FY 2008 OPERATING PLAN

A COMPILATION OF ACTIONS TO IMPLEMENT THE *GULF HYPOXIA ACTION PLAN 2008*

The *Gulf Hypoxia Action Plan 2008* provides an overview of how federal agencies, states and tribes within the Mississippi/ Atchafalaya River Basin are working together to take action to reduce the size of the hypoxic zone, while protecting and restoring the human and natural resources of the Mississippi River Basin. The Task Force has committed to using an adaptive management approach to guide the implementation of the Action Plan, as well as future reassessments. This adaptive management approach involves continual feedback between the effects of management actions and the interpretation of new scientific information to improve and inform management strategies, and target actions within watersheds where they will be most effective.

This FY 2008 Operating Plan is a compilation of actions that the various state and federal members of the Task Force have planned to undertake during FY 2008 to implement the *Gulf Hypoxia Action Plan 2008*. Each item in this Operating Plan specifically implements one of the eleven actions in the 2008 Action Plan. The Operating Plan includes, where known, funding levels and specific milestones for the current fiscal year. In some cases the plan identifies critical needs for the next fiscal year to acknowledge and analyze barriers to progress and to assist in state and federal planning and funding. **Inclusion of an action in this operating plan is at the discretion of the individual Task Force agencies and does not convey endorsement by all the members of the Task Force. Rather these items are listed here to illuminate the cumulative efforts of the individual Task Force agencies in implementing the *Gulf Hypoxia Action Plan 2008*.**

One of the keys to the success of implementing the plan is to determine first what is being done currently by the Task Force partners that can aid in achieving each specific action in the 2008 Action Plan. Accordingly, these lists of "planned nutrient reduction activities" are identified as deliverables in the FY 2008 Operating Plan for both the MARB States and Federal agencies for Action 1 and Action 2, and constitute a first step in completing and implementing both state and federal nitrogen and phosphorus reduction strategies. The Appendix at the end of this document has been developed partially as a response to those deliverables.

Additionally, the Appendix provides an overview of ongoing activities that will result in improvements to state and local water quality and the reduction and mitigation of hypoxia in the Gulf of Mexico, and complement the listed actions in the Annual Operating Plan. The Appendix is by no means a comprehensive list, and will change as projects are completed, new projects are proposed and funded, and as items are incorporated into the state and federal nutrient reduction strategies as they are developed.

In addition to the yearly Operating Plans and Appendices, starting in FY10, an annual report will be issued that will measure the results of these actions. Task Force Agencies will use this information and input from the public through an adaptive management process to modify their actions as needed for subsequent Operating Plans and Appendices.

1.) Complete and implement comprehensive nitrogen and phosphorus reduction strategies for states within the Mississippi/Atchafalaya River Basin encompassing watersheds with significant contributions of nitrogen and phosphorus to the surface waters of the Mississippi/Atchafalaya River Basin, and ultimately to the Gulf of Mexico.

Coordinating Committee Action Lead: EPA, Illinois

Summary of Expected Results

A few states, with assistance from federal agencies, will begin developing nutrient reduction strategies, including the most appropriate watersheds to target. This will be an important first step in reducing nutrients delivered to the Gulf of Mexico. However, full implementation on this action will require significant additional funding.

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Coordinating Committee	Proposed template for developing state-wide nutrient reduction strategies.	Sept. 2008		
Mississippi/ Atchafalaya River Basin (MARB) States	▪ Identify states to begin pilot efforts to develop and implement nitrogen and phosphorus reduction plans. ▪ Identify planned nutrient reduction activities and the corresponding availability and needs for funding. ▪ Begin developing nutrient reduction strategies including a analysis of implementation costs	▪ Sept. 2008 ▪ State project list of planned nutrient reduction activities by 6/15/08 (See Appendix)		Funding for State level nutrient reduction strategies at a cost of $200,000 to $500,000 per state.
Sub-basin Committees (SBC)	▪ Continued work on coordinated effort on state level nutrient reduction plans. ▪ Continued progress on coordinated policy decisions, budgeting and message among federal agencies and within agencies, and on state level among state agencies.			▪ $150,000 for operating budget for each established Sub-basin Committee (2-3 years)

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Iowa	Develop a conceptual plan, timeline, and budget estimate for completing the state level nutrient reduction strategy	March 2008		$250K funding to begin development of the strategy
Louisiana/ Lower Mississippi River SBC (LMRSBC)	Begin planning process to develop state level nutrient reduction strategy.	Planning Mtg. April 10		Data on nutrient reduction and loading
Mississippi	Facilitate development of a nutrient reduction template for coastal watersheds to ensure a consistent, but flexible, strategy among Gulf states - MDEQ as the lead state for the Gulf of Mexico Alliance's (GOMA) Nutrient Reduction Priority Issue Team.	Develop aligned nutrient reduction template Q3 08 – Q3 09	$75K (NOAA)	NOAA to continue funding to develop and implement 1-2 pilot projects using developed template: $125K – Pilot project development (Q4 09-Q4 10) $150K – Begin pilot project implementation Q1 11))
Missouri	▪ Continue development of rule-making for establishing state-wide nutrient criteria for lakes and reservoirs. ▪ Continue efforts establishing reference streams and rivers for use in future nutrient criteria development on flowing waters of the state.	▪ Present to the State Clean Water Commission in 2008.		Initiate a workgroup to determine which watersheds will most likely be impacted by the establishment of nutrient criteria and begin to coordinate tools and programs that can be used to assist nutrient reduction efforts in affected water bodies.
TF Federal Agencies	TF Federal members to provide input and assistance as needed and able to states in development of nutrient reduction strategies.			

2.) Complete and implement comprehensive nitrogen and phosphorus reduction strategies for appropriate basin-wide federal programs and projects. Target first those federal programs and projects with significant federal lead or co-implementation responsibilities.

Coordinating Committee Action Lead: EPA

Summary of Expected Results

By the end of FY08, all Federal agencies on the Task Force will have compiled a list of major projects and programs with the greatest possibilities to impact nutrient levels.

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
TF Federal Agencies	▪ List of programs with greatest impacts on nutrient levels, by agency. ▪ Commitment by Agency to begin to align listed programs with needs for hypoxia.	Federal program list of planned nutrient reduction activities by 6/15/08 (See Appendix)		▪ EPA: Funding to support States implementation of nitrogen and phosphorus reduction strategies, including $800,000 for development of nutrient criteria in two states in the lower basin. ▪ EPA: 2 FTE's to develop federal strategies for each program critical to reducing nutrients, programs may include: o TMDL (Total Maximum Daily Load) o Nutrient Criterion/Standards o Point Sources o Wetlands o Air deposition ▪ USDA: Funding for increased technical assistance including rapid watershed assessments, ▪ USDA: Establishment of a Regional Water Enhancement Program to address water quality, ▪ USDA: Additional funding for working lands (EQIP) including conservation innovation, ▪ USDA: Additional funding for wetland creation, restoration, and enhancement (CRP/WRP). ▪ Develop interagency coordination strategy to leverage USDA, EPA, ACE, and other funding mechanisms to eliminate financial barriers for private landowners implementing conservation practices to address nutrient runoff from neighboring properties

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
DOI-NPS	▪ Continue to implement basin-wide nutrient reduction plans for two national park units in the Upper Mississippi River Basin (St. Croix National Scenic Riverway, through its Nutrient Reduction Goal for 2020, and Mississippi National River and Recreation Area, through its involvement in Minnesota's Lake Pepin TMDL process). ▪ Continue contributing to the Yellow River Initiative and its efforts to reduce erosion and related nutrients affecting the Yellow River in and near Effigy Mounds National Monument.	Ongoing		
EPA	Analyze opportunities for a federal strategy to improve the effectiveness of Clean Water Act programs in the Mississippi Basin.	Complete assessment December 2008		

3.) While developing comprehensive state and federal nitrogen and phosphorus reduction strategies and continuing current reduction efforts, examine and, where possible, implement opportunities to enhance protection of the Gulf and local water quality through existing federal and state water quality, water management and conservation programs.

Coordinating Committee Action Lead: USDA, USACE

Summary of Expected Results

List of existing State and Federal program that could be aligned to maximize benefits to alleviate hypoxia and improve water quality in the MARB, including: nutrient loss to MARB surface waters; nutrient removal in the lower Mississippi Basin. Programs could include wildlife habitat enhancement, conservation practices, navigation controls, wastewater discharge permit programs, etc. Task Force members will review the programs within their purview, determining how appropriate adjustments might be made to the implementation of these programs to best achieve additional nutrient retention and capture benefits. MARB States implementing best management practices in local watersheds to ensure significant additional focus in nutrient reduction efforts.

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
MARB States	Continue to work with Federal Agencies on EQIP, CRP, CREP, and Wetland Reserve.			
Illinois	▪ Enforce siting and construction requirements of Livestock Management Facilities Act (LMFA). Under LMFA, livestock waste handling facilities are required to be designed, constructed and maintained to be zero discharge facilities. ▪ Enforce livestock waste management plan requirements of the LMFA. Livestock producers with animal unit capacities of 1,000 animal units or greater are required to prepare and implement a waste management plan.			
Iowa	▪ Continue and expand implementation of the Iowa CREP constructing targeted nitrogen-removal wetlands removing 40-90% nitrate from cropland drainage. ▪ Continue implementation of the Iowa Watershed Protection Program currently supporting 61 watershed protection projects which primarily reduce nutrients and sediment.	▪ Ongoing ▪ Ongoing	▪ $6.7 million state + federal match ▪ $6.3 million state, $2.5 million 319 • local and landowner	Funding increase to allow program expansion

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
			match	
Louisiana	▪ Support Louisiana Environmental Leadership Program with Louisiana industries and municipalities to implement technology-based nutrient removal in wastewaters. ▪ Implementing nutrient BMPs in LA watersheds through LA Dept. of Ag and Forestry and local Soil and Water Conservation Districts.			
Mississippi	▪ Implement Lake Washington Nutrient Reduction Showcase Project watershed implementation plan (WIP). ▪ Incorporate appropriate Gulf Hypoxia Action Plan 2008 actions and GOMA Governors' Action Plan actions into its Coastal Streams and Pascagoula River Basin collaborative watershed management process and begin implementation immediately.	Q3 2008-2011	$800,000 (319 NPS)	▪ Additional funding to fully implement WIP, currently funded at 50%. ▪ Encouragement of Federal agencies to fully support this enhanced emphasis on nutrient reduction and Gulf hypoxia. ▪ Funding to develop and implement 1-2 pilot project(s) based upon the nutrient reduction template identified in Action #1
Missouri	▪ Continue state-wide implementation of agricultural best management practices via the Department of Natural Resources Soil and Water Conservation Program. ▪ Through permitting process, ensure that Concentrated Animal Feeding Operations address required phosphate issues. Continue to provide departmental guidance on broader nutrient management planning required of permitted facilities. ▪ Continue to support Missouri Conservation Reserve Enhancement Program (Mo CREP) efforts to retire environmentally sensitive lands via the Conservation Reserve Program (CRP). Continue Mo CREP's active involvement in the protection of 83 watersheds in the state.		▪ $22 million in cost-share funding	
Ohio	Continue to implement the Scioto Watershed CREP through 2011 (addresses N, P and sediment).			▪ Based on existing implementation plans (TMDL and/or local plans), overall need for non-point source pollutant reductions, and state and local delivery capacity, $7 million annually for implementation projects.

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
				▪ Continued work on CREP application for the Little Miami River with Little Miami River Partners
TF Federal Agencies	Draft list of programs, projects and initiatives within HQ and regions that align with needs of hypoxia.	List compiled by June 2008 (See Appendix)		Identify barriers to aligning existing programs, projects and initiatives with needs of hypoxia., and have fixes underway.
DOI - USGS	Continue to incorporate science needs for improving conservation programs design and implementation of various agencies into research and monitoring programs and vice versa.	Ongoing	½ FTE	Funding in current budget request.
DOI - FWS	Provide technical assistance and work with partners in implementing fish and wildlife habitat restoration and improvement projects with ancillary nutrient reduction benefits on private lands on 50,000 acres and 200 stream miles in the Mississippi River Basin.	Ongoing	$4.9M	▪ Provide similar level of technical assistance and extend to 2,500 additional acres of private lands and 10 additional stream miles in the Mississippi River Basin. ▪ Funding is not in current budget request.
DOI/ USACE	Work with the Long Term Resource Monitoring Program (LTRMP) Strategic Planning Team to incorporate considerations of value and multiple uses of the data by other programs such as the Hypoxia Task Force, middle Mississippi watershed.	FY 08		Continued funding as established.
EPA	▪ Participate and provide leadership to the Gulf of Mexico Alliance Water Quality and Nutrient Reduction teams. ▪ EPA Region 5 will evaluate five major municipal collection systems for sanitary system overflows to address wet weather sources of urban nutrient discharge.			Identify barriers to aligning existing programs, projects and initiatives with needs of hypoxia.
USDA	Provide information and guidance to state USDA leaders for appropriate incorporation into state level priorities for delivery of USDA programs.	Ongoing		

4.) Develop and promote more efficient and cost-effective conservation practices and management practices for conserving nutrients within the Mississippi/Atchafalaya River Basin watershed and evaluate their effectiveness at all scales beginning with local watersheds and aggregating them up to the scale of the Mississippi/Atchafalaya River Basin.

Coordinating Committee Action Lead: USDA, USACE, LMRSBC

Summary of Expected Results

Initial results from two of USDA's national conservation and water quality research programs; 1) Conservation Effects Assessment Project results relating to nutrients and the Upper Mississippi Sub-basin, a quantification of the environmental benefits of conservation practices in terms of water quality and water quantity, and 2) Water Availability and Watershed Management National Program (211) on methods for reducing nutrients from agricultural systems.

Continue State support of agricultural research, water quality and nutrient management initiatives through research and the implementation of BMP pilot projects. Increased knowledge of the effects of best management practices at various spatial scales on nitrogen and phosphorus loads to surface waters of the MARB resulting from implementation of projects by MARB States.

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Illinois	▪ Conduct Certified Livestock Manager training workshops throughout the state. ▪ Develop refined hydric soils maps of the Illinois River Basin, in cooperation with NRCS, for utilization in site selection by the Metropolitan Water Reclamation District of Greater Chicago for nutrient farming consideration. ▪ Use fertilizer tonnage tax proceeds to support research on nutrient use efficiency ▪ Support research on nutrient abatement trading using constructed wetlands as an alternative to conventional point source wastewater treatment. ▪ Provide training for Soil and Water Conservation District employees on preparation and review of nutrient management plans ▪ Support the CBMP Lake Bloomington watershed project which provides producers with incentive payments for following nutrient best management practices. An estimated 65% of all eligible acres will be enrolled in the program in 2008.		▪ Sand County Foundation	

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Iowa	▪ Continue development of the Iowa Plan for Integrated Drainage & Wetland Landscape Systems for reducing nutrients to water resources, and achieve federal wetland regulatory concurrence	▪ Sept. 2008		▪ Federal wetland regulatory permitting and landowner enrollments to implement pilot demonstration/study sites.
	▪ Continue research under Wetlands, Nutrients and Water Management, and Des Moines Lobe Targeted Watershed Grant projects with Iowa State University to develop new technologies and improve water quality impacts of management practices.	▪ Ongoing	▪ $300K state + $200K federal	
	▪ Continue Iowa Learning Farm demonstrations and studies to improve water quality through crop residue management practices, and Integrated Farm and Livestock Management program to demonstrate improved nutrient management practices.	▪ Ongoing	▪ $780K	
	▪ Continue use of fees paid by farmers on the sale of agricultural chemicals to develop improved practices for reducing nutrients to water resources.	▪ Ongoing	▪ $550K	
Louisiana	▪ Support LA State Dept. of Ag and Forestry, USDA and LSU Ag Center programs for developing nutrient management and control plans for inclusions in BMPs. ▪ Implementation of nutrient BMPs in Louisiana watershed pilot projects under Lower Mississippi River Sub-basin Committee	▪ Planning Mtg. April 10		
Minnesota	▪ "Highway 90 Drainage Project" monitoring nutrients in subsurface drainage - MN Dept of Agriculture. ▪ Support the Technical Service Provider training program for nutrient management ▪ Support the development of Controlled Drainage ▪ Agricultural Watershed Restoration Project to look at hydrologic restoration compatible with Ag. Land use - MN BWSR ▪ Nutrient Management Initiative for farm N rate evaluation - MN Dept of Ag			

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Mississippi	Begin pre-implementation monitoring for Lake Washington Nutrient Reduction Showcase Project watershed implementation plan.	Q3 2008	TBD	Funding to support monitoring efforts (pre and post-implementation)
Missouri	▪ Through the Department of Natural Resources Soil and Water Conservation Program, continue to provide funding for the Nonpoint Source Special Areas Land Treatment programs (AgNPS SALT). These programs supports 72 active watershed projects and an additional 12 are proposed for funding in 2008. ▪ Through Missouri's Nonpoint Source Grant Program (Funded pursuant to Section 319 of the CleanWater Act), support projects that improve the quality of Missouri's waters listed as impaired or threatened by nonpoint source pollution and includes projects that reduce sediment, nitrogen and phosphorus on a watershed scale.		▪ $7 million ▪ $4 million	
Wisconsin	▪ Develop phosphorus and nitrogen water quality based indices for Ag lands (pilot projects in SW corner of state) ▪ Implement Discovery Watershed Approach (see Senate Farm Bill) ▪ Promote cellulosic alternatives for ethanol production.			
DOI-NPS	Evaluate (through monitoring and modeling) the success of nutrient management practices applied in the St. Croix and Lake Pepin watersheds.			
USDA	▪ Provide Conservation Effects Assessment Project (CEAP) results relating to nutrients and the Upper Mississippi Sub-basin ▪ Provide results from ARS's Water Availability and Watershed Management National Program (211) on methods for reducing nutrients from agricultural systems.	▪ CEAP Report ▪ Ongoing	$300,000	▪ Provide CEAP results relating to nutrients for remaining sub-basins within the MARB. ▪ Utilize results and recommendations from CEAP to identify program improvements in reducing nutrient loads. ▪ Obtain resources/priority necessary for development and implementation of strategies to use NRI/CEAP for monitoring progress from agricultural land management activities to provide 5 -

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
				10 year estimates with trends. ▪ Obtain resources/priority necessary for a systematic evaluation of emerging nutrient reduction strategies implemented at the watershed scale.
USACE	Discussion and action at annual MVD Environmental Team Leaders conference. Review regional 404 analysis and considerations.	May 2008		Develop measures for effective incorporation into project planning. Also, FY 08 cross walk with Great Lakes division and regulatory programs.

5.) Identify and, where possible, quantify the effects of the hypoxic zone on the economic, human and natural resources in the Mississippi/Atchafalaya River Basin and Northern Gulf of Mexico, including the benefits of actions to reduce nitrogen and phosphorus and the costs of alternative management strategies.

Coordinating Committee Action Lead: NOAA, USDA

Summary of Expected Results

Analysis of the economic costs of alternative management options for reducing nutrient loads from the agriculture sector.

Identify strategy (including critical needs) for expanded research on the biological and economic impacts of hypoxia on Gulf natural resources.

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Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Illinois	Conduct study to assess the costs of achieving specified levels of reductions of nitrogen and phosphorus loadings to meet hypoxia and TMDL goals through implementation of agricultural management practices in the Lake Bloomington watershed			
Iowa	Conduct Cedar River watershed study to assess the costs and needed management practices to meet the nutrient reduction targets of the hypoxia goal.	July 2008	$60,000	
Louisiana	Partner with NOAA on Ecological Impacts of Gulf Hypoxia on Living Resources			
Mississippi	Assess cost-effectiveness of the implementation measures for Lake Washington Nutrient Reduction Showcase Project through the concept of ecosystem services	TBD (after implementation is completed)		Funding for assessment
NOAA	Support research on and inform management of the Ecological Impacts of Gulf Hypoxia on Living Resources	▪ Outcomes of current NGOMEX projects ▪ Development of FY09 NGOMEX funding announcement ▪ Ecological Impacts of Hypoxia on Living Resources report outlining	$750K to support NGOMEX projects (Brandt et al., Thomas et al.)	Increased focus on ecosystem and socioeconomic impacts of hypoxia in FY09 NGOMEX new competition ($3M).

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
		research and management needs		
USACE - ERDC	Build data collection/monitoring into project actions	▪ By August 08, evaluate some possible quantification efforts such as contributing to NGOMEX	$250K	Need $200K additional resources for FY09.
USDA	Analyze the economic costs of alternative management options for reducing nutrient loads from the agriculture sector.	▪ CENR Update		

6.) Coordinate, consolidate and improve access to data collected by State and Federal agencies on Gulf Hypoxia and Mississippi/Atchafalaya River Basin program activities and results.

Coordinating Committee Action Lead: ERDC (USACE)

Summary of Expected Results

Begin to determine information needs and strategy to address gaps, inconsistencies, data sharing and comparability issues.

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Louisiana	Support NOAA and other state, university and federal partners in identifying and consolidating data and information collected on GOM hypoxia for improved access and assessment			
LMRSBC/ Arkansas	Compile available data on nutrient loading and removal in the Lower Mississippi River Sub-basin		$90K (from EPA)	
Missouri	Continue participation with Regional Technical Assistance Group (RTAG) and EPA region 7. All nutrient data available to the state is made available to this workgroup			
Minnesota	▪ Continue to develop electronic submittal of Discharge Monitoring Reports for NPDES permitted facilities. ▪ Continue implementation of Hydstra for storage, management and sharing of data from stream gages and sampling			
Wisconsin	▪ Develop a "Tributary Monitoring Plan" including a better information base for nutrient loading and to be able to assess improvements on a smaller area scale over time. ▪ Upper Miss. River Tributary analysis to be set up so data is collected consistently for parameters, analysis, and for multiple states with consistent frequency. (St. Croix, Chippewa, Black, Wisconsin R)		▪ $20,000	Develop a consistent multi-state regional system that is monitored on a consistent basis year after year. (Partner with USGS)
EPA/USGS	Continue to enhance the coordinated delivery of information from National Water Information System (NWIS)/STORET			
NOAA	▪ Expand Hypoxia Monitoring Stakeholder web site capabilities and combine into Hypoxia Watch site ▪ Continue to develop and incorporate data into hypoxia data portal and bring web mapping capabilities to operational status	▪ Sept 2008		
USACE - ERDC	Have existing Corps programs and projects data available	▪ FY 2008	$75K	Develop Corps support and programs with hypoxia focus, $300K

7.) Track interim progress on the actions to reduce nitrogen and phosphorus by producing an annual report on federal and state program nutrient reduction activities and results.

Coordinating Committee Action Lead: EPA

Summary of Expected Results

Develop report tracking Federal and State nutrient reduction activities, results and progress on implementation of the 2008 Gulf Hypoxia Action Plan.

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Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Illinois	Implement system to track estimated reductions in nutrient losses for all cost-shared conservation practices			
Iowa	Continue assessing nutrient load reductions from the Iowa CREP and Iowa Watershed Protection Programs.	Ongoing		
Louisiana	Work closely with State, University, USDA, EPA and other agencies and groups to track Louisiana nutrient reduction activity	Planning Mtg. - April 10		
Louisiana/ EPA	Participate in National Flowing Waters Assessment including water quality, sediment and biological monitoring for the lower Mississippi River			
Minnesota	E-Link reporting of phosphorus and sediment reductions associated with BMPs			Funding for nitrogen crediting routine
Wisconsin	GRTS-state reporting of progress			
DOI-USGS	Annually provide nutrient loads from MARB from July to June; nutrient loads from MARB and its sub-basins from October to September	July 2008; Nov 2008	$40K	Funding in current budget request
DOI-NPS	Annually provide nutrient load estimates from a new gage site at the mouth of the St. Croix River, installed to track progress			

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
	toward nutrient reduction goals.			
EPA	▪ Develop framework for annual report on federal and state nutrient reduction activities and results. ▪ Create Coordinating Committee Workgroup for report development	▪ Workgroup created by 6/15/08 ▪ Develop draft format for report by 7/15/08	▪ 1 FTE to develop/ produce annual report	▪ Develop national benchmarks for tracking progress. ▪ First annual report published October 2009 in conjunction with FY10 Operating Plan.
NOAA	Annual reporting on size of hypoxic zone	▪ Hypoxic zone forecast by July 2008 ▪ Press release on results of mid-summer survey 7/31/08		▪ Identify funding source to maintain current monitoring effort for FY09. ▪ Implementation of improved hypoxia monitoring plan

8.) Continue to reduce existing scientific uncertainties identified in the SAB and MMR reports regarding source, fate and transport of nitrogen and phosphorus in the surface waters of the Mississippi/Atchafalaya River Basin to continually improve the accuracy of management tools and efficacy of management strategies for nutrient reduction.

Coordinating Committee Action Lead: USGS, Ohio

Summary of Expected Results: Management action to mitigate hypoxia in the northern Gulf of Mexico and to improve water-quality conditions in the Mississippi River Basin requires a base of scientific knowledge encompassing geographic scales and scientific disciplines that is required by few other national environmental challenges. Implementation of this action will continue to reduce scientific uncertainties, which is necessary to implement the Task Force Action Plan in a manner that enables management actions to adapt to new and changing scientific information.

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Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Illinois	▪ Continue long term nitrate monitoring in the Upper Sangamon (Lake Decatur) Watershed. ▪ Impacts of market-based mechanisms on nutrient loading from agricultural watersheds. ▪ Sediment and Nutrient Monitoring at Selected Watersheds within the Illinois River Watershed for Evaluation of the Effectiveness of the Illinois River CREP. ▪ Hydrologic and Hydraulic Model Development for the Illinois River Basin. ▪ Continued nitrogen and phosphorus monitoring of the Illinois River basin as part of the Illinois Conservation Reserve Enhancement Program.		▪ USEPA Targeted Watershed Grant)	
Iowa	▪ Continue water quality monitoring of nitrogen-removal wetlands developed under the Iowa CREP. ▪ Continue water quality monitoring of the Wetlands, Nutrients and Water Management, and Des Moines Lobe Targeted Watershed Grant projects.	▪ Ongoing ▪ Ongoing	▪ $100,000 ▪ $300,000	
Minnesota	▪ Continue the Watershed Pollutant Load Monitoring program			

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Mississippi	▪ MDEQ through GOMA's Nutrient Reduction Priority Issue Team: – Begin characterization of nutrient sources, fate, and transport across the Gulf region project – Develop an Index of Biotic Integrity and a Waterbody Classification System for the Gulf of Mexico	▪ Q4 2008 - Q4 2009 ▪ Q4 2008 - Q4 2009	▪ $225K (NOAA) ▪ $145K (NOAA)	Continued NOAA funding to complete projects: ▪ $200K – FY09; $200K – FY1010 ▪ $100K – FY09; $100K – FY10
Missouri	▪ Continue to provide support of river and stream monitoring stations across the state. State recently provided funding to recover 2 stations that were to be decommissioned and will be adding 6 new monitoring sites in 2008. ▪ Continue to provide funding to the University of Missouri for ongoing monitoring of nutrients for 100 lakes in Missouri.			
Wisconsin	▪ Initiate long term load monitoring stations with USGS ▪ Collect baseline nitrogen monitoring data from point sources		In-kind	
DOI-USGS	▪ Continue stream flow and water quality (WQ) measurements to compute nutrient loadings and detect trends in the MARB; add sampling at Mississippi River at Vicksburg	Ongoing	▪ $2.2 M + $100K for Vicksburg	Fill gap in monitoring network between the Ohio/ Mississippi confluence and the Old River diversion. Expand limited monitoring in the upper MARB and on large tributaries to the Mississippi that are sampled only every 2 or 3 years to estimate nutrient loads at these subbasins. Funding needs TBD.
	▪ Continue collecting data and information on nutrient levels in the Upper Mississippi River Basin (Long Term Resource Monitoring Program)	Ongoing	▪ $5Mil	Obtain yearly $5M funding from USACE
	▪ Continue development of new regional scale Spatially Referenced Regressions on	Ongoing	▪ $525K	Funding in current budget request

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
	Watershed Attributes (SPARROW) models. ▪ Operation of continuously measured nitrate at 2 sites on the Mississippi and Atchafalaya Rivers.	Ongoing, except Atchafalaya nitrate gage currently unfunded- Need $25 K additional funding for FY08.	▪ $25K	
DOI-NPS	▪ Complete a two-park project (St. Croix and Mississippi Rivers) with USGS to assess the role of riverine backwaters in cycling nutrients. ▪ Complete a nitrogen source study on Lake St. Croix to evaluate the importance of point vs. nonpoint source nitrogen contributions to the Lower St. Croix National Scenic Riverway. ▪ Continue long-term monitoring of nutrients via the NPS Inventory and Monitoring Network. ▪ Continue to emphasize the importance of key USGS stream gauging stations, offering NPS support for their continued operation when necessary.	▪ FY 2008-2010 ▪ Ongoing ▪ Ongoing		Pilot study with partners (USGS-Baton Rouge) to "Identify Hypoxia Effects on Natural Resources" at Jean Lafitte Historical Park and Preserve and strategies to reduce excessive nutrients.
EPA	▪ Improve and utilize hydrologic models,, including SPARROW, to identify watersheds within the MARB with the greatest loadings of nitrogen and phosphorus. ▪ Ongoing efforts by EPA HQ and regional offices in partnership with the states to advance nutrient criteria development, and research to reduce the scientific uncertainties regarding source, fate and transport of nitrogen and phosphorus.	▪ Continue to improve SPARROW model capabilities: rank 8 digit HUCs using 2002 WQ data by 9/08, provide outreach on results to State Ag programs.	$100,000	▪ Draft long-term research and monitoring strategy to reduce existing scientific uncertainties regarding nitrogen and phosphorus source, fate and transport. ▪ Need point source data on effluent flows and concentrations (missing from EPA's Permit and Compliance System) to improve definition of nutrient sources within the MARB ▪ Further analysis of nutrient pollution contributions from point sources and non-agricultural sectors, including a full analysis of costs.

9.) Continue to reduce uncertainty about the relationship between nitrogen and phosphorus loads and the formation, extent, duration, and severity of the hypoxic zone, to best monitor progress toward, and inform adaptive management of the Coastal Goal.

Coordinating Committee Action Lead: NOAA, MS

Summary of Expected Results

By FY09 develop long term research and monitoring strategy, and identify barriers to implementation (including lack of funding).

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Louisiana	Work with NOAA, EPA, LUMCON, LSU, Texas A&M and other universities on continuing to document severity and causes of Gulf hypoxia and to meet the Action Plan Goals.			
Mississippi	▪ Two FTEs to support current, planned, and future nutrient and hypoxia-related activities and projects of the Gulf of Mexico Alliance; Hypoxia Task Force, Coordinating Committee, and Sub-basin Committee; the Nutrient Criteria Development Team; and to enhance needed program integration resulting from these efforts. ▪ MDEQ will establish the position of Coordinator of the Gulf of Mexico Alliance's Nutrient Reduction Priority Issue Team. This full-time effort will coordinate nutrient reduction activities of the five Gulf coastal states.	▪ Begin Q4 2008 (funded annually) ▪ Q4 2008 – Q4 2009 (1 year)	▪ ~$200K (319 NPS) ▪ $150K (NOAA)	Future annual funding support Future NOAA funding support ($100K – 2009; $100K – 2010)
EPA	▪ Gulf hypoxia modeling and monitoring support ▪ Gulf sample analysis support		▪ $200K ▪ $115K	▪ 20 days OSV Bold ship support to address gaps in water quality/ecological processes regulating hypoxia ▪ Maintain FY08 funding level

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
	▪ RARE support for Development of a Relational Database to Aid in Modeling and Managing Water Quality in the Gulf of Mexico Hypoxic Zone ▪ Gulf of Mexico Hypoxia Monitoring and Modeling - Linking Satellite Ocean Color Remote Sensing and Hydrodynamic Modeling to Understand the Mechanisms Regulating Hypoxia in the Northern Gulf of Mexico		▪ +11.8 FTE (for both of above) ▪ $70,600 ▪ $323K +1629 technical support hours	▪ Continued 11.8 FTE support ▪ Maintain funding and technical support levels
NOAA	Draft long-term research and monitoring strategy to reduce existing scientific uncertainties regarding relationship between nitrogen and phosphorus loads and the formation, extent, duration and severity of the hypoxic zone.	▪ Gulf of Mexico Hypoxia Monitoring Implementation Plan ▪ Outcomes of current NGOMEX projects	$900K to support 4 NGOMEX projects	▪ Currently there is no FY09 funding identified for monitoring the hypoxic zone or for determining its mid-summer areal extent (metric for the Coastal Goal); $500K is needed to extend current monitoring program ▪ Implementation of improved hypoxia monitoring plan ($3M) ▪ Additional support for continued development of modeling capabilities ($3M)

10.) Promote effective communications to increase awareness of hypoxia and support the activities of the Task Force.

Coordinating Committee Action Lead: TF Communications Sub-committee

Summary of Expected Results

By the start of FY 09 complete and begin to implement a communications strategy that guides expansion of public awareness and outreach efforts through the reassessment process, and beyond.

Gulf Hypoxia Monitoring Stakeholders Group that includes "Education & Outreach activities necessary to raise public awareness on the health & economic impacts of Hypoxia" will develop a web site to communicate hypoxia related items. This group is closely connected to outreach efforts of the Gulf of Mexico Alliance and Gulf of Mexico Coastal Ocean Observing System. http://www.ncddc.noaa.gov/activities/gulf-hypoxia-stakeholders/view.

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
Illinois	Sponsor session on Gulf hypoxia, nutrient research and agricultural best management practices at the annual Crop Protection Technology Conference			
Iowa	▪ Host meeting/tour by conservation agencies of 8 corn belt states to view nitrogen-removal wetland technologies of the Iowa CREP and promote adoption in other states. ▪ Sponsor plenary session on Gulf hypoxia at the Iowa Water Conference ▪ Sponsor in conjunction with UMRSHNC two hypoxia symposia for national and state conservation leaders at the Soil and Water Conservation Society annual conference, Tucson, AZ.	▪ October 2007 ▪ February 2008 ▪ July 2008		
Louisiana	▪ Actively participate in the Lower Mississippi River Sub Basin Committee to foster local hypoxia awareness, demonstrate effective nutrient BMPs and meet shared TF goals ▪ Participate in Louisiana Hypoxia Working Group to coordinate information and actions on Gulf hypoxia for interested lower basin partners and citizens			
Missouri	▪ Provide information and education on nutrient issues effecting water quality in the state, including the relationship of nutrient loading to hypoxia in the Gulf of Mexico.			

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
	▪ Host information on the Department of Natural Resources website on nutrient issues, best management practices, and other tools to reduce the impact of nutrient loading to the waters of the state and Mississippi River basin.			
Ohio	▪ Continued coordinated work with the Conservation Technology Information Center (CTIC). ▪ Consultations with neighboring states on hypoxia issues, including joint effort with Indiana involving Wabash watershed.			
Wisconsin	Develop information and education efforts in state to explain, promote, and implement activities recommended by the Task Force.			
DOI-NPS	Continue outreach to Park Service visitors on the importance of nutrient reductions to water quality.			
DOI-USGS	Continue web page support and update of USGS nutrient concentration and load data and SPARROW results	Ongoing	0.2 FTE	Funding in current budget request
EPA	▪ Establish TF Communication sub-committee and develop strategy to communicate with the general public and specific stakeholders	▪ Establish committee, draft strategy 9/30/07 ▪ Finalize strategy by 2/28/08 ▪ Begin implementation by 3/15/08	▪ In-kind	
	▪ Create and maintain website with current information on implementation status of 2008 Action Plan, Task Force activities, and related projects and programs.	▪ Phase I: Update content, integrate Action Plan public comment page by 11/30/07 ▪ Phase II: Improve visual appeal and navigability, add success stories and stakeholder database by 9/15/08	▪ $25K	Continued contractor support
	▪ Develop and distribute TF communication materials for the general public.	▪ Develop draft set of communication materials		▪ Publication of Annual Report FY09 in October

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
		by 2/29/08 ▪ Publish and begin to distribute communications materials by 6/17/08.		2009.
NOAA	Outreach in collaboration with GOM Alliance and GCOOS.	Gulf Hypoxia Monitoring Stakeholder web site		
USACE	Distribute Task Force material through out the Corps and to partners	FY 2008		Corps developed hypoxia outreach material, $60K.
USDA - NRCS	Poll USDA state leadership to identify communication tools including field guides, job sheets, etc. currently in use.		In kind	

11.) In five years (2013) reassess nitrogen and phosphorus load reductions, the response of the hypoxic zone, changes in water quality throughout the Mississippi/Atchafalaya River Basin, and the economic and social effects, including changes in land use and management, of the reductions in terms of the goals of this Action Plan. Evaluate how current policies and programs affect the management decisions made by industrial and agricultural producers, lessons learned and determine appropriate actions to continue to implement or, if necessary, revise this strategy.

Coordinating Committee Action Lead: EPA

Summary of Expected Results

Complete Reassessment strategy by Q1 FY 2009.

Draft list quantitative measures that measure progress towards "Coastal Goal" and "Within Basin Goal".

FY 2008 Implementation Plan

Lead Agency	**FY 2008 Actions**	Milestones	FY 2008 Funding	Critical Needs for 2009
EPA	Complete Reassessment Strategy	Oct 2008	.25 FTE	
MARB States	Identify quantitative measures of in-basin nutrient reductions that exhibit progress towards both the "Within Basin" and "Coastal" goals.			

APPENDIX

TASK FORCE STATE MEMBER ACTIVITIES

STATE of ARKANSAS

- Implement 2005 legislation requiring: registration and completion of individual "on-farm" nutrient management plans, and restrictions on land application of nutrient enriched materials in designated watersheds.
- Reestablish 15,000 acres of woody and warm-season grass buffers in the Illinois River (tributary to Arkansas River) watershed through the Illinois River *CREP* project.
- Implement nutrient reduction programs in Point Remove, Arkansas County, and Bayou Bartholomew watersheds. These areas are tributaries to the Mississippi River via the Arkansas and Red Rivers.
- Assist Lower Mississippi River Subbasin Committee Coordinator with compilation and reporting of nutrient reduction activities in lower Mississippi River Basin states through scheduled public workshops and final publications.

STATE of ILLINOIS

Education and outreach

- Continue to support ongoing projects of the Illinois Council on Best Management Practices (CBMP), a coalition of producer organizations and the agricultural industry, http://www.cbmp.uiuc.edu/ including: 1) a statewide educational campaign on phosphorus best management practices, funded through the Fertilizer Research and Education Council, that reached over 75,000 producers with a brochure included in a weekly Illinois Farm Bureau publication; and 2) an educational program in the Indian Creek watershed in southeast Illinois, which is funded by The Fertilizer Institute, that will focus on nutrient best management practices and nutrient management plan record-keeping.
- Use fertilizer tonnage tax proceeds to support website with information on soil temperatures throughout the State and educational outreach to producers and agricultural retailers stressing the importance of utilize nitrification inhibitors during fall anhydrous ammonia application.
- Sponsor public symposium on research related to the development of phosphorus water quality criteria in Illinois http://www.ilcfar.org/wnew/waterqualityforum.html
- Conduct Illinois Tillage Seminars
- Use Section 319 funds to support projects to promote the reduction of nutrient use on lawns and farm lands.
- Through educational exhibits at several museums, zoos and schools, provide nutrient reduction and nonpoint source pollution information to Illinois citizens.

Monitoring, modeling and research

- Fox River Watershed Investigation, Stratton Dam to the Illinois River
- Continued support of two of the Corps of Engineers Long Term Resource Monitoring Program stations on the Illinois and Mississippi Rivers.

Implementation

- Continue to work with USDA Farm Service Agency, Association of Illinois Soil and Water Conservation Districts, SWCDs, and others on the Conservation Reserve Enhancement Program - Ongoing Program with 232,000 acre goal. Have enrolled 126,016 acres on the federal side, and 78, 546 acres in the state program.
- Continue to support TNC's efforts in Mackinaw River basin to help guide and influence the use of conservation-oriented agricultural techniques for water quality improvement.
- Cost-share the construction of stream-bank stabilization and restoration practices
- Use Section 319 funds for (1) 8 projects implementing urban green infrastructure practices to reduce nutrient nonpoint source pollution; (2) 16 stream, lake or and wetland restoration/protection projects; and (3) 2 animal waste/exclusion projects.
- Continue to develop and implement total maximum daily loads (TMDLs) in watersheds tributary to lakes that exceed the 0.05 mg/L TP lake water quality standard.
- Continue to develop and implement total maximum daily loads (TMDLs) in watersheds tributary to drinking water intakes that exceed the 10 mg/L nitrate potable drinking water quality standard.

STATE of IOWA

Implementation and Watershed Protection

- Continue to implement the Iowa Conservation Reserve Enhancement Program (CREP) constructing highly-targeted nitrogen-removal wetlands for cropland drainage. Funding for FY08 is $6.7 million state funds plus federal match. The program currently has 72 wetlands constructed or under development totaling 715 acres of wetland pool which treat the drainage from 86,100 watershed acres and remove 40-90% of nitrate, for an estimated 53,600 tons of nitrate removed over design life.
- Continue to implement the Iowa Watershed Protection Program currently supporting 61 watershed protection projects, which primarily reduce nutrients and sediment to water resources. Continue watershed planning assistance and assessment of nutrient load reductions from the watershed projects. FY08 funding is $6.3 million state, $2.5 million Section 319 funds, and $2.2 million landowner match funds for a total of $11.0 million.
- Continue to implement the competitive grant award program to local sponsors through the Watershed Improvement Review Board, much of which reduces nutrients and sediment to water resources. FY08 funding is $5 million state funds and $9.9 million of estimated local match funds, for a total of $14.9 million.

- Continue to implement the Iowa Financial Incentive Program for cost-sharing implementation of soil and water conservation practices on private working lands to reduce erosion, sedimentation, and nutrient transport to water resources. FY08 state funding is $11.4 million, which with landowner match funds of $5.1 million is estimated to total $16.5 million in conservation practices.
- Continue to implement the District Initiatives program, which for FY08 provides $4.4 million state funds to leverage federal conservation programs and increase Iowa landowner participation in federal conservation programs.
- Continue to provide state personnel support and funding to Iowa's 100 Soil and Water Conservation Districts (SWCDs) which assist implementation of federal, state and local conservation programs that reduce nutrients and sediment. Federal programs delivered through SWCDs include Environmental Quality Incentives Program, Wetland Reserve Program, Conservation Security Program, Conservation Reserve Program, Conservation Reserve Enhancement Program, Watershed Protection and Flood Prevention, Conservation Technical Assistance, and Resource Conservation and Development.
- Continue development of TMDLs for water bodies impaired by nutrients, and collection of water quality nutrient monitoring data for streams and lakes.

Research and Technology Development

- Continue the Wetlands, Nutrients and Water Management research initiative with Iowa State University to develop new technologies and improve targeting and efficiency of water quality management practices. Continue water quality monitoring of research sites evaluating various management practices and CREP nitrogen-removal wetland field sites. FY08 state funding is $0.3 million.
- Continue technology development through the EPA Targeted Watershed Grant "Integrated Drainage-Wetland Systems for Reducing Nitrate Loads from Des Moines Lobe Watersheds" with Iowa State University. FY08 federal funding is estimated at $0.2 million.
- Continue development of the Iowa Plan for Integrated Drainage & Wetland Landscape Systems for reducing nitrogen and phosphorus to water resources across 6 million acres of croplands. Achieve federal wetland regulatory concurrence and begin demonstrations and studies at 25 pilot sites.
- Conduct the Cedar River watershed study to assess the costs and needed management practices at large watershed scale to meet the nitrogen and phosphorus reduction targets of the Gulf hypoxia goal. Funding for FY08 is $60,000.
- Continue Integrated Farm and Livestock Management program funding of research and demonstrations through Iowa State University on impacts of nutrient management, harvest of crop biomass for bio-energy, and cover crops on water quality of drainage and surface runoff. FY08 state funding is $0.21 million.
- Continue to invest fees paid by farmers on the sale of agricultural chemicals towards developing new technologies and improved practices for reducing nutrients from cropped landscapes to water resources. FY08 funding is estimated at $0.55 million.

Education and Outreach

- Sponsor meeting and tour by conservation and environmental agencies of 8 corn belt states concerning the nitrogen-removal wetland technologies of the Iowa CREP, and facilitate adoption of similar programs in other corn belt states to address Gulf hypoxia.
- Continue websites, publications, and educational/outreach initiatives sponsored by the Cooperative Extension Service of Iowa State University addressing nutrient management in cropped landscapes, detailing topics such as nitrogen and phosphorus fertility recommendations, real-time soil temperatures website to determine acceptability of fall N fertilization for water quality improvement, livestock waste management systems and land application, etc.
- Continue Iowa Learning Farm demonstrations, education, and outreach through Iowa State University to improve water quality through crop residue and tillage management. FY08 funding $0.45 million.
- Continue outreach and education concerning Gulf hypoxia and nutrient reductions to farm organizations, drainage and watershed management groups, and the 2008 Iowa Water Conference. Sponsor 2 hypoxia symposia in conjunction with UMRSHNC for leaders of federal and state conservation programs at the 2008 annual conference of the Soil and Water Conservation Society, Tuscon, AZ.

STATE of LOUISIANA

- Review of nutrient removal BATs with EPA for industrial and municipal permits
- Develop watershed implementation plans with nutrient BMPs under LA 319 NPS Program
- Ongoing Implementation of the Louisiana Nutrient Criteria Development Plan
- Working with Governor's Office and Congressional Delegation on Gulf Hypoxia funding initiatives
- Participate in the Nutrient Reduction and Water Quality Priority Issue Teams of the Gulf of Mexico Alliance to coordinate with Gulf States on nutrient reduction, sources, fate, transport and criteria development
- Participate with EPA Flowing Waters Assessment Program to conduct environmental and water quality monitoring on the Lower Mississippi River Louisiana segment

STATE of MINNESOTA

- N reduction through wetland restoration with tile outlets into restored wetlands - MN Board of Water & Soil Resources (BWSR) and USDA Natural Resources Conservation Service (NRCS)
- Draft 2008-2012 Nonpoint Source Management Program Plan recently came off notice for public comment and has been sent to EPA for approval.
- Completed study to determine P sources in watersheds.

- Continue development of the Lake Pepin TMDL.
- Continue development of the Minnesota River TMDL.
- Development of Eutrophication Standards for lakes and reservoirs.
- MN Pollution Control Agency website includes links to a variety of hypoxia related documents (http://www.pca.state.mn.us/water/).

STATE of MISSISSIPPI

Modeling, Monitoring, and Research

Northern Gulf Institute-Facilitated Activities (led by Mississippi State University)

The Mississippi State University-led Northern Gulf Institue (NGI) is a member of the Gulf of Mexico Alliance (GOMA) Nutrient Reduction Priority Issue Team. NGI has a group of nutrient and hypoxia-related research projects currently underway to help us understand the mechanisms leading to hypoxia or will, ultimately, lead to the development of tools for the management of the causes of hypoxia.

- Dr. Chet Rakocinski of the University of Southern Mississippi (USM) is leading a project, "Macrofaunal Indicators of Hypoxia," which is a collaborative effort with another USM project, "Monitoring and Assessment for Ecosystem Management." These projects are attempting to characterize the macrobenthic subsystem function that may respond to hypoxia and other stressors.
- Dr. Stephan Howden of USM is working with NGI partners and state and federal agencies to carry out a multi-faceted approach for building a land-to-sea monitoring and assessment strategy in selected key coastal regions in his project, "Monitoring and Assessment of Coastal Marine Ecosystems in the Northern Gulf. This work is aimed at understanding coastal nutrient, carbon, and trace element fluxes in several key environments. The overarching goal is to better understand the transport and processing of nutrients and pollutants through the coastal transition zone.
- Dr. Jaye Cable of Louisiana State University (LSU) in his project, "Investigating Material Exchange Between the Marsh and Channel Along an Estuarine Gradient," is studying material exchange with marshes and groundwater, which are two key sources for carbon to the coastal ocean. Along the northern Gulf of Mexico coast, prolific point and non-point sources of carbon and nitrogen exist in the form of major rivers and expansive wetland ecosystems. Understanding the dynamics of these systems is vital to the ultimate understanding of the nutrient-hypoxia system along the northern Gulf of Mexico.

Additional research facilitated by NGI related to Gulf of Mexico water quality that is currently underway.

- Dr. Stephen Lohrenz of USM is developing and implementing robust protocols for harmful algal bloom (HAB) recognition in his project, "Satellite and In-situ Optical Assessment of Algal Blooms Events in the Northern Gulf of Mexico." The technologies developed in this work may help us develop tools directly applicable to hypoxia.

- Dr. William McAnally of Mississippi State University (MSU) in his project, "Spatial Technology and High Performance Computing for Improving Prediction of Surface Water Quality," is working to improve model predictions of water quality.
- Dr. William McAnally's project, "Modeling Mobile Bay Sediments and Pollutants with New Technologies," developing a management-oriented model of sediment and pollutants for Mobile Bay and the major tributaries to the Bay. An extension of this work will help us model the amount of nutrients and pollutants that are entering the Gulf of Mexico from the Mobile Bay system.

Mississippi Department of Environmental Quality-Facilitated Activities

- Nutrient monitoring is required in numerous permits which will provide needed data to help with future planning and decision-making.
- Implementation of Mississippi's Nutrient Criteria Development Plan continues to proceed. The plan addresses monitoring and criteria development for large streams, small streams, Delta streams, lakes, and estuaries.
- Through EPA's Flowing Waters Assessment Program, MDEQ is supporting the multi-state effort to conduct environmental and water quality monitoring on the Lower Mississippi River. This will include nutrient monitoring.

Implementation and Watershed Protection

Mississippi Department of Environmental Quality-Facilitated Activities

- Nutrient TMDLs will continue to be developed in accordance with Consent Decree requirements. This will be the 9th year of implementing the 10-year Consent Decree.
- For approved TMDLs, NPDES permits are required to be consistent with TMDL load allocations.
- Implementation plans for priority watersheds identified through Mississippi's Basin Management Approach are being developed and implemented. In watersheds with nutrient impairments, the plans will address nutrient problems and use the load reduction in approved nutrient TMDLs as the reduction targets.
- The 2008 Nonpoint Source Management Program Plan has an enhanced focus on nutrient reduction. 319 NPS funding will continue to support nutrient reduction efforts.
- MDEQ, MDAC, NRCS, Farm Bureau, Extension Service, and the Board of Animal Health are working together through the Poultry CAFO Advisory Committee to expand a required CAFO training program (in which CEUs are earned by CAFO permittees) to make the training available to interested AFOs on a voluntary basis.

Mississippi Department of Agriculture and Commerce (MDAC)-Supported Activities

- MDAC has been working with the Mississippi Land, Water, and Timber Board to fund three pilot digester projects that have multiple beneficial uses – the creation of methane for home use and the reduction/elimination of chicken litter (2 projects) and cow manure (1 project).
- Natural Resource Conservation Service (NRCS)-Facilitated Activities (from the State Office)

- Implementation of a new precision agriculture program which makes funding available for technology transfer to producers to reduce nutrient overloading.
- A steering committee of state and federal agencies and agricultural stakeholders has been meeting during the past year to develop the components, tools, and processes for generating comprehensive nutrient management plans (CNMP).
- A new nutrient management standard has been developed for Mississippi. This standard establishes updated guidelines for nutrient and conservation management.
- To reduce nutrient overloading, a new manure transfer program will transfer manure to watersheds with phosphorus-deficient soils.

STATE of MISSOURI

- Continue to implement a matrix of agricultural best management practices via the Department of Natural Resources Soil and Water Conservation Program. The program provides technical staff and cost share funding for all the counties of the state. An estimated $22 million in cost share funding for on-site projects will be implemented in 2008. The program has prevented an estimated 12 million tons of soil from being introduced into waterways of the state for the 2004-2008 time frames. Specific program information and support is available at: http://www.dnr.mo.gov/env/swcp/
- Continue current steps to develop a needs assessment framework for Soil and Water Conservation Program funding. This recent process dictates that each district develop a 5 year needs assessment and is anticipated to allow more flexibility in program allocations to better address specific resource concerns such as nutrient loading.
- For 2008, increase the incentive rate for development of Nutrient Management Plans (N 590) and Waste Utilization Practices (N633), currently funded through the Soil and Water Conservation program.
- Implementation of the state water quality antidegradation policy. Program requires re-evaluation of point sources on classified streams and in some cases will require steps to achieve greater pollution reduction via permitting process.
- Implementation of Missouri Nonpoint Source Management Plan, requiring continued development of TMDL's strategies associated with the 303(d) impaired waters. A revised list of impaired waters will be submitted by the Department of Natural Resources to EPA review in 2008. A portion of the impaired water bodies on the list will be required to initiate nutrient reduction actions when nutrient levels adversely affect beneficial water uses. A list of impaired waters and those with specific nutrient impact can be found at: http://www.dnr.mo.gov/env/wpp/waterquality/303d.htm
- Provide reporting and guidance on Gulf Hypoxia issues to the Water Quality Coordinating Committee. The Water Quality Coordinating Committee is an informal interagency and public committee dealing with water quality issues, with representatives of nonprofit organizations, universities and colleges, cities and businesses, as well as state, federal and local agencies.

- Through the permitting process, the state will require Concentrated Animal Feeding Operations to further address phosphate levels. The Department of Natural Resources will also continue development of broader nutrient management planning guidance for permitted facilities.
- Continued support of a state-wide Volunteer Water Quality Monitoring Program. State partners provide training and equipment to this citizen monitoring group, which submits physical, chemical and biological data from monitoring sites throughout the state. Over 4,000 citizen volunteers have attended at least one of the training workshops. The program provides screening-level data used by state and local decision makers to determine current stream conditions and to identify potential problems or trends in water quality. A similar program is supported for monitoring the states lakes and reservoirs (Lakes of Missouri Volunteer Program).
- Administer the Watershed Management Plan Development Grants. The program provides directed 319 funding to restore waters impaired by nonpoint source pollution. Program is targeted at water bodies that are on the states Targeted Nonpoint Source 303(d) list. The funded watershed plans support activities that will result in achievement of load reduction goals set forth in the corresponding TMDL developed for the affected water body.
- Continue to implement phase I and II storm water regulations. Permits require regulated MS4s to have storm water management programs in place by March 10, 2008. These efforts have the potential to address a significant amount of nutrient related issues associated with stormwater pollution from large and small metropolitan areas.

STATE of OHIO

- Ohio strives to capitalize on existing program efforts. Below are key linkages and statements relating to major program efforts and guiding documents for the Ohio River Basin within the state of Ohio. These linkages provide the detailed information on programs such as Farm Bill Conservation efforts, local watershed plan implementation, state water quality studies (Total Maximum Daily Load (TMDL) Reports), point source programs, monitoring, etc.
- Ohio TMDLs addressing nutrients that are completed or in progress are shown in the map at the website below. A list of watersheds by name is also listed on the website. http://www.epa.state.oh.us/dsw/tmdl/OhioTMDLs_InProgress.html.
- Local watershed plans can be found at the website below. These plans address all sources of impairment, including those associated with excessive nutrient loading. http://www.dnr.state.oh.us/soilandwater/water/watershedprograms/default/tabid/9192/Default.aspx.
- Information on Ohio's soil and water conservation districts and their non-point source and nutrient/sediment programs can be found at http://www.dnr.state.oh.us/soilandwater/default/swcds/default/tabid/9093/Default.aspx.
- Continued implementation of state programs addressing small, medium and large AFOs.
- Continued implementation of the Ohio NPS Management Plan and 319 Grants Program.
- Research, development and education efforts related to advanced treatment of nutrients at wastewater treatment plants will continue.

- NPDES, CSO/wet weather and other federally delegated programs will continue.
- ORSANCO and Ohio DNR will continue to act as liaisons with other ORB states.

STATE of WISCONSIN

- NR 217 requirement for phosphorus effluent limits
- Non-point source specific performance standards that apply—Target Dates
- Stormwater & CAFO permits
- TMDL on Rock River
- TMDL on Lake Pepin with MN
- Begin to collect nitrogen data from WWTPs
- Farm Nutrient Management Plans performance standards (acreage goals)

TASK FORCE FEDERAL MEMBER ACTIVITIES

United States Army Corps of Engineers

- Navigation Environmental Sustainability Program (NESP). This is an upper Mississippi River program with a significant ecosystem restoration component. Many of the projects that develop in the future will help with sediment and nutrient retention/treatment.
- Environmental Management Program (EMP). This is an upper Mississippi River program that has two components, one being development and construction of ecosystem restoration projects which will help with sediment and nutrient retention/treatment, and the other being a water constituent monitoring program, providing valuable water quality data to be used by many state and Federal agencies as well as non-government groups.
- Middle Mississippi River Watershed Study. The study will look at watershed issues in the middle Mississippi River area including ecosystem restoration, management, socioeconomic concerns and balance, as well as environmental monitoring needs. From this study, future projects for the benefit of the middle Mississippi River watershed will develop.
- Lower Mississippi River Watershed Study. While the focus of this study is related to recreational and economics needs and existing infrastructure, it will have some importance in influencing some future growth and development in the Lower Mississippi River, which it turn, could have impacts to hypoxia issues including sediment and nutrient input.
- Louisiana Coastal Area Study (LCA). While not specifically authorized, some aspects of LCA associated with other programs and projects are moving forward including scientific investigation for long distance sediment transport and freshwater diversions for building new wetlands and nutrient uptake.
- Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). Projects for ecosystem restoration and protection are planned and constructed annually by inter-agency groups each

year. For example, West Bay Sediment Diversion project is a joint effort by the Corps and the State of Louisiana to transport sediment from the river by a specifically designed channel or bank cut for the purpose of building marsh, which in turn reduces sediment and nutrient load to the hypoxic zone in the Gulf of Mexico.

United States Department of Agriculture (USDA)

- USDA will provide technical and/or financial assistance through the following conservation programs to help reduce nutrient (nitrogen and phosphorus) runoff and leaching to local receiving waters as well as to the Gulf of Mexico: Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP), Wetland Reserve program (WRP), Conservation Technical Assistance (CTA), Conservation Security Program (CSP), PL 83 566 Watershed Projects, and the Resource Conservation and Development Program (RC&D).
- USDA will continue to test and demonstrate innovative management practices for reducing nutrient losses to surface waters and evaluate current conservation practices for water quality benefits at the watershed scale. Recent progress has been made in the areas of improving modeling of riparian zone function for more accurate water quality assessments, developing new management practices for reducing nitrate losses in drainage waters, improving water quality models for large-scale watersheds, assessing the water quality effects of management practices in tile drained agriculture, developing sensors and procedures for improved nitrogen fertilizer management in corn and designing wetland systems for tile drained agricultural landscapes. These and other research findings for FY2007 can be found at the following web sites:

  http://www.ars.usda.gov/SP2UserFiles/Program/211/NP211AnnRptFY07.pdf
  http://www.fsa.usda.gov/Internet/FSA_File/fsa_final_report_crumpton_rhd.pdf
  http://www.fsa.usda.gov/Internet/FSA_File/iameetingagenda.pdf.

United States Department of Commerce

National Oceanic and Atmospheric Administration (NOAA)

- Through the Gulf of Mexico Ecosystems and Hypoxia Assessment (NGOMEX) program, NOAA supports research designed to provide managers with tools, techniques, and information to make informed decisions and assess alternative management strategies regarding the hypoxic zone. Ongoing research projects include efforts led by:
  - Drs. Nancy Rabalais (Louisiana Universities Marine Consortium, LUMCON) and Eugene Turner (Louisiana State University, LSU) that provides a continuing and consistent series of long-term data that document the temporal and spatial extent of hypoxia (including production of the Action Plan Coastal Goal metric); identifies relationships among river discharge and constituent loads, physical conditions (especially currents), and biological and chemical parameters; links coastal ecosystem studies with Mississippi River data on discharge, concentration, and loads of relevant constituents; refines models of the severity and extent of hypoxia (including the predictive model used as a basis for NOAA's annual hypoxic zone

forecast), and continues public outreach, including a web site, to translate research results to a broad cross-section of the public;

- Dr. Steve DiMarco (Texas A&M University) that investigates short- and long-term variability in currents, stratification, and dissolved oxygen associated with the hypoxic zone; determines spatial variability of benthic and water column respiration rates; and develops a realistic coupled physical-biological-geochemical numerical model of the northeastern Gulf of Mexico;
- Dr. Dubravko Justić (LSU) to develop a process-based hypoxia module for the Louisiana shelf to advance hypoxia modeling by incorporating experimental results to estimate the importance of benthic and epibenthic oxygen production; partition the total oxygen uptake in the Gulf's hypoxic zone into water-column and benthic respiration; and estimate the relative forcings of biology and physics as controls of hypoxia in relatively stagnant bottom waters;
- Dr. Wayne Gardner (University of Texas at Austin) to determine biological and chemical processes that maintain and extend bottom water hypoxia in the summer after initial hypoxia development, important supportive data to improve the accuracy of predictive models of hypoxic zone expansion;
- Dr. Stephen Brandt (NOAA Great Lakes Environmental Research Laboratory) to integrate ecosystem measurements through a variety of models designed to assess the effects of hypoxia on Gulf pelagic food webs and production; quantify habitat suitability for economically and economically important fishes; and provide tools to forecast food-web interactions, habitat suitability, and fish production in relation to hypoxia; and
- Dr. Peter Thomas (University of Texas at Austin) that determines the effects of Gulf hypoxia on reproductive output in benthic copepods and Atlantic Croaker; develops reproductive output indicators (biomarkers) for Atlantic Croaker environmental exposure to hypoxia; and develop predictive models on the effects of hypoxia on fish and copepods populations based on impacts on reproduction.

- Workshop technical report "Ecological Impacts of Hypoxia on Living Resources" and publication of dedicated issue of the Journal of Experimental Marine Biology and Ecology on ecological impacts of hypoxia.
- Fiscal year 2009 competitive funding announcement for the NGOMEX program focusing on the development of models providing quantitative predictions of the spatial and temporal extent and severity of Gulf hypoxia given varying levels of nutrient inputs, physical forcing, and other anthropogenic or natural factors that control hypoxia, and quantitative models to predict the individual and population level effects of different spatial and temporal extents of Gulf hypoxia on ecologically and commercially important aquatic species and, where feasible, the socioeconomic consequences.
- Completion of a 2008 Southeast Area Monitoring and Assessment Plan (SEAMAP) summer groundfish survey in support the Gulf of Mexico Hypoxia Watch program
- Development of "Gulf of Mexico Hypoxia Monitoring Implementation Plan" and identification of funding source to maintain, at a minimum, the current monitoring effort of the hypoxic zone.

- Continued development of "Hypoxia Monitoring Stakeholder" web site capabilities and integration with Hypoxia Watch site. Continued development of hypoxia data portal and transition of web mapping capabilities to operational status.
- Development of a proposal for a NOAA Gulf of Mexico Integrated Ecosystem Assessment, for which hypoxia and nutrient pollution will be a significant component.
- Fiscal year 2008 funding announcement and subsequent collaboration with Gulf states to implement components of the Gulf Alliance Action Plan; nutrient reduction is one of five priority issues.
- Develop a proposal to assist the states of the Gulf Alliance in designing a common monitoring framework to provide the information needed to understand the transport, fate, and effects of nutrients into coastal waters of the Gulf, including the Louisiana shelf.
- Upon passage of the 2007 Farm Bill, collaboration with USDA and other federal agencies on the implementation of the 2007 Farm Bill Conservation Reserve Program (CRP).

United States Department of the Interior (DOI)

National Park Service

- Publish special issue of Journal of Paleolimnology to summarize a body of research on historic nutrient loading and current conditions in two riverine lakes (Lake St. Croix and Lake Pepin) in or near NPS units, 2008.

United States Fish and Wildlife Service

- Work with private landowners throughout the MARB to implement a variety of land treatment and wetland restoration, enhancement or creation activities primarily focused on improving habitat for a variety of fish and wildlife species. Many activities have ancillary benefits of reducing nutrients entering the basin's streams. Numerous programs are involved, the major of which is the Partners for Fish and Wildlife Program.

United States Geological Survey

- National SPARROW model development and journal article "Differences in Phosphorus and Nitrogen Delivery to the Gulf of Mexico from the Mississippi River Basin"
- National SPARROW model simulation and journal article on projected impacts of corn-based ethanol production on delivery of nitrogen and phosphorus through 2016
- Several studies and reports discussing hydrologic and biogeochemical controls affecting nutrient transport in agricultural streams.
- Several studies to evaluate the role of nutrients in determining riverine ecosystem productivity and eutrophication, nutrient cycling and transport. Report on the role of nutrients in determining food sources and nutrient flows through river foodwebs.

- Scientific journal articles: (1) microbial ecology of denitrifiers in restored and natural wetlands in the Lower Mississippi Valley; (2) scientific hydrologic restoration/nutrient retention of restored Lower Mississippi Valley wetlands)

United States Environmental Protection Agency (USEPA)

USEPA, Office of Water

- Participate and provide leadership to the Gulf of Mexico Alliance Water Quality and Nutrient Reduction teams.

USEPA Office of Water, Office of Science and Technology

- Provide financial and technical support to States for numeric nutrient criteria development.

USEPA Office of Water, Office of Wetlands, Oceans, and Watersheds

- Compile and summarize information on TMDLs completed in Basin States that deal with nutrients.
- Provide technical and financial assistance to Basin States developing nutrient TMDLs for shared water bodies.
- Initiate assessment of scientific, modeling, and technical aspects of nutrient pollutant load allocations for TMDLs in Basin States.

USEPA Office of Research and Development, National Health and Environmental Effects Research Laboratory

Research in ORD has focused on improving the scientific understanding of processes regulating hypoxia and the science supporting nutrient management decisions in the Mississippi River Basin. The goals of this research project are to develop model applications, data products and other tools to quantify the relationship between nutrient loads and extent of hypoxia, quantify sources of uncertainty in nutrient load reduction targets, forecast the effects of nutrient management actions in the Basin on the extent of hypoxia, and provide defensible options to guide restoration management decisions.

- An Interagency Agreement with the Naval Research Laboratory and ORD will integrate satellite ocean color remote sensing imagery, hydrodynamic and water quality modeling and in situ measurements with the objective to assess and predict coastal ocean processes regulating the development and size of hypoxic bottom waters.
- Report on the conditions and seasonal trends of water quality in the Gulf of Mexico hypoxic zone.
- Report on development and application of mass balance models for the northern Gulf of Mexico hypoxic zone.
- Report on physical and biogeochemical processes influencing seasonal and spatial dynamics of the northern Gulf of Mexico hypoxic zone

- Compile and report on geospatial database to support Gulf Hypoxia research, nutrient management and regional water quality programs. The effort will combine data collected from multiple federal, state, and academic projects into a single database structure.

USEPA Region 4

- Complete 20 TMDLs for nutrient impaired waters draining to the MS River
- Conduct NPDES compliance inspections of CAFOs major municipals, and major industrials discharging nutrients to MS and tributaries
- Conduct workshops and other compliance assistance seminars to CAFOs, municipalities, states and tribes regarding nutrient mgt in MS River Basin
- Work with MS, TN, and KY 319 Programs to reduce N and P from nonpoint sources
- Provide assistance to MS, TN, KY on Plans for development and development of numeric criteria for nutrient reduction in the MS Basin

USEPA Region 5

- Develop a stream classification system and a set of diagnostic indicators to identify impairment related to nutrient effects (near completion) in Region 5, with ORD.
- Investigating the relationship between nutrients, algal biomass, continuous dissolved oxygen, and biological communities in wadeable streams in the nutrient rich areas of Region 5.
- March 2008 meeting focused on developing scientifically-defensible criteria and implementation guidance.
- Conduct 12 CAFO inspections in R5 states, targeting those CAFOs with the most severe impacts.
- Evaluation of 5 major municipal collection systems within R5 for sanitary system overflows to address wet weather sources of urban nutrient discharge.
- Continue work with State Nutrient Workgroups, IL, IN, MI, MN, OH, WI.

USEPA Region 6

- Working with States within the region to develop nutrient criteria. EPA Region 6 has been encouraging and assisting our states to keep moving forward in the development of numeric criteria for phosphorus (TP) and nitrogen (TN).
- Has entered into an IAG with USDA/ARS to compile and analyze all existing databases along the length of the Red River, from headwaters in NM to confluence with the Mississippi River. This project began in 2007, and will be completed in 2009.
- Work with States within the region to assist them with implementation of their water quality monitoring programs. Arkansas and Louisiana are conducting water quality monitoring for nutrients.
- Participation in the SPARROW modeling effort, partly via a Regional Geographic Initiative-funded project ($50,000) which is funding data collection for SPARROW for the Lower

Mississippi River Basin, via an Interagency Agreement between Region 6 and Region 5. Headquarters, Region 5, and the Gulf of Mexico Program are also funding the overall "100 Watersheds" work.

- The TMDL program is developing 2 TMDLs for Louisiana. The estimated budget for the Louisiana efforts is $50-60,000. The Louisiana TMDL program could use $200,000 for work in 2009.
- The 319 Program in Region 6 works with our states to reduce water quality problems related to nonpoint sources of pollution. Approximately 70% of our 319 efforts address nutrient reduction.
- The NPDES Program participates in the Great South Regional TMDL project, as does the TMDL program. As part of that, the NPDES program is requiring nutrient limits for some permittees, and nutrient monitoring of effluent for some permittees.
- The CWPPRA Program in Region 6 currently has 2 coastal restoration projects that focus on reintroduction of Mississippi River water into coastal basins. When constructed, these projects will provide for the removal of some nitrogen and phosphorus from the loadings that would otherwise go to the Gulf. The Region works with the State of Louisiana on these projects. Approximately $500,000 will be spent this year to reach the 30% design for river reintroduction into the Maurepas Swamp.

USEPA Region 7

- Region 7 Technical Advisory Group
  - Lake and Reservoir Benchmark document
  - Streams and Rivers Benchmark document
  - Continue work with State Nutrient Workgroups, MO, IA, NE, KA
- Missouri River Nutrient Workgroup - USEPA Regions 7 & 8 are in the beginning stages of forming a workgroup of federal, state, tribal and university scientist to develop nutrient benchmarks for the Missouri River.
  - The workgroup is currently attempting to gathering all existing nutrient and biological data on the Missouri River from a variety of federal, state, tribal and university data sources.
  - Once gathered, the workgroup plans to compile all nutrient and biological data (i.e., phytoplankton, periphyton, macroinvertebrate data) and begin developing nutrient causal and response benchmarks.