Modeled changes in anthropogenic activities needed to reduce the size of the hypoxic zone
- ◆ Adequacy of available data and analyses

## Causes of hypoxia in the Gulf of Mexico

- ◆ What is the relative significance of suggested causes of hypoxia formation?
- ◆ What is the potential for mitigation of these causes?
- ◆ What is the degree of uncertainty in identifying the causal factors?

## Effects of Nutrients

- ◆ What are the pertinent temporal (annual and seasonal) characteristics of Mississippi River nutrient loads to the Gulf of Mexico?
- ◆ What is the current understanding of the delivery pathways of nutrients?
- ◆ How do the magnitude and spatial distribution of stratification and nutrient concentrations in the Gulf change seasonally?

## Changes in Climate and Mississippi River Hydrology

- ◆ What are the significant long-term climatic and anthropogenic changes that may affect the development, persistence and areal extent of hypoxia?
- ◆ Have changes in fresh water discharge increased stratification and the size and persistence of the hypoxic zone?

## Modeled Changes in Anthropogenic Activities

- ◆ What are the limitations and uncertainties associated with recent modeling, including:
  - ◆ the appropriateness of the model for its intended application?
  - ◆ the limitations of the model?
  - ◆ the uncertainties associated with model results and conclusions?
- ◆ Provide an estimate of the percent reduction required of causal agents to reach the goal of reducing the five-year running average size of the hypoxic zone to 5,000 km<sup>2</sup>

## Adequacy of Available Data and Analyses


- ◆ Are the currently available data adequate to characterize the onset, volume, extent and duration of the hypoxic zone?
- ◆ Is the current monitoring of freshwater discharge and nutrient concentrations adequate to characterize the forcing functions that contribute to hypoxia?

## Expert Panel Report

- ◆ The SAB Expert Panel will develop a report that provides a state-of-the-science assessment of the causes of hypoxia in the Northern Gulf of Mexico.
- ◆ The report will be:
  - Independent
  - Objective, and
  - Comprehensive
- ◆ Report will be used by the Task Force to develop recommendations regarding management actions to address hypoxia in the Northern Gulf of Mexico.

## **Attachment M**

Presentation by Herb Buxton, USGS: Update on  
National Monitoring Network



# **National Water Quality Monitoring Network for U.S. Coastal Waters and Their Tributaries**

Mississippi River/Gulf of Mexico  
Watershed Nutrients Task Force  
December 1, 2005



## **Origins of the Project**

*An Ocean Blueprint for the 21st Century*  
Final Report of the U.S. Commission  
on Ocean Policy

*The US Ocean Action Plan*  
The Administration's Response

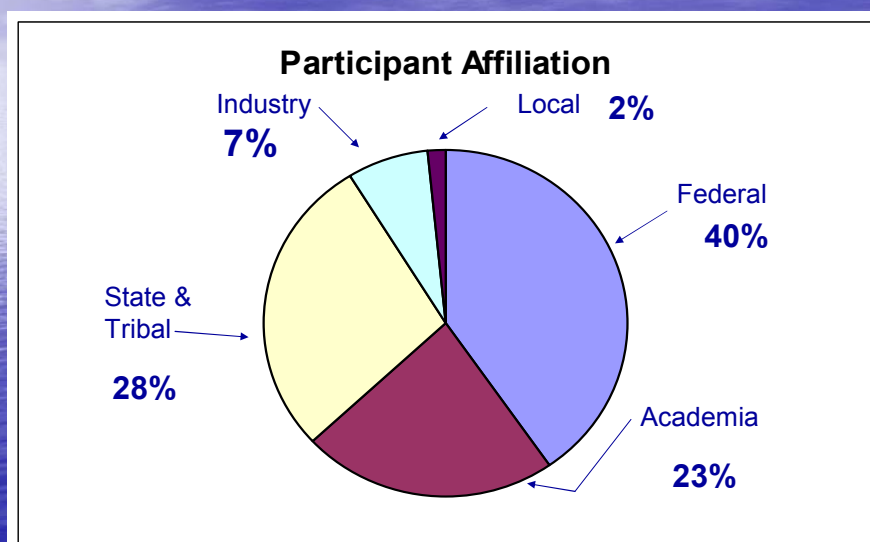
Both called for the creation of a  
National Water Quality Monitoring Network

Charge to ACWI/NWQMC

## Ocean Commission Recommends National WQ Monitoring Network for US Coastal Waters and Tributaries

1. Develop network that coordinates and expands existing efforts – Network of Networks
2. Network should cover coastal and upland areas, and be linked to the Integrated Ocean Observing System (IOOS)
3. Network must have clear goals, specify core variables, and an appropriate sampling framework, and be periodically reviewed and updated.

## Participation Thru ACWI/ NWQMC





## **Objectives of the National Water Quality Monitoring Network**

1. Define status and trends of key water quality parameters and conditions in coastal areas and influence of tributary waters (delivery).
2. Provide data relevant to determining whether goals, standards, and resource management objectives are being met, thus contributing to sustainable and beneficial use of coastal and inland water resources.

## **Objectives ...**

3. Provide data to identify and rank existing and emerging problems to help target more intensive monitoring, preventive actions, or remediation.
4. Provide data to support and define coastal oceanographic and hydrologic research, including influences of freshwater inflows.
5. Provide quality-assured data for use in interpretive reports and educational materials.

## The Network Will NOT

- Provide data on all water resources
  - Small rivers
  - Lakes and reservoirs
  - Local aquifers
- Replace State Clean Water Act use attainment monitoring
  - 305b and 303d
- Compliance monitoring

## Stressors

- Oxygen depletion
- Nutrient enrichment
- Toxic contamination
- Sedimentation
- Harmful algal blooms
- Habitat degradation
- Pathogens (indicator bacteria)

## Water Resource Compartments

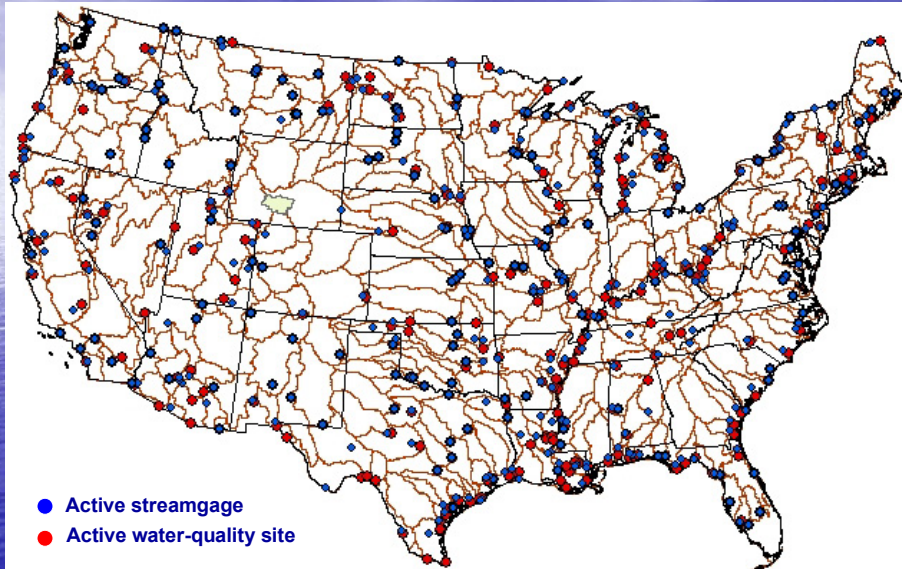
- Coastal Ocean Conditions
  - Estuaries
  - Recreational beaches
  - State & Territorial Waters (Great Lakes)
  - Coastal Oceans to the Edge of the EEZ
  - Wetlands
- Tributary Influence
  - Rivers
  - Ground water
  - Atmospheric deposition

## Rivers

- Flow and WO-constituent loads from HUC-6 watersheds
- 90% of streamflow (continuous) to IOOS regions
- Sample water chemistry 12-15 times per year
- Annual biology sampling at monitoring sites
- 5-year sediment-chemistry sampling



## Active River Monitoring Sites



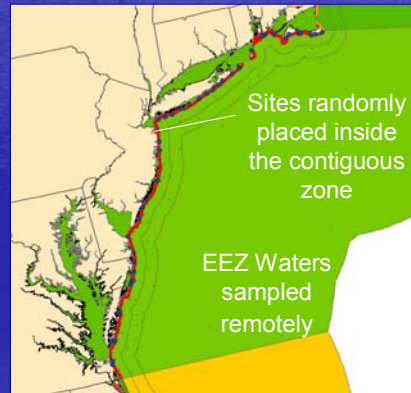
## Estuaries

- @ 145 estuaries
- Define extent of estuarine resource
- Linked to riverine sampling
- Includes targeted and probabilistic approaches
- Enable reports on:
  - Condition of estuaries nationally & individually
  - Transport through individual estuaries
  - Short-term variability through continuous monitoring



## State Waters and the EEZ

- Defined using NOAA definitions
- Choose and distribute sampling sites
- Use remote sensing with fixed sites for many physical parameters
- Established monitoring schedule



## Other Water Resources

- Ground water - in areas where ground water is significant input to coastal waters
- Atmospheric deposition - enhancement of NTN/NADP network with more sites and additional constituents near coast
- Beaches - current data collected by states for recreation
- Wetlands - research issue, no consensus on methods

## Network Milestones

- Council Meeting (review): Nov 1-3, '05
- Draft Report: Early Jan '06
- Final report: Late Jan '06
- CEO Review???
  
- Nat'l. Monitoring Conf. May 7-11, '06



NATIONAL WATER QUALITY MONITORING COUNCIL

*Working Together for Clean Water*

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Co-chairs NWQMC



## IOOS Regions



## Progress To Date

- The Design is set
  - Detailing the contents
    - Geography
    - Parameter lists
- Metadata needs are established
- Data Management & Access
  - Web Services
  - Network of Networks
  - DMAC Compatible
- The Issue of Institutional Arrangements being framed

## Progress To Date

- We are addressing:
  - Common definitions of environmental compartments
  - Common information goals
  - The use of different design approaches
  - Common parameter specifications
  - Sample timing
- We are starting to address:
  - Metadata standards
  - Field data Collection & handling
  - Analytic procedures
  - Data storage, and data access practices

## Inventory of Existing Monitoring

- Identify existing Federal programs
- Identify state and local programs in case-study areas
- Determine whether data in these programs meet objective criteria
- Those that do meet criteria are candidates for inclusion in NMN
- Track reasons for exclusion—high priority for action



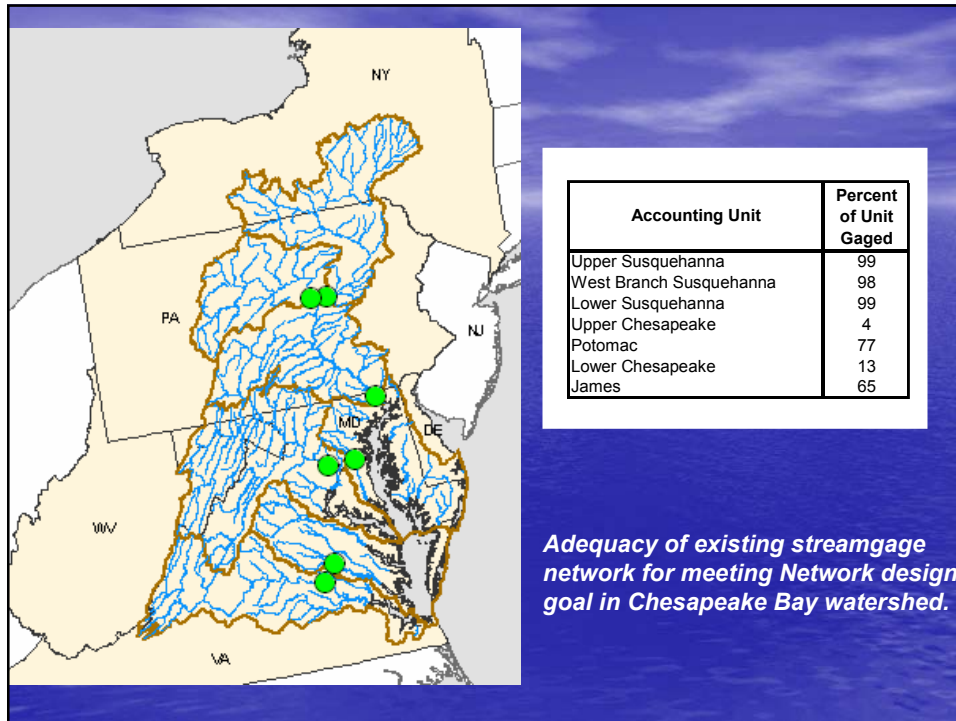
## What the Network Will Provide

### A framework

- That links the upland to the coasts and ocean
- Provides national coverage
- That can support local needs:
  - Finer temporal or geographic scale
  - Additional indicators
- That has data standards
- That has provisions for data management and access

## The Design

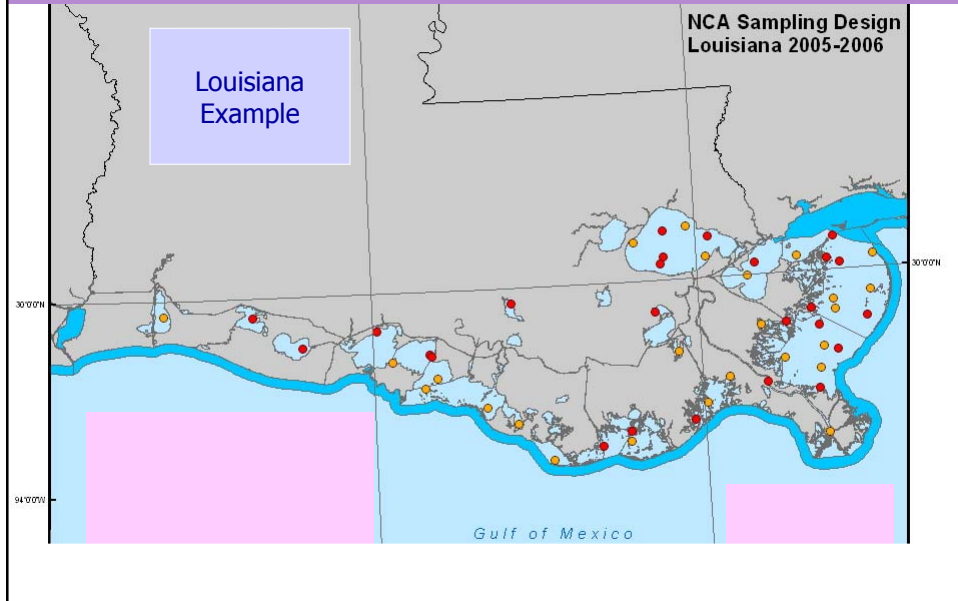
- Resource compartments
- Specific stressors
- Scope
  - Coastal Condition assessments
  - Tributary Delivery (Flow and Loads)
- Approach
  - Station locations
  - Constituents
  - Frequency
- Data Considerations
  - Metadata requirements
  - Data management
  - Data access
- Implementation
  - Institutional considerations



## Primary Criteria Used to Screen Existing Networks

- On-going programs
- Data available electronically
- Database searchable using location and constituents as search criteria
- QA/QC
- Metadata available electronically and of sufficient quality

# Estuary Monitoring Sites



# Monitoring the Coastal Ocean



**Attachment N**

Presentation by Bryon Griffith, EPA: Gulf Alliance Update

# GULF OF MEXICO ALLIANCE

## Implementing the U.S. Ocean Action Plan in the Gulf of Mexico

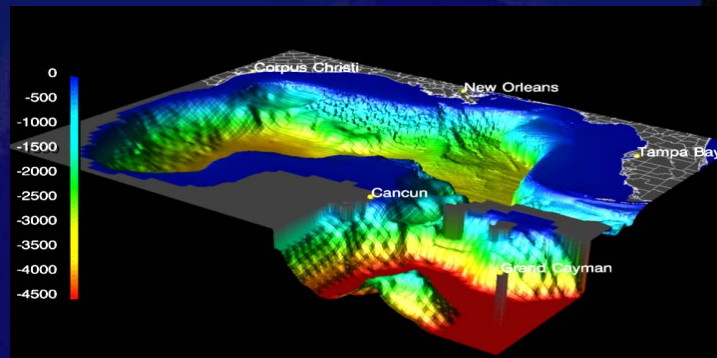
Mississippi River/Gulf of Mexico Watershed  
Nutrient Task Force

**December 1, 2005**

*Bryon Griffith  
Director  
Gulf of Mexico Program*

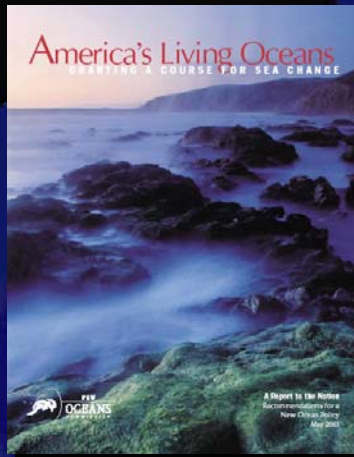


## *The Gulf of Mexico - An Unparalleled Ecologic and Economic Treasure*

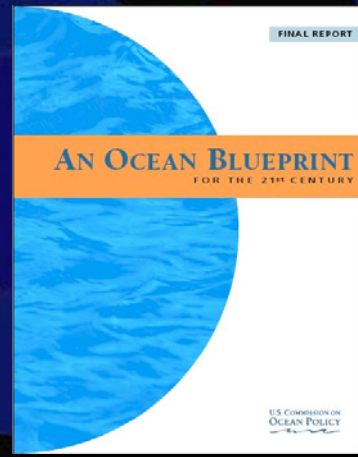




## Background



Pew Oceans Commission  
[www.PewOceans.org](http://www.PewOceans.org)



U.S. Commission on Ocean Policy  
[www.OceanCommission.gov](http://www.OceanCommission.gov)

## Background

- As recognized by the U.S. Commission on Ocean Policy report and the report of the Pew Oceans Commission, **existing policies have been inadequate in improving the health of the Gulf of Mexico.**
- The President's U.S. Ocean Action Plan offers a unique opportunity for the Gulf of Mexico states to advance regional collaboration.

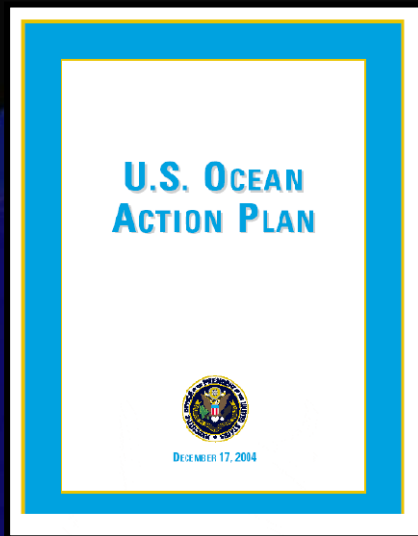


## Background

- Spring 2004: Governor Jeb Bush invited other Gulf of Mexico States to participate in a regional partnership to address the health of the Gulf.



Florida Oceans Day – April 2004



U.S. Ocean Action Plan  
<http://ocean.CEQ.gov>

- Released by the Bush Administration on 12/17/04, its response to the Final Report of the U.S. Commission on Ocean Policy.
- 39-page Plan includes many actions affecting Gulf, including 8 actions specifically mentioning Gulf.
- Plan recognizes the leadership that Florida and Gulf States have demonstrated ("Regional Partnership")

General Sentiment: Plan won't move forward unless States drive it.

#1

INTRODUCTION

**U.S. Ocean Action Plan Highlights**

Immediate and Long-term Action Highlights

***Support a Regional Partnership in the Gulf of Mexico.***

#2

ENHANCING OCEAN LEADERSHIP AND COORDINATION

**Support Regional Collaborations on Oceans, Coasts, and Great Lakes Policy in Partnership with Leadership of States, Localities, and Tribes**

***Support a Regional Partnership in the Gulf of Mexico.***

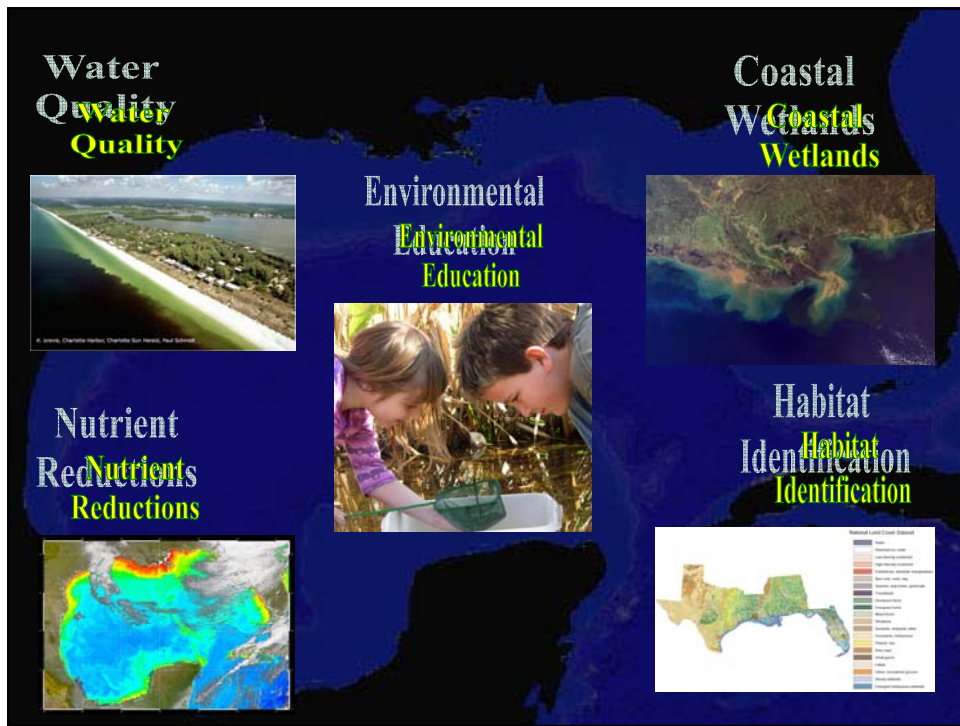
U.S. OCEAN ACTION PLAN

## Background

- Spring-Fall 2004: Preliminary meetings held and “Gulf of Mexico Alliance” formed:
  - **Florida** (Lead coordination role)
  - **Alabama**
  - **Mississippi**
  - **Louisiana**
  - **Texas**

GULF OF MEXICO ALLIANCE





## Gulf Regional Partnership

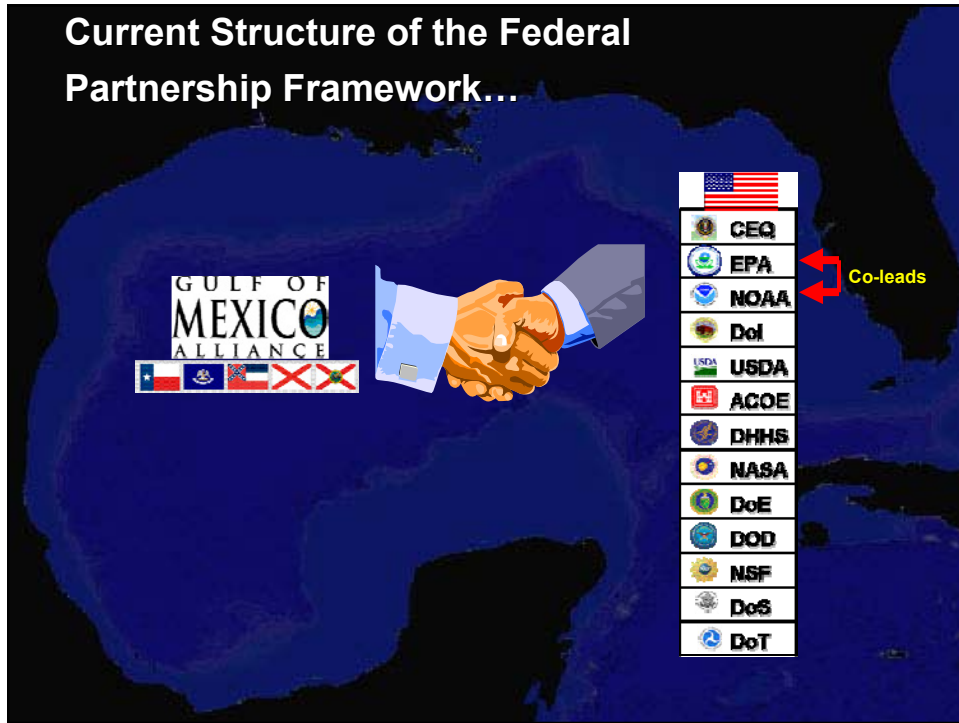
*"The five Gulf of Mexico States have taken the lead in identifying key priorities for the Gulf of Mexico region. Among these priorities is a particular emphasis on public health, specifically on water quality for shellfish beds and beaches in the Gulf of Mexico and the use of a regional ocean observing system to provide a real-time alert system for beach and shellfish bed closings."*



1. Reductions in nutrient loading (Mississippi)
2. Improving Gulf water quality, emphasis on beaches & shellfish beds (Florida)
3. Restoration of coastal wetlands (Louisiana)
4. Identification of Gulf habitats to inform management (Texas)
5. Gulf of Mexico environmental education (Alabama)

*Note: These 5 priority areas represent a starting point.*

## Current Structure of the Federal Partnership Framework...



## State/Federal Meeting

Initial Coordination Meeting was held June 9-10, 2005 at Rookery Bay NERR in Naples, Florida with three primary goals:

1. Establish the framework of a Gulf Alliance Plan of Action to be announced at the HRI *State of the Gulf of Mexico Summit*
2. Explore and better define partnership opportunities between the Gulf states and federal partners, including expanded federal support toward state priorities.
3. Begin to forge linkages with local communities
4. Set stage for parallel joint effort with Mexico

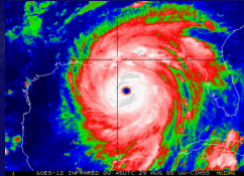


Rookery Bay NERR  
Environmental Learning Center

## Plan to have Gulf States Governors Unveil Gulf Alliance Plan of Action at the State of the Gulf of Mexico Summit



- Originally scheduled for  
November 7-9, 2005 in Corpus Christi



*...plans didn't  
factor in Katrina  
and Rita.*



- Re-scheduled for March 28-30, 2006



*The U.S. Gulf of Mexico States believe they are in a unique position to demonstrate strong leadership for the Nation for implementing the U.S. Ocean Action Plan and are rapidly mobilizing to fulfill that vision.*



*However, in the spirit of good competition challengers are emerging...*



*One Gulf, One Community!*



*Questions?*

## **Attachment O**

Letter from the Mississippi Riverwise Partnership and the  
Mississippi River Basin Alliance

To: Mississippi River/Gulf of Mexico Watershed Nutrient Task Force

From: Mississippi Riverwise Partnership, Mississippi River Basin Alliance

We are writing as representatives of groups working to improve water quality in the Mississippi River basin and Gulf of Mexico to express a number of concerns about the reassessment of the *Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico* (2001) being undertaken by the Task Force.

The Task Force agreed at its September 2004 meeting in St. Paul, MN to carry out a reassessment as called for by short-term action item #11 from the *Action Plan* (p.14), which states that “By December 2005, and every five years thereafter, the Task Force will assess the nutrient load reductions achieved and the response of the hypoxic zone, water quality throughout the Basin, and economic and social effects. Based on this assessment, the Task Force will determine appropriate actions to continue to implement this strategy, or, if necessary, revise the strategy.”

We recognize that the science of Gulf hypoxia has continued to develop subsequent to the adoption of the *Action Plan*, and that these developments need to be incorporated into the reassessment. However, some of the language used to describe the reassessment by Task Force agencies has suggested that a complete reassessment of the science of Gulf hypoxia will be attempted, rather than an assessment of actions undertaken since 2001 and their level of effectiveness. If this is the case, the Task Force needs to explain clearly to the public why this complete reassessment of hypoxia science beyond the language of the reassessment contained in the *Action Plan* is necessary, especially in light of the conclusions of the peer review panel that evaluated the white paper released by EPA Region 4.

One of the critical issues that the reassessment should address is the failure to achieve funding for implementation of the *Action Plan* for the past 5 years, and how implementation can be funded upon completion of the reassessment process. Continued failure to address funding for the *Action Plan* will negate any benefits gained from the reassessment process. This is especially true in the current fiscal situation, where many programs that benefit the public interest are being attacked as a response to the large budget deficits created by the administration and Congress. If the Task Force does not push for a unified funding plan, then continued progress on the *Action Plan* will most likely not be possible – an outcome that is unacceptable.

The date of 2007 set for completion of the reassessment raises the question of what actions will be taken in the interim. Clearly, delaying implementation actions for a further two years will set back progress on the hypoxia issue. We hope that the Task Force will state clearly that efforts to fund and implement the *Action Plan* will continue while the reassessment process is underway.

MRP/MRBA Letter to Task Force - 2

Sincerely,

Cynthia Pansing  
Executive Director, MRBA

Kathy Andria  
American Bottom Conservancy

Melissa Samet  
American Rivers

Dan McGuinness  
Audubon Society

Scott Sparlin  
Coalition for a Clean Minnesota River

Mark Davis  
Coalition to Restore Coastal Louisiana

Leslie Davis  
Earth Protectors

Jackie Rollins  
Environmental Coalition of Mississippi

Albert Ettinger  
Environmental Law and Policy Center

Lori Nelson  
Friends of the Minnesota Valley

Cynthia Sarthou  
Gulf Restoration Network

Mark Muller  
Institute for Agriculture and Trade Policy

Susan Heathcote  
Iowa Environmental Council

George Boody  
Land Stewardship Project

MRP/MRBA Letter to Task Force - 3

Judy Peterson  
Kentucky Waterways Alliance

Carlton Dufrechou  
Lake Pontchartrain Basin Foundation

Dr. Jerry DeWitt  
Leopold Center for Sustainable Agriculture

Kris Sigford  
Minnesota Center for Environmental Advocacy

Jon Devine  
National Resource Defense Council

Jean Flemma  
Prairie Rivers Network

Mike Fremont  
Rivers Unlimited

Renee Victoria Hoyos  
Tennessee Clean Water Network

Richard Gauger  
West Wisconsin Land Trust

Donald Hey  
Wetlands Initiative



## **Attachment P**

Description of the Hypoxia Stakeholder Network

## HYPOXIA STAKEHOLDER NETWORK OVERVIEW

*A Joint Project of the Mississippi River Basin Alliance, the Institute for Agriculture and Trade Policy, the Leopold Center for Sustainable Agriculture, and Green Lands Blue Waters*

How we grow our food has an enormous impact on the Mississippi River's ecological health and on the quality of life in the basin. The trend of dramatic growth of the Gulf hypoxic zone demonstrates that the current conservation efforts in the basin are not adequate. A key challenge to solving this problem on a long-term basis is the articulation of a common vision and means for connecting economic sectors and stakeholders across the basin who have an interest in a healthy Gulf, thriving, sustainable agriculture systems and healthy, viable communities across rural America.

The Mississippi River Basin Alliance, and its partners, the Institute for Agriculture and Trade Policy, the Leopold Center for Sustainable Agriculture, and the University of Minnesota-led initiative, Green Lands, Blue Waters, with assistance from the Sustainability Institute, propose to build a systemic, basinwide Mississippi River hypoxia stakeholder network. We believe that the proposed network is a creative and powerful tool to build important communications bridges to facilitate ecological work. This network will enable more effective collaboration and leveraging of actions and resources among organizations basinwide as they work to improve water quality and ecological health and reduce hypoxia in the Gulf of Mexico.

This project is conceived and planned as a way to connect the many programs, projects, and initiatives now underway in a multi-faceted, collaborative network that will facilitate consensus-building on the actions and policies that will result in permanent reduction of the hypoxic zone in the Gulf, and long-term sustainability for agriculture in the Mississippi River basin. Project elements include:

- Surveying and mapping of nutrient management efforts (outreach, research, education, advocacy) at all scales throughout the basin focusing initially on ten states bordering the main channel
- Stakeholder workshops with 25-30 stakeholders at a time to align desired actions and outcomes
- Central website with interactive online system to enhance awareness of efforts underway and encourage collaboration
- White paper on strategic priorities
- Formal stakeholder network organized around priorities that emerge from mapping and workshops
- Upper/Lower basin farmer/shrimper mutual learning forums
- Fundraising for formal stakeholder network and organizational capacity-building for all participants

The principal funding for this phase currently comes from the W.K.Kellogg Foundation, with matching funds from the McKnight Foundation, USDA, the National Fish and Wildlife Foundation, and the Bush Foundation.

The partner organizations are currently collecting as much data as possible from organizations and individuals involved in activities that can reduce the flow of nutrients to the Gulf. This is a first-of-a-kind survey that will develop an awareness of the various efforts taking place in the Mississippi Basin and create the foundation for a dynamic systems network that will help people/stakeholders identify opportunities for effective cooperative ventures and more efficient and effective use of resources. The systems network will create awareness among researchers, conservationists, government agencies and others involved in these efforts, to identify strategies that are working, learn from each other's successes, and identify unmet needs. The information will be incorporated into a database and made available through a public website currently in development.

This project needs you. Please let us know about your organization's activities that reduce nutrient flows in the basin by contacting Cynthia Pansing, MRBA, at (612) 334-9460 x118 or [cynthiapansing@mrba.org](mailto:cynthiapansing@mrba.org).

## **Attachment Q**

Presentation by Diane Regas, EPA, Task Force  
Action Items and Agreements

# Action Items and Agreements

Mississippi River/Gulf of Mexico Watershed  
Nutrient Task Force 12<sup>th</sup> Meeting

Memphis, TN  
December 1, 2005

## Agreements

- Annual Work Plan
  - The Coordinating Committee will move forward to implement the workplan with support from the Task Force.
- Timeline for Reassessment
  - The target for completing the reassessment and developing a final, revised Action Plan continues to be late 2007.

## Basin Science and Management Panel Review

- The Coordinating Committee will pursue using EPA's Science Advisory Board (SAB) to conduct the review of basin science and management practices. The Coordinating Committee should continue to work with interested stakeholders to ensure continued sensitivity to people who live and work in the Basin. The Coordinating Committee will continue to explore other possibilities including other expert scientific organizations such as the Council for Agricultural Science and Technology (CAST).

## Revised Action Plan

- The Coordinating Committee will prepare a scoping document that explores potential revisions to the *Action Plan*. The document will provide a road map for the Task Force to anticipate key reassessment questions and ensure completion of a new plan on schedule. Through an iterative process, this document will be revised to reflect outcomes of the ongoing reassessment.

## Funding Request from the States

- The Task Force recognizes that funding from federal and state members of the Task Force is of continued importance. Consistent with the *Action Plan* item #1 (“Integrated Federal Budget”), we commit to a continued dialogue on opportunities for increased funding for the work of sub-basin teams and implementation by states and others.