

Louisiana Reservoir Priority and Development Program

Executive Summary

Prepared for:

Louisiana Department of Transportation and Development
Public Works and Water Resources Division

April 2010



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Prepared by:



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Louisiana DOTD Reservoir Priority Development Program Executive Summary

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Louisiana DOTD Reservoir Priority Development Program

EXECUTIVE SUMMARY

Water, both above and below ground, is Louisiana's most abundant resource. Louisianans recognize the importance of sustainable water resource management to support healthy ecosystems and promote thriving economies. In the recent past, some consequences of water resources development have begun to appear in locations around the state, as evident in low surface water flows, impaired surface water quality, groundwater level decline, and degraded groundwater quality. To encourage projects that will address these issues and promote sustainable economic development, the Louisiana Department of Transportation and Development (DOTD) Public Works and Water Resources Division was directed by the Legislature to establish a Reservoir Priority and Development Program (RPDP).

A. Purpose

The DOTD contracted with MWH to develop an RPDP for proposed state-funded reservoirs. The RPDP establishes procedures to submit and evaluate applications for proposed state-funded reservoir projects (based on a comprehensive suite of engineering, environmental and socioeconomic criteria) and provide a list of ranked projects to the Legislature for funding based on the best value for the state. To support evaluation criteria and funding decisions, the RPDP provides information about statewide water resource issues relative to available water, future demands, and relevant environmental and socioeconomic issues. The RPDP also provides recommendations for a statewide water resources management strategy.

B. Goals and Objectives

Goals and objectives of the RPDP include the following:

- Develop a process for evaluating and prioritizing proposed state-funded reservoirs that will provide water supply, flood control, environmental enhancement, socioeconomic development and recreation benefits
- Focus on long-term water supply needs and issues
- Provide sound technical and economic criteria for evaluating proposed projects, utilizing “best practices” from Louisiana and other states
- Develop a prioritization system to encourage best solutions in line with State priorities
- Provide a practical tool for applicants, agencies and State decision makers to facilitate the funding of proposed projects
- Provide a high-level, easily understood summary of state-wide water resource issues as a basis for proposed projects and to promote awareness of water resource needs throughout the state
- Provide guidance on long-term State water resources management strategies

C. Documents Developed for the RPDP

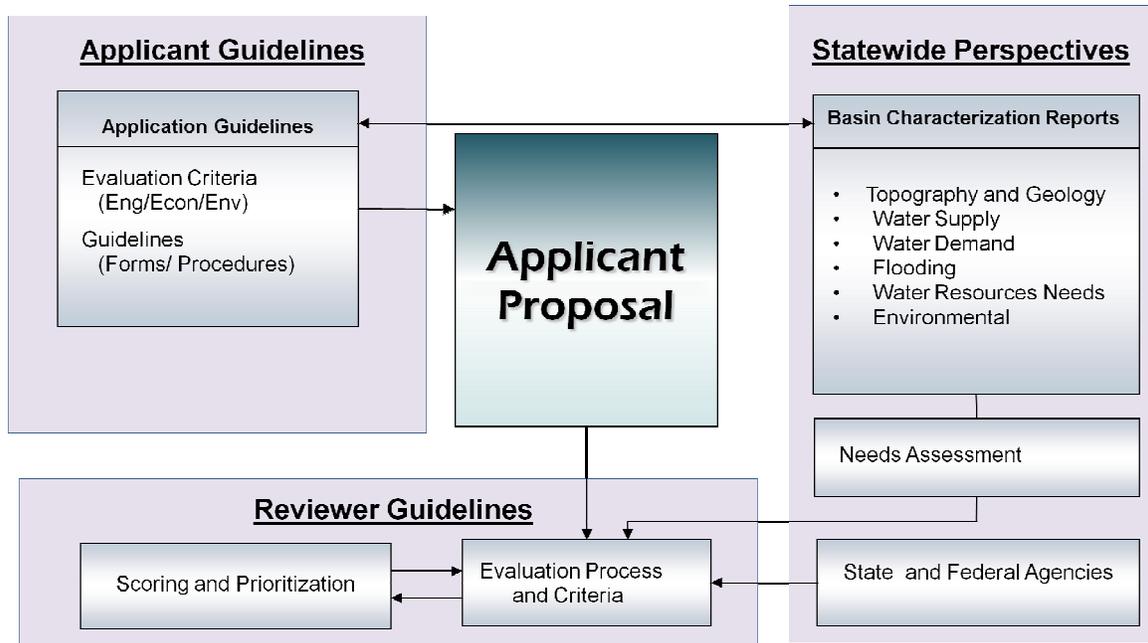
In support of the RPDP, the following documents were developed for this program:

1. Basin Characterization Reports – An overview of the primary water resources in each of the nine major surface water basins in Louisiana, which also identifies needs and concerns unique to each basin established through preliminary needs assessment. The reports are designed specifically for proposed state-funded reservoir development applicants as well as reviewers and other interested entities.
2. RPDP Applicant Guidance – Describes the process and procedures for obtaining state funds for the development of a reservoir project under the RPDP. Includes submittal schedule, detailed instructions, examples, and forms.
3. RPDP Reviewer Guidance – Describes the reservoir project application process and review procedures for Evaluation Committee members. It includes guidance for reviewing, evaluating and scoring proposed projects to develop a prioritized list to be submitted to the Legislature.
4. Louisiana Statewide Perspective on Water Resources - a brief summary of water resources uses and issues in Louisiana at a state-wide level. Also presents a series of strategies for water resources development and management that would reduce the severity of current water supply related problems and reduce the potential for future problems.

D. Project Planning and Execution

To efficiently develop the processes, procedures and documents for the program, the work was structured to be completed in two phases. The first phase, focused on preparing program documents, was completed in December 2009, and the accomplishments are summarized in this executive summary. Phase 2 of the RPDP, which has not been funded to date, is to implement the program through use of the documents developed in Phase 1 and additional input from a broader set of interested parties and stakeholders through outreach activities.

As illustrated in the work plan flow diagram on the following page, development of the RPDP included various tasks centered around potential applicants and their proposed projects. The tasks were to develop documents that provide information, processes and procedures to assist applicants in preparing proposed reservoir projects, and reviewers in evaluating, scoring and prioritizing proposed projects.



RPDP Phase 1 Documents were developed in support of the application process.

Documents were developed through a series of meetings and workshops with state and federal agencies and other interested parties. Many agencies provided their perspective on the issues and evaluation criteria relevant to new reservoir projects, and provided review comments on draft proposed documents. The agencies and interested parties involved in the development of the RPDP include:

- Louisiana Geological Survey
- Louisiana Department of Culture, Recreation and Tourism – Division of Historic Preservation
- Louisiana Department of Health and Hospitals – Office of Public Health
- Louisiana Department of Wildlife and Fisheries
- Louisiana Department of Agriculture and Forestry
- U.S. Army Corps of Engineers
- U.S. Geological Survey
- Louisiana Department of Environmental Quality
- Louisiana Department of Economic Development
- Louisiana Department of Natural Resources
- U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Department of Fish and Wildlife

E. Summary of Work Products

1. Basin Characterization Reports

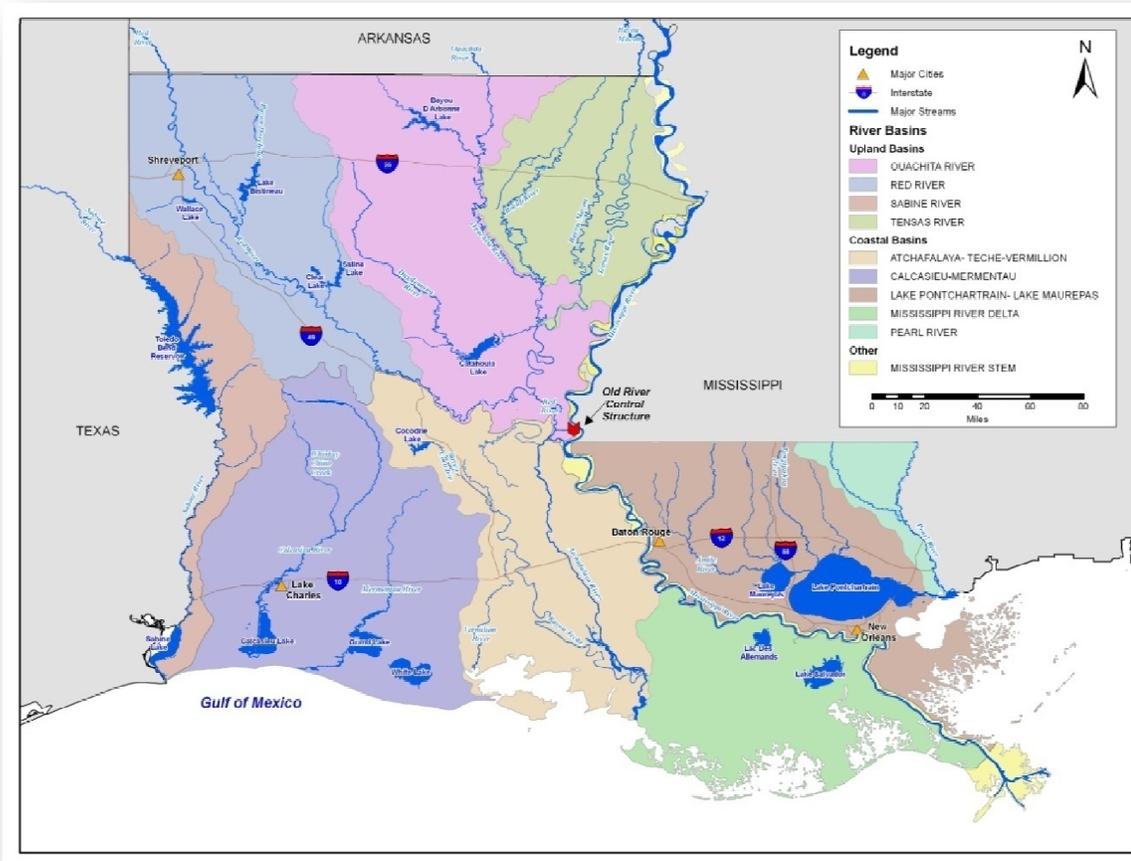
To support reservoir project development, review, evaluation and prioritization, Basin Characterization Reports were developed for each of the nine major surface water basins in the state. These characterization reports provide an overview of the primary water resources and identify needs and concerns unique to each basin. The reports are designed specifically for use by applicants for State reservoir funding as well as application reviewers and other interested entities. References are provided with links to web sites and databases that interested parties can use to find more information from Federal, State and local agencies and organizations.

Information provided in each basin report includes the following:

- Basin Overview
- Land Use and Legal Entities
- Physiographic and Climatic Information
- Water Use
- Surface Water
- Groundwater
- Flooding
- Environmental and Cultural Issues
- Recreation, Navigation and Hydropower
- Interbasin and Interstate Issues
- Summary of Water Resources Needs

The basin characterization reports were developed using existing available information. Primary data sources included U.S. Geological Survey, Louisiana Geological Survey, U.S. Army Corps of Engineers, Louisiana Department of Environmental Quality, Louisiana Department of Wildlife and Fisheries, and other pertinent agencies





Basin Characterization reports were developed for each of the nine major surface water basins in the state

2. Needs Assessment

In order to identify and prioritize statewide water resources issues, a preliminary needs assessment for each of the nine major surface water basins in Louisiana was prepared. The results of this assessment were incorporated into the Basin Characterization Reports. Because the assessment provides the foundation for developing reservoir priority evaluation criteria, it emphasizes needs that could be addressed by the development and management of surface water reservoirs. In recognition that not all water resources issues can be addressed through reservoirs, the needs assessments also identify other water resources management issues, although generally at a lesser level of detail.

The preliminary needs assessment is based on an observation of the current status of water resources issues in the state, and an evaluation of anticipated future needs based on current trajectories. This observation of current conditions represents a single snapshot in time, and does not preclude issues from arising in the future in any specific region of the state. For example, groundwater is a valued and finite resource in

Louisiana, and the overuse that has caused the current most dramatic problems in certain basins could also occur in other areas if the similar groundwater management and use practices continue. Finally, the preliminary needs assessment highlights the need to address particular water resources issues but does not recommend constructing any specific reservoir(s) to resolve water resource issues in any given basin.

Need Categories	Major Surface Water Basin																	
	Red		Ouachita		Tensas		Sabine		Calcasieu		Atchafalaya		MS Delta		Ponchartrain		Pearl	
	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future
Surface Water Supply	High	↑	Medium	↑	Medium	—	Low	↑	Medium	—	Medium	—	Medium	↑	Medium	↑	Low	—
Surface Water Quality	Medium	↑	Medium	↑	Low	↑	Low	↑	Medium	↑	Medium	↑	Medium	↑	High	↑	Medium	↑
Groundwater Supply	Medium	↑	High	—	High	↓	Low	—	High	—	High	↑	Low	—	High	↑	Medium	↑
Groundwater Quality	Medium	↑	Medium	—	Medium	↓	Low	—	High	—	High	↑	Medium	—	High	↑	Medium	↑
Flood Control	Medium	—	Medium	—	Medium	—	Medium	—	Medium	—	Medium	—	High	↑	High	↑	Medium	—
Environmental Protection and Enhancement	Medium	↑	Medium	↑	Low	↑	Low	↑	High	↑	High	↑	Medium	↑	High	↑	Medium	↑
Recreation	Medium	—	Medium	—	Medium	↓	Low	↑	High	↑	Medium	↑	Medium	—	Medium	↑	Low	—
Navigation	Medium	↑	Medium	—	Low	—	Low	↑	Medium	—	High	↑	High	↑	High	↑	Low	↑

Needs Assessment considered current status of water resources issues and anticipated future needs for eight categories in each major surface water basin.

Eight categories of state water resources needs were identified that could be addressed or affected by construction of surface water reservoirs. Evaluation criteria were developed for each category to allow inter-basin comparison of the differing needs to address these water resources categories across the state. The following categories were evaluated:

- Surface water supply
- Surface water quality
- Groundwater supply
- Groundwater quality
- Flood control
- Environmental protection and enhancement
- Recreation
- Navigation

To maintain objectivity in the evaluation process, criteria were developed based on factors that could be estimated as consistently as possible across all basins. Current needs are identified as high, medium, or low based on relative differences in these factors among the nine basins. Future trends are identified as increasing, unchanged, or decreasing relative to current conditions.

3. Program Application Procedures

A key task for this project was development and documentation of the specific process and procedures for the RPDP Program. This included consideration of many factors such as eligibility criteria, screening objectives, agency coordination and funding, to name just a few. Two sets of documents were developed; one for applicants and one for reviewers. These documents describe the RPDP reservoir project process, including project application procedures and schedule, evaluation and review criteria, and ranking for legislative approval and funding.

Information included in the guidance manuals includes:

Applicant Guidance

- Procedures and Schedule
- Instructions (including descriptions and sample calculations)
- Application Forms
- Appendices with cost and benefit information tables

Reviewer Guidance

- Background information on the Program
- Evaluation and scoring guidance
- Information on permitting requirements
- LDEQ and LDW&F typical reservoir review comments
- Reservoir feasibility evaluation model spreadsheet
- Review worksheets

Highlights of the proposed RPDP application and review process include:

- Applicants must be a legislatively created Reservoir District or other governmental entity.
- State funding under this program could be used for the following activities: planning, engineering studies, permitting, design, ROW acquisition, construction and other related activities.
- Applications will be processed in a two-phased approach. Phase 1 Applications will include basic project information and a basis for seed money from the Legislature (if requested) for preliminary planning and engineering studies. Phase 2 Applications will provide more detailed information and evaluations to allow for DOTD review and scoring and to provide a prioritized



list to be submitted to the Legislature for final design and construction funding. Program objective is not to screen out projects, but to provide a list of prioritized projects to the Legislature.

- Phase 1 Applications will be reviewed for completeness with a series of yes/no questions, but will not be scored, due to the limited available information. Phase 1 Applications that do not have “fatal flaws” will be included in the priority list.
- Phase 2 Applications will be reviewed and scored by a committee comprised of the following agencies:
 - DOTD dam safety engineer
 - DOTD water resources engineer
 - Louisiana Geological Survey
 - Louisiana Department of Wildlife and Fisheries
 - Governor’s Office, Division of Administration, Office of Planning and Budget
- Phase 2 Applications will be evaluated based on the following weighted criteria: (Note: these are suggested weighting factors, but they may be adjusted based on review committee input and experience with the process)
 - Project Need 20 points
 - Technical Feasibility 20 points
 - Project Benefits and Costs 35 points
 - Environmental and Development Impacts 20 points
 - Management and Cost Share 5 points
- To insure projects are technically sound, Phase 2 Applications will need a minimum score (10 points) in the Technical Feasibility criterion. Projects scoring less than 10 points in this category will receive an overall score of zero. All projects, regardless of score, will be included in the prioritized list of projects to be submitted to the appropriate Legislative Committee for funding.
- Project costs are based on full life cycle costs and include planning, design, permitting, right-of-way acquisition, construction, environmental mitigation, replacement costs and annual operation and maintenance.
- Guidance for calculating project benefits includes all expected beneficial uses that reservoirs can provide (multiple benefits). Benefits are based on net value; that is, the benefits to be derived “with the proposed project” compared to those “without the proposed project”.
- An annual application submittal and review cycle was developed based on the Legislature’s annual schedule. Different submittal deadlines were established for Phase 1 Applications depending on whether the applicant is seeking seed money from the Legislature for project planning.
- Applicants will be provided feedback on their applications (Phase 1 and 2), however, the annual application review schedule does not include time for applicants to revise their applications based on that feedback within the same annual review cycle – other than to provide minor missing information.

- No local funding match will be required for proposed reservoir projects, however, projects with local funds or partial funding by other agencies will receive a higher score.
- Program funding is anticipated to be established through the annual Capital Outlay projects (HB-2).

4. Project Evaluation Criteria

Evaluation criteria used to assess and prioritize proposed reservoir projects in Louisiana were developed through a series of workshops. The sources of information utilized include the following:

- Project review processes used by DOTD (e.g., Port Priority Program and State-wide Flood Control Priority Program) for prioritization of other potential public or private infrastructure projects.
- Programs, processes and criteria used by other states (e.g., Texas, Arkansas and Florida) for prioritizing reservoirs or other public works projects.
- Information from other State and Federal agencies responsible for regulating and approving new reservoirs, such as the U.S. Geological Survey, U.S. Army Corps of Engineers, and Louisiana Department of Environmental Quality.

Separate evaluation criteria were developed for Phase I and Phase 2 Applications. The criteria are clearly described for both applicants and reviewers, and are as objective and quantifiable as possible, as summarized in the following tables:

Phase 1 Application Criteria

Eligibility	<ul style="list-style-type: none"> • Is the project eligible for consideration by the RPDP? • Is the applicant, or will the applicant be, a qualifying reservoir district?
Project benefit to state	<ul style="list-style-type: none"> • Has the applicant described how the project would provide benefits to the state by either meeting an identified water resources need or promoting economic development?
Feasible approach	<ul style="list-style-type: none"> • Does the estimated cost (capital & O&M) appear to be the right order of magnitude? • Does the applicant have a reasonable approach to funding the project? • Has an adequate source of water been identified to fill and maintain the reservoir?
Other significant issues	<ul style="list-style-type: none"> • Is the project consistent with existing regional, state, and federal plans? • Can environmental impacts be minimized or mitigated so that the project could be permitted? • Are technical problems and effects on existing facilities minor enough that the project could be constructed?

Phase 1 Applications will be reviewed for completeness with a series of yes/no answers

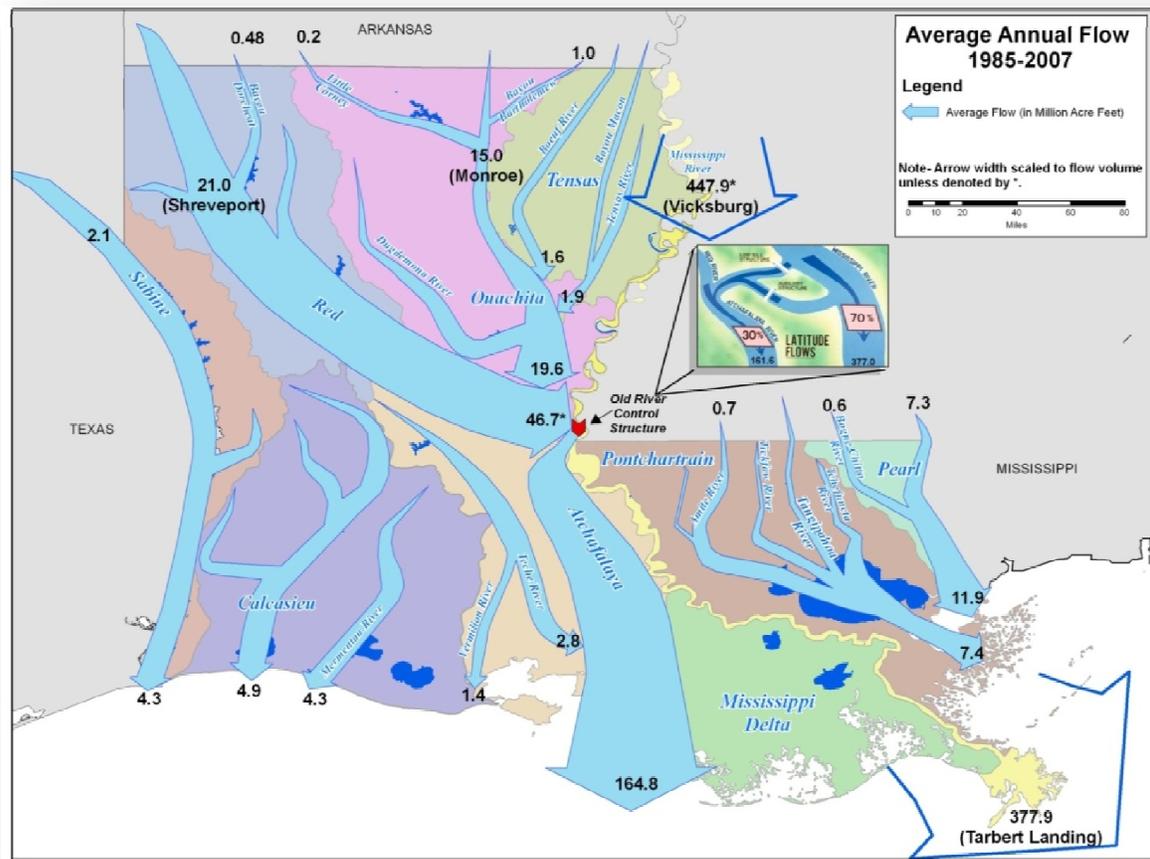
Phase 2 Scoring Criteria (Category and Maximum Score)



Phase 2 Applications will be evaluated and scored based on specific established criteria

5. Louisiana Statewide Perspective on Water Resources

Water, both above and below ground, is Louisiana's most abundant resource and one of the most important. Water from 41 percent of continental United States land areas flows through Louisiana.



Surface water in Louisiana is plentiful, particularly in streams that originate in upstream states.

The Louisiana Statewide Perspectives Report on Water Resources (Perspectives Report) presents a consolidated overview of water resources throughout the state, including both surface water and groundwater, based on available information and multiple documents prepared for the RPDP. It presents water use information and summarizes groundwater aquifer conditions throughout the state. The Perspectives Report identifies water resources issues and concerns affecting Louisiana at state-wide and regional scales and highlights current and future trends. It also describes the role of State and Federal agencies in development and management of water resources.

The Perspectives Report provides a water resources management strategy to more proactively address identified water resources issues and concerns. The strategy includes several specific actions that were selected to assure that state surface and groundwater resources are managed to meet the present and future needs of municipalities, agriculture, industry, rural water users, and the environment.

The Perspectives Report statewide water resources management strategy for Louisiana includes the following elements:

- **Establish a statewide water supply advocacy program** – Promote increased state agency coordination through a governor-led initiative that establishes common water management objectives; emphasize the importance of sustainable water resources for public welfare, ecological health, and economic prosperity.
- **Adopt a state-wide process for water resources management** - Regularly identify the most serious water supply issues from a statewide perspective; focus on comprehensive processes that can identify and address potential regional water supply issues before they grow to crisis proportions; provide guidance for water resources planning.
- **Improve information on sustainable water use** – Increase data analysis, model development, and estimates of sustainable yields for surface water and groundwater resources. Coordinate the evaluation of monitoring data and development of analytical tools.
- **Communicate State and Federal permitting requirements** – Provide clear guidelines about regulatory compliance requirements of State and Federal agencies that must be addressed during water project planning, design and construction.
- **Provide state-level financial incentives** – Develop state programs that provide financial assistance, either directly or through tax incentives, to develop projects that reduce the severity of known or emerging water supply issues.

F. Conclusions

Although water resources needs in Louisiana vary considerably across the state, a set of common concerns are evident in many regions of the state. These result, in part, from

lack of coordinated planning, availability of information to support decision making and funding. Statewide water resources issues and concerns include the following:

- Existing areas of groundwater concern (e.g., in the Sparta aquifer) caused by localized groundwater over pumping
- Population and water use forecast uncertainty
- Limited availability of sustainable yield estimates for surface and ground water resources
- Agricultural demands for water
- Industry and energy demands for water that are erratic and difficult to predict
- Declining water quality in certain surface and ground water resources
- Uncertainty in climate change and its possible effects on Louisiana water resource use and availability
- Increasing complexity of complying with environmental regulations
- Increasing competition for water resources among different uses (municipal, rural domestic, agricultural, environmental, recreation, energy)

In developing the RPDP, the following conclusions were drawn regarding the level of understanding of statewide water resources issues and concerns, and the ability of the State of Louisiana to address them:

- Long-term water resource issues and concerns will increase in the future
- The issues and trends affecting surface water and groundwater resources in Louisiana are well known by technical experts and local, impacted entities
- Many state and federal agencies have information and ideas that could help address the concerns and issues
- For effective statewide ground and surface water planning and management, and to provide for future water resources needs, a comprehensive and well coordinated water management strategy is required
- Providing state-funding for high-priority water development projects through the RPDP could assist in addressing water supply and water quality needs in the best interest of the state

- The RPDP provides an objective, standardized approach based on sound data for prioritizing requests for state funding of surface water reservoirs

G. Recommendations

As a result of preparing the RPDP and related documents, two related but separate types of recommendations are presented. These include the need to develop a statewide strategy for managing water resources, and implementing the RPDP as part of that strategy.

Develop a Statewide Strategy for Water Resources Management

To more proactively address the identified and other potential water resources issues and concerns, the state of Louisiana should adopt a comprehensive water resources management strategy to assure that state surface and groundwater resources are managed to meet the present and future needs of municipalities, agriculture, industry, rural domestic water users and the environment. In particular, the strategy should focus on measures that would assure the protection and sustainable use of its groundwater resources. While the implementation of such a strategy would not be expected to immediately resolve long-established water resources issues, it would be beneficial in reducing or reversing adverse effects, and avoiding similar issues from occurring in the future.

A statewide water supply strategy for Louisiana should include the following elements:

- The Governor should direct water-related state agencies to collectively develop a coordinated plan for water resources management. The plan would identify the highest priorities at a state-wide and regional level, and highlight how each agency would be involved in advancing those objectives. These priorities should be reflected in agency budgets.
- The State of Louisiana should provide guidelines and funding to encourage local and regional cooperation in water resources planning and management. The State also should have the authority/responsibility to identify important issues in various regions and initiate the process to address them.
- The State of Louisiana should require municipalities, industries, and agricultural operations using more than a specified threshold amount of water to prepare water supply plans projecting their water needs 20 years into the future and identifying proposed water sources.
- The State of Louisiana should provide guidance to regional planning groups on the application of scenario based planning to address areas of uncertainty, including climate change, emerging environmental requirements, population forecasts, and expected adoption of conservation measures.

- The State of Louisiana should provide funding for water projects to reduce unsustainable groundwater use. The Reservoir Priority Development Program is one method to achieving this goal. Other options may include tax incentives to private entities to encourage investments in alternative water supplies.
- In coordination with regional planning groups, the State of Louisiana should review ongoing groundwater and surface water monitoring programs and identify necessary modifications to assure that necessary data for long-term management and model development is collected. Emphasis should be placed on the importance of groundwater monitoring in aquifer management.
- In coordination with regional planning groups and Federal agencies, the State of Louisiana should develop models to estimate the sustainable yield of groundwater and surface water resources. State and Federal leadership is needed to provide consistent approaches in model development and assure that they receive adequate peer review.
- Through regional planning groups, water resources needs assessments should be completed on a regular basis. A consistent approach should be applied to allow information to be aggregated at a state-wide level on a periodic basis. State-wide priorities also should be adjusted as necessary as information from regional planning processes reveal changes.

Implement the RPDP

DOTD recommends that the Reservoir Priority Development Program be implemented and funding provided for the following Phase 2 activities:

- Pilot testing of the RPDP process with one or more reservoir projects
- Workshops with stakeholders, such as potential applicants and state and federal agencies, to obtain additional input
- Workshops with potential users to explain and demonstrate the process
- Technical Studies at select locations, as needed, such as:
 - Estimate sustainable yields of streams, lakes and reservoirs to assist in evaluating a proposed reservoir project
 - Quantify stream flood characteristics to confirm flood protection benefits of a proposed reservoir project
 - Develop ground and surface water models to quantify water resources needs and availability



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